

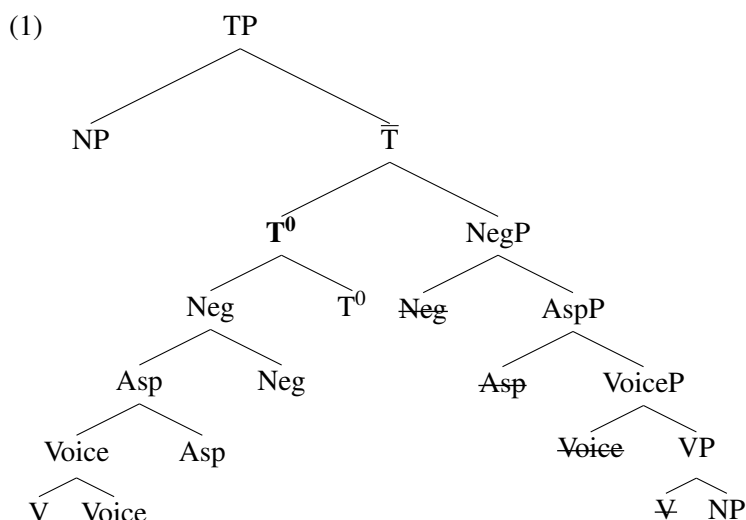
Verbal Morphology: Not Head Movement, Not Mirror Theory, Just External Merge

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1 Introduction

Many contemporary researchers working within a syntactic approach to word formation make use of head movement in the syntax to assemble complex morphological objects. In this type of approach, a morphologically complex verb might be put together by moving V through Voice, Asp(ect), Neg(ation), and T(ense) projections (for a recent example of exactly this sort, see Merchant 2015 on Greek):



(Strikethrough indicates unpronounced lower copies of the heads that have moved.) The boldfaced T^0 is then a morphological word, consisting of morphemes realizing V, Voice, Asp, Neg, and T, in that order. Head movement accounts have been proposed for the morphology of non-verbal categories, as well (see sections 2.5.1–2.5.2 for some examples, although the focus here will be verbs).

There have been many different versions of the head movement approach (e.g., Baker 1985, 1988, Hale & Keyser 1993), and it is probably accurate to say that few, if any, researchers believe that a “pure” version of head movement could possibly be correct as the mechanism for morphological composition (judging by recent references like Adger et al. 2009 and Harizanov & Gribanova 2018). Nevertheless, it is recurrent in the contemporary literature, particularly among practitioners of Distributed Morphology (Halle & Marantz 1993), and so it is important to evaluate it carefully.

This paper has three goals. The first is to show, on the basis of cross-linguistic data, that a pure version of the head movement approach to word formation is untenable. The head movement account of verbal morphology predicts that there should be a strong correlation between the morphology of a verb and the position of that verb in the clause. I show here that there is no such correlation. The position of the verb, as

diagnosed by word order, bears either no relation or only an indirect relation to its morphology. This is true both within a language and across languages.

This should surprise no one. Researchers have long recognized that the pure version of the head movement approach cannot be sustained (Halle & Marantz 1993, Adger et al. 2009, among many others), and so they have proposed various fixes. The second goal of this paper, then, is to evaluate some of these fixes. One of these fixes posits post-syntactic operations that can alter the positions of heads after head movement takes place, or fails to take place (e.g., Halle & Marantz 1993, Embick & Noyer 2001). I discuss some facts from Passamaquoddy-Maliseet (Algonquian) that show that devices of this sort also fail. These same facts also militate against dividing head movement into processes that occur at different levels of the grammar, as proposed by Harizanov & Gribanova (2018). The alternative Mirror Theory (Brody 2000, Adger et al. 2009, Svenonius 2016) also fails when confronted with facts from Passamaquoddy-Maliseet.

Given that existing versions of head movement and Mirror Theory all falter, the third goal of this paper is to propose an alternative mechanism for the formation of complex heads in the syntax. I propose as an alternative that morphemes on the verb (and other categories) are syntactic heads that are merged with the verbal head prior to insertion of the complex verb into the clause. Merger of heads is forced by language-particular well-formedness conditions. In addition, a licensing principle requires that heads with different possible feature values must Agree with a head in the clause in order to check those features. Licensing does not have to be one-to-one, so we correctly expect cases of zero exponence, multiple exponence, and simultaneous pronunciation of both a morpheme on the verb and the clausal head as a freestanding morpheme, something that is also incompatible with head movement accounts. We also expect that a given morpheme can be required by well-formedness conditions in different contexts, or licensed by Agree with different heads in different contexts, with the result that a single morpheme can be associated with multiple, sometimes unrelated, functions. This is also something that is unexpected on a head movement account. The converse situation also obtains: a single, well-defined syntactic function that might be associated with a single clausal head can be marked on the verb by very different morphemes depending on the context. This is also problematic for head movement accounts, but is accommodated easily in the alternative I propose.

The paper begins by addressing the pure version of the head movement approach. Section 2 shows that verbal morphology does not correlate with the position of the verb in the clause, as the pure version would predict. This section also addresses two examples of non-verbal categories where head movement has been proposed, and shows that those accounts are similarly problematic. Sections 3 and 4 address devices like post-syntactic lowering and Mirror Theory, respectively. Section 5 discusses the Mirror Principle (Baker 1985) as a justification for head movement approaches and concludes that it is not valid. Section 6 presents the alternative that I propose, external merge and licensing. In section 7, I return to head movement in the syntax as an operation that does nothing but alter a head's position. Finally, section 8 concludes with some implications and consequences.¹

2 Verbal Morphology Does Not Correlate with Verb Position

As stated in the introduction, the pure head movement approach to verbal morphology predicts that the position of the verb in the clause will correlate with its morphology. In this section, I show that this prediction is falsified even in familiar European languages like English, French, and Danish. I also show that the predictions such an account makes for a polysynthetic language like Passamaquoddy-Maliseet are likewise

¹I should note at the outset that this paper does not address phrasal movement approaches to word-formation at all (as proposed by, e.g., Koopman 2005, Caha 2013, Myler 2017). However, note that some of the same issues in section 6 that are problematic for head movement are also problematic for phrasal movement, namely simultaneous pronunciation of both a morpheme on the verb and the clausal head as a freestanding morpheme; a single morpheme having multiple, unrelated functions; and a single, well-defined function being marked by different morphemes in different contexts. However, I will have to leave to future work a full comparison of the current proposal with phrasal movement accounts.

falsified. Similar points have been made before, for instance in Adger et al. (2009) and Svenonius (2016); I am merely laying the issues out clearly to set up discussion in further sections, and to lay the groundwork for my own proposal.

2.1 Verb Movement to T in European Languages

The head movement account says that verbs receive their finite tense and agreement morphology in European languages by moving to a functional head like T. In contrast, I will show that the actual generalization about European languages (and many others as well) is the following:

(2) Morphological Tense/Agr Generalization:

The highest verb is inflected for tense and agreement, regardless of its position.

In the head movement account, a verb that has tense inflection must have moved to T, since that is how tense inflection gets on the verb. If the morphological tense/Agr generalization in (2) is correct, the head movement account could not be.

Facts from Danish show that the generalization in (2) is correct, and not the head movement account. Danish is verb-second (V2) in main clauses, meaning in the standard account that the inflected (highest) verb has moved through T to C. But in embedded clauses, the verb never leaves the VP, as diagnosed by its following negation and adverbs. But the verb has T/Agr inflection in either case:

(3) (Vikner 1995: 47, (33d, f))

- a. Kaffe **drikker** Peter ofte om morgenen.
Coffee drinks Peter often in the.morning
- b. Vi ved at Peter ofte **drikker** kaffe om morgenen.
we know that Peter often drinks coffee in the.morning

This is true of auxiliary verbs as well as main verbs, they also never leave the VP:

(4) (Vikner 1995: 145, (31a,b))

- a. Jeg spurgte hvorfor Peter ikke **havde** læst den.
I asked why Peter not had read it.
- b. *Jeg spurgte hvorfor Peter **havde** ikke læst den.
I asked why Peter had not read it.

But again, the auxiliary is inflected for past tense, even though it has not moved to T (present tense is *har*).

Now consider English. In English, according to standard analyses, the auxiliary verbs *have* and *be* start to the right of negation, as can be seen when there is a modal:

- (5) a. Carlotta may not **have** eaten the goldfish.
b. Drusilla may not **be** studying as hard as she should.

If there is no modal, then the auxiliary moves to the left of negation:

- (6) a. Carlotta **has** not eaten the goldfish.
b. Drusilla **is** not studying as hard as she should.

In this case, there does seem to be a morphological consequence of this movement: *have* and *be* are in their base forms in (5), but are inflected for tense and agreement in (6). The standard analysis is that the auxiliary becomes inflected for tense and agreement by virtue of moving to T (see, e.g., Lasnik 2000). But note that

the morphological tense/Agr generalization in (2) also accounts for this pattern. If there is a modal, *have* and *be* are not the highest verb; if there is no modal, then they are the highest verb, and they receive the finite inflection. That the morphological tense/Agr generalization in (2) is the correct generalization can be seen by looking at main verbs, which never move anywhere. They never cross negation or adverbs, for instance, in contrast with main verbs in French:

- (7) a. John often **kisses** Mary.
b. Jean **embrasse** souvent Marie. (Pollock 1989: 367, (4b))

But the main verb bears finite tense and agreement if it is the highest verb, even though it has not moved to an inflectional head. This confirms that movement across negation in (6) is completely irrelevant for inflection. Auxiliaries also do not have to cross adverbs in English, and yet they will still be inflected if they are the highest verb:

- (8) a. Holder said he often **has** seen officers take the stand sporting sunglasses.
b. While I was at the venue, Selby often **was** being whisked around town for radio and television appearances

In other words, position and inflection are independent. This has been obscured in English because the highest auxiliary also obligatorily moves across negation in finite clauses. This has led researchers to the incorrect conclusion that there is a connection between this movement and inflection. As the above considerations indicate, there is not. Moreover, in non-finite clauses, the auxiliary *to* optionally moves across negation, with no morphological consequences whatsoever (on *to* being an auxiliary, see Pullum 1982):

- (9) a. She hopes not **to** lose.
b. She hopes **to** not lose.

Verb movement across negation is independent of inflection. This is true both within English, and across languages: Within English, auxiliaries but not main verbs move to T, but both bear finite tense inflection if they are the highest verb. Across languages, in both French and Danish, the highest verb bears the finite inflection, but only in French does that verb cross negation. In Danish embedded clauses, the highest verb moves nowhere.²

2.2 Verb Movement to C in Germanic Languages

Now consider verb movement to C. One of the best motivated instances of head movement is English T-to-C movement in inversion contexts (for a recent overview, see Bruening 2017). It is clear that this instance of head movement has no effect whatsoever on morphology. Whether the auxiliary stays in T or moves to C, its inflection is the same:

- (10) a. Bruno doesn't like goldfish.
b. Doesn't Bruno like goldfish?
(11) a. If she had done as we asked, . . .
b. Had she done as we asked, . . .

²It has been claimed that there is a correlation between rich agreement inflection in a language and the presence in that language of verb movement to T. See Koenenman & Zeilstra (2014) for a recent attempt to resuscitate this correlation, which has largely been discredited. The correlation does not seem to be real, see Bobaljik (2002) and Heycock & Sundquist (2017), as well as Harbour (2016). As Heycock & Sundquist (2017) show, Danish continued to exhibit verb movement to T for two centuries after having lost agreement inflection on the verb. I conclude that there is simply no connection at all between inflection and verb movement to T.

The same is true of verb-second in other Germanic languages, also typically analyzed as head movement to C. The verb in verb-second Germanic languages moves to C in main clauses, but may not move at all in embedded clauses (at least in the mainland Scandinavian languages like Danish, as shown above), yet main clause verbs and embedded clause verbs do not differ in their inflection:

(12) German

- a. Gestern **sahen** die Kinder diesen Film.
yesterday saw the children this film
- b. Er sagt, dass die Kinder diesen Film gestern **sahen**.
he says that the children this film yesterday saw

(13) Danish (Vikner 1995: 47, (33d, f))

- a. Kaffe **drikker** Peter ofte om morgenen.
Coffee drinks Peter often in the.morning
- b. Vi ved at Peter ofte **drikker** kaffe om morgenen.
we know that Peter often drinks coffee in the.morning

As we just saw above, the V does not move at all in embedded clauses in Danish, not even across negation or adverbs to T. Yet the verb is inflected in exactly the same way as a main clause verb, which has presumably moved through T to C. Clearly, this movement has no morphological consequences whatsoever.³

2.3 Historical Change

The standard head movement account faces other, insurmountable difficulties from historical change. In particular, the loss of verb movement in the history of English as documented by Haeberli & Ihsane (2016) is incompatible with standard analyses of verb movement to T. Haeberli & Ihsane (2016) show that verb movement across adverbs and verb movement across negation were lost separately and must therefore be two different movement processes. Importantly, the order in which they were lost is incompatible with standard analyses of verb movement to T, and leads those analyses into a paradox.

Briefly, the facts are the following: The loss of main verb movement across negation was a long process that started in the 16th century and came to completion over 200 years later. In contrast, the loss of main verb movement across adverbs started earlier, in the middle of the 15th century, and was largely completed by the middle of the 16th century, when main verbs were still moving across negation.

This historical development is very strange from the perspective on verb movement in the standard account, represented by Pollock (1989). In that account, verb movement takes place in two steps: the first step moves a verb across adverbs, and the second step moves verbs across negation. The second step is not possible without the first. If the first step is lost, as appears to have happened given the data in Haeberli & Ihsane (2016), then the second step should not still be possible. Yet apparently it was in the history of English. Haeberli & Ihsane (2016) propose to reverse the two movement steps, with the first step being across negation and the second being across adverbs. Then the second step can be lost while the first step still takes place. This is incompatible with the facts of French given in Pollock (1989), and would therefore require cross-linguistic variation in the order of the two steps, and the placement of adverbs and negation within the clause. It is also incompatible with facts of Modern English, where adverbs can and often do follow negation:

³There are some Germanic languages where the inflected verb takes a different form of agreement depending on whether it precedes or follows the subject (e.g., Zwart 1997). However, in these varieties the morphological composition of the verb is the same in either position, it is only the particular agreement morpheme that is used that is different. Head movement and morphological composition are still independent.

- (14) a. The students will not always be told what the answer is.
 b. If landlords have not quickly fixed an issue with the apartment. . .

This is one reason the standard account has the ordering it does: the auxiliaries *will* and *have* must have crossed *always* and *quickly* first, and then moved across negation. In fact, adverbs can come on both sides of negation:

- (15) The students will probably not always be told what the answer is. (Baker 1991: 395–396, (17))

The account in Haerberli & Ihsane (2016) would then have to posit yet more changes in the history of English, so that there are now three movement steps: the first across some adverbs, the second across negation, and the third across yet more adverbs. In the 15th and 16th centuries (and later), the possibility of adverbs coming lower than negation would have had to be absent.

In contrast, the historical facts are expected on the account of verb movement in Baker (1991) and Bruening (2010). In that account, there are two distinct rules. One is a rule that obligatorily moves verbs across negation. In Modern English this only affects auxiliary verbs and not main verbs. In earlier forms of English it was not so restricted; the historical development included the rule becoming restricted to auxiliaries. This restriction took hold over 200 years starting in the middle of the 16th century, as described above.

The second rule is a rule that moves verbs across adverbs. This rule is optional and is related to stress. In Baker (1991), the rule is obligatory for unstressed auxiliaries, while stressed auxiliaries may not undergo it. This appears to have been factually incorrect, and in Bruening (2010) the rule is simply optional. Regardless, in Modern English this rule is restricted to auxiliaries, just like the negation rule. Main verbs may not move across adverbs. However, in the past this restriction did not hold, and again the historical development includes the rule becoming limited to auxiliaries. Importantly, however, the adverb rule is distinct from the rule moving a verb across negation. The two rules are separate rules, with neither depending on the other (unless an adverb happens to follow negation, as in (14a) and (15), then the obligatory negation rule forces the otherwise optional adverb rule to apply). It is therefore expected that historical change could affect them differently. In particular, the rule moving verbs across adverbs becomes restricted to auxiliaries *before* the rule moving verbs across negation. In fact, the change to the adverb rule is largely complete before the change to the negation rule even begins. (One could imagine that the change to the adverb rule is one of the triggers for the change to the negation rule.)

Crucially, unlike in the standard account, the two movement rules are completely unrelated to inflection. Movement across negation has nothing to do with the morphology of the verb. Neither does movement across an adverb. One is obligatory, the other is optional; whether the optional rule applies or not, the auxiliary is still inflected the same. The same was true of periods where main verbs could optionally undergo movement: whether they moved or not, they were still inflected. The facts of language change in the history of English support this type of account, and therefore support the view where verb movement has nothing to do with inflection. The facts are incompatible with the standard account, where V movement to T is a two-step process and must take place in order for inflection to appear on the verb.

Some varieties of Mainland Scandinavian have also been found to allow verb movement over adverbs even when they do not allow verb movement over negation. See Bentzen (2007) and Heycock et al. (2010). This is true even when some of the adverbs that the verb can move over preferentially precede negation when they co-occur. This is a paradox in the standard account, but makes perfect sense in the two-rule account.

2.4 Polysynthetic Languages

The head movement account of morphological composition also implies that languages with very complex verbs, as in polysynthetic languages, should have head movement to a very high position, in order to get all of

the morphemes on the verb. This is in fact Halle and Marantz's (1993) analysis of the Algonquian language Potawatomi. Potawatomi has very complex verbs like the following, with various agreement morphemes, negation, and tense ("Preterit"):

- (16) k-wapm-a-s'i-m-wapunin-uk
 2-see-3Acc-Neg-2Pl-Preterit-3Pl
 'you (pl) didn't see them' (Halle & Marantz 1993: 140, (16b))

Halle & Marantz (1993) propose that the verb moves through a head they call Ind(ependent), through Neg and T to C. The prefix *k-* is, according to them, a pronominal argument cliticized to C.

The problem is that other polysynthetic languages clearly do not have verb movement to such a high position, as diagnosed by word order. In the closely related Passamaquoddy-Maliseet, for instance, the verb could not be in C. Passamaquoddy-Maliseet is a wh-movement language, with wh-words moving to Spec-CP. If the verb were in C, then a fronted wh-phrase and the verb should always be adjacent. However, numerous things can and even must come in between them. Negation in the form of a freestanding particle must come in between them. XPs (other arguments, for instance), can come in between the wh-phrase and the verb, on either side of negation:⁴

- (17) a. Tama ma=te wen wikuwaci-toli-hpi-w?
 where Neg=Emph someone enjoy-there-eat.3-Neg
 'Where does no one like to eat?' (Bruening 2001: 148, (347b))
 b. Wen-il tehpu niktok nemiy-ahtic-il?
 who-Obv only those.An IC.see-3P/Obv-Obv
 'Who did only they see?' (Bruening 2001: 226, (579b))

Even outside of wh-questions, the verb obligatorily follows negation, and other elements can come in between negation and the verb, as in the following example:

- (18) Kat=op keq kt-ol-essi-w.
 Neg=would something 2-thus-happen.to-Neg
 'Nothing shall happen to you.' (Mitchell 1921/1976a: 11)

The verb could not even be moving as high as a Neg(ative) head, then. It has definitely not moved to C. Yet the verb still bears a negative affix and may have tense and mood morphemes, just like Potawatomi:⁵

- (19) ma=te ' -tokom-a-wi-wa-s-opon-il
 Neg=Emph 3-hit-Dir-Neg-3P-Dubitative-Preterit-Obv
 'they (proximate) may not have hit him/her (obviative)' (paradigm 30d)

⁴The transcription uses the orthography in use in the Passamaquoddy community. Letters have their usual values except that o = schwa, q = [k^w], 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; Emph = emphatic particle; Fut = future; IC= initial change, ablaut process; Inan = inanimate; N = morpheme glossed "N," described in the text; Neg = negative; Obv = obviative; P = plural; Perf = perfect aspect; Quot = quotative. "Obv/3" means an obviative subject with a proximate object, "1/2" means a first person subject with a second person object, and so on.

⁵Examples of Passamaquoddy-Maliseet verbal morphology (not full sentences) come from a draft version of the verbal paradigms of Francis & Leavitt 2008 (if negative, I have added the negative and emphatic particles to the left of the verb). The published version of the verbal paradigms in Francis & Leavitt (2008) contains numerous errors. The draft version I am using is dated 1992. I have posted a PDF of this draft at [http://udel.edu/~bruening/Downloads/PassamaquoddyVerbalParadigms\(1992\).pdf](http://udel.edu/~bruening/Downloads/PassamaquoddyVerbalParadigms(1992).pdf).

It is also clear in Passamaquoddy-Maliseet that the prefix is not a pronoun and is not in C. It obligatorily doubles a freestanding pronoun, making it agreement. Such a freestanding pronoun can, like all XPs, come in between a wh-phrase and the verb:

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

The freestanding pronoun is therefore not left-dislocated, since left-dislocated elements must precede wh-phrases (Bruening 2001). It must be the argument of the verb, and the prefix must be agreement.⁶ Moreover, given the word order, the verb could not be in C.

Thus, the most superficial inspection of word order reveals that the verb in Passamaquoddy-Maliseet is quite low, below negation. But it is also morphologically complex. We must conclude that the complex morphology is not put together through head movement to a high functional head.

Note also that negation is marked twice in Passamaquoddy-Maliseet, once with a morpheme on the verb and once with a freestanding particle (*ma* in (17a) and *kat* in (18)). This is also incompatible with standard head movement accounts, but it is quite common. A typical proposal for accommodating it within the head movement account is to say that the freestanding particle is in Spec-NegP while the morpheme on the verb (or clitic, in some cases) is the head Neg (e.g., Pollock 1989). The morpheme on the verb gets there by the verb moving to or through the Neg head. If the verb moves past Neg, this results in the particle in Spec-NegP being postverbal. The only way to get the Neg head on the verb *and* have the particle be preverbal in this head movement account is to move the verb to Neg and stop. But this has the same problem as head movement to C: it predicts adjacency between the particle in Spec-NegP and the verb, something that we see is not correct in (17a) and (18).

Other analyses of negation posit multiple NegPs in the clause (e.g., Zanuttini 1997). The problem with this is that we also see numerous examples of doubling in domains other than negation (e.g., comparatives, section 2.5.1, and definiteness, section 2.5.2), which would then require multiple projections of every syntactic category. This seriously undermines the appeal of the head movement analysis.

I conclude that head movement is simply not a viable account of the morphological composition of the verb in Passamaquoddy-Maliseet (see also Adger et al. 2009 on Kiowa). Once again, the correlation between morphological composition and syntactic position that is expected by the head movement account is not borne out. A language can have highly complex verbal morphology without movement of the verb to a high position in the clause. Since a language can also have movement to a high position in the clause without corresponding morphological complexity (Danish V2), we have to conclude that morphological complexity and verb movement are independent.

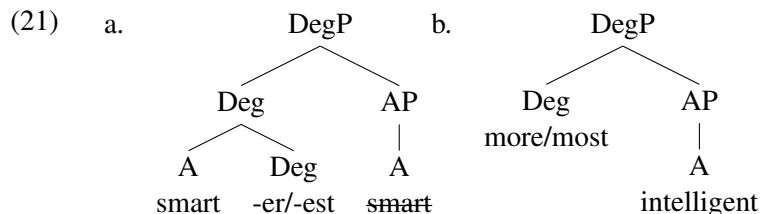
2.5 Two Examples of Other Categories

I turn now from verbs to other categories where a prominent approach to the morphology has been to posit head movement. I discuss two examples, comparative and superlative morphology in English, and definiteness marking in Danish. In both cases, the head movement account of the morphology has turned out to be problematic.

⁶Some recent work, like Kramer (2014) and Preminger (2014), proposes various diagnostics for clitics versus affixes. Most of these classify the prefix as an affix: It can index only one argument; it can index only the highest internal argument (in the inverse); it is obligatory; it has to index all arguments of the relevant type, not just certain ones (specific, e.g.); its form varies by tense (the independent vs. conjunct inflection; Nevins 2011 on this diagnostic); it agrees in just a subset of features (person and not number). Other diagnostics that those works propose are not telling.

2.5.1 English Comparatives and Superlatives

It is commonly proposed that English comparatives and superlatives are put together by moving an A(djective) to a Deg(ree) head, which combines the A with the suffix *-er* or *-est*. If this movement does not happen, then Deg is realized as *more* or *most*, and there is no suffix on the A (e.g., Corver 1997, Matushansky 2013):



Movement of A to Deg can also be realized as suppletion, as in *bad*—*worse*, *worst*.

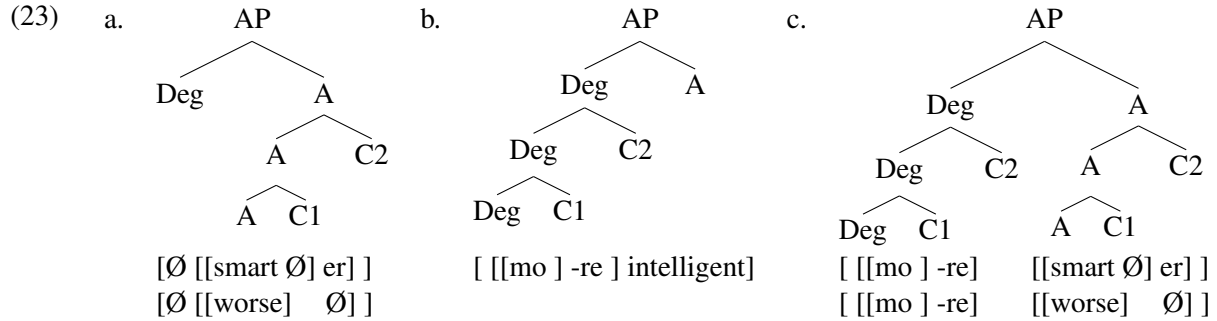
Note that this head movement account requires that head movement be able to make reference to the phonology, since there is a phonological condition on forming *-er/-est* comparatives and superlatives: only As that are a single prosodic foot can move to Deg. Adjectives like *intelligent* may not move and therefore only form comparatives with *more* and superlatives with *most*. This phonological condition is a problem for Distributed Morphology in particular, which keeps phonological material out of the syntactic derivation altogether (see Bobaljik 2012).

Matushansky (2013) defends the head movement account of these morphological forms on the basis of the claim that we need further head movement to a V head in order to explain why change of state verbs are always built on the suppletive comparative form if there is one (Bobaljik 2012). For instance, there is a verb *to worsen* in English, which seems to consist of the root BAD, the suppletion that is triggered by Deg, and a V head *-en*. According to Matushansky, this could only be put together by movement of A through Deg to V. The problem is that we then expect verbs based on non-suppletive adjectives to include the *-er* suffix, since they should also have moved to Deg. They never do, however:

- (22) a. to smarten (up), *smarteren
 b. to widen, *wideren
 c. to enlarge, *enlarger

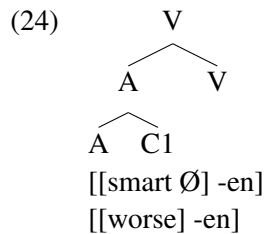
This discrepancy severely undermines the head movement account of the morphological composition of comparative adjectives and deadjectival verbs. In addition, double marking is common with comparatives (*more smarter*), something that is simply incompatible with this head movement account. In English it is viewed as substandard (though it is widespread), but it is also common in other languages (Bobaljik 2012). For other arguments against head movement accounts, see Embick & Noyer (2001), Embick (2007), Embick & Marantz (2008). Given all of these issues, the head movement account of English comparatives and superlatives is problematic at best.

It is also possible to design an alternative analysis that does not rely on head movement at all. Caha (2017a,b) argues that the comparative head of Bobaljik (2012) and others needs to be split into two heads, C1 and C2. Adopting this proposal, I propose that C1 and C2 can merge with A (23a), or they can merge with a Deg element in Spec-AP instead (23b), or they can do both simultaneously (23c):



The structure in (23a) produces synthetic comparatives like *smarter*, with Deg (typically) unpronounced. The suffix *-er* is the pronunciation of C2, while C1 is null with As like *smart*. The structure in (23b) produces analytic comparatives like *more intelligent*. There is a phonological condition on merging C1 and C2 with As, as described above, which prevents them from being merged with As like *intelligent*. Instead they have to be merged with Deg. Deg plus C1 is realized as *mo-*, while C2 is *-er* again. Following Caha (2017a,b), suppletion is always the spellout of multiple adjacent nodes; following Corver (1997), Bobaljik (2012), and many others, *mo-* is the suppletive form of *much*. The structure in (23c) yields doubling, as in *more smarter*.

Adjectives like *bad* that take a suppletive form in the comparative have the suppletive form (here *worse*) as the spellout of A and C1 in the structure in (23a) (or doubled in (23c)). C2 in such cases in English is null (it appears that only one of C1 and C2 can be pronounced in Standard English, although *worser* is possible substandardly). Suppletion appears in change of state verbs and *-er* never does because change of state verbs are built on A and C1 but do not include C2:



This gives *worsen* and *smarten* but not **smarteren*, as desired.⁷

This analysis accounts for the complex patterns of English comparatives with no head movement (and no post-syntactic lowering). There is only merge and the idea that particular morphemes can spell out more than one syntactic head (and this is always what suppletion is). In this analysis, the phonological condition operative in English is a condition governing merge of C1 and C2 with particular As; it is not a condition governing head movement in the syntax, which is another mark against the head movement account since head movement in general seems to be insensitive to phonology.

I should emphasize that the point of this alternative analysis is to show that it is possible to build a simple analysis of the facts without head movement. This analysis therefore functions mostly as a proof of concept. The details of the analysis are not that important, but I do offer the proposal here as a serious analysis. It appears to fare at least as well as any existing proposal that has been made in the literature.⁸

⁷Note that since the verb based on the A *good* is *to better*, *better* as the comparative form of the A could not include the suffix *-er*, contra Stump (2001), Bobaljik (2012), and numerous others. The form *better* must be a monomorphemic suppletive form, here realizing A + C1.

⁸The effect of adverbs and PPs documented by Embick & Noyer (2001), Matushansky (2013) can be captured in this analysis simply by imposing a semantic condition on an A merged with C1 and C2: If Matushansky is right, the condition is that an A that has C1 and C2 adjoined to it cannot head an AP that is norm-related.

This analysis is also able to account for Jackendoff's (2000) *smarter and smarter* versus *more and more intelligent*. I propose that

2.5.2 Definiteness Marking in Danish

Another case that was initially analyzed as morphological composition through head movement has also been shown to be problematic. This is definiteness marking in Danish. Definiteness is marked by a suffix on the head noun when it is not modified, but by a freestanding article when there is a prenominal adjective:

- (25) Danish (Hankamer & Mikkelsen 2005: 87–88, (3a), (6c))
- a. hest-en
horse-Def
'the horse'
 - b. den gamle hest
Def old horse
'the old horse'

Delsing (1993) and Embick & Noyer (2001) analyze this as movement of N to D, which is blocked by a prenominal modifier. However, Hankamer & Mikkelsen (2005) show that this analysis suffers from numerous problems. They propose two alternative analyses, neither of which includes head movement as a mechanism for getting the definiteness marking on the noun.

The details and arguments here are not important. I mention this case for two reasons: First, it is an instance where head movement appears initially to be an attractive analysis of morphological facts, but closer inspection shows that analysis to be untenable. Second, definiteness marking in the closely related Swedish illustrates again the phenomenon of doubling. In Swedish, there can be a freestanding definite article *and* a suffix on the head noun at the same time:

- (26) den gamla mus-en (Swedish)
Def old mouse-Def
'the old mouse' (Hankamer & Mikkelsen 2005: 88, (5b))

This is incompatible with a simple head movement analysis of the type that is typically proposed, where there is one single head that is realized as an affix if there is head movement and a freestanding element if there is not. In fact, doubling of this sort is widespread. We have already seen it with negation and with comparatives; now we see it with definiteness marking as well.

2.6 Summary

This section has shown that there is no relation between head movement in the syntax and morphology. Where head movement is motivated on the basis of relative order, it never has morphological consequences. The inflection on the verb is also completely independent of verb movement within the clause. This can be seen both within languages and across languages. Other putative cases of head movement putting together complex morphological objects, like English comparatives, have turned out to be problematic. There are also numerous cases of doubling, where some category is marked both as a morpheme on some other element, and as a freestanding element of some kind. This is also incompatible with the head movement account.

this construction has a reduplicative morpheme to the left of Deg in (23) that copies the prosodic word that begins with the left edge of Deg. If Deg is null, this will start copying with A, yielding *smarter and smarter*. Double marking with the structure in (23c) is correctly predicted to yield *more and more dumber* and not **more dumber and more dumber*. Compare Matushansky (2013), who has no account of double marking. (Note that this analysis also has the potential to explain the ill-formedness of reduplication with other degree modifiers: *She's getting smarter and smarter*; *She's getting much smarter*; **She's getting much smarter and smarter*; **She's getting much and much smarter*. If the reduplicative morpheme is the same category as *much*, which appears immediately to the left of *more* (*much more intelligent*), then it will be in complementary distribution with it.)

3 Post-Syntactic Operations

In the previous section, I gave several arguments that the head movement approach to the assembly of complex morphological objects, verbs in particular, is not correct. In this section I address one of the patches that researchers have used to fix some of the more obvious holes in the head movement account, namely, post-syntactic operations of some sort. “Affix-hopping” has been used as a way to get tense and agreement morphology on main verbs in English since at least Chomsky (1957). Different types of post-syntactic movement have also been explored in Distributed Morphology (e.g., Halle & Marantz 1993, Embick & Noyer 2001, Embick & Marantz 2008).

Data from Passamaquoddy-Maliseet show that appeal to lowering movements, whether post-syntactic or not, will not fix the problems for head movement in that language. Recall that Passamaquoddy-Maliseet verbs are quite morphologically complex, but word order indicates that they occur fairly low in the clause. To save the head movement account, one could propose that heads like Neg and T lower onto the verb in some fashion.

The problem with this is that Passamaquoddy-Maliseet has a type of element that clearly intervenes between the position of the head in the clause and the verb that it has to lower onto. These are usually referred to in the Algonquian literature as *preverbs*. Recall that the inflected verb in Passamaquoddy-Maliseet begins with an agreement prefix (in the independent order), boldfaced in the example repeated below:

- (27) Kat=op keq **kt**-ol-essi-w.
 Neg=would something 2-thus-happen.to-Neg
 ‘Nothing shall happen to you.’ (Mitchell 1921/1976a: 11)

If a preverb is present (underlined>, the prefix attaches to the left of that instead:

- (28) Ipa, on Makolit-ol ’-kisi yah-a-n-iya.
 Well, then Margaret-Obv 3-Perf tell-3/Obv-Subord-3P
 ‘Well, then they told Margaret (what had happened).’ (Newell 1979: 25)

In the clausal domain, this prefix only attaches to elements that are of category V. It can never attach to a noun or any other category, including freestanding particles and clitics. This suggests that the preverb is, like the main verb, of category V.

Importantly, many preverbs come in two varieties, one morphologically freestanding, and one that attaches morphologically to the main verb. For instance, the ability preverb has a bound form *kis-* and a free form *kisi* (the rest of the verb that is separated from it is boldfaced):

- (29) a. Msi=te el-ehl-ut ’-kisi-uwehka-n.
 all=Emph IC.thus-do.to-Pass.3 3-able-use-Inan
 ‘All that has been done to him he can now use.’ (Mitchell 1921/1976b: 15)
- b. Tokec oc ’cimaciw (k)-kisi te=hc **yali-topskans** etol-amkole-k,
 now Fut from.now.on (2)-able Emph=Fut around-roll IC.there-burn-IIConj
 (k)-kisi=hc **pomaws** ktahkmiku-k naka ’samaqan-ok.
 (2)-able=Fut live land-Loc and water-Loc
 ‘From now on you will be able to roll in the fire, you will be able to live on land and in the water.’ (Mitchell 1921/1976b: 15)

The free form can be separated from the main verb by other elements, for instance the emphatic and future clitics in (29b), and even a separate freestanding argument pronoun in (30):

- (30) (K)-kisi nil motewolonuwihponol-ol.
 (2)-Perf 1 curse-1/2
 ‘I’ve been putting a curse on you.’ (Newell 1979: 16)

(The prefix *k-* deletes before the /k/ of the preverb, but we know it must occur there and not on the main verb because it would be pronounced before /m/. The same is true of the examples in (29b).)

The bound form makes perfect sense: the bound preverb is part of the main verb stem, and as such, the agreement prefix attaches outside of it. The question is what the free form is. Since the agreement prefix only attaches to category V, a freestanding preverb must also be of category V. However, the preverb is clearly not a main verb, as it never takes the sequence of suffixes that the main verb does. Preverbs are also not an open, lexical class like main verbs; instead they encode things like modality, tense, and aspect. I therefore conclude that preverbs are not main verbs, they are instead auxiliary verbs. As in English, verbs come in two subcategories, main verbs (MVs) and auxiliary verbs (AuxVs). As in English, some syntactic phenomena target the entire class of verbs, while others target only AuxVs or only MVs. In Passamaquoddy-Maliseet, the sequence of suffixes only affixes to MVs. The prefix, however, attaches to the highest element of category V, regardless of its subcategory. Note that this is the same generalization that we saw for morphological tense and agreement in European languages: it always goes on the highest V in the clause, regardless of that V’s position, and regardless of its subcategory (AuxV vs. MV).

We now have a reasonable and adequate description of the verb complex in Passamaquoddy-Maliseet that comports with what we know about other languages. There is always a main verb, and there may be an auxiliary verb that occurs higher than the main verb in the clause. A piece of inflection always occurs on the highest element of category V in the clause. This piece of inflection will always occur on the auxiliary verb if one is present, otherwise it will appear on the main verb. This is a pattern we are all familiar with.

Now the question is where the auxiliary verb appears in the clause. We have already concluded that the main verb stays quite low, definitely below negation. The auxiliary verb can evidently appear higher than the position of the main verb, since it can be separated from the main verb by other material in (29b) and (30). However, it still always occurs below negation, since it obligatorily follows the freestanding negative particle:

- (31) Wot olu yaq Kci Anuwit, **ma** te coni posonut-ehke-w.
 this.An Topic Quot great Hannah, Neg Emph stop basket-make.3-Neg
 ‘Old Hannah didn’t even stop working on her basket.’ (Newell 1979: 13)

Therefore the auxiliary verb, though higher than the main verb, still appears in a relatively low position in the clause. It is most definitely lower than negation.

The problem now is that it is the main verb that bears all the verbal morphology other than the prefix. All other inflection is suffixal, and it all attaches to the main verb, not the auxiliary verb (AuxV underlined, MV boldfaced):

- (32) ma=te ’t-oqeci **tok**-om-a-wi-wa-s-opon-il
 Neg=Emph 3-try hit-TransAn-Dir-Neg-3P-Dub-Pret-Obv
 ‘they (proximate) may not have tried to hit him/her (obviative)’

The problem for any lowering account is that these heads (the suffixes) would all have to lower past the auxiliary verb in order to attach to the main verb. This should not be possible, in any theory. If this is lowering head movement, it should be unable to cross an intervening head. If it is local dislocation (Embick & Noyer 2001), it should be unable to jump across intervening material (the AuxV, and anything that separates the AuxV from the MV).

Note in particular that the main verb obligatorily bears a negative suffix if the clause is negative. In the head movement account, this means that the head Neg must have gotten on the main verb by head movement somehow. We have already concluded that the main verb never moves as high as Neg, so Neg could not have gotten on the main verb by syntactic movement. But we have also concluded that the auxiliary verb has not moved as high as Neg, either (since it occurs to the right of negation), so if Neg were to try to lower onto the main verb it would have to cross the auxiliary verb somehow. Since most theories of head movement specifically exclude such an operation, I conclude that no such mechanism can possibly save the head movement account.

It is also not possible to claim that the auxiliary verb is somehow invisible to lowering (perhaps it is an adverb), since it does in fact block lowering of the prefix onto the main verb. As we have seen, the generalization about the prefix is that it goes on the highest element of category V. In order to capture the positioning of the prefix, we have to conclude that the auxiliary and the main verb are the same category and are visible to the same process (affixation of the prefix, however that is accomplished). We cannot have it both ways and claim that the auxiliary is a verb for one process but not for another.

Harizanov & Gribanova (2018) propose as an alternative to lowering that head movement can take place in the post-syntax morphology instead. This puts the morphology on the verb but does not change the verb's position with respect to other elements in the clause. This also will not work for Passamaquoddy-Maliseet, for the same reason: It would require that the main verb cross the auxiliary in order to get its affixes on it, including Neg.

Richards (2016: chapter 6) proposes a prosodic lowering rule that lowers an affix onto the closest host in the prosodic tree. This also will not work for Passamaquoddy-Maliseet, and for the same reason: the affix would have to cross the auxiliary to get to the main verb, since the auxiliary is the closest element in the prosodic tree. It can constitute its own prosodic unit separate from the main verb, and can even be separated from the main verb by additional prosodic units, as we have seen.

I conclude that there is no lowering or any alternative based on head movement that can account for the morphology of verbs in Passamaquoddy-Maliseet. Head movement is always extremely local, as are local dislocation and prosodic lowering, but Passamaquoddy-Maliseet requires that morphemes on the main verb be able to jump over another element of the same type.

In the alternative that I will propose, affixes on verbs are merged there directly, as enforced by language-particular well-formedness conditions. Well-formedness conditions in different languages can refer directly to notions like “main verb,” “verb,” or “highest verb.” In European languages, the finite inflection all uniformly targets “highest verb.” In Passamaquoddy-Maliseet, in contrast, there is a split: the agreement prefix adjoins to the highest verb, but all the inflectional suffixes target the category “main verb.” This type of system easily accounts for the more familiar European pattern, but it also allows the Passamaquoddy-Maliseet type, with violations of the locality conditions inherent in head movement and lowering accounts.

4 Mirror Theory

The same types of facts from Passamaquoddy-Maliseet also rule out another alternative, Mirror Theory (Brody 2000, Adger et al. 2009, Svenonius 2016). In Mirror Theory, the morphological object that spells out a contiguous sequence of heads can be located in any of the head positions in that sequence. For instance, the sequence T-Voice-V can be spelled out in T in French but in V in English. In Danish, the sequence C-T-Voice-V could be spelled out in C in main clauses but in V in embedded clauses. As for Passamaquoddy-Maliseet, perhaps we could say that the sequence of heads C-T-Neg-Mood-Asp-Voice-V (for instance) can be pronounced very low, perhaps in V.

This will not work, for the same reason as head movement. In Mirror Theory, the sequence of heads has to be contiguous. But we have already seen that AuxV is in the way in Passamaquoddy-Maliseet. It can be

separated from the main verb with all of its affixes (see 30). It will therefore disrupt any sequence from C to the main verb.

Let me illustrate the problem in more detail with one particular affix, since this will motivate the need for a long-distance licensing mechanism of some sort. In Passamaquoddy-Maliseet, what is called the *Subordinative* mode is marked on the main verb of the clause with a morpheme that I will gloss temporarily as “Subord.” This mode is selected by something high in the clause, for instance the particle *on* in the left periphery:

- (33) a. Ipa, **on** Makolit-ol ' -kisi yah-a-**n**-iya.
Well, then Margaret-Obv 3-Perf tell-3/Obv-**Subord**-3P
'Well, then they told Margaret (what had happened).' (Newell 1979, 25)
- b. **On** [']-kisi kpukow-a-**n** piksi piyehs ewehke-t.
then 3-Perf sew-3/Obv-**Subord** pig hair IC.use-3Conj
'[Then] He sews him up using a pig's hair.' (Anonymous 1974: 9)

We might assume that it is the head C that requires Subord on the main verb, and that the particle *on* is a realization of the subordinative C.

Like all the inflection other than the prefix, Subord is always marked on the main verb. But a higher AuxV (here *kisi*) can intervene between the head and the verb bearing Subord. Such auxiliary verbs can even be separated from the main verb by overt material (see 30); there could therefore *not* be a sequence C-T-Neg-Mood-Asp-Voice-V that is spelled out in a single location.

This could also not be an instance of *selection*, with C selecting a particular form of V: There are too many projections in between C and V. Selection is strictly local. Of course, one could say that C selects a particular form of its complement, which selects a particular form of its complement, and so on down to the main verb. This would be entirely artificial, though, as the particular selected form would only be visible on the lowest head in the chain of selection.

What the Passamaquoddy-Maliseet subordinative (and other categories like negation) requires is some sort of long-distance licensing mechanism. In the case at hand, we need C to be able to require that the main verb have Subord morphology. Many current theories already have such a mechanism, often in addition to head movement or Mirror Theory. One such mechanism is Agree (Chomsky 2000), which typically implements agreement relations. But it also often performs a licensing function. The thing to note here is that once we admit such a mechanism, we can dispense with Mirror Theory and head movement altogether. *All* cases of morphology can be done using a long-distance licensing mechanism like Agree. The morphology can be created purely by external Merge, and licensed by the long-distance licensing mechanism. Head movement, if it occurs, has no direct effect on the morphology. This is the kind of analysis I will propose in section 6. First, though, I will briefly address claims regarding the Mirror Principle.

5 On Ordering and the Mirror Principle

One of the major motivations for the head movement approach to morphology is the claim that the order of morphemes reflects the order of heads in the clause. This is embodied in the Mirror Principle of Baker (1985). The head movement analysis is supposed to explain the Mirror Principle: As the verb undergoes head movement, each morpheme is added to the verb successively as it passes through the clausal heads. The result is that the order of morphemes will directly reflect the hierarchy of clausal heads (lowest closest to the verb root, highest furthest from the root). If we reject the head movement approach, as I am advocating here, it may seem that we are giving up any attempt to capture the data described by the Mirror Principle.

However, it is not clear that the Mirror Principle is actually justified by the available data. The only large-scale analysis of morpheme order that I am aware of, Julien (2002), seems to show that all possible

orders of V, T, Asp, and Agr (both subject and object) are attested in the languages of the world (this is hard to tell for sure, since the tables in Julien 2002 mostly leave out Asp). This is not expected by the Mirror Principle, where T should always be higher than and therefore farther from the root than Asp.⁹ (In Distributed Morphology, Agr nodes are added post-syntactically and can be added anywhere; there are not expected to be any ordering effects with them.) Unexpected affix orders have also been described in numerous languages, for instance Bantu languages (Bresnan & Moshi 1990, Hyman 2003), Athapaskan languages (Rice 2000), and others (e.g., Safir & Bassene 2017).

One affix that frequently occupies the wrong place on the verb is the negative marker. In languages that have a negative morpheme on the verb, the negative morpheme is often in the wrong place for sentential negation. For instance, in Potawatomi and Passamaquoddy-Maliseet, the negative morpheme on the verb is quite close to the stem, as was shown above. The example from Passamaquoddy-Maliseet is repeated below. As can be seen, the negative morpheme is closer to the stem than the Dubitative and the Preterite morphemes, which presumably realize modal and tense categories:

- (34) ma=te '-tokom-a-wi-wa-s-opon-il
 Neg=Emph 3-hit-Dir-Neg-3P-Dubitative-Preterit-Obv
 'they (proximate) may not have hit him/her (obviative)'

However, the freestanding negative particle is always preverbal and therefore farther away from (and presumably higher than) the verb and any prefixal tense, aspect, or mood morphemes (the preverb *koti-* can be translated either as 'want' or as a future marker):

- (35) (Bruening 2001: 97, (199b); 92, (179a))
- a. **Ma=te** n-**koti**-nomiy-a-wi-k kehceyawi-c-ik weyossis-ok.
 Neg 1-want-see-Dir-Neg-3P IC.be.many-3-3P animal-3P
 'I don't want to see a lot of animals.'
- b. **Ma=te** wen '-kisi-tomh-a-wiy-il Piyel-ol.
 Neg=Emph someone 3-Perf-beat-3/Obv-Neg-Obv P.-Obv
 'No one beat Peter.'

The freestanding particle case is where we might expect negation to be: higher than tense, mood, and aspect, where it can negate a proposition. In contrast, the negative morpheme on the verb is in a completely unexpected place, close to the verb stem, and below tense, mood, and aspect. Other languages also have negation close to the verb stem: in Turkish and Nanai, for instance, the negative morpheme comes closer to the stem than tense (Payne 1985). Such a low placement makes it doubtful that the negative morpheme on the verb is the head Neg in the clause that is responsible for sentential negation, as it is taken to be in standard head movement analyses. The placement of the negative affix in many languages therefore violates the Mirror Principle.

The best evidence for the Mirror Principle, including most of the evidence in Baker (1985), comes from valence-changing morphology like reciprocal marking, causatives, passives, and similar processes. In many languages, reversing the order of, say, a reciprocal plus a causative, reverses the interpretation, in exactly the way the Mirror Principle would expect (Baker 1985). However, in other languages, a single morpheme order can be ambiguous with respect to the scope of the two morphemes (e.g., the Bantu languages described

⁹Julien (2002) attempts to explain away orders that should not exist according to her own analysis, by reanalyzing the morphemes involved (primarily by claiming that what a source calls an aspect marker is actually not). However, there is a methodological problem with doing this: if one were to also reanalyze the data that appeared initially to fit one's predictions, would the data still fit those predictions? In other words, it is not methodologically sound to only reanalyze the problematic data. If 100% of the languages that are looked at more closely are found to have been mischaracterized, then we have to expect that some similarly high percentage of the languages that were not looked at more closely were also mischaracterized, and we cannot trust the data at all.

in Bresnan & Moshi 1990, Hyman 2003). This makes the putative universality of the Mirror Principle extremely suspect.

Without a large-scale typological investigation, the jury is still out on whether the Mirror Principle is actually correct. There are certainly numerous deviations from it in many different languages, which makes it appear that it is not correct, and the head movement approach therefore receives no motivation from it.¹⁰ If there are any ordering tendencies, I suggest that they follow from psycholinguistic factors, or from patterns of historical change. For example, it is sometimes suggested that morphemes on the verb originate as freestanding elements. If the freestanding elements are clausal heads, then we expect their order to reflect the order of functional heads in the clause. When they cliticize onto the verb over time and eventually become affixes, it would not be at all surprising for them to reflect their original order in some way.

Since there are so many counterexamples to the Mirror Principle, and the only available typological survey is inconsistent with it, I conclude that the Mirror Principle is not real. Where there are ordering tendencies, they are due to other factors, like psycholinguistic factors and factors involved in historical change. There is absolutely no support for head movement approaches from the Mirror Principle.

6 Alternative: Merge + Licensing

In previous sections I have shown that the head movement account of morphological composition faces serious difficulties. Devices like lowering do not rescue it, nor does the proposal that head movement can take place in different components of the grammar. The alternative Mirror Theory fares no better. The data from Passamaquoddy-Maliseet that we have seen show that morphology can violate the locality conditions that are inherent in head movement and Mirror Theory. I have suggested that we need a long-distance licensing mechanism, and once we have that, we can dispense with head movement and Mirror Theory altogether. I will outline in very broad strokes what such a theory might look like.

6.1 External Merge

First, I propose that complex heads are put together by Merge, prior to inserting the complex head into a phrase. The syntax simply merges one head (Y^0) with another head (X^0), and projects the category of one of them:

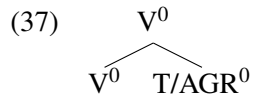
$$(36) \quad \begin{array}{c} X^0 \\ \diagdown \quad \diagup \\ X^0 \quad Y^0 \end{array} \quad \text{or} \quad \begin{array}{c} X^0 \\ \diagdown \quad \diagup \\ Y^0 \quad X^0 \end{array}$$

Linear order is specified as part of Merge, as illustrated: the two possible trees are distinct. If Y^0 is merged with X^0 on the right, it is a suffix, if it is merged on the left, it is a prefix.

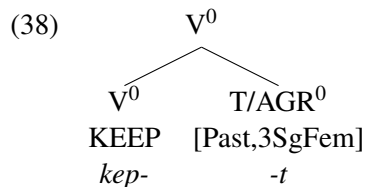
Note that a head cannot be equated with a terminal node, because a head can dominate other nodes, as the topmost X^0 in the above diagrams does. We therefore need to distinguish between heads, or X^0 s, and terminal nodes, which are nodes that dominate nothing but features (morphosyntactic, phonological, semantic). Terminal nodes are all heads, but not all heads are terminal nodes.

As an example, English requires that verbs merge with a T/AGR head prior to insertion into a phrase:

¹⁰Occasionally, non-local morphophonological processes are claimed to correlate with Mirror-Principle-violating orders (e.g., Skinner 2009, Myler 2017). However, this does not appear to be true: there are Mirror-Principle-violating orders that do not give rise to non-local morphophonological processes, and there are non-local morphophonological processes even when the order of affixes respects the scope order (Hyman 2003). While such processes are interesting, they do not appear to bear significantly on this topic.

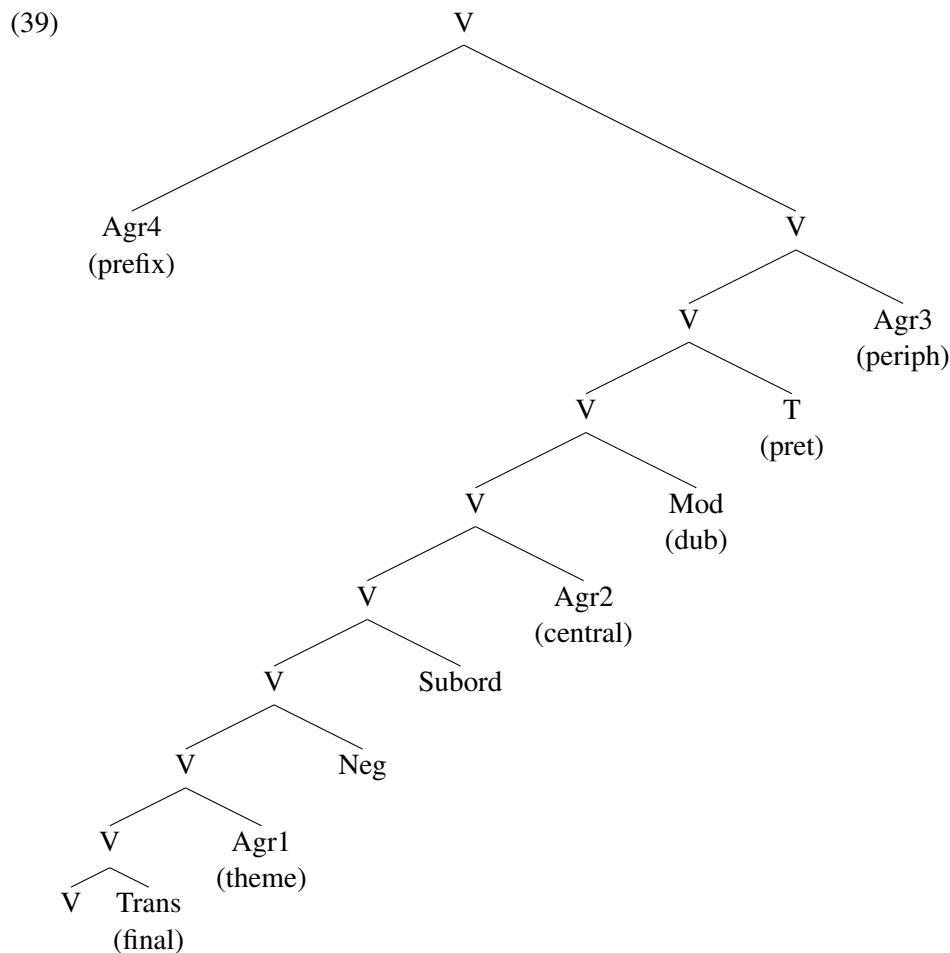


This is true of both main verbs and auxiliary verbs, and of all verbs in a clause when there is more than one (so verbs below an auxiliary will have one of the suffixes *-en*, *-ing*, or \emptyset , which I assume realize non-finite T/AGR). V can be a particular verb like *keep* (capital letters for the abstract root, italics for the surface allomorph), while T/AGR will have values specified for tense and agreement:



I will follow Chomsky (1993) and suppose that heads come with feature values already specified, as depicted for English T/AGR in (38). The values are chosen at the point of merger. These values will have to be licensed through Agree. I will return to this in section 6.3.

As a second example, Passamaquoddy-Maliseet requires that the highest verb in the clause merge with an AGR head on the left, while the main verb must merge with a sequence of heads, depending on the syntactic context (for instance, Neg is only merged if the clause is negative). For the case where the highest verb is also the main verb, this will yield the following:

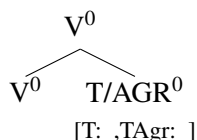


Note that the complex head in both English and Passamaquoddy-Maliseet is category V. When this complex head is merged into a clause, it will always be merged as the head of category VP, which will then combine with other categories to create a clause (possibly following a universal sequence). Head movement of the V, if it takes place, has nothing to do with the morphological makeup of the V (see section 7).

6.2 Well-Formedness Conditions

Since it is simply a fact that languages differ in their morphology, it is unavoidable that we will have to stipulate rules or conditions regulating the merger of heads in particular languages and in particular contexts. (Note that Distributed Morphology also has language-particular requirements of merging heads like AGR post-syntactically, in addition to putting complex heads together through syntactic head movement.) I will model these language-particular requirements as well-formedness conditions. As an example, English has the following well-formedness condition:

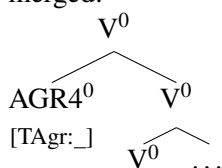
- (40) WFC-E1: An English V^0 must have a $T/AGR^0_{[T:_,TAgr:_]}$ head adjoined to it:



This condition requires that any V^0 that is to be used in the syntax must be merged with a T/AGR head. The T/AGR head must have features for tense and agreement, but the particular values of those features are open. As stated immediately above, values are chosen at the point of merger. The notation “TAgr” means that the Agr features will be checked against the head T; see section 6.3. (I do not assume any particular theory of features here, the choice is unimportant for the goals of this paper.)

Passamaquoddy-Maliseet is considerably more complex, and requires many more well-formedness conditions on the verb. To give two concrete examples, there must be two well-formedness conditions governing the prefix and the negative suffix, something like the following:¹¹

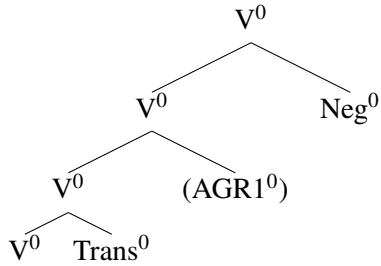
- (41) a. WFC-PM1: The highest verb in a Passamaquoddy-Maliseet clause that requires the independent order must have an $AGR^0_{[TAgr:_]}$ head adjoined to it on the left as the last element merged:



- b. WFC-PM2: The main verb in a Passamaquoddy-Maliseet negative clause must have a Neg^0 head adjoined to it outside of Trans and AGR1 (if present):

¹¹I assume the following definitions:

- (i) a. X is in a phrase CP1 of category C iff X is dominated by CP1 and there is no CP2 of category C such that CP2 dominates X but does not dominate CP1.
 b. X1 is the highest element of category X in a phrase YP iff there is no element X2 of category X in YP such that X2 c-commands X1.



It is not my purpose here to give a complete analysis of Passamaquoddy-Maliseet, but only to give an idea of how external merge is regulated. This has to be done internal to individual languages, and even according to syntactic context. For instance, the Neg head is not merged with V in a positive clause in Passamaquoddy-Maliseet, and the prefix is not merged in any clause that requires an order other than the independent order. The two well-formedness conditions above express these restrictions.

6.3 Licensing of Heads

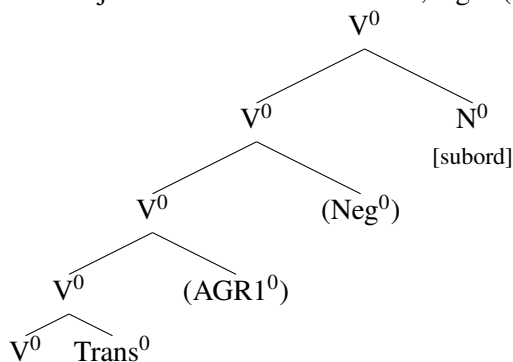
As noted above, we need some kind of long-distance licensing condition, in order to license, for example, the Subord morpheme on the verb by C in Passamaquoddy-Maliseet. But note that well-formedness conditions by themselves ought to be sufficient to license morphemes. For instance, the well-formedness condition governing negation in Passamaquoddy-Maliseet in (41b) forces a Neg head to be adjoined to the main verb. This forces a verb in a negative clause to have a Neg head adjoined to it, and this should therefore also license that Neg head, if we assume that merger of heads is not free but is only permitted by well-formedness conditions:

- (42) General Well-Formedness Condition on Heads: A head may not merge with another head unless it is forced to do so by a well-formedness condition.

This blocks, for instance, merging a Neg head with a verb that is not going to be merged into a negative clause. The result of the general requirement in (42) is that no other licensing mechanism is necessary, as heads will be merged only in those environments where they are forced to be by the well-formedness conditions of the language.

For the case of the Subord morpheme in Passamaquoddy-Maliseet, we then just need a well-formedness condition of the following sort (I call the head involved “N” for reasons that will be explained below):

- (43) WFC-PM3: The main verb in a Passamaquoddy-Maliseet subordinative clause must have an $N^0_{[subord]}$ head adjoined to it outside of Trans, Agr1 (if present), and Neg (if present):



Here there is no choice of features: the N head has to have a [subord] feature. For the case of the Subord morpheme, this is all the long-distance licensing condition we need. We need a condition to force the

merger of the morpheme, and if morphemes cannot freely merge but only merge when forced to, then the same condition serves to license the morpheme.

The two heads Neg and Subord do not have different possible feature values to choose from, given their licensing well-formedness conditions. However, some heads can take different feature values and thereby take different forms depending on those values, like the T/AGR head in English and AGR heads in Passamaquoddy-Maliseet (and in general). In addition to the well-formedness conditions forcing and licensing the merger of a head, we then also need a way to license particular feature values. For this purpose I will adopt Chomsky's (2000) Agree mechanism, and propose the following principle:

(44) Feature Licensing Principle:

A terminal node that has a choice of features must check its features by Agreeing with a head in the clause.

In English, the T/AGR⁰ head on the verb can be merged with different values of Tense and different values of the AGR features. The features that are chosen must be licensed by Agreeing with a head in the clause that has the same features. In English, this is the clausal head T⁰ (notated "TAgr" in the well-formedness condition). I assume that the clausal head T⁰ is also merged with a tense value specified and with AGR features. It checks these AGR features against an NP in the clause, via Agree, and also checks the AGR features of the T/AGR⁰ node on the highest verb, also by Agree. Agree between clausal T⁰ and an NP and clausal T⁰ and the T/AGR⁰ node on the verb ensures that all three match in values.

Agreement in Passamaquoddy-Maliseet is considerably more complex. In the tree in (39), Trans, Agr1, Agr2, Agr3, and Agr4 all have a choice among different possible feature values. Agr2 and Agr4 always index the same argument (the syntactically most prominent one), while Agr3 indexes a different one. I assume that Agr2 and Agr4 license their features through Agree with T⁰, which Agrees with the most prominent argument (syntactically highest: the object crosses over the subject in the inverse, following Bruening 2009). Agr1 indexes both subject and object and also registers the grammatical roles of the arguments (this morpheme is traditionally referred to as the *theme* sign, and it registers the direct versus inverse voice but also first-second person interactions). Trans agrees in animacy with one of the arguments but also indicates whether the verb is transitive or intransitive (if transitive, it indicates the animacy of the object, if intransitive, the subject). I will not spell out a theory of how all of this works, but simply note that each of these heads will have to check its features against at least one clausal head. In the case of Agr2 and Agr4, which index the same argument, they will both check features against the same clausal head, which also checks features with an NP. As just noted, I assume that this clausal head is T⁰ (but nothing important hinges on this).

Note that this requires that Agree not take place in a one-to-one fashion. The Feature Licensing Principle is stated in such a way that it does not require a one-to-one relation between heads on the verb and heads in the clause. Cases of multiple exponence then do not require more than one clausal head, since multiple terminal nodes on the verb can all check their features against the same clausal head. There is also no requirement that clausal heads check their features against a morpheme on the verb. I assume that Universal Grammar makes various categories available, like Aspect, Tense, Mood, etc. (and these might occupy a fixed hierarchy in the clause), and particular languages choose which ones to mark on the verb (as enforced by well-formedness conditions). Particular languages also choose which heads may bear phi-features and Agree with an NP. There does not need to be an AGR head in the clause to match AGR in the verb, and I assume that there is not; clausal heads that are already there may be specified to have phi-features. The Feature Licensing Principle does require that there be some clausal head for an AGR head on the V to check its feature values against. A head on the verb could also potentially check its features against multiple heads in the clause. Additionally, the clausal head against which a morpheme on the verb checks its features can be pronounced at the same time as the morpheme on the verb. Given all this, we correctly expect cases of multiple exponence, zero exponence, overlapping exponence, and so on.

6.4 Morphemes that are Licensed in Different Environments

The system proposed here, unlike the head movement account, also expects to find a single morpheme marking unrelated syntactic categories/functions. In the current system, a given head can be required by distinct well-formedness conditions, or its features could be licensed by Agree with different heads in different contexts. The result would be that a single morpheme can be associated with multiple, sometimes unrelated, functions. The head movement account, in contrast, does not expect this. A given morpheme is expected to represent a single head in the clause. Of course, there are ways to make unrelated heads be spelled out by the same phonological content, but it is then surprising when that morpheme always occupies the same place in the verb, because a morpheme's place in the verb should be determined by the position of the head in the clause. If there are different heads they should have different positions, and so the different functions of the same morpheme ought to be associated with different positions for that morpheme.

The example that I will point to here again comes from Passamaquoddy-Maliseet. This is the morpheme that was described above as marking the subordinative and was glossed as “Subord” in the examples in (33a–33b). This same morpheme actually appears in what looks like a grab-bag of environments: It appears with ditransitive verbs, with verbs that are formally intransitive but take an object, with verbs that have an inanimate argument, and in some contexts it marks the passive (more detail on the passive in section 6.5). The morpheme itself always occurs in the same place in the verb, and it is also invariant across all these different contexts: it is always an allomorph of /-one-/ (although it does have some contextual allomorphs, see section 6.5). I illustrate all of these functions below, starting with the subordinative, which we have already seen but which I here contrast with the indicative:

- (45) a. ma=te '-tok-om-oku-wi-wa-pon-il
Neg=Emph 3-hit-TransAn-Obv/3-Neg-3P-Pret-Obv
'he/she/it (obviative) didn't hit them (proximate)' (indicative; paradigm 30d)
- b. ma=te '-tok-om-oku-w-**oni**-ya-wihpon
Neg=Emph 3-hit-TransAn-Obv/3-Neg-**Subord**-3P-Pret
'he/she/it (obviative) didn't hit them (proximate)' (subordinative; paradigm 30d)

As the example in (45b) shows, the Subord morpheme comes in between Neg and Agr2 (the “central” agreement marker, marking agreement with the same argument as the prefix).¹² This is also true of its appearance in ditransitive verbs that are not subordinative (glossing it now as “N,” because its most common allomorph always has an /n/).¹³

- (46) ma=te 't-oli-ht-a-ku-w-**oni**-ya-l
Neg=Emph 3-make-TransInan-Ditrans-Obv/3-Neg-N-3P-Obv
'he/she/it (obviative) doesn't make it (an/inan) for them (proximate)' (paradigm 37b)

(With a double object verb, the subordinative is identical to the indicative except that Agr3 cannot appear.) Verbs that are formally intransitive but take an internal argument in addition to a subject have the same morpheme in the same position (not shown). So do transitive inanimate verbs (transitive verbs one of whose arguments is inanimate):

- (47) ma=te k-mic-i-w-**oni**-ya-wihpon-il
Neg=Emph 2-eat-TransInan-Neg-N-2P-Pret-InanP
'you (plural) did not eat them (inanimate)' (paradigm 24b)

¹²There are phonological changes that take place, with /wa/ changing to /ya/ following /one/, and the /e/ of /one/ changing to /i/; there is also epenthesis before Pret with /ya/ but not /wa/. See section 6.6 on contextual allomorphy. Additionally, Agr3, marking the obviative argument in (45a), disappears in the subordinative.

¹³The verbal paradigms do not show the preterite forms for double object verbs.

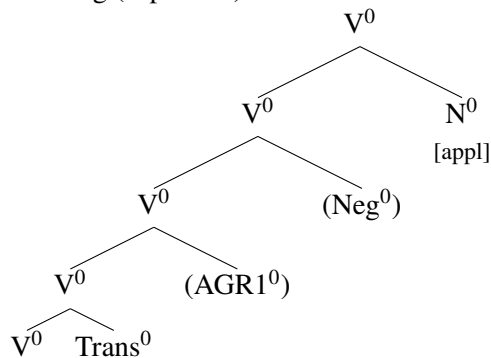
And the same morpheme appears in the same form and in the same place to mark the passive in certain contexts (described in section 6.5, now glossed as “Pass”):

- (48) a. ma=te op-i-wi-hpon
 Neg=Emph sit-IntransAn-Neg-Pret
 ‘he/she did not sit’ (paradigm 1b)
- b. ma=te op-i-w-**one**-hpon
 Neg=Emph sit-IntransAn-Neg-**Pass**-Pret
 ‘there was not sitting’ (paradigm 1b, note)

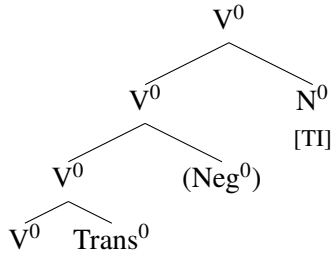
In the head movement account, since this morpheme has the same form and appears in the same position in the verb in all of these different contexts, it should be expected to be the realization of a single head in the clause. This is extremely doubtful, since the things it marks are not semantically or syntactically related to each other in any way. The subordinative is determined by the clause type (say, the head C), while ditransitives and intransitives that take an object are characterized by the addition of an object, something that is expected to be very low in the clause (it is a valence-changing operation). The passive is also a valence-changing operation, but of the opposite sort: it takes away an external argument, rather than adding an internal one. Transitive inanimate verbs are not associated with a change in valence at all, they simply take two arguments, one of which is inanimate. The “TransInan” morpheme is sufficient to mark that, and the N morpheme seems entirely redundant in this case. It is therefore extremely unlikely that all of the functions of this morpheme could be due to a single head in the clause.

In the approach here, well-formedness conditions can simply require the presence of this morpheme in certain contexts. We already have the well-formedness condition for the subordinative, in (43). We can state additional well-formedness conditions of the following sort. In order to collapse ditransitives and formally intransitive verbs that take an object, I assume that both involve an object added by an Appl(icative) head, but nothing hinges on this. As in (43), I refer to the head as “N”:

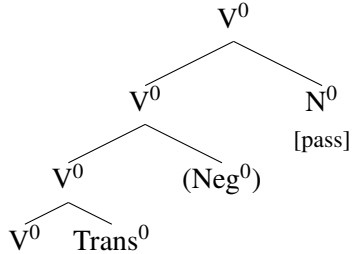
- (49) a. WFC-PM4: The main verb in a Passamaquoddy-Maliseet clause that has an argument added by an Appl head must have an $N^0_{[appl]}$ head adjoined to it outside of Trans, Agr1 (if present), and Neg (if present):



- b. WFC-PM5: The main verb in a Passamaquoddy-Maliseet clause that has two arguments one of which is inanimate must have an $N^0_{[TI]}$ head adjoined to it outside of Trans and Neg (if present):

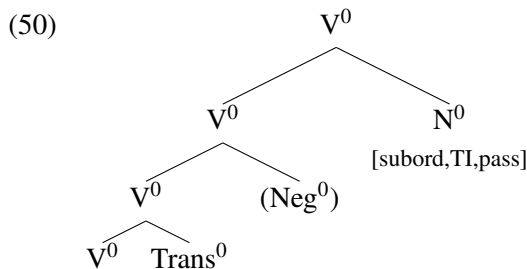


- c. WFC-PM6: The main verb in a Passamaquoddy-Maliseet clause that is not a transitive animate verb and is c-commanded by a Pass(ive) head must have an $N^0_{[pass]}$ head adjoined to it outside of Trans and Neg (if present):



(Transitive inanimate verbs and the relevant passives never have Agr1. On the Pass head in passives, see section 6.5.)

Note that the conditions for more than one of these well-formedness conditions can be met at the same time, meaning that more than one of them can apply. However, I assume that well-formedness conditions are always met in the minimal way possible. In this case, since they all require that the same head be adjoined but only require different feature values, it is possible to satisfy all of them by adjoining a single head with multiple features:



Since it is possible to do this, the grammar forces this to happen and will not adjoin multiple N heads.

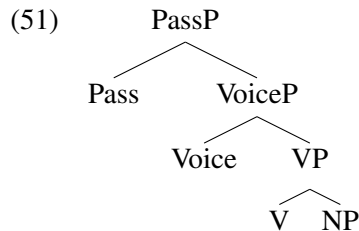
Summarizing, in the current system different well-formedness conditions can require the same head. The result is that the same morpheme can mark a grab-bag of syntactic functions. This is something that is not expected by the head movement account, but it does occur. Of course, if it is possible to give a unified analysis for a morpheme with many apparently unrelated functions, that would be desirable, but we also expect cases like this one from Passamaquoddy-Maliseet where that seems extremely unlikely. (This particular case is probably a historical residue.)

6.5 Clausal Heads that are Marked by Different Morphemes on the Verb

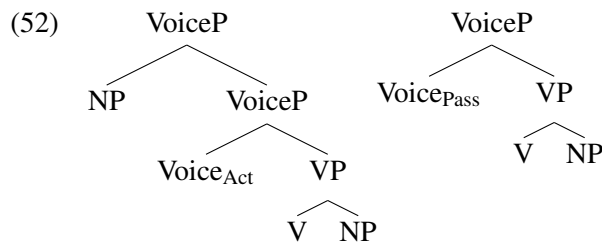
We also see the converse situation: a single function that might be attributed to a single functional head in the clause can be realized by very different morphemes in different positions on the verb in the same language, depending on the context. This is also a major problem for head movement accounts of verbal morphology, but can be accounted for easily in the system proposed here.

The case I will present and analyze is the passive in Passamaquoddy-Maliseet.¹⁴ As in many languages, the passive in Passamaquoddy-Maliseet completely suppresses the external argument of the verb. The external argument cannot be realized, not even as an oblique (a by-phrase). This effect is uniform across contexts in Passamaquoddy-Maliseet, yet the marking of the passive varies depending on the syntactic context.

Given the function of the passive, many researchers propose that there is a Pass(ive) head that attaches outside the head that projects the external argument, which is Voice in Kratzer (1996):



See Bruening (2013) for such a proposal. An alternative is that Voice comes in two varieties, active and passive:



In either case, the passive has the effect of suppressing the syntactic projection of the external argument. Also in either case, the function of the passive is carried out by a head in the clause that occurs very low, close to the verb root and between it and any inflectional categories like tense, aspect, mood, negation, and so on.

In Passamaquoddy-Maliseet, however, the passive is marked by different morphemes in different locations depending on the context. There is no dedicated position for the passive; instead it always makes use of positions that are typically used for marking other categories.

With transitive base verbs that take an animate object, the passive is marked on a morpheme known as the *theme sign* (Agr1 in the tree in 39). This morpheme immediately follows Trans, which marks transitivity and the animacy of the object. This can be seen in the following examples, where the morpheme marking the passive (Agr1) takes a different form depending on the person of the logical object:

- (53) a. ' -psk-uw-a-l
 3-find-Trans.An-3/Obv-Obv
 'he/she (proximate) finds him/her (obviative)' (paradigm 36a)
- b. Ipa, wot pesq psk-uw-a.
 well, Dem one find-TransAn-3.Pass
 'Just one of them was found.' (Newell 1979: 20)

¹⁴The Algonquian literature refers to the passive as an "indefinite subject" form rather than a passive, but that is only because it is not clear whether it involves object promotion, and it also seems to be marked by inflection rather than valence-changing morphology. However, it has the essential characteristic of a passive, namely the external argument is not projected and is interpreted existentially. Therefore it should be viewed as a passive (see Bruening 2013 and Bruening & Tran 2015).

- c. ma=te nt-ok-om-**oke**-w
 Neg=Emph 1-hit-TransAn-**Pass**-Neg
 ‘I am not hit’ (paradigm 30b)

With third persons in (53b), the passive theme sign is the same form as the active direct voice (53a), but the inflection for an additional argument is missing (the prefix, and an obviative agreement marker). In (53c), there is a special allomorph of the theme sign just for the passive with first and second person logical internal arguments.

This position for the passive morpheme is consistent with a Pass head or passive Voice head that comes between the verb and higher heads. The morpheme marking the passive comes before negation, for instance, as can be seen in (53c). However, with other types of verbs the passive is marked instead by a morpheme that comes *after* negation (54b, 55b; I provide the corresponding active form for comparison):

- (54) a. ma=te op-i-wi-hpon
 Neg=Emph sit-IntransAn-Neg-Pret
 ‘he/she did not sit’ (paradigm 1b)
- b. ma=te op-i-w-**one**-hpon
 Neg=Emph sit-IntransAn-Neg-**Pass**-Pret
 ‘there was not sitting’ (paradigm 1b, note)
- (55) a. ma=te ’-pun-omu-w-one-wihpon
 Neg=Emph 3-put-TransInan-Neg-N-Pret
 ‘he/she did not put it (there)’ (paradigm 27, referring to 24b)
- b. ma=te pun-omu-w-**one**-hpon
 Neg=Emph put-TransInan-Neg-**Pass**-Pret
 ‘it was not put (there)’ (paradigm 27, referring to 7 and 1b)

The morpheme marking the passive with these verbs is in fact the very same morpheme that marks the subordinative, which we saw in (33a–33b). The difference is that the subordinative will have a prefix; compare the following to (54b) and (55b):¹⁵

- (56) ma=te ’**t**-op-i-w-one-wihpon
 Neg=Emph 3-sit-IntransAn-Neg-Subord-Pret
 ‘he or she didn’t sit’ (subordinative; paradigm 1b)
- (57) ma=te ’-pun-omu-w-one-wihpon
 Neg=Emph put-TransInan-Neg-Subord-Pret
 ‘he or she did not put it (there)’ (subordinative; paradigm 27 referring to 24b)

Note that slightly different allomorphy is triggered in surrounding morphemes depending on whether the verb is indicative, subordinative, or passive (see section 6.6). Nevertheless all three are realized by the same morpheme in the same position.

If the verb is both passive and subordinative, a special allomorph of /-one-/ appears (and the Neg morpheme disappears):

- (58) ma=te op-i-**moc**
 Neg=Emph sit-IntransAn-**Neg.Pass.Subord**
 ‘there was not sitting’ (subordinative; paradigm 1a note)

¹⁵The verbal paradigms refer the subordinative as the “relative.”

In this analysis, then, a single clausal head, Pass, can be registered in two different locations on the verb, depending on the context. Two different well-formedness conditions apply in complementary environments to ensure that a head that typically indexes other features also has a [pass] feature in these environments. The spellout of the head depends on the features it has, so that it can mark multiple functions at once.

Note that in this analysis, morphemes on the verb are not themselves functions like the passive. The Pass head in the clause is what is responsible for the syntactic and semantic effects of the passive. The morphemes on the verb merely mark its presence. I assume that the same is true for other morphemes, like the Neg morpheme that we have already seen, but also apparent valence-changing morphemes like the one glossed “Ditrans” in (46). This morpheme appears quite regularly on verbs in Passamaquoddy-Maliseet to mark the addition of an object (in benefactive and possessor-raising contexts). In head movement accounts, this would make it the Appl head that is responsible for the addition of the object. In the current account, it is not, its presence is merely forced by a well-formedness condition to indicate that there is such a clausal head. It is this unpronounced clausal head that introduces the additional argument and adds the semantics of a benefactive or “possessor raising” (if there is any).

6.6 Allomorphy

In the last two sections, we have seen various different uses of the N head. This head registers the subordinative, the passive with non-transitive animate verbs, TI verbs, ditransitives, and so on. In some of the examples, the same allomorph of that head, /-one-/, can trigger or undergo distinct allomorphy rules depending on which well-formedness condition required its presence. In the analysis, particular well-formedness conditions require particular feature values, for instance “ $N^0_{[\text{subord}]}$.” Rules of contextual allomorphy can refer to these features, thereby marking which well-formedness conditions required the morpheme.

I repeat the well-formedness conditions governing the N head below, minus the trees:

- (62) a. WFC-PM3: The main verb in a Passamaquoddy-Maliseet subordinative clause must have an $N^0_{[\text{subord}]}$ head adjoined to it outside of Trans, Agr1 (if present), and Neg (if present).
- b. WFC-PM4: The main verb in a Passamaquoddy-Maliseet clause that has an argument added by an Appl head must have an $N^0_{[\text{appl}]}$ head adjoined to it outside of Trans, Agr1 (if present), and Neg (if present).
- c. WFC-PM5: The main verb in a Passamaquoddy-Maliseet clause that has two arguments one of which is inanimate must have an $N^0_{[\text{TI}]}$ head adjoined to it outside of Trans and Neg (if present).
- d. WFC-PM6: The main verb in a Passamaquoddy-Maliseet clause that is not a transitive animate verb and is c-commanded by a Pass(ive) head must have an $N^0_{[\text{pass}]}$ head adjoined to it outside of Trans and Neg (if present).

If more than one well-formedness condition applies, the head will register all of them, as described above. For instance, if both the subordinative and the passive apply, we get $N^0_{[\text{subord,pass}]}$.

Rules of allomorphy can refer to features on the N head, the same way they can refer to different features on an AGR head. Consider the different pronunciations of the following two examples repeated from above (now glossing the morpheme uniformly as “N”):

- (63) a. ma=te ’-pun-omu-w-one-wihpon
 Neg=Emph put-TransInan-Neg-N-Pret
 ‘he or she did not put it (there)’ (subordinative; paradigm 27 referring to 24b)

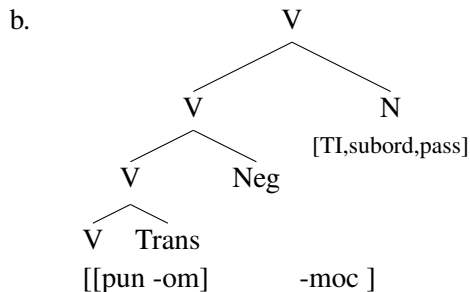
used for [AgrV: 2, AgrVoice: 1] (first person subject, second person object); and /-oku-/, the inverse theme sign. I follow Bruening (2009) and assume that the inverse involves movement of the object across the subject, and this change of grammatical roles is recorded in the features of Agr1.

- b. ma=te pun-omu-w-one-hpon
 Neg=Emph put-TransInan-Neg-N-Pret
 ‘it was not put (there)’ (paradigm 27, referring to 7 and 1b)

In (63a), the N head has the features [TI,subord], which triggers epenthesis of /w/ before Pret. In (63b), the feature [pass] instead triggers deletion of the initial /i/ of Pret. Since these features are present and visible, they can trigger distinct phonological changes in the surrounding morphemes, even when those morphemes are identical.

In addition, suppletion can take place across multiple heads. As explained in section 2.5.1, suppletion is always more than one head being pronounced as a single morpheme. In the passive subordinative of a TI verb, Neg and N_[TI,subord,pass] together get pronounced as the suppletive /-moc-/:

- (64) a. ma=te pun-om-**moc**
 Neg=Emph put-TransInan-**Neg.Pass.Sub**
 ‘it was not put (there)’ (subordinative; paradigm 27 referring to 7)



So, syntactic contexts like subordinative C or the presence of the passive head Pass register themselves as features on the heads that they require to be merged. These features can then trigger rules of allomorphy. In this way the morphemes on the verb act as markers for different syntactic contexts.

6.7 Summary

In this section, I have outlined a syntactic approach to morphology in which morphemes are heads adjoined to other heads, but they are not clausal heads and they are not put onto the verb (or other stem) by head movement. Instead, they are *markers*, indirectly marking syntactic contexts and functions. They are forced to appear by language-particular well-formedness conditions. Morphemes that have a choice of feature values have to check the feature values chosen through Agree with a head in the clause. I have also illustrated the system with phenomena from Passamaquoddy-Maliseet that are problematic for the head movement approach and therefore further argue against that approach. These are cases where a single morpheme can appear in a grab-bag of environments, and cases where a single syntactic function can be marked by different morphemes in different contexts.¹⁷

¹⁷Halle & Marantz (1993: 167–170) argue against a checking theory of the sort I have proposed here, addressing specifically the notion of feature checking proposed by Chomsky (1993). Most of their discussion revolves around the Mirror Principle, which I have already addressed. They also criticize such a theory for having null functional heads to check the features of inflectional heads on the verb. However, as I have shown, these heads do not have to be null, as there are numerous instances of doubling. There are also numerous instances of correspondences that are not one-to-one. This argument actually goes in favor of my checking proposal. Finally, Halle and Marantz correctly note that their theory requires either head movement in the syntax, or some mechanism like lowering, in order to get an inflectional affix on the verb. If lowering is not tenable, “then DM loses out to the checking theory” (Halle & Marantz 1993: 170). As I have shown here with Passamaquoddy-Maliseet data (section 3), Distributed Morphology does indeed lose out to the checking theory on this score.

7 Head Movement in the Syntax

I have argued here that head movement in the syntax, as diagnosed by relative position, never creates morphologically complex objects. An important question is then how head movement is to be modeled. In most head movement accounts, one head moves and merges with another head, creating a complex head consisting of two heads. If head movement never actually puts two heads together, then we need to rethink this.

First, the empirical data indicate that all head movement does is put an already constructed head in a different location. Assuming that the right account of subject-auxiliary inversion in English is head movement to C, then movement of the auxiliary to C does not change the internal makeup of the auxiliary in any way, it simply changes its location:

- (65) a. Had she ~~had~~ done that, she would not be in this mess now.
b. If she had done that, she would not be in this mess now.

As pointed out above, *had* is morphologically identical on both sides of the subject. The movement also does not seem to change the *category* of the auxiliary verb, at least not in any way that we can see. It does not suddenly act like a complementizer in any way other than its position (for instance, it continues to bear T/AGR, which complementizers in English cannot do). At the same time, the movement does not seem to alter C or its maximal projection CP in any way, either; here the subordinate conditional clause has the same external (syntactic) distribution as one with the complementizer *if*.¹⁸

What head movement seems to do, then, is simply move a head from one position to another, without changing the category or properties of either the moving head or the head that is moved to. In our conditional example, the conditional semantics is presumably a property of C, as is the distribution of the CP as a subordinate clause, and this does not change with the movement of the auxiliary.

One further important point is that head movement cannot take place unless the moved-to head is empty:

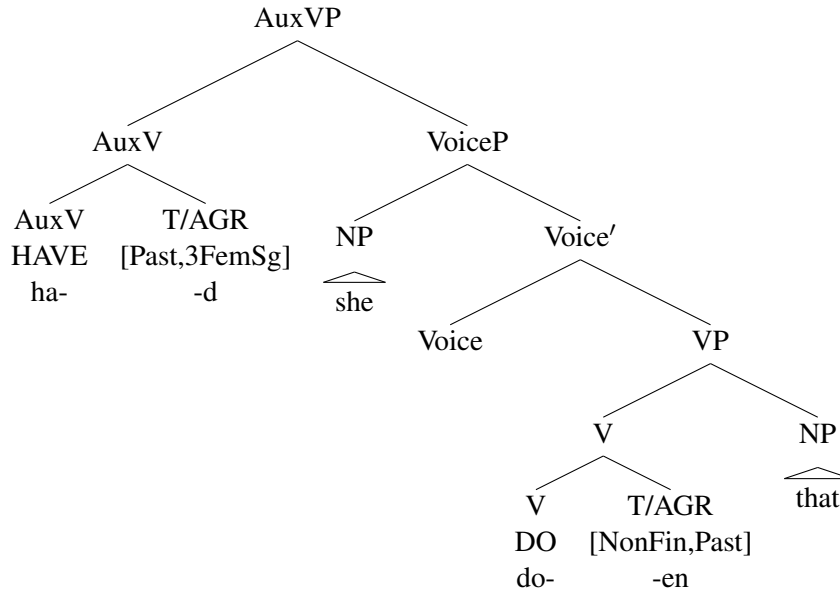
- (66) a. If she had done that, . . .
b. Had she done that, . . .
c. * If had she done that, . . .
d. * Had if she done that, . . .

This indicates that head movement cannot put two heads together, and only one head may occupy any given head position. It follows that head movement can only target an empty position.

I assume that auxiliary verbs like *had* start out above VoiceP:

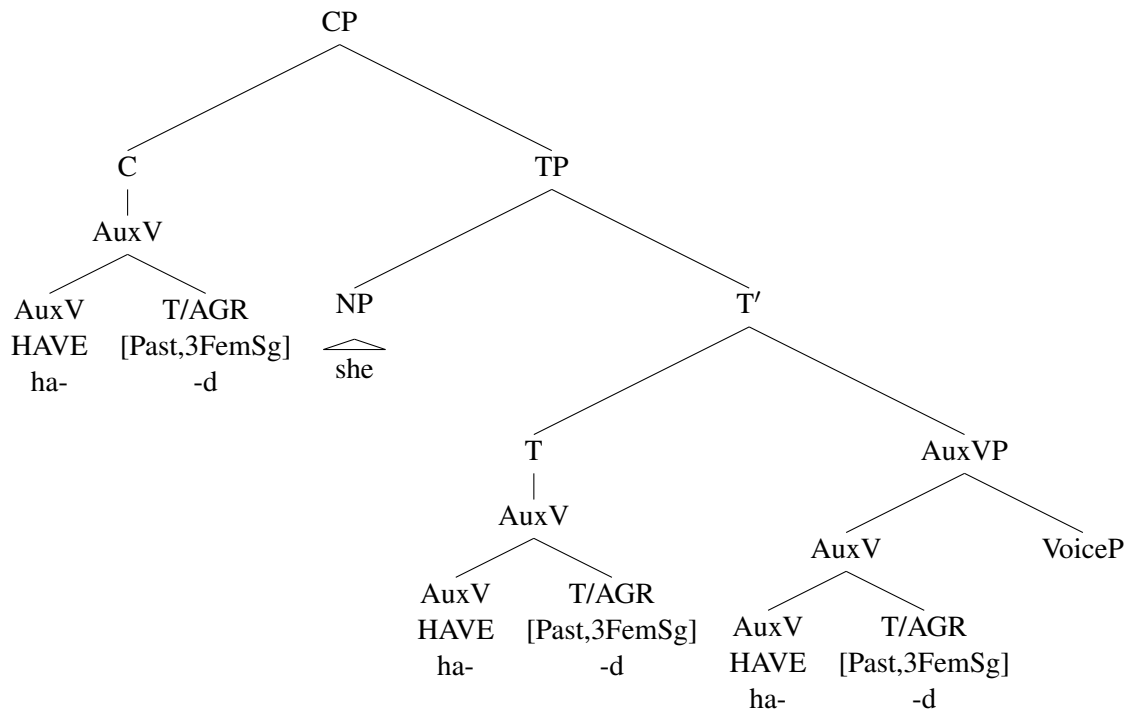
¹⁸See Iatridou & Embick (1994), Biezma (2011) on potential semantic differences between *if* and inversion conditionals. There do not appear to be any syntactic differences between them.

(67)



The subject moves to Spec-TP, while the AuxV moves through T to C in an inversion context. In doing so, as discussed above, it becomes neither a T nor a C. Nor does it change anything about T and C. Instead it just occupies their positions. I propose the following representation for this:

(68)



In this representation, AuxV is the head of AuxVP, but it is not the head of TP or CP, it is merely located in the same position as the head T and the head C. This is represented by the vertical line connecting T and AuxV and C and AuxV. C has its own syntactic and semantic properties, as does T, and these are not affected by AuxV occupying their positions. In addition, when AuxV moves from T to C, there is no sense in which T also moves. That is, AuxV simply moves *through* the T position.

8 Conclusion

This paper has shown that the head movement approach to morphological complexity is not supported. Head movement as diagnosed by relative word order does not correlate with morphological complexity. In general, the morphological form of a verb has little to no relation to its position. A single syntactic function, something that ought to be related to a single head in the clause, can also be marked by different morphemes in different positions on a verb. A single morpheme on a verb, in a fixed position, can also be associated with a grab-bag of syntactic functions. The Mirror Principle is not supported by the current state of cross-linguistic knowledge, and so does not support the head movement account. Data from Passamaquoddy-Maliseet moreover show that various modifications of the head movement account, including post-syntactic lowering and Mirror Theory, cannot work.

I proposed an alternative, where complex morphological objects are put together by external merge, as required by language-particular well-formedness conditions. If heads merged with a verb have a choice of feature values, as Agr heads do, then the values chosen must be checked by Agree with clausal heads (which themselves check Agr features through Agree with an NP). Head movement in the syntax, if it takes place, does not affect a pre-built verb in any way, but only puts it in a different location.

There are many consequences to the conclusions drawn here. One consequence is that the head movement approach to noun incorporation and other morphological phenomena (Baker 1988) simply cannot be correct. Another consequence is that we can do away with post-syntactic operations like lowering and local dislocation altogether. It is also possible to reject the Distributed Morphology architecture where actual vocabulary items with their phonology and semantics are not part of the syntax but are only inserted at a late, post-syntactic level. The approach to morphology proposed here is instead compatible with a view where all information—semantic, phonological, syntactic—is present from the beginning and computed in parallel with the syntax. The proposed approach is then maximally simple, with no levels but a syntax that puts things together through successive application of Merge. It also has very few mechanisms, just Merge, well-formedness conditions, and Agree (as well as some formulation of rules of allomorphy, which every theory needs).

Finally, the proposed approach also has no notion of “grammatical,” “syntactic,” or “morphological” word. The units relevant to the syntax are only heads and phrases. There is no morphology other than the syntax. The phonology must interface with the syntax to produce different levels of the prosodic hierarchy, including something like a prosodic word, but that interface is not necessarily a one-to-one mapping. This is again a desirable simplification of the theory (see Haspelmath 2011 on the lack of a coherent notion of “word”).

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