

# Head Adjuncts and Left-to-Right Syntax

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rough draft, January 17, 2024; comments welcome

## Abstract

This paper proposes that there is a category of element called a *head adjunct*, which has properties of an adjunct but merges with its host as a head. Head adjuncts include English affixal negation, the definite markers in Bulgarian (e.g., Franks 2001, Embick & Noyer 2001) and Amharic (Kramer 2010), and the person prefix on independent order verbs in Algonquian languages. Head adjuncts have a very particular distribution: They always appear on the linearly *first* element of the appropriate type. I argue that this placement follows from their status as head adjuncts and from a view of syntax where the structure is built left to right. The proposed system puts morphological elements where they occur on the surface without the need for any post-syntactic reordering mechanisms. It also makes typological predictions, correctly excluding affixes that always appear on the last element of the appropriate type, or second or second-to-last.

## 1 Introduction

In this paper, I investigate certain elements that I suggest have the status of *head adjuncts*: They are heads and attach to a head, but in the manner of an adjunct. That is, they are not selected by the head that is their host, but they instead select that host. Pollard & Sag (1994), Bruening (2010a, 2013, to appear), Bruening & Al Khalaf (2020) propose that adjuncts select the categories that they modify. In English, for instance, adjectives select nominal categories and adverbs select other categories. These modifiers are phrasal and select phrasal projections to modify. Here, I suggest that there are also adjunct heads that select the category of the head they adjoin to. I suggest that English affixal negation is one such element:

- (1) a. She **isn't** looking for jobs yet.
- b. She **hasn't** been looking for jobs yet.
- c. She **couldn't** have been looking for jobs for long.

English affixal negation attaches to the first auxiliary in the clause, as can be seen in the above paradigm. It does not seem to be selected by the auxiliary, since that same auxiliary does not host it if it is not linearly first. I suggest that affixal negation is an adjunct and selects an AuxV as the category it adjoins to.

I go on to suggest that various elements in other languages are exactly the same type of thing. The definite suffix in Bulgarian (Franks 2001, Embick & Noyer 2001, among many others), the definite suffix in Amharic (Kramer 2010), and the person prefix on independent order verbs in Algonquian languages are the items that I will investigate in detail. They all obey the same distribution as English affixal negation: they appear on the linearly *first* element of the appropriate type. While the English and Algonquian cases could plausibly be described in purely hierarchical terms, the Bulgarian definite marker cannot. It can only be described in linear terms.

I argue that the distribution of all of them falls out from their status as head adjuncts, plus the hypothesis that syntactic structure is built from left to right rather than bottom-up as in most approaches. A head adjunct

selects a particular category to adjoin to; as soon as such a category is merged into the structure being built, the head adjunct will merge with it. In a left-to-right structure building operation, this will always be the *first* element of that category. Thus, viewing these elements as head adjuncts in a left-to-right syntax explains why they have the distribution that they do.

This approach also makes typological predictions which, as far as I have been able to determine, are borne out. First, there could not be any head adjunct that attaches to the *last* element of the appropriate type. Or second, or second to last. As far as I have been able to determine, these elements always have the *first* head of the appropriate type as their host. There is nothing in any language that is always hosted by the second, second-to-last, or last head of the appropriate type. This is predicted by left-to-right structure building, but it is not predicted by a bottom-up system.

Section 2 introduces the notion of a head adjunct while simultaneously describing and analyzing English affixal negation. Section 3 describes the Bulgarian facts and how they fall out from the hypothesis. Section 4 does the same for Amharic. Section 5 applies the proposal to the person prefix that appears on independent order verbs in Algonquian languages. It is common in generative treatments of Algonquian languages to view this prefix as a pronominal clitic (following Halle & Marantz 1993), but I show that it is not a clitic, it is a canonical affix. Its placement vis a vis the rest of the inflectional morphology is unusual, but it follows naturally from the proposal here.

The proposal not only accounts for the facts discussed in this paper and the typological patterns, it does so without the need for post-syntactic operations of any type. The Bulgarian and Amharic facts have been analyzed in terms of post-syntactic reordering operations (Embick & Noyer 2001 and Kramer 2010, respectively). In the current approach, these are unnecessary, as are post-syntactic operations or levels of any kind. In the proposed approach, there is only the syntax. The placement of the elements being investigated falls out from syntactic operations that are needed anyway. This means that we can achieve a paired-down, minimal model of morphosyntax, where there is only a single component of grammar for putting complex forms together, the syntax.

## **2 The Proposal, with Reference to English Affixal Negation**

In this section, I spell out the proposal. I do so with reference to English affixal negation, which I simultaneously describe and analyze. Subsequent sections describe and analyze the phenomena in the other languages.

### **2.1 Background: Selection and Categories**

I start with some necessary background. First, I assume that there is only a single component of grammar for putting complex forms together. This is the syntax. It puts both complex heads together, in what is the traditional domain of morphology, and phrases, which is the traditional domain of syntax. Unlike other syntactic approaches to morphology (e.g., Distributed Morphology, Halle & Marantz 1993), I do not assume the existence of post-syntactic operations that perturb the output of the syntax. I assume that morphemes are put where they appear by the syntax. Since having linear order be specified post-syntactically would entail a post-syntactic level of syntax (which multiplies theoretical devices unnecessarily), I assume that linear order is part of the syntax. Linear order is specified whenever two things combine.

I also assume a fundamental distinction between heads and phrases. Heads can combine with other heads to create complex heads. Whenever two things are merged and they do not form a complex head, the resulting structure is necessarily phrasal. Within phrases, it is not necessary to make a distinction between maximal projections and intermediate ones. I will label anything that is a phrase headed by H “HP,” to distinguish it from the head, “H.”

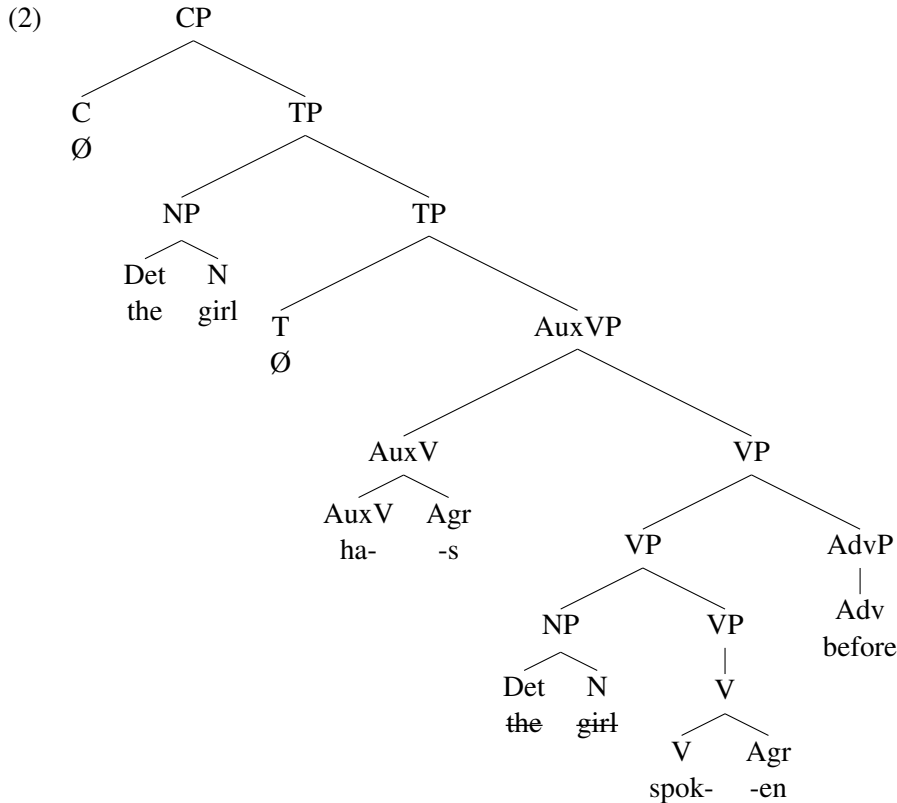
I also assume that syntactic elements select other elements, and this selection is one of the main drivers of merge. For instance, heads select their complements and their specifiers. The head C, for instance, usually strictly selects T (or a similarly high functional category) as its complement, and it may select a wh-phrase as its specifier (if it is interrogative, for instance). This selection drives merge: At the point where C is being considered, the syntax will see that it selects a wh-specifier, and so it will have to find one (or create one) and merge it. It will see that C selects T, and so it will merge T into the structure being built.

Since specifiers and complements appear on different sides of the head in a language like English, we need to distinguish complement selection from specifier selection. I will leave aside the question of whether the difference between specifiers and complements can be derived, and will simply notate the two different selectional patterns as “S<sub>C</sub>” for complement selection, and “S<sub>S</sub>” for specifier selection. I will implement this as feature checking, so that a head can have an [S<sub>C</sub>] feature and/or an [S<sub>S</sub>] feature, and these features are checked off by merging something of the appropriate type. For instance, C has an [S<sub>C</sub>:T] feature, which is checked off by merging a phrase of category T with it as its complement.

Both specifier and complement selection typically involve a head selecting its arguments. Syntax also includes non-argument modifiers or adjuncts. As mentioned above, Pollard & Sag (1994), Bruening (2010a, 2013, to appear), Bruening & Al Khalaf (2020) propose that these also select. Modifiers select the category that they modify. For instance, modifying adjectives in English select nominal categories, while adverbs select other categories. I will label this type of selection “S<sub>A</sub>,” for adjunct selection. At merge, labels can be fully determined: the selecting category is the one that projects, unless it is an adjunct, in which case it does not project and the other category does. (Again, for purposes here I just stipulate this, rather than trying to derive it from something.)

## 2.2 A Simple Example

Take the clause, *The girl has spoken before*. Keeping things as simple as possible, the syntax will have to create at least the following structure (there may be more to it, but we are simplifying):



I assume that the subject has a representation in the VP where it is interpreted, but moves to Spec-TP (but this will not be important here). I assume that there is a null declarative C which selects T, which is also null. Since there are no post-syntactic operations, there could be no post-syntactic lowering of T onto the finite verb. Rather, English verbs all have to combine with an inflectional head. In this example, the auxiliary verb *have* has combined with *-s*, and the main verb has combined with *-en*. It seems to be a fact that in English, every verb has to combine with one and only one inflectional head. Call these “Agr” heads. Many of them are null, but in many contexts (like this one) we can clearly see that each verb has exactly one Agr head. The Agr head takes its form depending on what selects the VP that its host heads: If T selects it, it takes a tensed form (e.g., *-ed* or *-s*); if perfect *have* selects it, it is the past participle (typically *-ed* or *-en*); if progressive *be* selects it, it is *-ing*; if a modal selects it, it is null; and so on. This can be modeled either as form selection, or as agreement (e.g., the Agree operation of Chomsky 2000); I will assume it involves Agree, but this is not crucial here.

What is important is how we model the need for each verb to have an Agr head. I will model this as selection again. In English, every verb selects an Agr head. This is not complement selection, specifier selection, or adjunct selection; it is head selection. So we need an additional mode of selection, head selection, or “S<sub>H</sub>.” Stating selection in terms of features, we can say that every verb has the feature [S<sub>H</sub>:Agr]. This feature is checked off by merging an Agr with it.

The adverb *before* in our example illustrates adjunct selection. Leaving aside whether this form is complex, we can say that the Adv *before* has an [S<sub>A</sub>:V] feature, which is checked off by merging the AdvP with something of category V, like a VP. Since this is not head selection, it is operating at the level of phrases: The AdvP combines with a VP. Since this is adjunct selection, the V projects rather than the Adv. In other instances of selection, V selects its specifier, the NP, so VP projects when the two combine; AuxV selects VP as its complement, so AuxV projects; T selects its specifier and its complement, so it projects when these combine; and so on.

### 2.3 Head Adjuncts: Affixal Negation

Now consider affixal negation, like *The girl hasn't spoken before*. This is not simple phonological contraction of *not*, comparable to contraction of auxiliaries. When auxiliaries contract, they contract onto whatever is to their left, whether that is a subject NP or another auxiliary:

- (3) a. These things've been put away.  
 b. These things should've been put away by now.

If what is to the left of the auxiliary moves away, the auxiliary contracts onto whatever is now to its left, for instance the complementizer in a relative clause:

- (4) the things that've already been put away

In contrast, English affixal negation is very selective: it only attaches to an auxiliary verb. We can see that affixal negation is not just a reduced version of *not* from contrasts like the following:

- (5) a. These things have probably not been put away.  
 b. \*These things have probablyn't been put away.

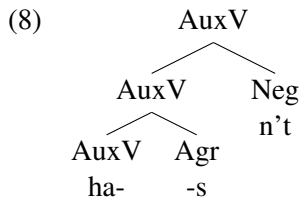
To use affixal negation, the word order has to change:

- (6) These things probably haven't been put away.

If the auxiliary verb that affixal negation would attach to moves away, affixal negation has to go with it (Zwicky & Pullum 1983):

- (7) a. Shouldn't you have given me that?  
 b. \*Should youn't have given me that?

Affixal negation also shows arbitrary gaps (there is no *\*amn't*) and morphophonological idiosyncrasies (*won't* rather than *\*willn't*; Zwicky & Pullum 1983). It therefore behaves like a canonical affix rather than like phonological contraction (or any sort of cliticization). In current terms, it is a head that combines with an auxiliary verb as a complex head:



Since the AuxV still has the distribution of an AuxV (appearing between the subject and the verb in a declarative but in C in an interrogative, for instance), the AuxV must be the label of the complex head. However, the AuxV does not seem to select affixal negation in the same way that it head-selects Agr. Agr is required, but affixal negation is not; and the same AuxV may or may not have affixal negation, depending on the context (whether it is preceded by another AuxV or not).

I suggest that this behavior is just that of an adjunct. Affixal negation is very selective in what it attaches to, so it is what is selecting; but it does not project, what it attaches to does. This makes it an adjunct. Since it is a head and combines with its host to create a complex head, it is a head adjunct. I will notate this “S<sub>HA</sub>,” which is the conjunction of S<sub>H</sub> and S<sub>A</sub>. Affixal negation has the feature [S<sub>HA</sub>:AuxV], which means that it

selects an AuxV as a head and as an adjunct. This feature is checked off when it merges with an AuxV and AuxV projects.

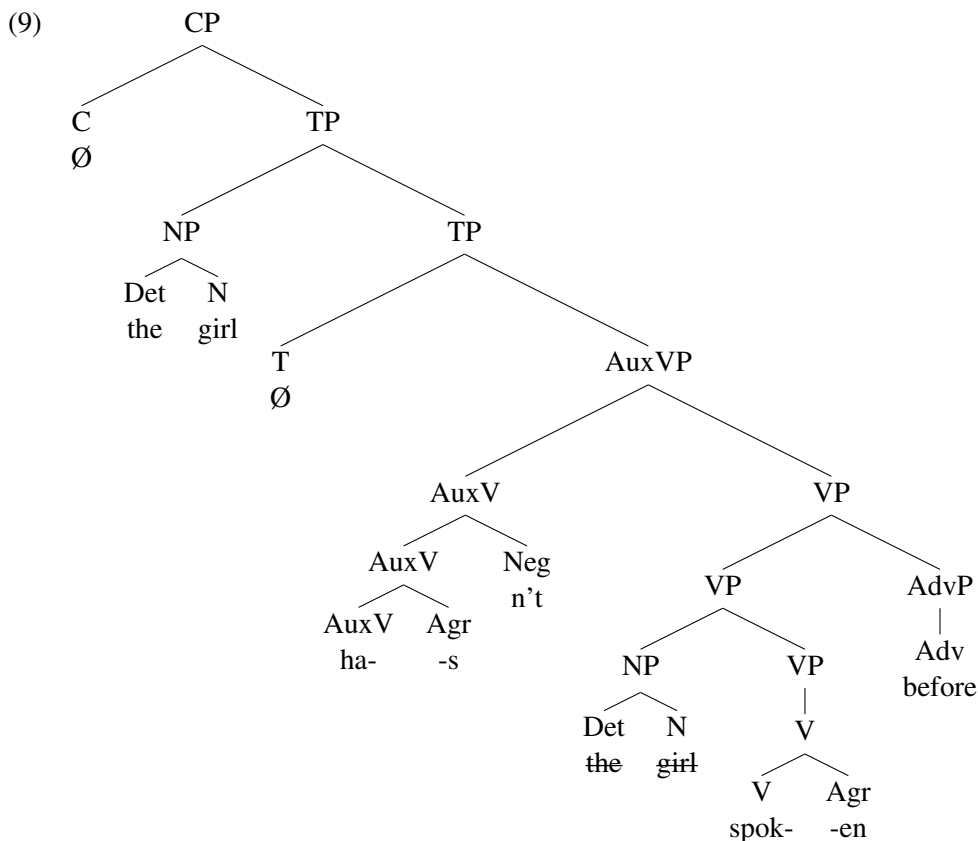
Note additionally that affixal negation, as an adjunct, comes outside of any heads selected by its host. In this case, the AuxV head-selects an Agr element, and this head combines with AuxV first. This is also the behavior of an adjunct: complements, at least, must merge with a head before any adjuncts can.

## 2.4 Building Structure Left to Right

English affixal negation always appears on the *first* AuxV in the clause it is part of. I suggest that this positioning follows from its status as a head adjunct if the syntactic structure is built left to right rather than bottom-up. Left to right structure building has been proposed by Phillips (1996, 2003), Richards (1999), Bruening (2010b, 2014, 2016, to appear), Osborne & Gross (2017), Bruening & Al Khalaf (2019). It has the advantage of being directly relatable to production and comprehension, which take place left to right (left to right is of course a visual depiction of the unfolding of time).

For the purposes of this paper, I will not spell out a complete account of how structure is built left to right. Only the briefest sketch of how it must proceed is necessary to derive the position of head adjuncts. First, I assume that the derivation takes place in chunks, roughly corresponding to the phases of phase theory (Chomsky 2000). CPs and NPs are the chunks we need here. I also assume that some planning mechanism picks out the items that will be necessary for each phase. Call the items so selected the *numeration* (Chomsky 1995). The syntax will then proceed to take items one at a time from the numeration and combine them into a syntactic structure in a workspace. There is only one syntactic structure; that is, items cannot be left unconnected in the workspace and only connected later.

Since we are building the structure left to right rather than bottom up, the syntax can start with the phase head in the CP phase. Take our example from above, but now with affixal negation added:



I assume that the following items were selected for the numeration for this CP phase:

(10)

Numeration							
<b>C</b>	<b>T</b>	<b>AuxV</b>	<b>Agr1</b>	<b>Neg</b>	<b>V</b>	<b>Agr2</b>	<b>Adv</b>
<b>∅</b>	<b>∅</b>	<b>ha(ve)</b>		<b>n't</b>	<b>spoke</b>		<b>before</b>
[S <sub>C</sub> :T]	[S <sub>S</sub> :N,S <sub>C</sub> :V]	[S <sub>H</sub> :Agr,S <sub>C</sub> :V]		[S <sub>HA</sub> :AuxV]	[S <sub>H</sub> :Agr,S <sub>S</sub> :N]		[S <sub>A</sub> :V]

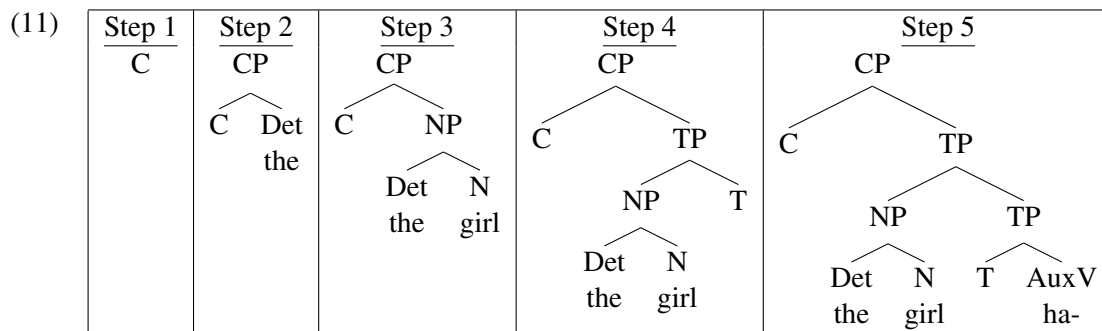
NPs constitute their own phases, so there is nothing in this CP numeration of category N. Additionally, I do not show a phonological form for the Agr heads, since their form is determined contextually in the syntax.

The syntax starts with the phase head, C. It can now proceed via selection. What has to happen is that the syntax takes each item in turn and evaluates whether it selects a specifier or not. If it does, the syntax has to build that specifier (or copy it from higher in the tree). Then the syntax will merge the head it was originally considering. If that head selects a complement, the syntax will locate a matching head and repeat: Does that head select a specifier? And so on.

At the point where the head is merged, the syntax also has to ask whether the head head-selects anything. If it does, a matching head will have to be found and merged with it.

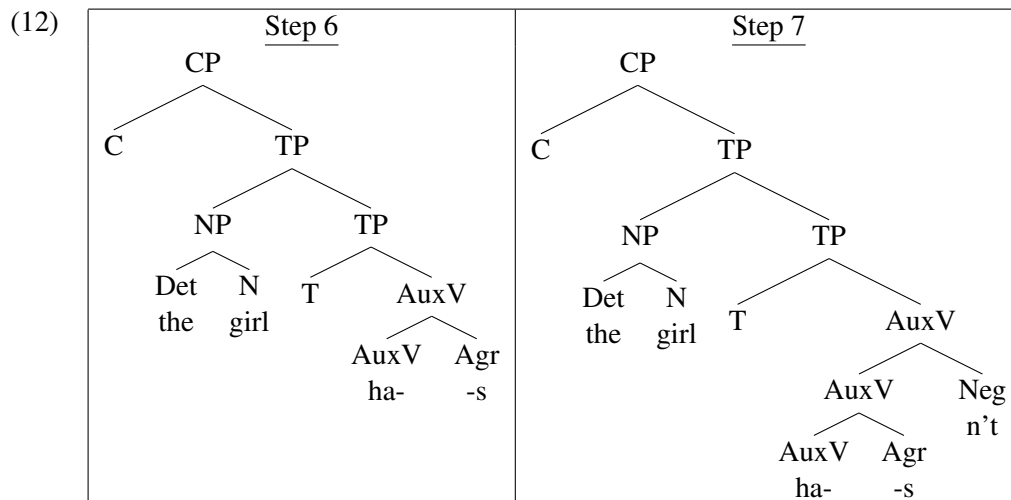
As for adjuncts, the syntax will also have to scan for them at the appropriate places. For instance, when considering C, the syntax will ask whether the numeration contains anything that selects C as an adjunct and merges on the left. If there is such an item, it will have to be merged before C is. Head adjuncts will be considered when a head is merged, but after that head has merged with all the heads that it head-selects. Phrasal adjuncts that merge on the right can be delayed until the phase is complete. At that point, if there are any right adjuncts in the numeration (like *before* in this example), they can be merged with an appropriate location in the structure.

So, in our example, C is considered first. This C does not select a specifier and nothing selects C as an adjunct. C is therefore put into the structure first (step 1 below). C does not head-select anything, and nothing selects it as a head adjunct. It does select a complement, T. T is then considered. Nothing selects T as a left adjunct. T does select a specifier of category N. NPs are their own phases, so the syntax will have to build something of category N. The CP phase has to be put on hold while an NP numeration is selected and then merged into the structure following the same procedure. In our example, there are only two items in the NP numeration, *the* and *girl*. First the specifier of N will be merged (Step 2), then the N will be (Step 3):



The syntax then returns to the CP phase. T will be merged as the complement of C, shoving the NP onto a left branch (Step 4). T does not head-select anything, and nothing selects it as a head adjunct. T does select a complement, in this case something of category V. The syntax has to know that AuxVs come before main Vs, so the AuxV is considered. Nothing selects AuxV as a left adjunct, and AuxV does not select a specifier. So AuxV can be merged next (Step 5).

AuxV does head-select something, namely, Agr. So an Agr morpheme will have to be merged with AuxV to form a complex head with it (Step 6):



Now we come to the important part. At this point, the syntax asks, Does anything in the numeration select AuxV as a head adjunct? The answer is yes, namely, affixal negation. Neg is therefore merged next (Step 7). The syntax will then proceed to build the rest of the structure, which is not so important here. Briefly, AuxV selects V, so the main verb will be considered. It selects a specifier of category N, so the syntax has to either construct one, or copy one. Something (not our concern here) has to require the syntax to copy the NP from Spec-TP. After it does this, V will be merged. V also head-selects an Agr, so an Agr will be merged with it. The syntax will scan for an item that head-selects V as an adjunct, but it will not find any. Finally, the Adv can be merged with a projection of V.

What is important here is how affixal negation is merged. Suppose there was another AuxV in the numeration (for instance, *The girl hasn't been speaking*). When the first AuxV is merged, the head adjunct will be merged with it, as just described. But now when the second AuxV is merged, there is no longer a head adjunct in the numeration that selects an AuxV. Neg will have been merged already. The result is that Neg always gets merged with the first head that is put into the structure of the category it selects, and not with any subsequent ones. That is, Neg always merges *when it can*, which puts it in the first possible location in a left to right syntax.

Thus, we account for the positioning of English affixal negation. The fact that it always appears on the first AuxV in its clause follows from its status as a head adjunct combined with the hypothesis that the syntax builds structure left to right.

Note that it also does not matter whether the AuxV is merged into its base position or somewhere higher, for instance in C in an interrogative. Suppose some feature of C directs the syntax to merge an AuxV into it. At that point, the syntax will again look for a head adjunct that selects an AuxV, and will merge affixal negation with it if it is present. After it has been merged, it will again have vanished from the numeration, and so will not be merged again if there are subsequent AuxVs.

## 2.5 First versus Highest

In this English case, it is not clear whether the generalization is about the *first* auxiliary verb, or the *highest*. The two coincide. It is usually described as *highest*, but that is only because most syntacticians adopt the assumption that the syntax deals only in hierarchy and not in linear order. If we reject this assumption (and see Bruening 2014, 2018, to appear, Bruening & Al Khalaf 2020 for good reasons to reject it), then there is no reason not to view it as *first*. As we will see, the Bulgarian facts are only compatible with a linear statement and not a hierarchical one. Since the Bulgarian definite article is very similar to English affixal negation, and they are instances of the same phenomenon, I contend, then we must conclude that the linear statement is correct for English, as well.



## 2.6 Summary

To summarize, English affixal negation is a head adjunct. A head adjunct selects a particular type of head to attach to, but is an adjunct and comes outside of any heads selected by its host. Head adjuncts always appear on the linearly *first* element of the type that they select, and this positioning follows from their status as a head adjunct if the syntax is built left to right.

## 3 The Bulgarian Definite Marker

The definite marker in Bulgarian appears as a suffix on the first word of a certain type within the NP. The relevant words are those that can bear nominal inflection. These include the head noun itself, adjectives, possessive pronouns, and numerals (see, e.g., Franks 2001). If there is only a head noun, the suffix attaches to that (13a); if there is a prenominal adjective, the suffix attaches to that (13b); if there is a possessive pronoun or a numeral before an adjective, then the definite suffix attaches to that (13c–d):

(13) (Embick & Noyer 2001: 568, Harizanov & Gribanova 2014: (2b))

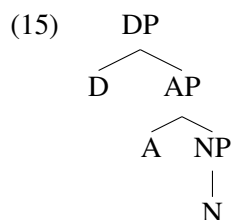
- a. kniga-**ta**  
book-Def
- b. xubava-**ta** kniga  
nice-Def book
- c. moja-**ta** xubava kniga  
my-Def nice book
- d. tri-**te** novi knigi  
three-Def new books

If an adjective is modified by an adverb, the definite marker attaches to the head adjective, and not to the first element (the adverb):

(14) (Embick & Noyer 2001: (23a–b))

- a. \*mnog-**ət** star teatər  
very-Def old theater
- b. mnogo starij-**ə** teatər  
very old-Def theater

The issue with this placement is that it seems to be partly hierarchical and partly linear. It is hierarchical because it ignores things of the wrong category. It is linear because it goes on the *first* element of the appropriate type. Since in many approaches, the syntax deals only in hierarchy and not in linear order, this placement is problematic. Accordingly, Embick & Noyer (2001) propose a post-syntactic *lowering* analysis of the placement of the Bulgarian definite marker. At a level after the syntax, the D head lowers onto the head of its complement. This analysis assumes the DP Hypothesis, where the definite marker is a head D that projects a phrase and takes as its complement a sequence of functional projections terminating in the lexical NP. This analysis also requires that D take A as its complement, in order to lower D onto A in examples like (13b). A then takes N as its complement (as was proposed by Abney 1987):



A taking N as its complement and projecting is an analysis that has been discredited; see, for example, Hankamer & Mikkelsen (2005). If this is not a viable analysis of adjectives, then this is not a viable analysis of the definite marker.

More importantly, there is an empirical problem for the lowering analysis from coordinated adjectives. If two adjectives are coordinated, the definite marker appears only on the first one (Harizanov & Gribanova 2014):

- (16) prohladna-**ta** i sveža večer  
 cool-Def and fresh evening  
 ‘the cool and fresh evening’

We should compare the Bulgarian case to the process that puts tense and agreement on the main verb in English, which Embick & Noyer (2001) also analyze as lowering. This process in English must apply in an across-the-board fashion:

- (17) She caught and ate/\*eat the fish.

This makes the lowering analysis of Bulgarian suspect, since it does not apply in an across-the-board fashion as it would be expected to. (Note that the English facts follow from the analysis in section 2: Every verb head-selects an Agr head, even coordinated ones.<sup>1</sup>)

Coordinated adjectives make it very clear that the positioning of the definite marker in Bulgarian is linear in nature. The generalization is that the Bulgarian definite marker appears on the *first* element of the right type in the NP. It does not appear on the head of the complement of D, which is how Embick & Noyer (2001) analyze it.

For lack of a better term, I will call the heads of the appropriate type in Bulgarian, namely, those that bear nominal inflection, “[+N] heads.” The generalization concerning the placement of the Bulgarian definite marker is then as follows:

- (18) Generalization: The Bulgarian definite marker attaches to the first [+N] head in the nominal.

As I will now show, the system developed here for English affixal negation accounts for the placement of the Bulgarian definite marker without any additional stipulations.

### 3.1 Nominal Concord: Agr Heads

As a preliminary, it is important that Bulgarian has nominal concord. Demonstratives, adjectives, numerals, possessive pronouns, and head nouns all bear nominal concord in Bulgarian. Nominal concord typically takes the form of a final vowel, marking number, gender, and case. So example (13d) should be fully glossed as follows (ignoring the specific features):

- (19) tr-i-te nov-i knig-i  
 three-Agr-Def new-Agr book-Agr  
 ‘the three new books’

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<sup>1</sup>English affixal negation behaves differently: it can go on either or both of two conjoined AuxVs:

- (i) a. She can’t and won’t reset the machine.  
 b. She can but won’t reset the machine.  
 c. She won’t but could reset the machine.

It is clear that the affixal negation is contentful in each conjunct. It seems likely that coordination here involves coordination of larger categories plus ellipsis, which means that we cannot use coordination to decide between a linear and a hierarchical analysis.

Adverbs do not bear nominal concord (Agr) markers, instead they have an invariant *-o* (which I will not gloss and will ignore in the analysis, but a complete analysis would include it):

- (20) mnogo star-ij-ə      teatər-Ø  
 very    old-Agr-Def theater-Agr

We can therefore restate the generalization as the following:

- (21) Generalization (revised): The Bulgarian definite marker attaches to the first [+N] head in the nominal, outside of Agr.

And we can capture the need for an Agr head on each [+N] head as follows:

- (22) All [+N] heads in Bulgarian have an [S<sub>H</sub>:Agr] feature.

Now every time the syntax merges a [+N] head into the syntax, it must also merge an Agr head with it.

Note how similar the Bulgarian definite article is to English affixal negation. All the relevant heads in Bulgarian head-select an Agr. They do not appear to select the definite marker. The definite marker appears only on the first one, so it may or may not appear on any given [+N] element. It also appears outside of any head that its host selects (Agr). Its host also retains its distribution, so Def is behaving like an adjunct. The Bulgarian definite article has all the properties of English affixal negation. Like English affixal negation, it is a head adjunct.

### 3.2 Analysis of the Bulgarian Definite Article

The system developed here will now correctly place the Bulgarian definite article, with no additional stipulations or constraints. All we need is to say that the definite article, which I will call “Def,” has the feature [S<sub>HA</sub>:+N]. Then, whenever the syntax merges a head with the feature [+N], it will look to see whether there is something in the numeration with the feature [S<sub>HA</sub>:+N]. The first time it does this, there will be, and Def will be merged with the *first* [+N] head put into the structure. On subsequent mergers of [+N] elements, Def will no longer be in the numeration, and nothing will happen. This will correctly locate Def on the first [+N] head in the NP phase.

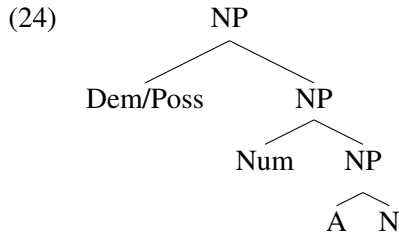
As an example, consider the phrase ‘the three new books’ in (19). The numeration for this phrase is the following, where there have to be as many Agr heads as [+N] heads, and Def is also present (again, I just assume that whatever does the work of selecting the numeration has done its job):

(23)

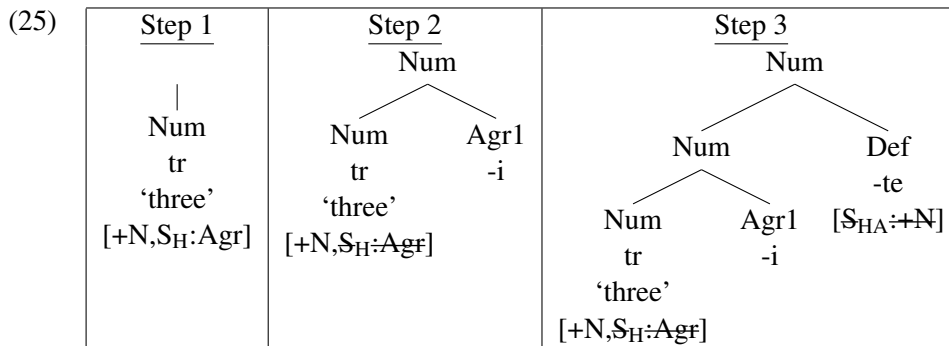
Numeration						
<b>Num</b>	<b>Def</b>	<b>A</b>	<b>N</b>	<b>Agr1</b>	<b>Agr2</b>	<b>Agr3</b>
<b>tr</b>		<b>nov</b>	<b>knig</b>			
‘three’		‘new’	‘book’			
[+N,S <sub>H</sub> :Agr]	[S <sub>HA</sub> :+N]	[+N,S <sub>H</sub> :Agr]	[+N,S <sub>H</sub> :Agr]			

I do not show the phonological forms of Agr and Def in the numeration, as their forms are determined contextually.

In Bulgarian, the order of elements within the nominal is fixed as Dem/Poss > Num > A. It does not really matter here what determines this order, or what exactly the structure is (on Dem Num A N orders, see for example Cinque 2005, Abels & Neeleman 2012, Dryer 2018). What matters is that *something* tells the syntax to merge the items in that order inside an NP phase. I assume that the linear order for these simple cases matches the hierarchical order, so that the structure (ignoring morphology) is:

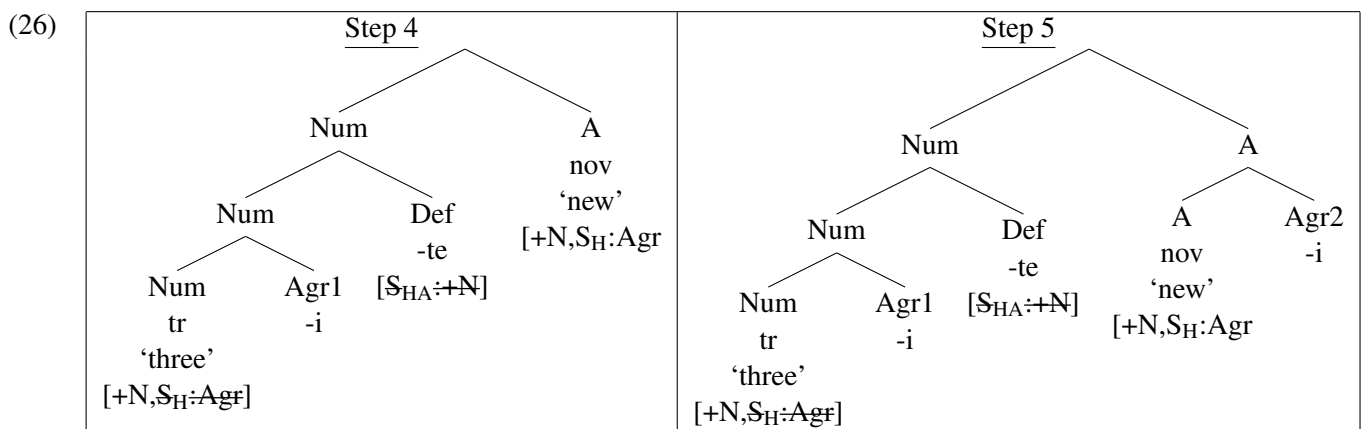


Inside an NP phase, then, the syntax looks first for a Dem or Poss element, then a Num. In our case, it does not find a Dem or Poss, but it does find a Num. It merges it into the syntax (Step 1). Num head-selects an Agr, so an Agr must be merged next (Step 2; it does not matter which Agr, if their form is determined contextually).



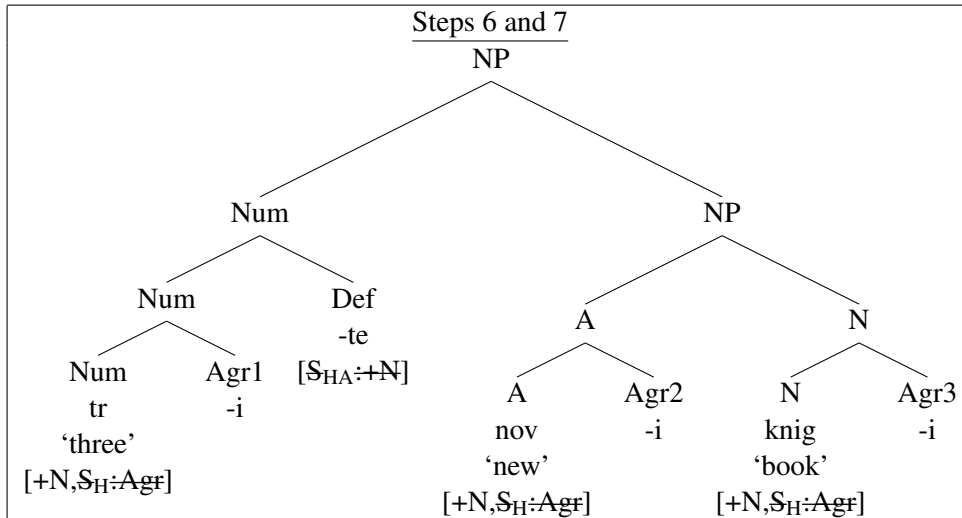
Now the syntax asks whether anything in the numeration selects Num as a head adjunct. There is something that does, namely, Def. It has the feature [S<sub>HA</sub>:+N], and Num is [+N]. So Def is merged into the tree (Step 3). (These instances of merger check off the selectional features, which I notate with strikethrough.)

The syntax now moves on. Whatever it is that is responsible for the order in the NP tells the syntax to look next for an adjective, and it finds one. The A is merged (Step 4):



A head-selects Agr, so a second Agr is taken from the numeration and merged with the A (Step 5). At this point the syntax again asks whether the numeration contains anything that selects the current head as a head adjunct. Since Def has already been merged into the tree, it does not. The syntax moves on, and merges the head N (Step 6); since N head-selects an Agr, the final Agr is also merged with the N (Step 7):

(27)



N projects, as the head of the phase (I assume that Num and A are adjuncts, but again the exact structure is not particularly important).

Once again the syntax asks whether there is anything in the numeration that selects the current head as a head adjunct. Since Def has already vacated the numeration, there is nothing. The syntax terminates, and the phase is finished.

It should be clear why Def is correctly located on the first [+N] head: Whenever the syntax merges a head, it looks to see if anything selects that head as a head adjunct. This will put Def on the first [+N] head merged. Once Def is moved out of the numeration, there will no longer be any such head adjunct in the numeration for subsequent [+N] heads.

We also get the correct output when there is nothing in the nominal except a head noun. In this case, Def merges with the head N:

(28) knig-a-ta  
book-Agr-Def

In this case, the numeration contains only N, Agr, Def. The only [+N] head is N, so when that is merged into the structure, Agr and then Def will merge, too.

The correct output is also produced for a nominal that consists of an adjective and a noun:

(29) xubav-a-ta knig-a  
nice-Agr-Def book-Agr

In this case, the numeration has two [+N] elements, A and N. A will be merged first, given the structure of the NP. When it is merged, first an Agr head and then Def will be merged with it. When N is then merged, Def is no longer in the numeration, so only another Agr will merge with the head N.

A case similar to the Num A N case gone through in detail above is Poss A N:

(30) moj-a-ta xubav-a knig-a  
my-Agr-Def nice-Agr book-Agr

The numeration has three [+N] elements, as in the derivation above. The first one to be selected will be Poss, given the structure of the NP in Bulgarian. Def will therefore merge with it, and not with any of the subsequent [+N] heads.

The analysis also captures the case of an adverb modifying an adjective:

- (31) a. \* mnog-ət star teatər                      b. mnogo star-ij-ə                      teatər-Ø  
           very-Def old theater                      very    old-Agr-Def theater-Agr

Def attaches to the adjective, and not to the adverb. This follows in the current account, since adverbs are not [+N]. When the adverb is merged, the syntax will look to see if the numeration contains anything that selects an adverb as a head adjunct, and it will not find anything. It is only after the adjective is merged that it will find a head adjunct with the right selectional features.

We will also get the right result for the case that was problematic for the lowering analysis, coordinated adjectives. As we saw, Def attaches only to the first A:

- (32)    prohladn-a-**ta** i    svež-a    večer-Ø  
           cool-Agr-Def and fresh-Agr evening-Agr  
           ‘the cool and fresh evening’ (Harizanov & Gribanova 2014: (2d))

It does not matter at all what the structure of coordination is, all that matters for the current account is which [+N] element is merged into the structure *first*. Since the structure is being built left to right, this is necessarily the leftmost one, here ‘cool.’ When this adjective is merged into the structure (and after an Agr morpheme has been merged to satisfy the head selectional feature of A), the syntax will look for a head adjunct that selects it, and it will find Def. It will then merge Def. Def will no longer be in the numeration when the second adjective and the head noun are merged, so they will not have a definite suffix.

### 3.3 Bottom-Up Will Not Work: One NP Phase Inside Another

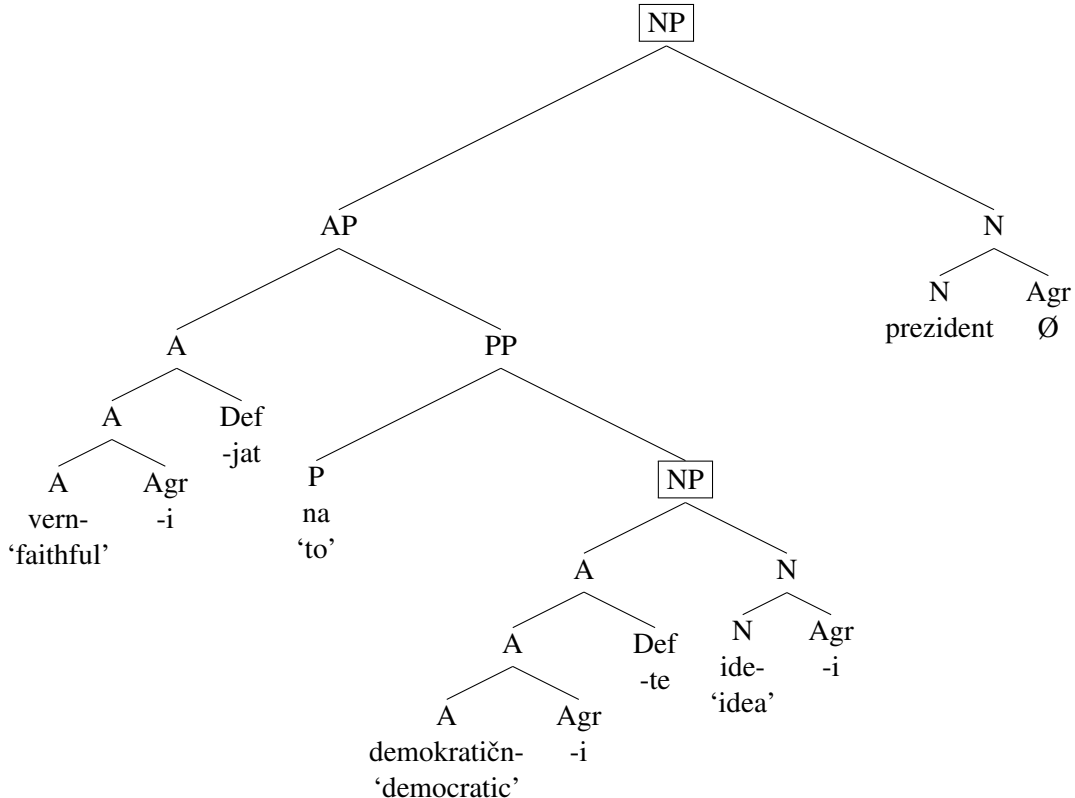
One NP can embed another. Interestingly, such cases show us that trying to translate the current analysis of head adjuncts to bottom-up structure building cannot work.

The following is an example of one NP phase inside another in Bulgarian:

- (33)    verni-jat    na demokratični-te idei    prezident  
           faithful-Def to    democratic-Def ideas president  
           ‘the president (who is) faithful to democratic ideas’ (Franks 2001: 55, (6a))

In this example, ‘the president’ embeds another definite NP, ‘the democratic ideas’. This has the following structure, with the two NP phase nodes in boxes:

(34)



Since each NP is its own phase, there are two different phases here, with two different numerations. Each numeration has its own Def. I still assume that the tree is built left to right, however. This means that the higher phase will have to be put on hold while the lower phase is built.

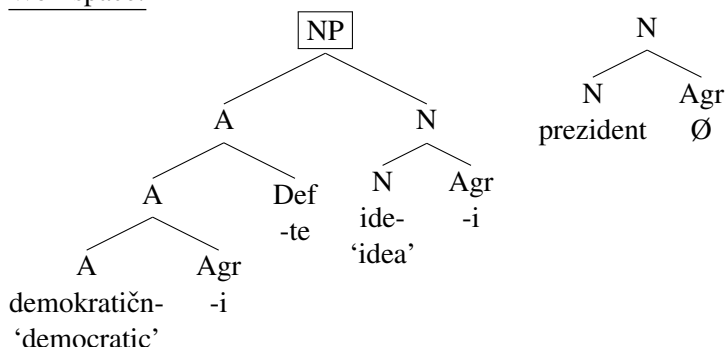
The higher phase will start with the adjective 'faithful'. It will be merged into the structure being built. Since it head-selects an Agr, an Agr will then be merged with it. The syntax will then look for a head adjunct that selects an adjective, and it will find one, namely, Def. Def will be merged with the A+Agr. This A also selects a PP complement, so a P will then be merged. P selects an NP complement. At this point, the higher phase will be put on hold and a new numeration for a new NP phase will be selected. This numeration also contains Def. It will start with the adjective 'democratic'. This A will be merged with the P of the higher phase, and then an Agr will be merged with it to satisfy its head selectional feature. The syntax will look to see if there is a head adjunct that selects an adjective; there is, Def. So Def will be merged. After that the N 'idea' will be merged. Since the N selects an Agr, an Agr will be merged with it. This ends the lower phase, and the syntax will return to the higher phase. All that is left in the higher numeration is the N 'president' and an Agr, and these will be merged in turn.

In the derivation just described, there is only a single tree structure being built at every point. There is never a point where two things are unconnected.

Suppose we wanted to adapt the head adjunct analysis to a bottom-up approach to structure building. The first problem is that a bottom-up derivation will not automatically locate Def on the *first* element of the right type. In the current analysis, Def will be merged when it can; this will correctly put it on the first element of the right type, and not any subsequent ones, because it will have been moved out of the numeration at the point where those become active. In a bottom-up derivation, the procedure would somehow have to put Def on the *last* item of the correct type. It is possible to specify such a procedure. One could have an algorithm like the following: (1) each time a [+N] element is merged, scan the numeration; (2) if there is a [+N] element in the numeration, do nothing; (3) if there is no [+N] element in the numeration, merge Def with the structure being built. This will put Def on the last [+N] element merged into the structure.

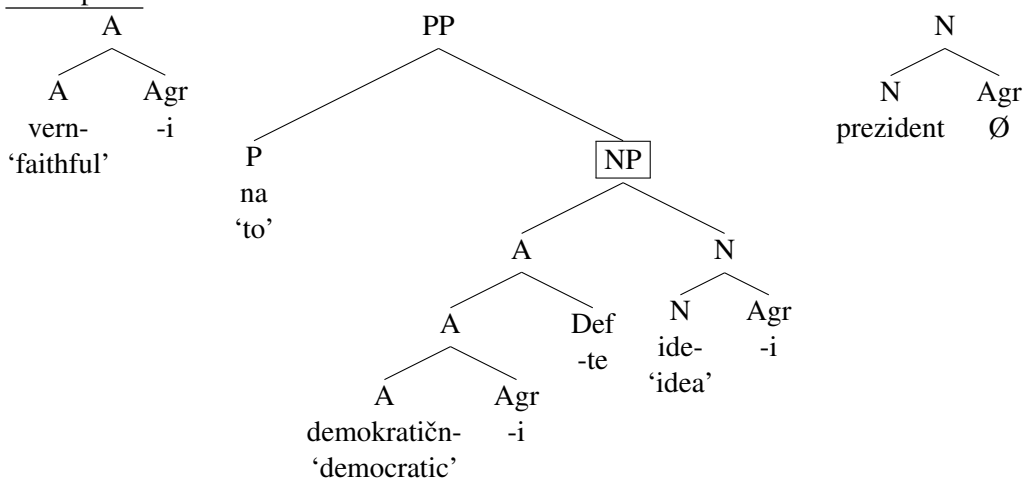
The problem comes from the embedded phase in the example above. In a bottom-up derivation for the structure in (34), the N ‘president’ and its accompanying Agr node would be merged first. The lower NP phase would have to be built separately, in a separate derivation. Suppose it could be, and then put into the numeration for the higher phase as a single item. It then has to be put into the workspace with ‘president’, but not yet connected to it. This is two unconnected items:

(35) Workspace:



The P is then merged with the lower NP phase. But now A needs to be merged. The problem is that it cannot be merged with either of the two unconnected items in the workspace. It has to remain on its own until Agr and Def merge with it, then it can be merged with the PP. So there is a stage at which there are three unconnected items in the workspace (this diagram shows the higher Def not having merged yet with ‘faithful’, but the Agr has):

(36) Workspace:



If this is allowed, however, then there is no way to ensure that other derivations work correctly. Take the case of coordinated adjectives. We could put them into the workspace in the wrong order, but then we could leave them unconnected. The bottom-up Def Algorithm would put Def on whichever A was merged last. But then that one could be merged on the right in the coordinate structure, incorrectly (since coordinates can typically be reversed). This would put Def on the *second* of two coordinated As, which is ungrammatical.

If we allow three or more unconnected items in the workspace, as is necessary for the NP embedded inside an NP in (34) on a bottom-up derivation, then it is impossible to properly constrain the derivation and ensure that everything merges in the right order. I conclude that only a left-to-right derivation will work, as only that can be constrained in the way that is necessary. Only a left-to-right derivation will not require leaving structures unconnected in the workspace. Note that in all of the left-to-right derivations gone through



here, everything that is moved into the workspace is merged immediately with the existing tree. There is never a point where two things need to remain unconnected.

A bottom-up approach can only work if heads move in the syntax to pick up their morphology. For instance, the adjective must merge with its complement PP before it is merged with Agr and Def; otherwise A must remain unconnected from PP while those are merged. If A must merge with PP first, then the only way to get Agr and Def on it is through movement. But movement, we have seen, runs into insurmountable problems in accounting for the position of Def in Bulgarian.

The head adjunct analysis is therefore only compatible with a left-to-right order for structure building. Since the head adjunct analysis is the only one that captures the facts, left-to-right structure building is to be preferred over bottom-up.

I additionally conclude that there could be no algorithm like that suggested for head adjuncts on a bottom-up approach. Things merge when they can. The syntax does not scan the numeration and only do things if something with a particular feature is missing from the numeration. Algorithms like this are not part of natural language syntax and could not be. This means that there could be no head adjunct that always attaches to the *last* item of the appropriate type. As far as I know, this is correct. More complicated algorithms are also ruled out, so there can be no head adjunct that always attaches to the second or second-to-last item of the appropriate type. Again, this seems to be correct.

### 3.4 Semantic Interpretation

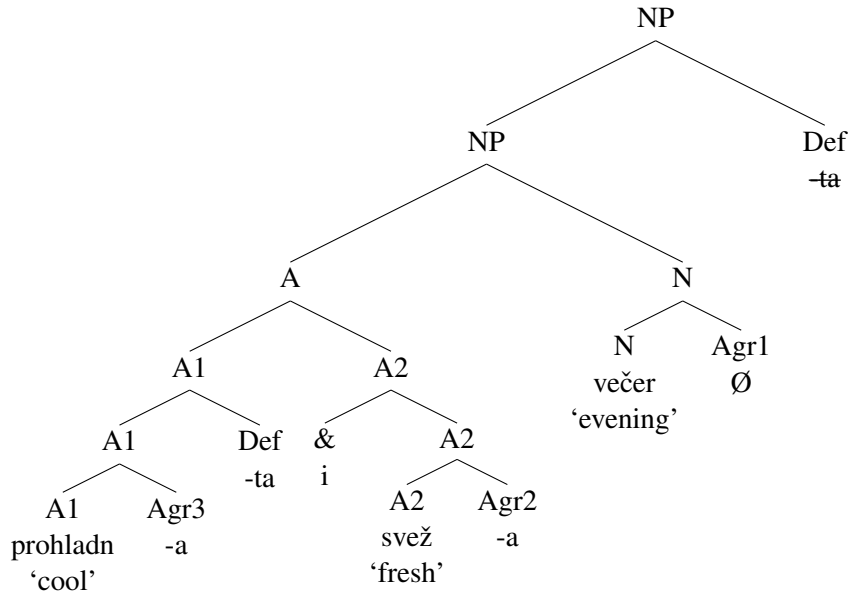
One thing to note about the proposed analysis is that it is not compatible with the DP Hypothesis, if Def is identified as the head D. Def cannot project in this proposal, it can only merge with a [+N] element. It is a dependent of the head N in the sense that it is part of the nominal numeration; but in the syntax it may end up as the daughter (and sister) of an A or a Num or Poss, depending on what it merges with. This may appear to pose a problem for compositional semantics. If the head Def is the definite article (an iota operator semantically), then it should combine only after all modifiers have combined with the N. Yet in the proposed structure, Def is often the sister of a modifier. I can see three ways to address the semantic effect Def has on the NP whose numeration it is part of. The first two I will not adopt.

The first alternative is to say that Def is present in an NP numeration when the head N is [+Def]. That is, it is a feature of the head noun that it is definite. A constraint then requires that when the numeration includes a [+Def] N, Def must be part of the numeration. Then it is the feature [+Def] on N, and by extension the whole NP, that is interpreted. For instance, this feature could induce a semantic typeshift at the NP level. A variant of this would have Def contribute the [+Def] feature, which would percolate to the NP level and again induce a semantic typeshift.

The second alternative is to say that a definite NP actually includes an unpronounced iota operator. This null iota operator would adjoin to the highest node in the NP. The head Def in this alternative would be semantically contentless. Its role would be to mark the presence of the iota operator. There would again be a constraint on selecting the numeration, such that if an iota operator is moved from the lexicon to the numeration, then a Def must be too.

The third alternative is the one that I will adopt. In this alternative, Def is indeed the semantic operator (an iota operator). It needs to take scope over the rest of the NP. I propose that scope-taking movements are rightward movements. Once the structure is otherwise complete, the syntax can copy something that is in the wrong scope location to a position high and on the right. This will have the following result, illustrating with the case of coordinated adjectives:

(37)



When the syntax makes copies, it is generally the leftmost copy in a movement chain that is the pronounced one. So this is covert movement. In the semantics, the pronounced copy, adjoined to A1, is semantically vacuous. Only the higher copy, adjoined to NP, is interpreted (as an iota operator).

This movement does move Def out of a coordinate structure. However, this is allowed precisely because the lower copy is not interpreted. Some recent work has argued that the coordinate structure constraint is not a constraint on movement, but a parallelism constraint on binding (Muadz 2001, Ruys 1992, Fox 2000, Johnson 2009). In the semantics, the lower Def is essentially not there, and so this constraint is not violated.

This third alternative eschews null elements, and makes Def the semantically contentful item, which I view as desirable. I therefore adopt it.

### 3.5 Complications in Bulgarian

As can be seen, the proposed analysis is very successful at capturing the placement of the Bulgarian definite marker. There are of course complications, however. The first complication is that Def does not co-occur with demonstratives (in the standard language):

- (38)   tazi kniga  
      this book  
      (Embick & Noyer 2001: 568, (21))

The most obvious approach to this complementarity is to say that Dem and Def are the same category, and only one element of that category is allowed per NP. The demonstrative instance of this category merges according to a principle different from that of the Def instance (whatever forces the word order in Bulgarian to be Dem > Num > A > N).

The second complication is that the Def head is not the only item in the language that has the distribution that it does. Bulgarian has two forms of possessive pronouns, one shown above (e.g., 30), which Def attaches to if it is the first [+N] element in the NP; but it also has clitic forms of possessive pronouns. These obey the same distribution as Def: they occur after the first [+N] element in the NP, immediately following Def:

- (39) (Franks 2001: 59, (23e–f))  
      a. mnogo-to **ti** novi knigi  
          many-the your new books

- ‘your many new books’
- b. večno mlada-ta **ni** stolica  
 perpetually young-Def our capital  
 ‘our perpetually young capital’

One issue that has been discussed heavily in the literature on this topic in Bulgarian is that Def has all the properties of a canonical affix, like idiosyncratic phonology and arbitrary gaps, but the clitic pronouns do not, they behave like clitics (see, e.g., Franks 2001, Embick & Noyer 2001). The issue is how they can obey the same distribution if one is an affix and the other is a clitic. Embick & Noyer (2001) correctly point out that this is not a problem if the same mechanism puts them in their position. They simply have to be lexically specified as having different prosodic and morphophonological properties. In Embick and Noyer’s lowering analysis, Poss first lowers onto the D head, and then D lowers onto its complement. As we saw above, a lowering analysis incorrectly predicts across-the-board lowering in coordination contexts.

In the current analysis, we can give exactly the same analysis for the clitic pronouns as for Def. The clitic pronouns have the same feature that Def does, namely, [ $S_{HA}:+N$ ]. When a [+N] item is merged into the structure, first an Agr will be merged with it, then the syntax will look for a head adjunct and find both Def and the possessive clitic. Some principle has to choose one of them. In Bulgarian it has to be Def first. Note that we also have to give Def the properties of an affix, as just discussed, while the possessive clitic is instead a prosodically deficient pronoun. I suggest that this provides the basis for choosing: The syntax will always choose something specified morphophonologically as an affix over something that is not. The syntax will choose Def first and merge it with the [+N] head, and then it will merge the possessive clitic. All of Agr, Def, and the clitic will form a complex head with the [+N] element, in that order.

### 3.6 Summary

The proposed analysis captures the position of the definite marker in Bulgarian without the need for post-syntactic lowering mechanisms or linear displacement rules. It uses only mechanisms that we need for the syntax anyway: the numeration, merge, and a selection-driven structure building operation. Analyzing it as a head adjunct has the result that the Bulgarian definite marker is placed in the correct location, with no stipulations or additional constraints. In fact the Bulgarian definite marker behaves exactly like English affixal negation: both go on the *first* element of the appropriate type in the phase they are part of. The placement of the definite marker in Bulgarian is therefore not unusual at all, and does not require extra-syntactic operations.

## 4 The Amharic Definite Marker

The definite marker in Amharic (Kramer 2010) has a distribution very similar to that of Bulgarian, although it differs in some important respects. Most importantly, Amharic is a head-final language for most categories (except apparently P), which results in some of the differences. Otherwise, we can give a very similar analysis for Amharic as for Bulgarian.

The procedure for building structure left to right has to be different for head-final languages. In particular, if the head being considered selects a complement, that complement has to be merged (or built) prior to the head being merged. Importantly, head selection and scanning for head adjuncts will take place in the same relative order: immediately after the head has been merged.

As described by Kramer (2010), the definite suffix in Amharic always follows the first full phrase inside the NP. If there is no phrase other than the head noun, it follows the head noun (40a), but if there is a phrase

like an AP, it follows the whole AP (40b–d):<sup>2</sup>

- (40) (Kramer 2010: (1a), (3a), (32), (6))
- a. bet-**u**  
house-Def  
'the house'
  - b. tällik'-**u** bet  
big-Def house  
'the big house'
  - c. bät'am tällik'-**u** bet  
very big-Def house  
'the very big house'
  - d. lä-mist-u tammaññ-**u** gäs'ä bahriy  
to-wife-his faithful-Def character  
'the faithful-to-his-wife character'

As in Bulgarian, adjectives agree with the head noun. Kramer (2010) states that adjectives optionally agree in number with indefinite nouns:

- (41) tigu(-wotʃʃ) tāmari-wotʃʃ  
diligent(-PL) student-PL  
'diligent students' (Kramer 2010: 228, (66a))

The first adjective in a sequence obligatorily agrees in case, while subsequent adjectives optionally do (and also in definiteness):

- (42) tällik'-u-n t'ik'ur(-u-n) bet  
big-Def-Acc black(-Def-Acc) house  
'the big black house (Acc)' (Kramer 2010: 228, (66b))

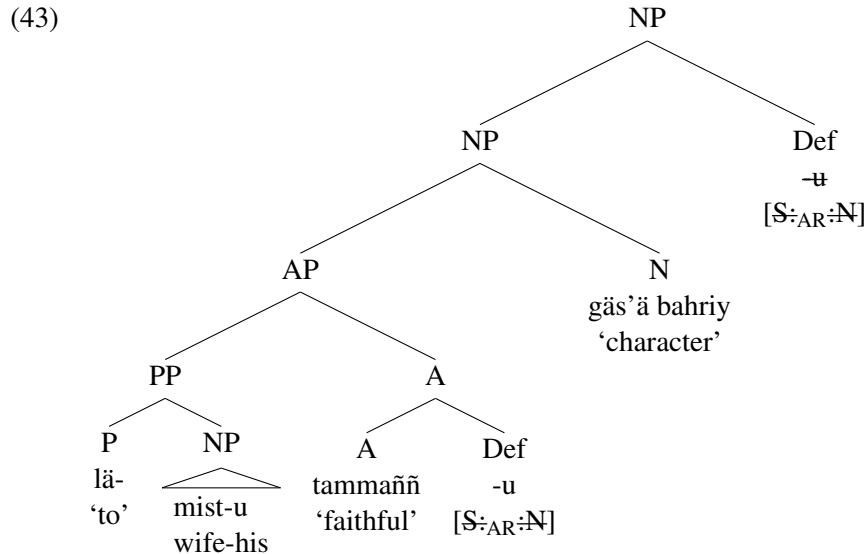
Note that, as in Bulgarian, the definite marker goes on the *first* AP if there is more than one. Following Kramer, the optional appearance on subsequent adjectives is optional concord; this is then an Agr head and not a Def head. There is only one Def head per nominal numeration.

As in Bulgarian, we can take this to indicate that certain heads in the nominal share a feature, call it [+N] again, and this feature defines the class of elements that can show concord agreement. Head nouns and head adjectives are [+N], while adverbs and prepositions are not. We can then give the Amharic Def essentially the same analysis as in Bulgarian: it has an [<sub>SHA</sub>:+N] feature. This will put Def on the *first* [+N] head merged into the derivation, since Def merges when it can, and once Def is merged, it is no longer present in the numeration and so cannot be merged when subsequent [+N] heads are merged. In (40a), the only [+N] head is the head noun itself; once this noun is merged into the structure, the syntax will merge Def with it. In (40b), there are two [+N] heads, the A and the N. Adjectives precede head nouns in Amharic, so the syntax will merge the A first. Def will then merge with it. In (40c), there are again two [+N] heads, an A and an N. Again Def will be placed on the A. The adverb will be ignored, since it is not [+N]. This is exactly like the derivation gone through in detail for Bulgarian. The same is true for the preposition in (40d). It is not [+N]. Its complement includes an N, which is [+N], but this complement is its own phase, with its own numeration; Def is not included in this numeration and so will not be merged when the complement of P

<sup>2</sup>All Amharic examples from Kramer (2010). Abbreviations that have not already been introduced: C = complementizer, IMPF= imperfective aspect, M = masculine, PF= perfective aspect.

is constructed. The head adjective ‘faithful’ is therefore the first [+N] head merged in the same phase that includes Def in its numeration.

As in Bulgarian, we also need Def to move high and to the right for semantic interpretation (as an iota operator). Only the lower copy is pronounced, but only the higher copy is semantically interpreted. I show the resulting structure for example (40d) below:

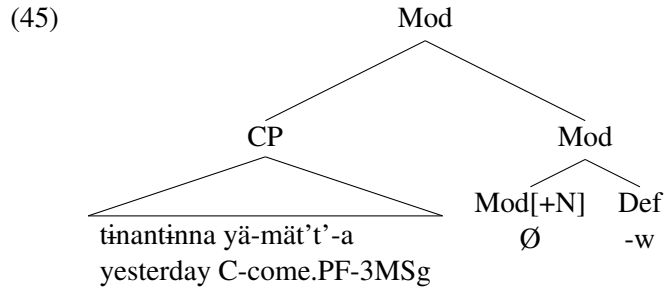


There are two cases in Amharic where things become slightly more complicated. These are relative clauses, and complex numerals. Two relative clauses are shown below. They uniformly have Def attached after the relative clause, apparently to the highest verb (recall that Amharic is head-final and therefore clauses are verb-final):

- (44) a. tɨnantinna yä-mät't'-a-w tāmari  
yesterday C-come.PF-3MSg-Def student  
'the student who came yesterday' (Kramer 2010: 199, (8a))
- b. ličɣ-otfɣ-u-n bähayl yi-gärf yä-näbbärä-w astāmari  
child-PL-Def-Acc severely 3MSg-beat.IMP C-be.Aux-Def teacher  
'the teacher who used to beat the children severely' (Kramer 2010: 200, (9))

Note that the complementizer appears to be a prefix on the highest verb inside the relative clause (glossed “C”). I propose that the highest verb undergoes head movement to C, and adjoins on the right of C.

I further propose that relative clauses are the complement of a null head that we can call Mod. Mod is an adnominal modifier, like an A, and like an A it is [+N]. In the two examples in (44), the CP is the first thing inside the NP. This means that the syntax will start by considering Mod. It will see that Mod has a [S<sub>C</sub>:C] feature, and so it will have to build a CP complement to Mod before it can merge Mod. It will put the NP derivation on hold and select a numeration for the embedded CP. Once the CP is complete, it will return to the NP derivation and merge Mod with the CP. At that point, Def has an [S<sub>HA</sub>:+N] feature, so it will be merged with Mod:



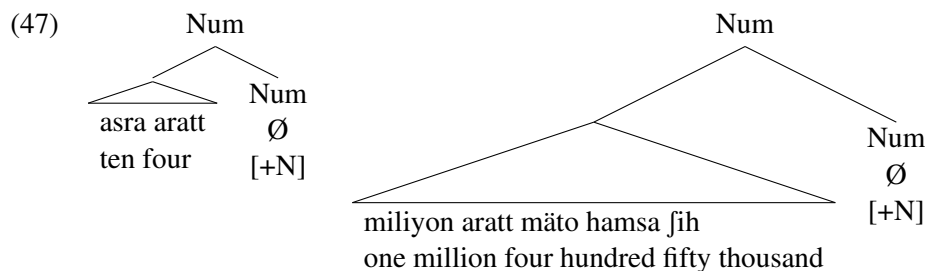
The nominal derivation will then continue. In (44a), the only thing left is for the head N to be merged.

The second case where things are more complicated is complex numerals. Def always attaches at the end of a complex numeral:

- (46) (Kramer 2010: 224, (57a), (59))
- a. asra aratt-**u** tāmari-wotʃʃ  
ten four-Def student-PL  
'the fourteen students'
  - b. and miliyon aratt mäto hamsa fiḥ-otʃʃ-**u** wättaddär-otʃʃ  
one million four hundred fifty thousand-Pl-Def soldier-Pl  
'1,450,000 soldiers'

In (46a), we can see that the numeral 'four' can host Def, and therefore ought to be a [+N] head. However, in (46b), this head is ignored and Def instead goes on 'thousand'.

I propose that all complex numerals in Amharic involve a null head that takes the overt numerals as complement. The internal structure of the sequence of overt numerals is not important:



The pronounced numerals are then not [+N], only the null Num head is. This makes Num the first [+N] head merged into the derivation in both examples in (46). Def will then be merged with Num (outside of the plural marker if present), correctly placing it at the end of the sequence of numerals.

This captures the distribution of the definite marker in Amharic, as described by Kramer (2010). There are of course a few complications, but Kramer does not give enough data to decide on an analysis of these. One has already been mentioned: when there is more than one AP, Def is obligatory on the first but optional on subsequent ones. As also mentioned above, we can follow Kramer and analyze markers other than the first as optional nominal concord. They are then Agr heads and not Def heads; any given nominal numeration can have only one Def head. The second complication is that stacked relative clauses have to have Def after each relative clause, not just the first. One possible approach to this is to say that each relative clause is an appositive NP, with a null N head. As Kramer (2010) shows, relative clauses with null N heads have Def in Amharic. The third complication is that coordinated APs or relative clauses have to have a Def on each conjunct. This is very unlike Bulgarian, where only the first coordinated adjective had Def. I can see two possible analyses of this phenomenon. The first is that apparent coordinated APs and relative

clauses actually involve NP coordination with ellipsis. Then each NP would have its own Def head. Kramer (2010) does not give enough data to know whether this is a viable analysis. The second possible analysis says that coordination in Amharic has a very strong morphological matching requirement. This matching requirement makes the previously optional nominal concord obligatory in coordinations. Every conjunct then has to have an Agr morpheme that agrees in definiteness. (Something like this is basically Kramer’s analysis.)

Assuming that these complications can all be accounted for, the analysis proposed for Bulgarian extends quite naturally to Amharic. Importantly, there is no need for post-syntactic movement operations, as Kramer (2010) proposes. All we need is the hypothesis that the definite article is a head adjunct, and the view that things merge when they can.

Additionally, we can now see that there are multiple elements that have the distribution of a head adjunct. English affixal negation and the Bulgarian definite article are not the only ones. The Amharic definite article is another, and the Algonquian person prefix on independent order verbs is another, next. These have all been treated individually in previous work, but we can now see that they all exhibit the same behavior and should be given a uniform analysis.

## 5 The Algonquian Person Prefix on Independent Order Verbs

In Algonquian languages, verbs that are conjugated in the Independent Order<sup>3</sup> have an agreement prefix that indexes the person features of one of the arguments. An example from Passamaquoddy-Maliseet (Eastern Algonquian) appears below, with the prefix in boldface:<sup>4</sup>

- (48) **k**-tok-om-i-pa  
 2-hit-TransAn-2Subj/1Obj-Pl  
 ‘you (Pl) hit me’

In Passamaquoddy-Maliseet the prefixes are *n-* (first person), *k-* (second person), and *w-/'* (initial [h], third person). These agreement prefixes are present in all Algonquian languages and are reconstructed to Proto-Algonquian as *ne-*, *ke-*, *we-* (Goddard 2007).

The same three prefixes appear on nouns, indexing the possessor:

- (49) **n**-mulcess-ok  
 1-mitten-3.Pl  
 ‘my mittens’ (Mitchell 1921/1976a: 8)

<sup>3</sup>There are three major orders: The Independent, the Conjunct, and the Imperative. The Independent is used in many types of main clauses and some embedded ones, while the Conjunct is used primarily in different kinds of embedded clauses and wh-questions.

<sup>4</sup>Passamaquoddy-Maliseet examples without a citation are based on the verbal paradigms in Francis & Leavitt (2008). Passamaquoddy-Maliseet is an Eastern Algonquian language spoken in Maine (United States) and New Brunswick (Canada). For general information about the language, see Sherwood (1986), LeSourd (1993), Leavitt (1996), Francis & Leavitt (2008). The transcription of Passamaquoddy-Maliseet uses the orthography in use in the Passamaquoddy community. Letters have their usual values except that o = schwa, q = [k<sup>w</sup>], c = alveopalatal affricate, ’ = initial h (phonetic effect is aspiration of the following stop or devoicing of s). Obstruents are voiced in many environments. Abbreviations: 1 = first person; 2 = second person; 12 = first person plural inclusive; 3 = third person animate proximate or unmarked; Abs = absentative; An = animate; Conj = conjunct inflection; Contr = contrastive; Dir = direct voice; Ditrans = Ditransitive; Dub = dubitative; Emph = emphatic particle; Fut = future; IC = initial change, ablaut process; Inan = inanimate; Intrans = intransitive; Inv = inverse voice; N = morpheme glossed “N,” used with transitive inanimate verbs, ditransitives, subordinatives, and in some other contexts; Neg = negative; Obv = obviative; Pl = plural; Perf = perfect aspect; Pret = preterit (tense); Quot = quotative; Trans = transitive. “1Subj/2Obj” means a first person subject with a second person object, and so on.

I will not discuss nouns here, although the facts are similar and the analysis should extend straightforwardly to them as well.

Returning to verbs, the prefix has a rather strange distribution compared to the rest of the verbal morphology. In (48), the prefix precedes the verb stem and then the verb stem is followed by a sequence of suffixes. All verbal inflection in Algonquian languages besides the person prefix (and initial change, below) is suffixal. The suffixes also attach directly to the verb stem. The prefix, in contrast, does not always appear on the verb stem. If there is a type of verbal modifier known as a *preverb*, the prefix goes on that instead. Preverbs can also be separated from the rest of the verb stem in many Algonquian languages (e.g., Bloomfield 1962, Leavitt 1985, Goddard 1988, Costa 2002, Shields 2005), and this is true in Passamaquoddy-Maliseet:

- (50) kt-oqeci=hc **nehpu-h-uku-k**.  
 2-try=Fut kill-TransAn-Inv-3.Pl  
 ‘... they will try to kill you.’ (Mitchell 1921/1976d: 12)

The preverb here is underlined, along with the prefix; it is separated from the verb stem (boldfaced) by a second-position clitic marking the future. Second-position clitics in Passamaquoddy-Maliseet regularly follow the first prosodic word in the clause, so we can assume that the preverb here constitutes its own prosodic word separate from the verb stem.<sup>5</sup>

If there is more than one preverb, the prefix goes on the *first* one:

- (51) on Koluskap ’t-oqet-okehki-m-a-n skicinu tan aqamok  
 then Koluskap 3-try-teach-TransAn-Dir-N Indian.ObvP Quant more  
’t-oli-kisi-woli-pomawsu-lti-li-n.  
 3-thus-Able-good-live-Plural-Obv-N  
 ‘Koluskap tries to teach the Indians to live better lives.’ (Mitchell 1921/1976c: 6)

This example has two verbs. The first one has one preverb, the second has three (all preverbs underlined). The prefix attaches to the first preverb in each case. (Note that Passamaquoddy-Maliseet authors are not consistent in how they write preverbs; sometimes they are written with a space between them and the verb, sometimes not. If there was no space in the cited text, I have added a dash; if there was a space, I have left it.)

This unusual distribution is what I will focus on here. I suggest that the prefix is a head adjunct, just like English affixal negation and the Bulgarian and Amharic definite suffixes. I propose that preverbs and main verbs share a feature, call it [+V] for lack of a better term. Other grammatical categories do not have this feature. The prefix has the feature [S<sub>HA</sub>:+V], meaning that it selects as an adjunct and as a head for something with the feature [+V]. Like all the other head adjuncts we have seen, it will merge into the structure as soon as it can; this will always be upon the merger of the linearly first [+V] element. If there is only a main verb, it will merge with the main verb; but if there is a [+V] preverb, then the prefix will merge with that, or with the first one if there is more than one.

In contrast, the suffixes on the main verb are not head adjuncts. They are put into position by a different mechanism. What this mechanism is is not the focus of this paper, but I will provide a tentative analysis in section 5.3. In this analysis, the suffixes are put together with the main verb by head movement. This is very different from the mechanism that locates the prefix. The different distribution of the prefix compared to the suffixes then follows.

A substantial number of researchers have adopted the view, first proposed by Halle & Marantz (1993), that the prefix is a pronominal clitic and not an affix (e.g., McGinnis 1995, Déchaine 1999, Brittain 2001,

<sup>5</sup>In the variety of Ojibwe described by Newell & Piggott (2014), preverbs cannot be separated from the verb stem, but even so, Newell and Piggott show that they constitute separate prosodic words from the rest of the verb stem.



Richards 2004, Cook 2008, Piggott & Newell 2007, Branigan 2012, Newell & Piggott 2014, Oxford 2014). This literature accounts for the different distributions by saying that pronominal clitics are located in the clause by very different mechanisms from those that place inflectional affixes like the suffixes. I start by showing that we cannot account for the prefix's distribution in this manner, because it has all the properties of an affix and none of the properties of a clitic.

Throughout this section, the language of illustration will be Passamaquoddy-Maliseet, but the facts hold to the best of my knowledge for all Algonquian languages.

### 5.1 The Person Prefix is an Agreement Affix, Not a Clitic

Halle & Marantz (1993) proposed that the person prefix on Independent Order verbs in Potawatomi is a pronominal clitic. They gave exactly one argument to this effect, which is that the prefix can appear separated from the verb stem (Halle & Marantz 1993: 141). We have already seen this in Passamaquoddy-Maliseet, in example (50). Halle and Marantz say that the prefix appears “at the front of CP;” and propose that it is a pronominal clitic high in the clause, in CP, from which position it attaches to a host. However, the prefix is actually quite selective. It can only go on the main verb itself, or on a preverb. All of Halle and Marantz's Potawatomi examples involve preverbs. Here is another example from Passamaquoddy-Maliseet, where the host of the prefix is separated from the main verb:

- (52)    'T-ali    yaq qecimul-a-wa                    psite Skicinu                    ...  
           3-around Quot ask.TransAn-Dir-3Pl.ObvP all    Indian.ObvP  
           'They're going around asking all the Indians ...' (Newell 1974: 6)

The prefix is attached to a preverb (underlined), while another second-position clitic, this one a quotative, separates the preverb from the rest of the verb.

If the prefix were a pronominal clitic that cliticized to whatever was first in CP, we would expect there to be many things it could attach to. For instance, a negative particle and a modal particle obligatorily precede the verb and any preverbs in Passamaquoddy-Maliseet, in that order:

- (53)    **Kat op**    keq kt-ol-essi-w.  
           Neg would what 2-thus-happen.to-Neg  
           'Nothing shall happen to you.' (Mitchell 1921/1976b: 11)

Wh-words used as indefinites also typically precede the verb (*keq* here). But the prefix never attaches to any of these preverbal elements, instead it goes on the first preverb (underlined). The negative and modal particles which obligatorily precede the verb also do not need to be initial in the clause, meaning that they also are not in CP:

- (54)    Nil **kat op**    apc nit n-toli-komoqi-w-on,  
           1    Neg would again there 1-there-dive-Neg-N  
           'I'm not going down there again,' (Newell 1979: line 15)

The prefix also does not go on whatever is to the left of negation (here a freestanding subject pronoun), it goes on the first preverb, far to the right. Note that in this example it also skips over an adverb meaning 'again' and a demonstrative pronoun (which, like wh-indefinites, tend to immediately precede the verb).

Other things obligatorily appear at the left edge of CP but cannot host the prefix. For instance, the particle *qenoq*, 'however', appears at the left edge of CP but never hosts the prefix:

- (55) **qenoq** olu kilowaw k-peci-nomi-ht-uni-ya  
 however Contr 2.Pl 2-come-see-TransInan-N-2.Pl  
 k-naci-wicuhke-m-i-ni-ya nil.  
 2-go.do-help-TransAn-2Subj/1Obj-N-2.Pl 1  
 ‘... still you (Pl) come to see if you (Pl) can help me.’ (Newell 1974: line 88)

The prefix again appears on the first preverb. This example also has a contrastive particle and a freestanding subject pronoun to the left of the verb, but these also never host the prefix.

The particle *on*, ‘then’, also obligatorily appears at the left edge of CP, and in the following example it is followed by the second-position future clitic. As stated above, this clitic follows the first prosodic word in the CP. Yet the prefix never attaches to *on*, or the future clitic, or the adverb ‘again’ which follows it, or the subject NP. It attaches to the first preverb:

- (56) **on** oc apc skicinuw-ok ’-sankewi-mawiya-ni-ya.  
 then Fut again Indian-3.Pl 3-peaceful-gather-N-3.Pl  
 ‘and then the Indians will assemble peacefully.’ (Mitchell 1921/1976c: 7)

In addition, Passamaquoddy-Maliseet is a wh-movement language. Wh-phrases obligatorily move to Spec-CP. If the prefix were a clitic that attached to whatever was at the front of CP, we would expect it to attach to a wh-phrase. It does not, however:<sup>6</sup>

- (57) **Tama** nil nt-i?  
 where 1 1-be.located  
 ‘Where am I?’ (Newell 1974: 2)

This example also has a freestanding subject pronoun between the wh-phrase in Spec-CP and the verb, but the prefix does not attach to that, either, it goes on the verb.

The prefix is very selective, then, and does not appear to attach to whatever is at the left edge of CP. In examples like (53–56), the prefix actually seems to be quite far from the edge of CP.<sup>7</sup>

Since the one argument that has been given in the literature does not actually indicate that the prefix is a clitic, it is necessary to scrutinize the behavior of the prefix using diagnostics that have been proposed in the literature for distinguishing affixes from clitics. To begin, Zwicky & Pullum (1983) propose six diagnostics. The first is that clitics can exhibit a low degree of selection with respect to their hosts, while affixes exhibit a high degree of selection with respect to their stems. We have already seen that the Algonquian prefix is very selective. It can only attach to either the verb stem itself, or a preverb. This contrasts with clitics like the

<sup>6</sup>Argument wh-questions use the Conjunct Order rather than the Independent, as do some adjunct questions. ‘Where’ questions use the Independent Order, so we can see with them where the prefix is with respect to Spec-CP.

<sup>7</sup>Halle & Marantz (1993) also propose that the verb raises to C in Potawatomi. The word order facts presented here show that this could not be correct for Passamaquoddy-Maliseet. In fact the verb must remain quite low in Passamaquoddy-Maliseet. This is apparent from the following example, which has a preverb encoding a root modal (Able). Such root modals are generally thought to be quite low (e.g., Cinque 1999). Yet the preverb is separated from the main verb, meaning that the main verb never raises even as high as a low root modal.

- (i) Kisi yaq ona **skitapew-ehl-os-ultu-wok** tan te etuci-woli-tahatomu-htit.  
 Able Quot also man-change.form-Refl-Plural-3.Pl WH Emph IC.X.time-good-think.TransInan-3.PlConj  
 ‘They could, it is said, change themselves into men whenever it pleased them.’ (Mitchell 1921/1976b: 16)

Similar arguments against verb raising to a high position have been given for some other Algonquian languages. Johnson (2016) argues that the verb in Potawatomi also stays low, giving similar word order arguments to those produced here for Passamaquoddy-Maliseet. Lochbihler & Mathieu (2009) give some similar arguments for Ojibwe and point out that V movement to C incorrectly predicts that the verb should precede all preverbs in Algonquian languages.

English possessive 's and cliticized (contracted) auxiliaries, which attach to whatever is adjacent to them, regardless of category. Second-position clitics in Passamaquoddy-Maliseet like *yaq* and *oc* above are also not selective, and will come after whatever is first in the clause. However, some clitics, like Romance object clitics, are also selective, and only attach to verbal elements. This diagnostic is therefore more of a tendency. Nevertheless, the Algonquian prefix patterns on the affix side.

Zwicky and Pullum's second diagnostic says that arbitrary gaps are more characteristic of affixes than clitics. For instance, they point out that affixal negation in English has an arbitrary gap, as for most dialects there is no *\*amn't*. There are no arbitrary gaps that I know of in Algonquian, but since this diagnostic seems to only work in one direction, this is also not telling.

Zwicky and Pullum's third diagnostic says that morphophonological idiosyncrasies are more characteristic of affixed words than of clitic groups. In all Algonquian languages, the prefixes have one allomorph for consonant-initial stems, and one for vowel-initial stems. In Passamaquoddy-Maliseet, the allomorphs are *n-*, *k-*, *w'-* before stems that begin with a consonant, and *nt-*, *kt-*, *'t-* before stems that begin with a vowel (the apostrophe is an /h/, which is typically only audible in its effect on the following consonant). Note that while this distribution is entirely regular, there is no phonological motivation for these allomorphs in Passamaquoddy-Maliseet. The sequence of an /n/, /k/, or /h/ followed by a vowel is well-formed in the language. There are also a few vowel-initial stems that idiosyncratically take the *n-*, *k-*, *w'-* allomorphs rather than the *nt-*, *kt-*, *'t-* ones. Morphophonological idiosyncrasies mark the prefix as an affix, then, not a clitic. Again, however, this is only a tendency, as clitics, like the object clitics in Romance, can have idiosyncrasies.

Zwicky and Pullum's fourth diagnostic says that semantic idiosyncrasies are more characteristic of affixed words than of clitic groups. There are no semantic idiosyncrasies that I know of in Algonquian. The prefixes simply mark the person of one of the arguments. They are quite regular in this use. This diagnostic also only works in one direction, however, and so this is also not particularly telling.

Zwicky and Pullum's fifth diagnostic involves syntactic rules. According to them, affixes can undergo syntactic rules along with their hosts, but clitics are claimed not to. It is difficult to find such rules in Algonquian. However, we could think of the separation of the preverb+prefix from the main verb stem as in (52) above as a movement rule affecting the preverb+prefix (as proposed by, e.g., Dahlstrom 1995, Branigan 2012). It would be quite reasonable to propose that in (52), the preverb and prefix have moved together across the quotative particle. Note that it is not just second-position clitics that can separate preverbs from the main verb, other things can too:

- (58) a. (K)-kisi **nil** motewolonuwihponol-ol.  
 (2)-Perf 1 curse.TransAn-1Subj/2Obj  
 'I've been putting a curse on you.' (Newell 1979: 16)
- b. Kenoq olu (')-nomi-ht-un nit (')-nokomasi kisi **nekom**  
 however Contr (3)-see-TransInan-N that.Inan (3)-easily Able 3  
 kinalo-ke-ht-un.  
 big-make-TransInan-N  
 'However, he sees that he can easily enlarge the hole.' (Mitchell 1921/1976a: 15)

In these two examples a subject pronoun separates the preverb (or even two preverbs) from the main verb. Here it really appears that we need a movement rule to dislocate the preverb plus prefix away from the main verb. (Note that in these two examples, the prefix is not audible for phonological reasons; but if it were on the main verb or another preverb, it *would* be audible.) A freestanding particle can also separate a preverb from the main verb (this preverb does not have a prefix, because the verb is intransitive and has a third person subject):

- (59) Ehpit, kisi **kenoq** skitape-wehlosu, tan ote weli-tahato-k.  
 woman Able however man-change.form.3 Quant Emph IC.good-feel-3Conj  
 ‘Although she is a woman, she can change herself into a man whenever she pleases.’ (Mitchell 1921/1976e: 12)

It might be possible to use non-syntactic mechanisms to get a second-position clitic in between a preverb and the main verb (the *prosodic inversion* of Halpern 1992, for instance), but that could not work for non-clitic pronouns and non-clitic particles. We need a movement rule that moves the preverb plus prefix away from the main verb. Given this, the prefix is acting like an affix, and not like a clitic (recall that English affixal negation moves along with the auxiliary verb it attaches to, but contracted auxiliaries do not).

Zwicky and Pullum’s final diagnostic is the ability to attach to material already containing clitics. According to Zwicky and Pullum, clitics may attach to other clitics, but affixes may not. Affixes always have to attach inside of clitics. In Passamaquoddy-Maliseet, clitics like the future *oc* (*hc* after vowels) can come between a preverb and the verb stem, but never between the prefix and the preverb or verb:

- (60) a. ... **kt-oqeci**=hc nehpu-h-uku-k.  
 2-try=Fut kill-TransAn-Inv-3Pl  
 ‘...they will try to kill you.’ (Mitchell 1921/1976d: 12)  
 b. \* **kt**=oc oqeci...

It is impossible for the prefix to attach to a clitic. In this respect it behaves like an affix and not a clitic.

To summarize so far, the diagnostics of Zwicky & Pullum (1983) are not particularly useful, as most of them merely describe tendencies. Suppose we were to take them all equally seriously as diagnostics, and we were to err on the side of the prefix being a clitic whenever it did not clearly pattern as an affix. Then the score would be the following:

(61)

Summary of Zwicky and Pullum’s Diagnostics						
	Selective	Arbitrary Gaps	Idiosyncratic Morphology	Idiosyncratic Semantics	Syntactic Rules	Attach to Clitics
Affix or Clitic?	affix	clitic	affix	clitic	affix	affix

Four of Zwicky and Pullum’s diagnostics indicate that the prefix is an affix, while only two indicate that it is a clitic. I would also not take all of these diagnostics equally seriously; in fact only the last two seem like they are more than tendencies. The ability to undergo syntactic rules along with the host in particular seems to be a strong diagnostic. On that diagnostic, the Algonquian prefix patterns as an affix.

Kramer (2014) and Preminger (2014) have proposed other diagnostics for telling clitics from affixes. All of their diagnostics that are applicable indicate that the prefix is an affix. First, the prefix in Algonquian is obligatory, even when it indexes a freestanding pronoun:<sup>8</sup>

- (62) a. Tama **nil nt**-i?  
 where 1 1-be.located  
 ‘Where am I?’ (Newell 1974: 2)  
 b. \* Tama **nil** i?

Compare Romance object clitics, which are not obligatory in the presence of an overt argument.

<sup>8</sup>Note that the pronoun comes between the wh-phrase and the verb; it could therefore not be dislocated, since dislocated phrases precede wh-phrases (Bruening 2001: 34–35). For arguments that Algonquian languages are not “pronominal argument languages” in the sense of Jelinek (1984) and Baker (1996), see Bruening (2001), LeSourd (2006).

A second diagnostic is the ability to index more than one argument. In Romance languages, it is possible to have more than one object clitic. In contrast, in Algonquian, the prefix can index only one argument. It can index both first and second persons, as both subjects and objects (63a–b), but if both arguments are first or second person, it cannot index them both simultaneously, it can only index one (63c–d):

- (63) a. **n**-tok-om-a-k  
1-hit-TransAn-Dir-3Pl  
'I hit them'
- b. **n**-tok-om-ok-u-k  
1-hit-TransAn-Inv-3Pl  
'they hit me'
- c. **k**-tok-om-i-pa  
2-hit-TransAn-2Subj/1Obj-Pl  
'you (Pl) hit me'
- d. \***k-n**-tok-, \***n-k**-tok-

This again makes the prefix an affix, not a clitic.<sup>9</sup>

Romance object clitics also behave independently in ditransitives. It is possible to have two, one for each object, or one for the lower object in the absence of one for the higher object. In contrast, agreement may be limited by locality to only indexing the higher of the two objects. The latter is true of the prefix in Algonquian. In the inverse, it can index an internal argument (as in 63b), but with a ditransitive, it can index only the higher object:

- (64) **'t**-oliht-a-ku-ni-ya-l  
**3**-make.TransInan-Ditrans-Inv-N-Pl-Obv  
'he/she/it (obviative) makes it (An/Inan) for **them (proximate)'**

This also identifies the prefix as an affix, not a clitic.

Clitics may also index only certain types of arguments, for instance just specific indefinites or definites. They may also have semantic effects, for instance in inducing a specific or emphatic reading. In contrast, affixes tend to index all arguments, regardless of their semantics and without inducing any particular interpretation. The Algonquian prefix behaves like an affix in this regard: it indexes all arguments of the relevant type, and has no semantic effects. For instance, it obligatorily indexes both definite pronouns (62a) and weak indefinites, even wh-indefinites that take narrowest scope:

- (65) Ma=te **wen** 'kisi-tomh-a-wiy-il Piyel-ol.  
Neg=Emph who 3-Perf-beat.TransAn-Dir-Neg-Obv P.-Obv  
'No one beat Piyel.' / \*'There is someone who didn't beat Piyel.' (Bruening 2007)

This diagnostic also identifies the prefix as an affix, and not a clitic.

Additionally, according to Kramer (2014) and Preminger (2014), affixes may agree in just a subset of features, whereas clitics tend to index all features. In Algonquian, the prefix agrees like an affix in just a subset of features: it indexes person and not number. This is visible in examples (63c) and (64) above, where the number of the agreeing argument is indexed by the suffix *-pa* or *-ya*. It should also be pointed out that the prefix behaves unlike freestanding pronouns in this respect, which index all features. For instance, second

<sup>9</sup>A reviewer points out that verbs that are derived from body part nouns can have what appears to be a possessive prefix on the noun inside the verb. This prefix is either indexing nothing (default third person) or it indexes the same argument as the prefix on the derived verb. This is therefore not an instance of person prefixes indexing more than one argument of the verb.

person pronouns in Passamaquoddy-Maliseet have the forms singular *kil*, inclusive first person *kilun*, and second person plural (excluding first person) *kiluwaw* (or *kilowaw* in 55). The prefix is therefore behaving very differently from other pronouns in the language.

According to Kramer (2014) and Preminger (2014), clitics also tend to appear in all clause types, including in non-finite clauses and imperative clauses. In contrast, affixes may disappear, depending on the clause type (cf. Nevins 2011). The Algonquian prefix behaves like an affix in this respect: it is present only in the independent order (66a) and is absent from the conjunct order inflection (66b) and in imperatives (66c):

- (66) a. Msi=te el-ehl-ut 'kis-uwehka-n.  
all=Emph IC.thus-do.to-Pass.3 3-able-use.TransInan-Inan  
'All that has been done to him he can now use.' (Mitchell 1921/1976d: 15)
- b. On [']-kisi kpukow-a-n piksi piyehs ewehke-t.  
then 3-Perf sew-Dir-N pig hair IC.use.TransInan-3Conj  
'[Then] He sews him up using a pig's hair.' (Anonymous 1974: 9)
- c. **Wehke-q!**  
use.TransInan-2.Pl.Imp  
'Use it!' (2nd person plural)

Compare Romance object clitics again: they appear in finite clauses, non-finite clauses, imperatives, all tenses, etc. (though their position famously varies by clause type).

Kramer (2014) and Preminger (2014) propose three other diagnostics, but these are not applicable to Algonquian. First, it is not possible to set up a situation where agreement is broken, so we cannot check if there is a default (according to Preminger 2009, 2014, clitics just disappear, while agreement is realized as a default). Second, since the prefix is obligatory, it is not possible to see if it affects binding relationships (clitics are supposed to be able to circumvent weak crossover). The third and final diagnostic is the ability to appear on a passive or reflexive verb. According to Kramer (2014), clitics can appear in passive/reflexive forms, but (object) agreement typically will not. This is only a valid diagnostic for telling object agreement from object clitics. It is therefore not applicable to Algonquian, where the prefixes generally index the subject of an intransitive and the subject of a transitive in the direct voice, and only index the object in inverse transitive forms.

Baker & Kramer (2018) add another diagnostic for clitics versus affixes. According to them, affixes can index singular universal quantifiers and NPs that contain a bound variable, but (doubled) clitics cannot. According to this diagnostic, the Algonquian prefix is an affix, since it can index a singular universal quantifier and an NP containing a bound variable:

- (67) a. On yatte wen 't-oloqi-ya-n 't-utene-k.  
then each who 3-that.direction-go-N 3-village-Loc  
'Then each one goes toward his own village.' (Mitchell 1921/1976c: 18)
- b. Ma=te keq<sub>1</sub> u-tomeya-ku-w-on tepelto-k *pro*<sub>1</sub>.  
Neg=Emph what 3-bother.TransAn-Inv-Neg-N IC.own-3Conj *pro*<sub>1</sub>  
'Nothing<sub>1</sub> bothers the one that owns it<sub>1</sub>.' (Bruening 2001: 131, (303))

We also saw a prefix indexing a negative quantifier or negated existential in example (65). If Baker & Kramer (2018) are correct that this diagnostic distinguishes affixes from clitics, then the Algonquian prefix must be an affix.<sup>10</sup>

<sup>10</sup>Baker & Kramer (2018) also say that affixes but not clitics can index wh-phrases and reflexives, but these are not possible to show in Passamaquoddy-Maliseet. Argument questions necessarily use the Conjunct, which does not have the prefix; and NP reflexives do not exist in the language.

The following table summarizes the diagnostics from Kramer (2014), Preminger (2014), and Baker & Kramer (2018):

(68)	Diagnostic	Affix or Clitic?
	Obligatory w/ overt argument?	Affix
	Index >1 argument?	Affix
	Ditransitives	Affix
	Only certain arguments?	Affix
	Subset of features?	Affix
	All clause types?	Affix
	Broken agreement?	N/A
	Binding?	N/A
	Passive or reflexive?	N/A
	Quantifiers/Bound variables?	Affix

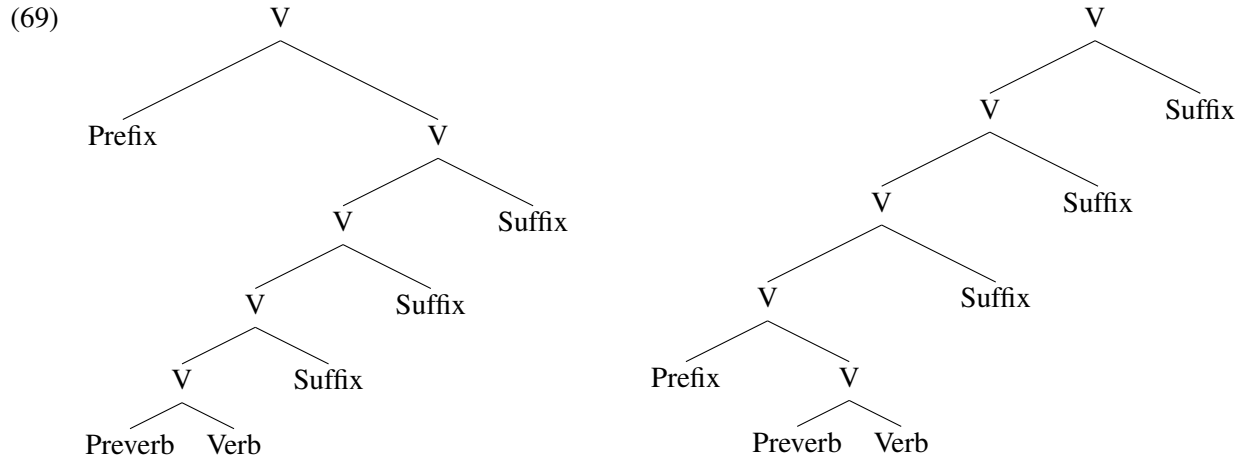
As can be seen, all of these diagnostics that are applicable indicate that the prefix is an affix. On not a single one does it come out as a clitic.

I conclude that the Algonquian person prefix is a canonical affix and not a pronominal clitic. This is exactly how most work on Algonquian languages since Bloomfield (1946:95) has treated it, other than the literature cited above that followed Halle & Marantz (1993).

## 5.2 Locating the Prefix

The advantage that the pronominal clitic analysis had was that it put the prefix where it appears using a very different mechanism from what puts the suffixes on the verb. That analysis therefore succeeds in capturing their different distributions. Unfortunately, it is not correct that the person prefix is a pronominal clitic. So we need a different way of capturing the different distributions of the inflectional affixes.

Bloomfield (1962:65) analyzed the preverbs as forming a compound with the verb stem. The entire compound is then a verb, and the prefixes always attach to the left edge of this verb, while the suffixes attach to the right edge. This analysis does not need different mechanisms for locating the prefix as opposed to the suffixes; they can be placed in the same manner, but on either side of the compound verb. The problem with this analysis is that preverbs can be separated from the verb stem, as in example (52). This should be impossible if they form a compound (meaning, presumably, a single complex head in the syntax). Of course, one could propose an excorporation analysis (Roberts 1991) of examples like (52), as Branigan (2012) does. The problem with this is that, if the prefix is attaching to the entire compound verb, then it could not excorporate along with the preverb, since the two of them do not form a head constituent to the exclusion of the rest of the verb. The whole advantage of the compound analysis is that the prefix is attaching not to the preverb, but to the entire compound. The suffixes are doing the same. The structure would have to be one of the following (or one where the prefix is hierarchically in between two of the suffixes):



Neither structure would permit excorporation of the preverb and prefix to the exclusion of everything else. If the preverb were to excorporate, it would move without the prefix.

Moreover, a preverb seems to be able to be excluded from verb coordination. In the following example the two underlined preverbs seem to take scope over the conjunction of the two main verbs:

- (70) 't-oli tpitahasi-n tan oc 't-oli kisi 'siki-y-a-n naka waniy-a-n,  
 3-thus think-N WH Fut 3-thus Able suffer-make.TransAn-Dir-N and pacify.TransAn-Dir-N  
 'he thinks about how he can torment them and be kind to them.' (Francis & Leavitt 1995: 156)

In the excorporation analysis, the two preverbs would have to be excorporating in an across-the-board fashion. This seems like a needlessly complex analysis; if preverbs and main verbs never form a complex head together, then the coordination here is straightforward (the coordination is *below* the second preverb).

The pronominal clitic analysis is incorrect, and the excorporation analysis will not work. The head adjunct analysis, in contrast, will work and will capture the different distributions of the prefix versus the suffixes.

To begin, as stated above I assume that verbs and preverbs share some feature, call it [+V]. It does not really matter what grammatical category preverbs are. They could be auxiliary verbs; there is a large literature showing that the Algonquian preverbs are like auxiliary verbs in other languages in the functional categories they express and in their order. See, for example, Leavitt (1985), Costa (2002), Cook (2003, 2014), Shields (2005), Branigan (2012), Oxford (2016). However, they can also express various modificational functions, things that are not typically expressed by auxiliary verbs, like 'good' in (51). Regardless, all that matters here is that they share a feature [+V] with main verbs, and other categories do not have this feature (the preverbal particles, second-position clitics, NPs, adverbs).

Second, the prefix is an Agr morpheme. There must be something that determines that when a high functional category (C, perhaps) is put into the numeration, and this high functional category determines the clause type such that the verb will be inflected in the Independent Order, then this Agr morpheme must be put into the numeration as well. This particular Agr morpheme is specified as a head adjunct. It has the feature [S<sub>HA</sub>:+V], meaning that it selects a [+V] element to adjoin to as a head.

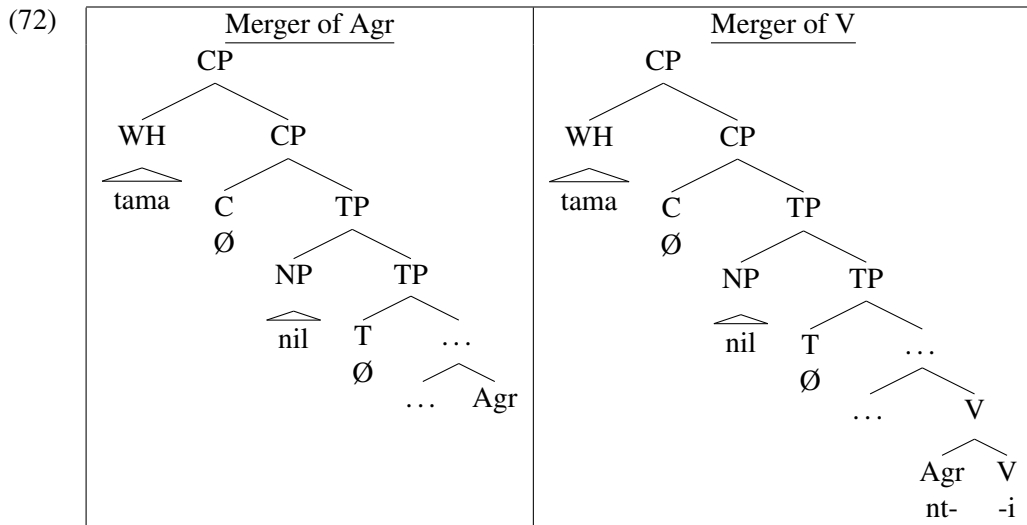
Consider the following example:

- (71) **Tama** nil nt-i?  
 where 1 1-be.located  
 'Where am I?' (Newell 1974: 2)

'Where' questions (and 'how' questions in 70) use the Independent Order rather than conjunct. I assume that the numeration includes a C head that is specified as both [+WH] (it takes a wh specifier) and Independent



Order. When this C head is chosen for the numeration, AGR[S<sub>HA</sub>:+V] must be put into the numeration as well. The numeration here also includes *tama* ‘where’, the pronoun *nil*, and the verb stem. The syntax will start putting these together. It will start with C. It will see that C selects a wh specifier, so it will merge *tama* into the structure. Next it will merge C, which is null here. Nothing selects C as a head adjunct. C selects a complement, T let us assume. T selects an NP as a specifier, so the pronoun *nil* is merged. Then the null T is merged. There may be some other functional projections, but eventually the verb will be considered. Since the prefix is a prefix and not a suffix, it needs to be merged first in a left-to-right system. So, prior to merger of the head, the syntax asks whether there are any head adjuncts in the numeration that select the verb and merge as a prefix. There is one, namely Agr. So Agr will be merged into the tree. Then the verb will be merged with it:



I assume a copy of *tama* is then merged as the complement of the V (not shown).

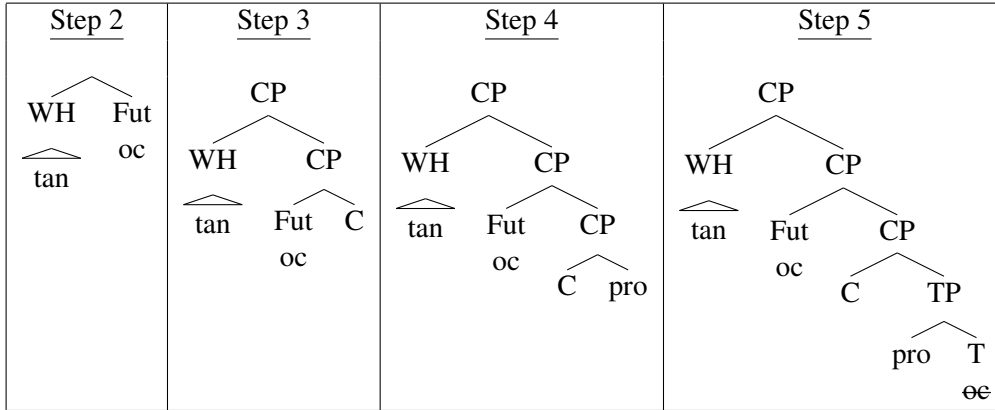
Now consider an example where there are multiple preverbs, for instance the second clause of (70), repeated below:

- (73) tan oc 't-oli kisi 'siki-y-a-n naka waniy-a-n,  
 WH Fut 3-thus Able suffer-make.TransAn-Dir-N and pacify.TransAn-Dir-N  
 ‘...how he can torment them and be kind to them.’ (Francis & Leavitt 1995: 156)

The preverb *oli* ‘thus’ adds a manner argument to the verb and is necessary to form a question regarding manner (it is what is known as a “relative root” in the Algonquian literature, see Bruening 2006a). I follow Bruening (2006a) in taking the wh-phrase *tan* to originate in the specifier of this preverb.

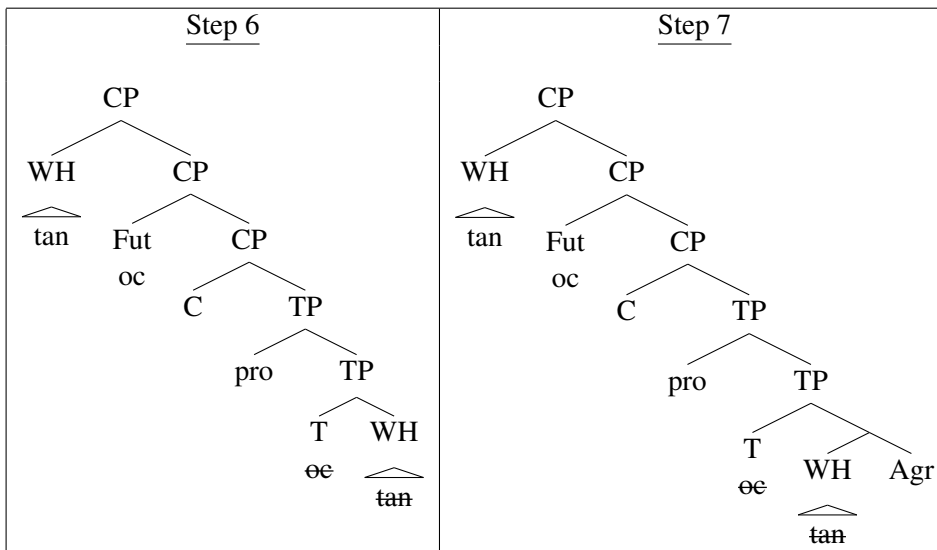
In this case as in the last one a C head is put in the numeration which is both [+WH] and Independent Order. Agr[S<sub>HA</sub>:+V] is therefore also put into the numeration. The syntax starts by considering C. C selects a wh-specifier, so the syntax merges *tan*. At this point we need to make some decisions about how to handle second-position clitics, which is what *oc* (Fut) is. It is not my intent to give a complete analysis of second-position clitics, but there is a very simple way to handle them in the current left-to-right syntax. As noted above, second-position clitics in Passamaquoddy-Maliseet generally follow the first prosodic word in CP. We could just merge them into that position. So, once the syntax merges *tan*, it will then merge *oc* (Step 2):

(74)



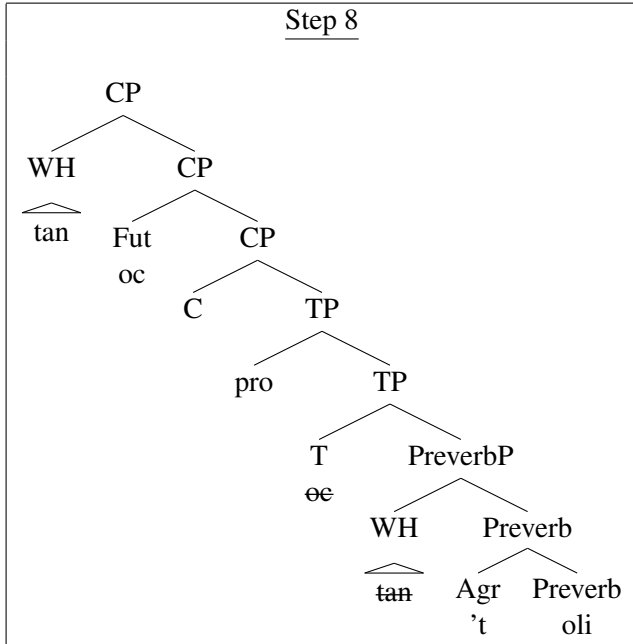
Then the C head will be merged, which projects; this essentially makes the clitic an adjunct to C (Step 3). C takes a T complement; T selects a specifier, which I assume is null *pro*; null *pro* is merged (Step 4) followed by T (Step 5). The Fut clitic is possibly category T; suppose it is, then it is copied as T, as indicated in Step 5. After that, there may be other functional categories that are merged first, but at some point the relative root *oli* will be considered. It selects a specifier. The syntax will copy *tan* (Step 6):

(75)



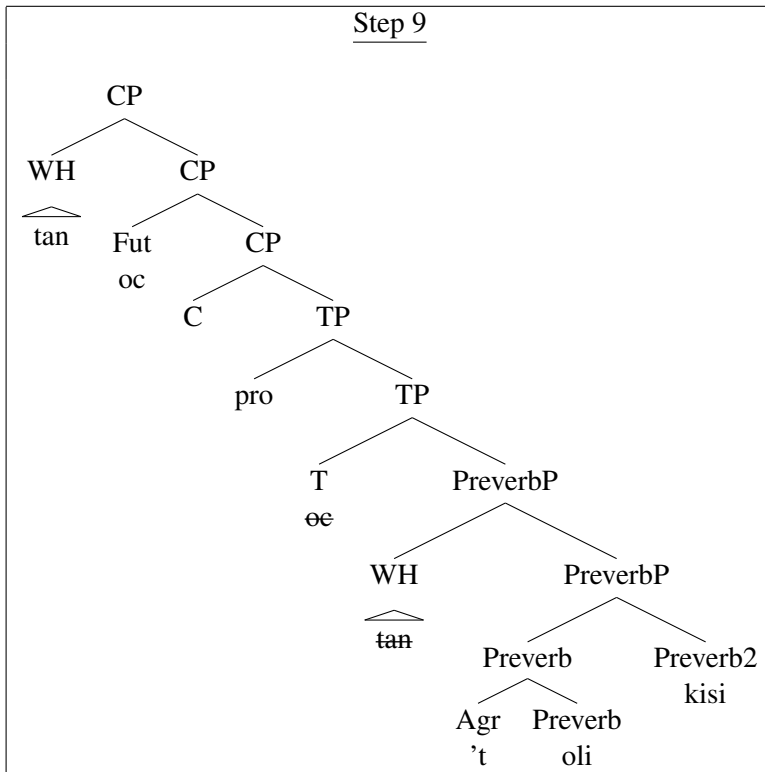
Now the syntax asks whether there are any head adjuncts that select *oli* and are prefixes. There is one, Agr. So Agr is merged next (Step 7). Then *oli* is merged (Step 8):

(76)



The next preverb will then be considered. Assuming it does not take a specifier, the syntax will ask whether there are any head adjuncts that select it and are prefixes. Agr has already been moved out of the numeration, so there are not. The second preverb will then be merged (Step 9):

(77)



The derivation will then continue, and build the coordinated verb phrases below the second preverb.

As should be apparent, the head adjunct analysis correctly locates the prefix in Algonquian languages on the first [+V] element in the clause. No additional machinery or stipulations are necessary. Left-to-

right structure building also enables a very simple analysis of second-position clitics. They can be merged immediately after the first prosodic word is, and then copied to their base position.

In cases where something separates the preverb+prefix from the main verb, we may want a movement analysis. We can merge the preverb+prefix in a position higher than the intervening material (for instance, above Spec-TP, when a subject pronoun intervenes as in 58), and then copy it into its base position as a head immediately above VP.

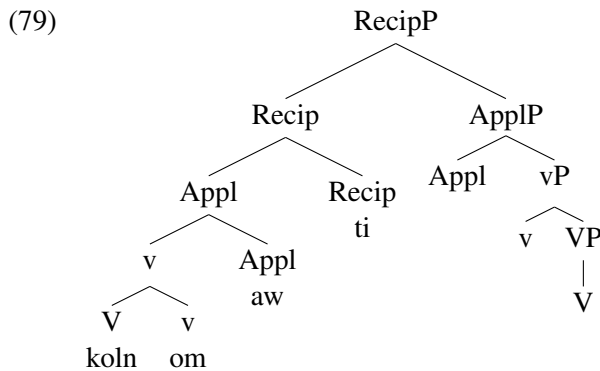
### 5.3 Locating the Suffixes

The head adjunct analysis correctly locates the prefix. So long as the suffixes are placed by a different mechanism, we correctly distinguish the two. It would be ideal to be able to say what that different mechanism is, however. Although it is not my intent to give a complete account of Passamaquoddy-Maliseet verbal morphology, I can make a few suggestions.

First, the verb can have several valence-changing suffixes on it. These are plausibly syntactic heads that combine with the V through head movement. Consider the following example, which has a base transitive verb that is turned into a ditransitive with a Ditrans(itive) morpheme and then a reciprocal with a Recip(rocal) morpheme. The reciprocal lowers the verb's valence by one. The morpheme closest one to the root (-om-) indicates the valence of the base verb (transitive with an inanimate object):

- (78) Pil naka Mali ' -koln-**om-aw-ti**-ni-ya-l (')-motqapiyi-wa-l.  
 Bill and Mary 3-hold-**TransInan-Ditrans-Recip-N-3.Pl-InanP** 3-bag-3.Pl-InanP  
 'Bill and Mary are holding their bags for each other.'

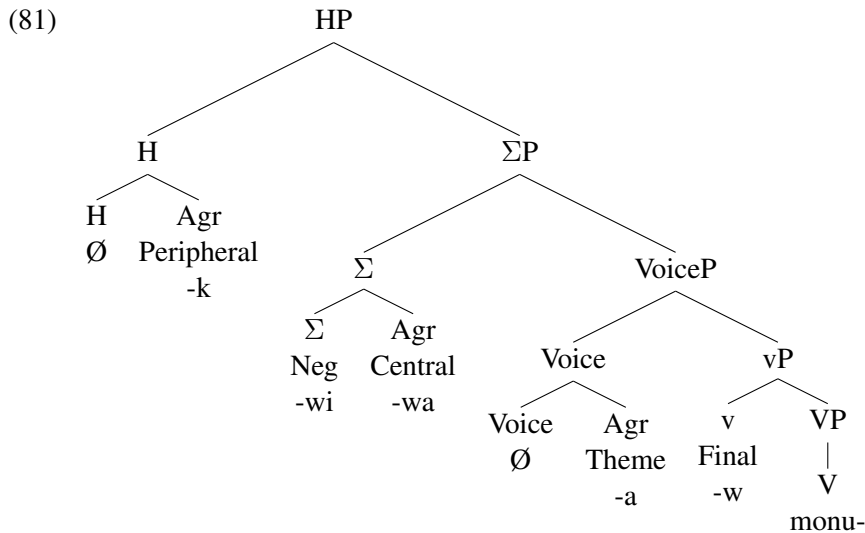
We can analyze the Transitive Inanimate suffix as v and the ditransitive morpheme as an Appl(icative) head above that. Recip(rocal) can be analyzed as a head that combines next. V moves through v and Appl to Recip:



Second, in the analysis of the other languages (English, Bulgarian, Amharic), Agr morphemes were selected by the heads that hosted them. I propose that all the agreement morphemes that are suffixes in Passamaquoddy-Maliseet are the same. They are Agr heads that are selected by the heads that make up the main verb. In a transitive verb, there are three Agr heads: (1) the Theme Sign (marking Direct/Inverse or 1/2 interactions); (2) the Central ending, which indexes the same argument as the prefix (but in number in addition to person); (3) the Peripheral ending, which indexes the other argument:

- (80)
- |          | prefix | verb | final | <b>Theme</b> | Neg  | <b>Central</b> | <b>Peripheral</b> |
|----------|--------|------|-------|--------------|------|----------------|-------------------|
| ma=te    | k-     | monu | -w    | -a           | -wi  | -wa            | -k                |
| Neg=Emph | 2-     | buy  | Tr.An | -Dir         | -Neg | -Pl            | -3Pl              |
- 'you (Pl) don't buy them (An)'

In Bruening (2004, 2006b), the head Recip is a variety of Voice. I suggest that Voice, including the Recip variety of it, head-selects an Agr that is the Theme Sign (see Oxford 2019 for an analysis of the theme sign that locates it in Voice and treats it as object agreement). Immediately above Voice there is a head  $\Sigma$  that head-selects another Agr.  $\Sigma$  is the negative morpheme on the verb if the clause is negative. I follow Zanuttini (1997), Poletto (2008), De Clercq (2013) in hypothesizing the existence of (at least) two positions for negation in the clause. One is this low  $\Sigma$  that is between Voice and any tense, aspect, or mood heads. The other is a higher Pol(arity)P that hosts the preverbal negative particle (*ma* in 80). I assume that there is an Agree relation between Pol and  $\Sigma$ , with the result that there is only a single semantic negation.  $\Sigma$  is present but null in a positive clause. Whether it is null or not, it head-selects an Agr that is the Central Ending. Finally, there is another, unidentified head that I will call “H” that head-selects the peripheral ending.



The V moves first to v, then to Voice, then to  $\Sigma$ , and finally to H. This results in the form *monu-w-a-wi-wa-k*. Note that H has to be below the lowest preverb, so the verb does not move very high in the clause. The heads that host the Agr morphemes (or the Agr morphemes themselves) engage in Agree relations with the arguments of the verb. I will not spell these relations out here; for some worked out analyses, see, among others, Bruening (2001) and Oxford (2019).

While this is by no means a complete analysis of the Algonquian verbal morphology, it suffices to correctly distinguish the person prefix from the rest of the verbal morphology. The person prefix is a head adjunct, and merges when it can, while the other morphemes are either clausal heads or they are Agr morphemes head-selected by clausal heads. The verb and its accompanying suffixes are put together by syntactic movement.

## 5.4 Initial Change

There is another morphological phenomenon that obeys the same distribution as the person prefix. In fact it is in complementary distribution with the person prefix. This is an ablaut process known as “initial change.” Initial change occurs in some conjunct forms (like relative clauses, some adjunct clauses). Initial change affects the first vowel of the verb. This is the first vowel of the verb stem itself if there is no preverb (82a, repeated from 66b, and compare the unchanged vowel in 66a), but the first vowel of the first preverb if there is one (or more), as in (82b–82c):

- (82) a. On [ʔ]-kisi kpukow-a-n piksi piyehs **ewehke-t**.  
 then 3-Perf sew-Dir-N pig hair IC.use.TransInan-3Conj

- ‘[Then] He sews him up using a pig’s hair.’ (Anonymous 1974: 9)
- b. ... wot yaq wen **pemi** sakhiya-t.  
 Dem Quot who IC.along come.into.view-3Conj  
 ‘... something came into sight.’ (Newell 1979: 25)
- c. **Eli**-qolop-essi-li-t w-ikuwoss-ol, kotama=te wen-il  
 IC.thus-around-turn-Obv-3Conj 3-mother-Obv Neg=Emph who-Obv  
 (’)-nomi-y-a-wiy-il.  
 3-see-TransAn-3Subj-Neg-Obv  
 ‘When his mother turns, she sees no one.’ (Mitchell 1921/1976e: line 60)

We can give initial change the exact same analysis as the person prefix. Suppose that initial change is driven by an abstract morpheme, which is to say a syntactic head. Its phonological realization is to affect the phonology of its host, but as far as the syntax is concerned it is identical to the person prefix in being a head. Like the person prefix, it also has the feature [ $S_{HA}:+V$ ]. As the syntax builds the structure from left to right, the abstract initial change head will be merged with the first element that has the feature [+V] to be merged into the structure. This will always be the first preverb if there is one, or the main verb if not.

## 5.5 Summary

The person prefix on Independent Order verbs in Algonquian languages has always stood out from the rest of the verbal morphology, which is suffixal. Its placement has always been problematic, which has led many (following Halle & Marantz 1993) to analyze it as a pronominal clitic high in the clause. I have shown that this is not the correct analysis. Analyzing it as a head adjunct in a left-to-right syntax correctly places it on the first element of the appropriate type in the clause. In this distribution it is just like English affixal negation and the Bulgarian and Amharic definite markers. Algonquian languages have another morphological marker, Initial Change, which obeys the same distribution, and can be analyzed in the same way.

## 6 Conclusion

In this paper, I have proposed that there is a class of elements in syntax that behave like *head adjuncts*. They are heads and form a complex head with their host, but they are not selected by that host and are instead adjuncts. They all appear on the linearly first element of the appropriate type in the phase they belong to. I have argued that their distribution follows from them merging when they can in a left to right syntax. The elements of this class that I have identified are English affixal negation, the Bulgarian definite marker (and clitic possessive pronouns), the Amharic definite marker, and the person prefix on Independent Order verbs in Algonquian languages (and initial change in some Conjunct forms). There are probably other examples; in fact anything that has been identified as attaching to the highest element of some type is a good candidate, if “highest” is also “first” in the language.

I have also proposed that adjuncts like this (and anything else, really) merge when they can. In a left-to-right syntax, this always attaches them to the first possible host head. There can be no complex algorithm that would put something on the last possible head, or the second or second-to-last. I believe that this is correct, and there is nothing in the languages of the world that has a distribution like that. However, I have to leave a full typological exploration to future work.

To the extent that this paper has been successful, the existence of head adjuncts is supported, as is a left-to-right structure building approach. One advantage of the proposal is that we can do without post-syntactic levels and post-syntactic mechanisms. There is no such thing as a post-syntax in the current approach, there

is only the syntax. This is a conceptual advantage over approaches like Distributed Morphology and most current approaches to syntax, which relegate linear order to a second syntax after the first.

One thing to note is that the notion of a numeration is crucial for the placement facts discussed here. If the syntax could access the lexicon at each step, then in Bulgarian and Amharic, it would select a Def *every time* it selected a [+N] element. In English, affixal negation would attach to *every* auxiliary verb, not just the first one. We need the notion of a numeration, with just one instance of Def or Neg in it, so that once it is merged, it is no longer available for merger with subsequent items of the appropriate type. Alternatively, if something can ensure that only one instance of the relevant item can be merged in each phase, then we can do without the numeration.

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