

A Purely Syntactic Account of Displaced Morphology in German Varieties

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Abstract

Salzmann (2019a) claims that the phenomenon of displaced morphology in German dialects is a strong argument for the post-syntactic model of morphology posited by Distributed Morphology. This paper shows that it is not: The data are amenable to a purely syntactic account that uses only the tools required by the phrasal syntax, namely, Merge, Move, and Agree. Reordering in verb clusters affects the placement of morphology because it moves a head (a verb) to the equivalent of an A-bar position, which makes it ineligible for further head movement. The next lower head then moves to form a complex head with the verbal morphology, accounting for the appearance of morphology on the “wrong” verb. This paper argues for what ought to be the default model of morphosyntax, one where there is only a single component of grammar for putting all complex forms together, and there are no post-syntactic levels or post-syntactic operations.

1 Introduction

I begin this paper by describing what I believe should be the default model of morphosyntax. Given standard metrics of theory comparison that prefer to avoid the multiplication of theoretical devices, the default model should have only a single component of grammar for putting all complex forms together. That is, the model should have only a single component of morphosyntax, not separate components for syntax and for morphology (see Bruening 2018b for empirical arguments to this effect; for similar views, see Haspelmath 2011, Caha 2013, Collins & Kayne 2023). Moreover, there should only be a single component of morphosyntax, not a “syntax” and a separate “post-syntax.” This holds for hierarchy and linear order as well as for everything else: Both should be the province of the single component of morphosyntax. Having a first syntax that deals only in hierarchy and then a second syntax that translates that into linear order clearly multiplies theoretical devices unnecessarily and is to be avoided (Bruening 2022: 27). Finally, there should also not be any operations or mechanisms beyond those that are necessary for the phrasal syntax. Since this default model is the simplest and to be preferred, strong empirical arguments should be required to motivate deviating from it.

Consider now the model of grammar proposed by the theory of Distributed Morphology (Halle & Marantz 1993). Distributed Morphology posits a purely hierarchical component of syntax that is followed by a level of Morphological Structure. At this level, hierarchy is converted to linear

order, and there are various operations that can permute the output of the syntax. The assumption behind this model is that there are mismatches between syntax and morphology. The proposed post-syntactic permutations are meant to account for these mismatches. For the most part, practitioners of Distributed Morphology just assume that this is how the grammar works, and analyze language data using the tools afforded by the model. Few give actual arguments that such a conception is *necessary*. Given the considerations of the previous paragraph, however, the Distributed Morphology model of grammar is clearly not the default and should require serious empirical argumentation in order to motivate it.

In this respect, papers like Salzmann (2019a) are important and significant. This is one of the few works to explicitly argue that some natural language phenomenon *requires* the Distributed Morphology conception of grammar and the post-syntactic mechanisms that it posits. If this argument were correct, it would definitively show that what should be the default view of grammar, where there is only a single component of morphosyntax, is insufficient, and we need a post-syntactic level with extra-syntactic mechanisms.

In this paper, I re-examine the data analyzed by Salzmann (2019a)—displaced morphology in German varieties—, and show that the Distributed Morphology analysis that he proposes does not accurately capture the data. I propose an alternative analysis, one which uses only the syntactic mechanisms of Merge, Move, and Agree, all of which take place in the syntax. There is no need for a post-syntactic level of grammar or any extra-syntactic mechanisms. It follows that this argument in favor of the Distributed Morphology conception of grammar does not go through, and there is no barrier to maintaining the default view of grammar where there is only the syntax.

I start by describing the set of data at issue, involving displaced morphology in German varieties (section 2). This section also describes the post-syntactic analysis proposed by Salzmann (2019a). Section 3 lays out three problems for Salzmann’s analysis, which point to a syntactic mechanism being involved. Section 4 presents the proposed purely syntactic analysis and shows how it accounts for all of the data. The conclusion (section 5) discusses further issues relating to models of morphosyntax.

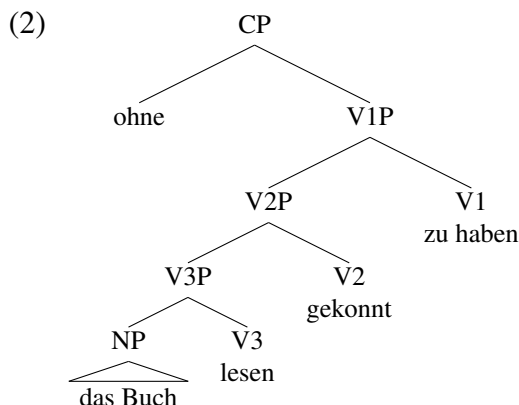
2 The Data: Displaced Morphology in German

The data analyzed by Salzmann (2019a) is displaced morphology in German verb clusters. German dialects are verb-second, with the finite verb moving to C in main clauses. All other verbs generally occur together at the end of the clause. These sequences of verbs are called verb clusters (see Wurmbrand 2017 for a recent overview). If they appear in their hierarchical order, ascending to the right as in (2),¹ there is no displacement. Each verb bears the morphology selected by the next higher selector. Consider example (1). This clause has three verbs. The complementizer *ohne*, ‘without’, assigns the *zu* infinitive to the highest verb, and this is the form of the final (highest) verb. That verb is *haben*, which assigns the participle form. The second verb, *können*, appears in

¹The literature confusingly calls such orders “descending.” The label is based on the numbers assigned to the verbs, for instance in (1) the order is 3–2–1. (Following Salzmann 2019a, I subscript the verbs in the examples with their hierarchical number.) These numbers descend, 3–2–1. Translated into a syntactic hierarchy, however, the cluster ascends: As one goes to the right, the verbs get higher, as shown in (2). I consider the labels “ascending” and “descending” as used in the literature to be terrible terminology, since they directly contradict the syntax. I will not use this terminology.

that form. It selects the bare infinitive, so the third verb, *lesen*, appears in that form:

- (1) ohne das Buch lesen₃ gekonnt₂ zu haben₁
 without the book read.Inf can.Ptcp to have.Inf
 ‘without having been able to read the book’ (Standard German; Salzmann 2019a: (9a))



If the order of the verbs in the cluster is different, however, the assigned morphology can appear to be “displaced,” appearing on a verb different from the one immediately selected by the next higher element. In the following examples, for instance, the final verb is not the hierarchically highest, but it takes the *zu* infinitive form selected by the complementizer:

- (3) a. ohne das Buch haben₁ lesen₃ zu können₂
 without the book have.Inf read.Inf to can.Inf
 ‘without having been able to read the book’ (Standard German; Salzmann 2019a: (9b))
- b. ohne das Buch lesen₃ haben₁ zu können₂
 without the book read.Inf have.Inf to can.Inf
 ‘without having been able to read the book’ (Standard German; Salzmann 2019a: (9c))

The participle form selected by V1, *haben*, meanwhile, disappears, and all the other verbs are in the bare infinitive form (which Salzmann 2019a assumes is a default).

Salzmann (2019a) proposes that the generalization is that the morphology selected by a particular selector always appears on the *last* verb in the complement of the selector. So, in (3a–3b), the complementizer *ohne* selects the *zu* infinitive, and this always appears on the last verb of the verb cluster, since its complement includes all of the verb cluster. (V1, ‘have’, selects the participle, and this would also go on the last verb of the cluster; it has to be deleted, because it is incompatible with the *zu* infinitive. Salzmann 2019a proposes that this deletion involves the Distributed Morphology process of Impoverishment.)

In another case, V1 is the selector whose selected morphology appears displaced within its complement:²

²Examples and page numbers from Höhle (2019 [2006]) come from the 2019 reprint of that work. Höhle (2019 [2006]) does not provide a morpheme-by-morpheme gloss, but instead gives a gloss in Standard German (but does not always even do that). I give that as the second line of the example, if it was provided; the third line is my attempt at a morpheme-by-morpheme gloss, following roughly Salzmann’s (2019a) conventions. Since I am not an expert on German dialects, I cannot claim complete confidence in my proposed morphological breakdowns, and encourage the reader to carefully check the examples themselves (I believe any errors will be innocuous as far as this paper is concerned).

- (4) mə wæn₁ mü-d₂ glü-n₃
 wir werden müssen.CS klagen.G
 we will.1Pl must.Sbjv-Sup litigate-Ger
 ‘we probably have to go to law’ (Kleinschmalkalden; Höhle 2019 [2006]: (35b))

In (4), V1 is the auxiliary ‘will’, which selects the gerund form. This form does not appear on V2, though, it appears instead on V3, which is the last verb in the complement of V1. (V2 appears in a different form, the “complex supine,” which I will gloss as a subjunctive supine. Salzmann (2019a) assumes that the supine is the default in dialects that have it; see section 3.2.)

In an example of V2–V3–V1 order from Swiss German, the morphology selected by the final V1 (the *z* infinitive) appears not on V2, where it ought to given selection, but on V3, which is the final verb in the complement of V1:

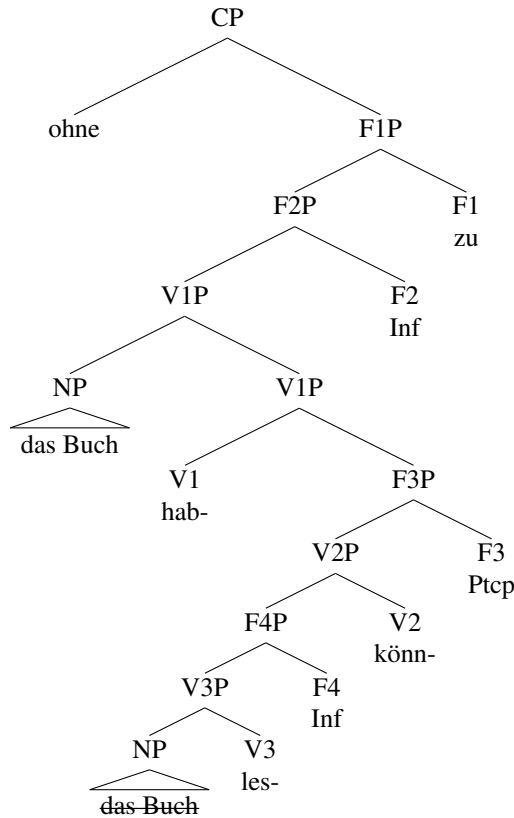
- (5) % dass er si {*z} ghööre₂ {z} lache₃ schiint₁
 that he her {*to} hear.Inf {to} laugh.Inf seem.3Sg
 ‘that he seems to hear her laugh’ (Swiss German; Salzmann 2019a: (17a))

(Salzmann states that this cluster order is degraded, but the judgment on the placement of the *z* infinitive is clear.)

Given this generalization, Salzmann (2019a) proposes that the mechanism for the placement of non-finite morphology in German is Local Dislocation (Embick & Noyer 2001). This is an operation on linear strings in the post-syntactic component of grammar hypothesized by Distributed Morphology. Non-finite morphology always heads its own functional projections, labeled “F.” In the post-syntactic component, Local Dislocation rebrackets F with what is adjacent to it on its left, making them a complex head. For (3a), the syntax would produce the following structure. Salzmann assumes that reordering in verb clusters is largely just free ordering of a verb with its complement, plus scrambling of arguments (following Wurmbrand 2004a,b). Here *das Buch* scrambles to a higher position, while V1 *hab-* takes its complement to its right rather than to its left:³

³Salzmann (2019a) represents the participle morphology as a single node F. On page 25 he says that he is treating it as a circumfix (but that nothing hinges on this). See section 4.1 for my treatment of the participle.

(6)



Ohne requires two functional heads, one *zu* and the other the infinitive form (F1 and F2). V1 *haben* requires the Ptcp form (F3). V2 requires the infinitive form (F4). In the post-syntax, F4 undergoes string-vacuous Local Dislocation with what is adjacent to it on its left, putting Inf morphology on V3 (realized as *les-en*). F3, F2, and F1 will all undergo Local Dislocation with the V to their left, which is V2, *könn-en*. In this case, there is a conflict between Ptcp morphology and Inf morphology, so the Ptcp morphology deletes (Salzmann analyzes this deletion as an instance of the Distributed Morphology operation Impoverishment). This results in F2 being spelled out on V2 (producing *könn-en*), while F1 inverts with V2, since F1 *zu* needs to immediately precede a V. This produces *zu könn-en*. V1 is not associated with any F, and so appears in the default infinitive form (which would appear to require some kind of node-sprouting mechanism; Salzmann 2019a: 27 says only that “default morphology is inserted”).

Thus, Salzmann’s Local Dislocation appears to correctly place the morphology where it appears. The same mechanism results in both displaced morphology, as in (3a) above, and in well-behaved morphology, as in (1). In that case, all the Fs would immediately follow the correct verb and would correctly be placed on the verb to their left.

This proposal appears to work very well, and to the extent that it is successful, it supports the existence of post-syntactic operations like Local Dislocation. Salzmann (2019a) also argues against some conceivable alternatives, including some purely syntactic ones, and concludes that only a post-syntactic account can succeed.

3 Problems

There are three empirical problems with the analysis in Salzmann (2019a). The first is that not all non-finite morphology obeys the generalization. The second is that the supine cannot be a default in the dialects that have it. The third is that morphology cannot be displaced across a clause boundary, which points to displacement being syntactic rather than linear. This section lays out these problems, in preparation for the purely syntactic analysis to be proposed in section 4.

3.1 Problem 1: Not All Morphology Obeys the Generalization

Recall example (5), repeated below:

- (7) % dass er si { *z } ghööre₂ { z } lache₃ schiint₁
that he her { *to } hear.Inf { to } laugh.Inf seem.3Sg
'that he seems to hear her laugh' (Swiss German; Salzmann 2019a: (17a))

In this example of V2–V3–V1 order, the morphology assigned by V1 appears not on V2, but on V3, in accordance with Salzmann's generalization.

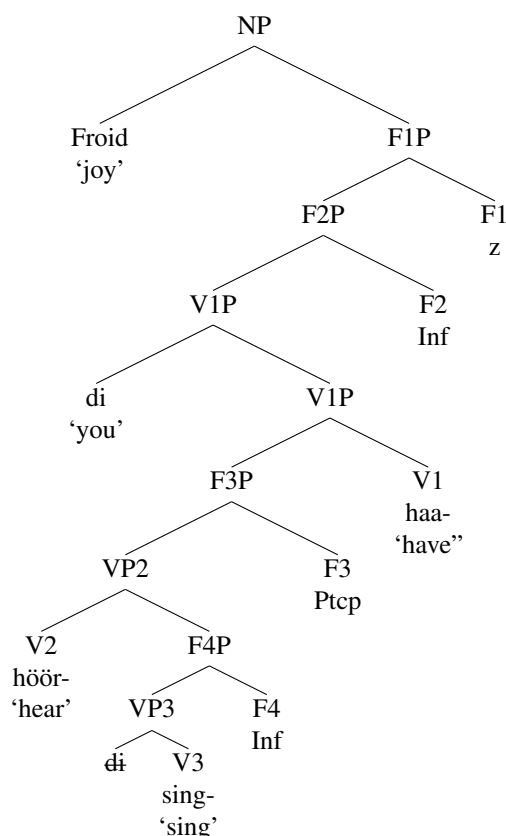
Now consider example (8), also with V2–V3–V1 order. The complement of a noun like 'joy' is assigned the *z* infinitive in Swiss German. This appears on the last verb of the cluster, V1, as would be expected:

- (8) d Froid, di ghööre₂/ghöört₂ singe₃ z haa₁
the joy you hear.Inf/hear.Ptcp sing.Inf to have.Inf
'the joy to have heard you sing' (Swiss German; Salzmann 2019a: (14d))

However, V1, 'have', itself assigns participle morphology. The last verb in the complement of 'have' is V3, 'sing'. According to Salzmann's generalization and his analysis, this verb should be the one to bear the participle morphology. It is not, however. Instead, V2 (the one that 'have' takes as its syntactic complement) is the verb that bears participle morphology (optionally; it can also appear in the infinitive). This directly contradicts the generalization, and stands in stark contrast with (7), where the *z* infinitive assigned by V1 is displaced to V3.

In Salzmann's account, all non-finite morphology consists of functional heads that are head-final in the phrase that is the complement of the assigning element. In the case of (8), we would have the following structure:

(9)



The N requires two Fs, *z* and the infinitive morphology (F1 and F2). V1 requires an F3 for Ptcp morphology. V2 requires infinitive morphology (F4). Local Dislocation correctly locates F2 and F1 on ‘have’, and F4 on ‘sing’. However, it incorrectly locates F3 on ‘sing’ as well. There should be a conflict between Ptcp and Inf which would need to be resolved, in favor of either Ptcp or Inf. What should not happen in Salzmann’s analysis is what actually happens, which is that Ptcp goes on V2, ‘hear’. V2 should not be associated with any F, and should only be the default infinitive.

The problem is that the participle morphology and the *z* infinitive are behaving differently. Salzmann (2019a) gives two other examples which show that the participle morphology in Swiss German actually never obeys his generalization. In (10), the complement of an adjective like ‘happy’ is assigned the *z* infinitive. V1, ‘have’, assigns participle morphology, while V2, ‘begin’, assigns the bare infinitive.⁴ In this case, V1 is not the final verb, so the *z* infinitive goes on the verb that is final, which in this case is V3:

- (10) Wieder en grund meh zum glücklich drüber sii, niä agfange₂ ha₁ z
 again a reason more to happy about.it be.Inf never begin.Ptcp have.Inf to
 rauche₃!
 smoke.Inf
 ‘Another reason to be happy to have never started smoking!’ (Swiss German; Salzmann 2019a: 14e)

⁴‘Begin’ can also assign the *z* infinitive, so this example is ambiguous between how it is described in the text, and an analysis where there are two *z* infinitives, one of which deletes. See Salzmann (2019b: 72).

Salzmann’s analysis correctly places *z* and the infinitive morphology here. However, the last verb in the complement of ‘have’ is not ‘begin’, it is V3, ‘smoke’. Salzmann’s analysis would incorrectly locate the Ptcp morphology on ‘smoke’, along with the Inf morphology from ‘begin’. This conflict would have to be resolved, but what should not happen is that V2, ‘begin’, appears with the Ptcp morphology.

The second example has V1–V2–V3 order. V1 selects participle morphology. This ought to go on V3, which is the last verb in the complement of V1, but it instead goes on V2 (V3 has the infinitive assigned by V2):

- (11) dass dis Herz vo sälber hät₁ ufghört₂ schlah₃
 that your heart by itself have.3Sg stop.Ptcp beat.Inf
 ‘that your heart has stopped beating by itself’ (Swiss German; Salzmann 2019a: note 34, (ii))

The three examples provided by Salzmann all indicate that the participle never obeys his generalization in Swiss German.

The first problem, then, is that not all non-finite morphology behaves the same. Some instances of morphology, like the participle in Swiss German, are never displaced, and always appear where they should based on selection (though this can be obscured because of the supine and the substitute infinitive or *infinitivus pro participio* or IPP; see section 3.2).

It should be noted that dialects differ in this regard. While the participle is not ever displaced in Swiss German (or most of the modern dialects surveyed by Höhle 2019 [2006] and Salzmann 2019a), it was displaced in Middle High German. Consider example (12):

- (12) ob in diu edele vrouwen het(e)₁ lazen₂ daz getan₃
 if him the noble lady have.Sbjv.3Sg let.Inf that do.Ptcp
 ‘if the noble lady had let him do that’ (Middle High German; Salzmann 2019a: (4))

Here V1 is in a finite (subjunctive) form. It assigns Ptcp morphology, but in this example, that morphology ends up on the last verb in the complement of ‘have’, which in this case is V3, ‘do’. So Ptcp morphology can, in principle, be displaced. Salzmann (2019a: 12) states that the participle can also be displaced in V2–V3–V1 order in Swabian and in Afrikaans (see De Vos 2003), but these dialects seem to be unusual.

It should also be noted that multiple selectional forms can be displaced in a single cluster. Typically, they all end up on the final verb of the cluster, where they have to be resolved, usually by realizing only one of them (see section 4.10). Given that more than one selectional requirement can be displaced in a single cluster, the lack of displacement of the participle in Swiss German is particularly troubling for the analysis of Salzmann (2019a).

3.2 Problem 2: The Supine

An additional problem arises in dialects that have a form that Höhle (2019 [2006]) calls the “supine.” This form typically has a *-d* attached to the bare stem. It has a very particular distribution. It only appears when there are at least three verbs in a clause. It appears on V2 if V2 is the complement of the auxiliary ‘have’ or, in some dialects, certain modals. V1 also has to take its own complement to its right, and V2 typically does, too (so, V1–V2–V3 is the typical order

for the appearance of the supine on V2). In Oberschwöditz, for example, if V2 is on the right in V1–V3–V2 order, it appears in the participle form required by V1, ‘have’:⁵

- (13) a hād₁ neç sə kom-ŋ₃ **gə-braux-d₂**
 er hat nicht zu kommen.G brauchen.P
 he have.3SgPast Neg to come-Ger Ptcp-need-Ptcp
 ‘he didn’t have to come’ (Oberschwöditz; Höhle 2019 [2006]: note 9)

But if it instead appears to the left of its complement in V1–V2–V3 order, it is in the supine form:

- (14) eç həd₁=s=n neç **braux-d₂** sə ga:-n₃
 ich hätte.es.ihm nicht brauchen.SS zu geben.G
 I have.1SgPast=it=him not need-Sup to give-Ger
 ‘I wouldn’t have had to give it to him’ (Oberschwöditz; Höhle 2019 [2006]: (12a))

(In either order, V3 appears in the ZU-gerund form selected by V2.)

Similarly, if V2 occurs to the right of its complement in Steinbach-Hallenberg, it is in the infinitive form selected by V1, a modal:

- (15) doas=e will₁ mit än fliecher { **kön-d₂** ge-foar₃ / ge-foar₃ **kön₂** }
 that=he wants with a plane can.Sup GE-go.Inf / GE-go.Inf can.Inf
 ‘that he wants to be able to travel by plane’ (Steinbach-Hallenberg; Salzmann 2019a: (63))

But if it instead appears to the left of its complement, it is in the supine. (In either case, its complement is in the GE-infinitive selected by V2.)

Salzmann (2019a) treats the supine as the default in the dialects that have it (rather than the infinitive). In (14), it appears because the participle required by V1 has been displaced to V3. V2 never combines with an F and so has no inflectional morphology. It is therefore realized as a default. (The participle is deleted in Salzmann’s analysis when V3 ends up with both participle and ZU-gerund morphology; only one can be realized.) Similarly for (15).

The problem is that the supine could not be a default. First, it changes form in agreement with V1. When V1 is in the subjunctive, the form of V2 also changes (Höhle 2019 [2006] calls this the “complex supine”):

- (16) a. ij hāwe₁ **mus-d₂** gi:e₃
 ich habe müssen gehen
 I have.1Sg must-Sup go.Inf
 ‘I had to go’ (Oberschwöditz; Höhle 2019 [2006]: (9a))
 b. ij hed₁=əs **mis-d₂** wise₃
 ich hätte.es müssen wissen
 I have.Sbjv.1Sg=it must.Sbjv-Sup know.Inf
 ‘I should have known it’ (Oberschwöditz; Höhle 2019 [2006]: (10a))

⁵Höhle (2019 [2006]) did not give a gloss for this example. I have filled in what I presume would have been provided.

The “complex supine” must therefore include more than just default features. V2 is also clearly in a syntactic agreement relation with V1, since the subjunctive on V1 is what determines that V2 is in the “complex” supine.

Second, many of the dialects with the supine described by Höhle (2019 [2006]) only use it for a limited number of verbs, and use the infinitive with others in the same context. For instance, Ruhla is said to have supines of only six verbs (Höhle 2019 [2006]: 13), while the rest take the infinitive form. Defaults usually apply across the board, since they are defaults; they are not typically lexically restricted.

Additionally, the supine’s distribution as described above matches that of the substitute infinitive (aka IPP for *infinitivus pro participio*) in other dialects (Höhle 2019 [2006], Hinterhölzl 2009). The word order is typically V1–V2–V3, and V1 is typically the participle-selecting ‘have’ auxiliary. In dialects that do not have the supine, V2 is in the infinitive. This is true of Sonneberg:

- (17) ich houna₁ **höör**₂ sing-a₃
 ich habe.ihn hören.In singen.G
 I.Nom have.1SgPres.him.Acc hear.Inf sing-Ger
 ‘I heard him sing’ (Sonneberg; Höhle 2019 [2006]: (34))

As will be shown in section 4.2, however, Sonneberg has no displacement. All the selected morphemes appear on the verb that is the complement of the selector, regardless of word order. The substitute infinitive on V2 in (17) therefore could not be due to displacement of the morphology that would have been assigned to V2. It cannot be a default assigned when no other morphology is assigned. Since the supine has exactly the same distribution as the substitute infinitive, it is also unlikely to be a default.

I will argue here that the supine and the substitute infinitive are actually selected morphological forms, appearing on a verb in a particular context, typically in V1–V2–V3 orders. In this order, V2 is assigned the supine or substitute infinitive by V1, indicating a syntactic relation between V1 and V2 in this order. This is also indicated by subjunctive agreement.

If this is correct, then it is a real problem for Salzmann’s generalization and analysis. In V1–V2–V3 order, V2 is not the last verb of V1’s complement, V3 is. V3 should be taking the morphology selected by V1. In Salzmann’s analysis, where each morpheme is a functional head merged on the right immediately below its selector, there is no way to have a syntactic relationship between V1 and V2 in the V1–V2–V3 orders where the supine appears.

I take the supine in the dialects that have it to point to an agreement-like relationship between two verbs, where this agreement relationship licenses the morphology. I view the supine as a selected form, but one that appears in only a very particular environment (and substituting for what is considered the regular selected form, usually the participle). Like the participle in Swiss German, the supine is never displaced, but always appears on the head of the complement of the selecting verb.

3.3 Problem 3: Embedded Clauses

The third problem is that morphology cannot be displaced across a CP boundary. This indicates that the mechanism for displacement is syntactic and subject to syntactic locality constraints, and is not linear in nature as in Salzmann’s Local Dislocation analysis.

Salzmann (2019a) cites the following example as an instance of displacement of externally-assigned *z* to the final verb of the cluster (in this case the morphology is the *z*-gerund, rather than the *z*-infinitive):

- (18) Ech ha ts Büach kchöiff, fer dam Marco cheni₁ **z sägan**₂, [dåss-i
I have.1Sg the book buy.Ptcp for the.Dat Marco can.Inf to say.Ger that-I
well lasa].
want.1Sg read
'I bought the book to be able to tell Marco that I want to read.' (Bosco Gurin; Comrie & Frauenfelder 1992: (96), gloss from Salzmann 2019a: (14c))

In the 'in order to' clause, *z* plus the gerund is assigned (perhaps by C). This morphology goes not on the highest verb, *cheni*, but on the final verb, V2, *säga*. Note, however, that the example continues with a finite CP, in brackets in the example. The final verb in the complement of the *z*-gerund selector is then *lasa*, inside the finite embedded clause, not *säga*. Given Salzmann's generalization and his analysis, we would expect the morphology to be displaced onto the final verb of this embedded clause, incorrectly. Comrie & Frauenfelder (1992) state that displacement into the embedded clause is "considered quite impossible":⁶

- (19) * Ech ha ts Büach ggchöiff, fer dam Marco cheni₁ säga₂, [dåss-i well **z lasan**].

Morphology also cannot be displaced into an extraposed non-finite clause (Salzmann 2019b). The generalization appears to be that CPs block displaced morphology. If the mechanism for displacement were Local Dislocation, we would not expect this locality constraint, all that should matter is linear adjacency.

Salzmann (2019b: 86–87) accounts for *z*-displacement ignoring an extraposed non-finite CP by adjoining that clause high, above the selector and the starting position of the relevant F. Then its contents are not to the left of F and cannot undergo Local Dislocation with it. This sort of explanation seems less plausible for the example in (18). Whatever selects the *z*-gerund is probably very high in the 'in order to' clause, plausibly C. The finite CP would have to obligatorily extrapose to adjoin to CP and not be allowed to adjoin to any node lower than that. Yet, as pointed out by Haider (2003) and Wurmbrand (2007), extraposition to the lowest VP of a cluster is possible when that VP undergoes topicalization:

- (20) [reden₃ **darüber**] sollte₁ man schon können₂
talk.Inf about.it should one indeed can.Inf
'talk about it, one should be able to' (Standard German; Salzmann 2013: (52))

Wurmbrand (2007) and others conclude that extraposition is able to target any VP in principle. Certainly extraposition can target the highest VP in a verb cluster. If this is correct, then it is hard to see how one could force the finite clause in (18) to adjoin higher than the Fs that are the *z*-gerund. Displacement into the CP ought to be at least optional.

It is always possible, of course, to come up with some constraint that would block Local Dislocation into an embedded CP like the one in (18). The point is that displacement appears to be subject to a syntactic constraint and is not (solely) about linear order, as it should be in the Local Dislocation analysis. In fact, the locality condition on displacement seems to match that of head movement: It cannot cross CP boundaries.

⁶The two different spellings of 'buy' are present in their paper.

3.4 Consequences

Salzmann (2019a) seems to be correct in that, when morphology is displaced, it is always displaced to the last verb in the complement of the selector. However, not all instances of non-finite morphology are displaced, and the supine shows us that there has to be able to be a syntactic dependency between two verbs, something like agreement. The non-finite morphology cannot all be freestanding heads that blindly undergo Local Dislocation with what is to their left. There is also a hierarchical, not linear, locality condition on displacement that matches that on head movement.

The fact that some instances of morphology are displaced while others are not points to there being two different ways of getting morphological forms onto verbs. One can be affected by verb cluster reordering, leading to displacement, while the other is never affected by reordering. When displacement happens, it is subject to a syntactic locality constraint, which points to it involving a syntactic mechanism like head movement rather than Local Dislocation.

Salzmann's (2019a) analysis does have the means to account for the first two problems. As Salzmann (2019a) notes, *finite* morphology is never displaced. It is always on the highest verb of the clause. Salzmann (2019a) accounts for this by saying that the morphology assigned by finite T gets on the verb not by Local Dislocation, but by Lowering (Embick & Noyer 2001). Lowering is a hierarchical rather than a linear process. It lowers a head onto the head of its complement. This will always put the finite morphology on the hierarchically highest verb in the clause, regardless of its linear order. Salzmann (2019a) could extend this to some instances of non-finite morphology as well, and say, for instance, that the participle in Swiss German and the supine in all dialects that have it always also undergo Lowering rather than Local Dislocation. (In fact, Salzmann does suggest this for the participle in Swiss German in his footnote 34.)

This would account for the facts, but it requires a post-syntactic level of grammar and the operations of Lowering and Local Dislocation, which I believe we can do without. It also does not account for the blocking effect of CP boundaries. (It also would not allow the supine and displacement simultaneously as described in section 4.9.) I will instead propose a purely syntactic alternative, where there are no post-syntactic levels of grammar and there are no mechanisms other than what we need for the syntax anyway, namely, Merge, Move, and Agree. The availability of such an analysis then removes the argument from German for the Distributed Morphology architecture of grammar.

4 The Proposed Analysis

The core of my proposal is that complex heads (in this case, verb stems plus their inflectional morphology) can be put together in two different ways. First, they can be merged together directly. Alternatively, they can be put together by head movement in the syntax. In either case, the inflectional morphology is licensed by an Agree relation (Chomsky 2000) with a higher head, as in the analysis of verbal morphology in Wurmbrand (2012). Before going into the details, I start with a general overview of the model of grammar assumed here.

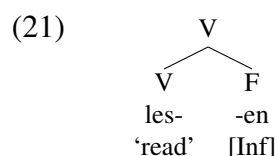
4.1 The Model of Morphosyntax

I assume that there is no component of grammar other than the syntax for putting complex forms together (see Bruening 2018b). That is, there is no component of morphology. All morphology is assembled using the syntax, and only the operations that the syntax needs anyway. These are Merge, Move, and Agree (Chomsky 2000). There is no post-syntactic level. Not only that, linear order must be part of the syntax from the beginning; otherwise, there would have to be two components of syntax, one that deals strictly in hierarchy and then another syntax that translates that to linear order (as proposed by, e.g., Kayne 1994, Chomsky 1995, Fox & Pesetsky 2005, Reinhart 2006, Berwick & Chomsky 2011, Bobaljik & Wurmbrand 2012, Idsardi & Raimy 2013). Having two different components of syntax is clearly undesirable and should be avoided. It follows that linear order must be part of syntax from the beginning. For empirical arguments to this effect, see Abels & Neeleman (2012), Bruening (2014, 2018a), Bruening & Al Khalaf (2020). As discussed above, having only a single component of syntax ought to be the default model of grammar, as alternatives multiply theoretical devices unnecessarily. Alternatives with multiple levels and multiple components of syntax (including separate ones for hierarchy and linear order) should only be pursued once the default model has been shown definitively to be unworkable. One of the points of this paper is that this default model has not been shown to be unworkable, and in fact it has all the tools that are necessary to account for displaced morphology in German.

Phonological features also cannot be inserted late, as in Distributed Morphology, because that would violate the Strict Cycle Condition (in fact, every operation at Distributed Morphology's post-syntactic level violates the Strict Cycle Condition). It follows that all phonological information must be present in the heads that are first merged into the syntax, along with syntactic and morphological information. Note that having phonological features present in the syntax does not predict that the syntax would refer to them; the syntax routinely ignores most information that is accessible to it. See Bruening (2017: section 2.2).

Complex heads (e.g., verb stems plus inflectional morphology) are put together in the same way that syntactic phrases are: by Merge and by Move (and Move is just Merge applying to elements that have already been merged into the workspace). As will be described in detail below, a head can be merged directly with another head to form a complex head. Alternatively, a head can move to another head and thereby merge with it to form a complex head.

I will assume that Merge is free but everything that is merged into a derivation must be licensed. The grammar states various kinds of licensing conditions. For example, in Standard German bare verb stems cannot be pronounced by themselves. All verbs have to combine with some kind of inflectional morpheme, which I will label an "F" head (in keeping with Salzmann 2019a):

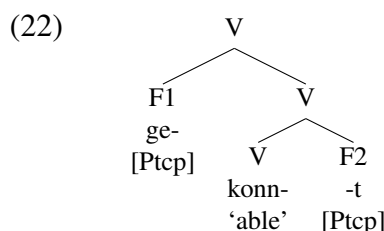


The grammar of German will then contain a licensing statement saying that something of category V is licensed only if it forms a complex head with another category, like F here. (German dialects where the infinitive is identical to the bare stem I will assume have a null Inf head.)

Particular feature values of F heads must be licensed through a syntactic relation with another head in the syntax. This relation I will assume is Agree, following Wurmbrand's (2012) analysis

of verbal morphology. I depart from Wurmbrand (2012) in one respect: Rather than have Agree *value* previously unvalued inflectional features, it checks and licenses them, as in Chomsky (1993). The features are valued from the beginning. For instance, in (21), F is merged with V with its [Inf] features present from the beginning. This F with these particular feature values will need to be licensed through Agree with an appropriate head (one that selects an infinitive).

The reason for this departure is the participle morphology in German, which is often bi-morphemic. It consists of a prefix *ge-* and a suffix (*-t* or *-en*). If F heads were to be valued during the course of the derivation, a single F head that is valued [Ptcp] would have to somehow be split into two, since the same F when valued differently would only surface as one morpheme. Splitting one F into two would violate the Strict Cycle Condition, as it would require merging another F head with a lower head, at a point where a higher head has already been merged (the one agreeing with F). I therefore assume instead that Merge is free, and one or even two F heads can freely be merged with a V, subject to licensing. In the case of the participle, two F heads with [Ptcp] features are merged (their relative hierarchical order is unimportant):



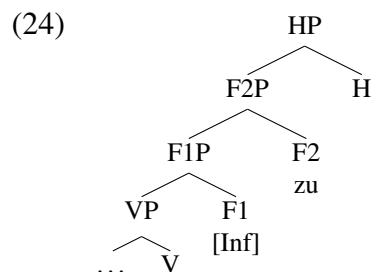
Both F1 and F2 will need to be licensed, through Agree with a higher head (typically the auxiliary ‘have’).

Agree is subject to strict locality, such that an Agree relation between two elements is blocked if something intervenes. Intervention can take two forms. One is absolute: If some F, say, requires licensing by a head H1, but another potential licenser H2 intervenes, then Agree is blocked. I will formalize this as follows:

- (23) *Intervention by a Potential Licenser:* A licensing head H1 can Agree with F and license its features only if there is no licensing head H2 such that H1 asymmetrically c-commands H2 and H2 asymmetrically c-commands F.

Verbs are potential licensing heads. The effect of (23) is that the features of an F on one verb can only be licensed by the immediately higher verb. This accurately captures how verbal morphology works, modulo the displacement data to be explained below. Note that in (22), a higher head (‘have’) can license both F1 and F2, because the V *konn-* does not asymmetrically c-command F1 and F2; they c-command each other (and V dominates F1 and F2).

Another element F2 that needs licensing can also intervene between F1 and a licensing head H. In this case, Agree is not blocked absolutely. I assume that Multiple Agree is possible. So long as H also Agrees with F2, it can Agree with F1. So, for instance, in (22), a higher ‘have’ auxiliary can Agree both with F1 and with F2, thereby licensing the features of both. With ZU-infinitives, there are two Fs, F1 and F2, merged above a VP:



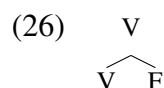
The licensing head H can Agree with F2, licensing it, and also with F1, licensing it as well. I formalize the condition as follows:

- (25) *Intervention by a Licensee*: A licensing head H can Agree with F1 and license its features only if there is no F2 such that H asymmetrically c-commands F2 and F2 asymmetrically c-commands F1 and H does not Agree with F2.

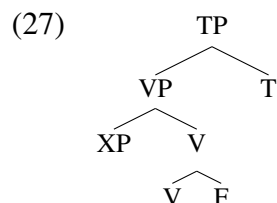
With this background, we can now turn to the two mechanisms for combining a V with an inflectional morpheme: direct Merge, and head movement.

4.2 The Two Mechanisms

As described above, an F can be merged directly with a V:

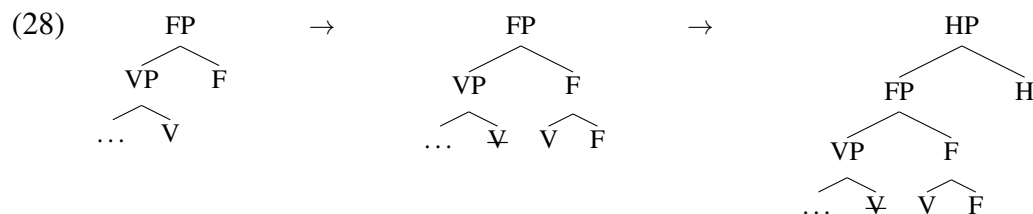


The features of F must be licensed by a higher head via an Agree relation. So, for instance, if F is finite tense and agreement, it will be licensed by an Agree relation being established between F and a higher T head. Given the locality condition on Agree in (23), T must be what is merged with VP:



F will establish an Agree relation with T, and this will check and license the finite tense and agreement features of F. V may go on to move to or through T, but this is not necessary for licensing of F.

The second option is that V can undergo head movement to F, which puts V and F together as a complex head:



In this case, it is also Agree that licenses the features of F. When H is merged with FP, F and H enter into an Agree relation. Assuming they match, the features of F are licensed by H. This option is essentially the analysis of Salzmann (2019a), except that F and V are put together by head movement in the syntax, not by Local Dislocation or Lowering in the post-syntax. There is no post-syntax in my proposal, and there are no such operations as Local Dislocation and Lowering.

The first option for putting complex heads together, Merge + Agree, is not disrupted by movement or reordering operations. Merge of F takes place in the base position of V, and F can Agree from this position with the base position of the licensing head. If either head moves, the licensing Agree relation is not disrupted. A-bar movement of an NP, for instance, does not disrupt Agree relations that NP entered into. Similarly, the highest verbal head in the clause always Agrees with finite T, regardless of whether it undergoes head movement or not (to C in a verb second clause). In contrast, it would be expected that head movement could be disrupted by other instances of movement. In particular, I propose that it is disrupted by the reordering operation that is operative in verb clusters, as I will explain in detail below. Note, however, that the Agree relation that licenses F in (28) will not be disrupted; only the movement that combines F with a V will be.

Regarding semantics, displacing the morphology has no semantic effects (see Salzmann 2019a). Neither does replacing the expected form (typically the participle) with the substitute infinitive or the supine (see Wurmbrand 2004a). The inevitable conclusion is that these Fs are purely formal elements that have no semantics. All the semantics inheres in the verbs themselves; the morphology they select is pure form requirement. Witness the different selectional requirements across dialects: The verb ‘can’ selects the infinitive in one dialect but the GE-infinitive in another; ‘will’ selects the infinitive in one dialect but the gerund in another. These different selectional patterns apparently have no semantic repercussions. (den Dikken & Hoekstra 1997 conclude the same thing on the basis of parasitic participles in Frisian. For recent discussion of participles, where their semantics has been debated, see Wegner 2019. I take the fact that participle morphology is used both in (non-past) passives and in (active) past/perfects to indicate that it is semantically contentless.)

Before getting to the details of how displacement works, different dialects choose which inflectional categories are done via Merge + Agree, and which by head movement. In all dialects of German, the finite morphology is done by Merge + Agree (Agree with finite T, I assume), and so it is never disrupted and never appears on any verb other than the hierarchically highest one. In contrast, some instances of non-finite morphology are done by head movement in some varieties of German, and they are then subject to disruption by reordering operations in verb clusters. Since the dialectal variation seems to be idiosyncratic, it appears that different dialects have to specify which type of morphology is done in which way. At one extreme is Sonneberg, which according to Höhle (2019 [2006]) has no displacement. In the following examples, *könn-* selects the GE-infinitive, and *werd-* selects the bare gerund. This selection is not perturbed by word order variation, and the appropriate form always appears on the head that is the immediate complement of the selecting verb:⁷

- (29) a. ich waar₁=sch schä gə-mäch₃ kün-na₂
 ich werde’s ? machen.IN können.G
 I will=it ? GE-do.Inf can-Ger
 ‘I am probably able to do it’ (Sonneberg; Höhle 2019 [2006]: (33b))

⁷Höhle (2019 [2006]) did not provide a gloss for examples (29a–29b).

- b. ich waar₁=sch runtər kün-na₂ gə-reiß₃
 ich werde's runter können.G reißen.IN
 I will=it down can-Ger GE-tear.Inf
 'I am probably able to tear it down' (Sonneberg; Höhle 2019 [2006]: (33a))

This dialect is unusual, however, and most dialects have displacement of at least some forms of non-finite morphology. In Kleinschmalkalden, in contrast with Sonneberg, the gerund selected by V1 *werd-* is displaced to V3 in V1–V2–V3 order:

- (30) mə wæn₁ mü-d₂ glü-n₃
 wir werden müssen.CS klagen.G
 we will.1Pl must.Sbjv-Sup litigate-Ger
 'we probably have to go to law' (Kleinschmalkalden; Höhle 2019 [2006]: (35b))

In the current proposal, Sonneberg specifies that the gerund is merged directly with the verb it appears on, and is licensed by Agree with the next higher verb *werd-*. Kleinschmalkalden instead specifies that the gerund is merged as an F head complement of *werd-*, and it is put together with a V by head movement. This head movement can be disrupted, so that it is V3 that undergoes movement to F rather than V2.

In the rest of this section, I will show in detail how these options work and how reordering in the verb cluster affects head movement.

4.3 How the Morphology Works with No Reordering

Recall that there is no displacement when the hierarchical structure of the verb cluster matches the linear order (rightward = higher). In this case all morphology appears where it would be expected to based on selection. Example (1) is repeated below as (31):

- (31) ohne das Buch lesen₃ gekonnt₂ zu haben₁
 without the book read.Inf can.Ptcp to have.Inf
 'without having been able to read the book' (Standard German; Salzmann 2019a: (9a))

I will go through this example to show how the morphology works when there is no reordering in the verb cluster. The derivation starts with V3, which is in the infinitive form. This is the form selected by V2, the modal *können*. Infinitives seem to be able to be displaced, at least as part of ZU- and GE-infinitives, so I will assume that they are composed via head movement. This means that V3 is merged by itself, with no F:

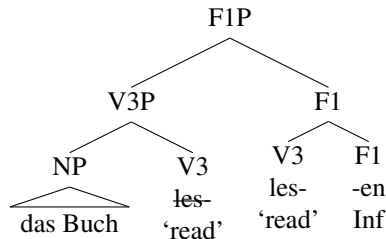
- (32)
-
- ```

graph TD
 V3P --> NP
 V3P --> V3
 NP --> dasBuch[das Buch]
 V3 --> les[les-]
 V3 --> read['read']

```

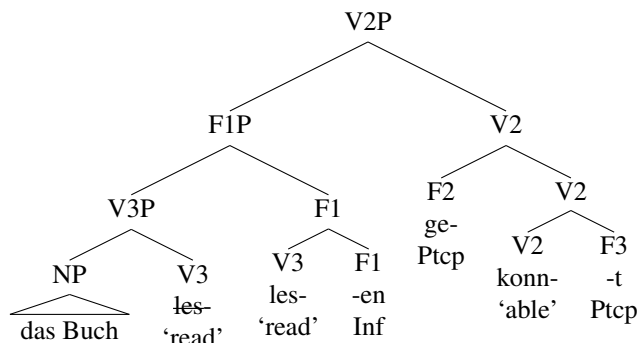
Continuing the derivation, an F merges (F1), which will be licensed by Agree with V2, *können*. However, before V2 merges, F1 requires head movement of a V to it. The only eligible V is V3, so V3 moves to F1 and adjoins to it on the left (the default order, I assume):

(33)



Next, V2 merges. V2 bears participle morphology. Since this morphology is never displaced in Standard German, it is put together with the verb by direct Merge, not by head movement. So two Fs, F2 and F3, merge with V2 (their respective order does not matter):

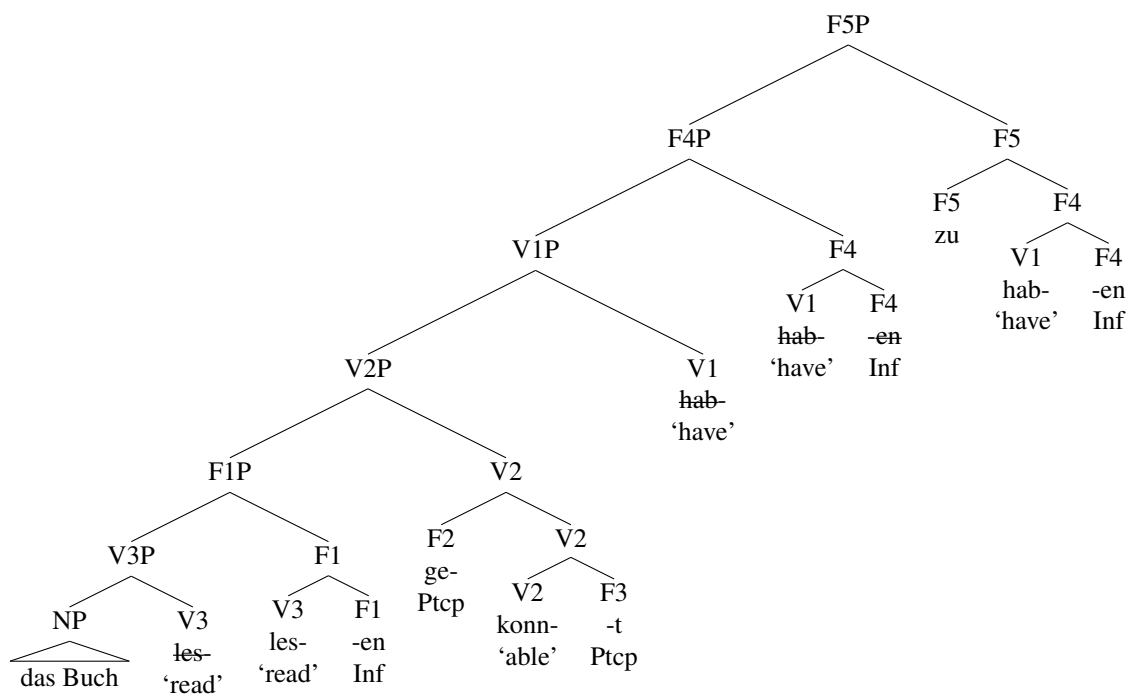
(34)



After V2 merges, F1 Agrees with V2, which licenses F1.

Then V1 merges. It is a ZU-infinitive. This morphology can be displaced, so it must be put together by head movement. So V1 merges without any Fs. At this point, F2 and F3 Agree with V1, which licenses their features. After that, two Fs merge, one for the infinitive morphology (F4) and one for *zu* (F5). These both require head movement, and the closest eligible V is V1, so V1 moves through F4 to F5:

(35)



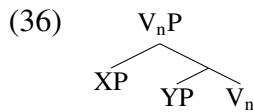
F5, *zu*, requires that what moves to it adjoin on its right, overriding the default left-adjunction of head movement. At a point subsequent to this, the complementizer *ohne* will be merged, licensing both F4 and F5 through Agree.

This yields the right result. Both ways of putting Fs together with Vs put the selected morphology on the complement of the selector when the verbs have undergone no reordering.

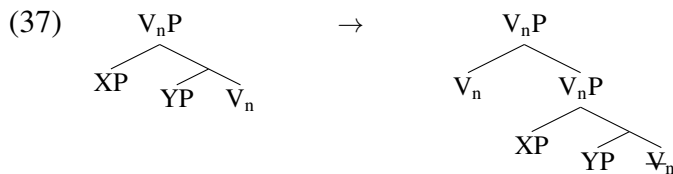
#### 4.4 Verb Cluster Reordering

There is a very large literature on order in West Germanic verb clusters, which I cannot possibly do justice to here. See Wurmbrand (2017), Dros-Hendriks (2018), Salzmann (2019b) for recent overviews and critical discussion. As stated earlier, Salzmann (2019a) assumes that reordering in the verb cluster is mostly a matter of flexible linearization, as was first proposed by Wurmbrand (2004a,b). However, if it were, we would not expect it to affect either Agree or head movement. I therefore propose that verb cluster reordering is not just flexible linearization, but actually involves movement. This is something that has been proposed many times before since Evers (1975)—see the references in Salzmann (2019b)—but my particular implementation is novel. I propose that reordering in a cluster is movement of a head to an adjoined position, which puts the head in the equivalent of an A-bar head position (cf. Roberts 1991, den Dikken & Hoekstra 1997). From this position, it is not eligible to undergo regular head-to-head movement anymore, just as an XP that has undergone A-bar movement can no longer move to an A-position.

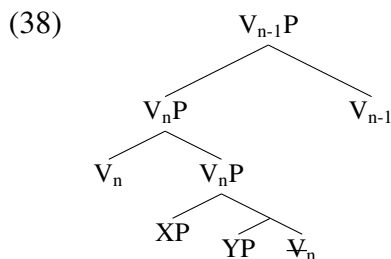
I propose that all VPs in German dialects are head-final. They all take their specifiers and complements to the left:



Suppose the grammar has built the VP above, but it now wants  $V_n$  to be on the left. It has to move  $V_n$ . I propose that it does this prior to merging the next V up. It merges the V with its own maximal projection, through adjunction:

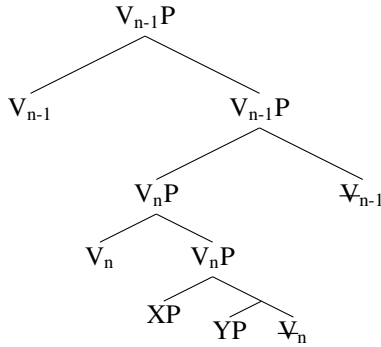


The next V is then merged:



If the grammar wants the new V ( $V_{n-1}$ ) on the left as well, then it will have to move it and adjoin it to  $V_{n-1}P$ :

(39)



Typically, XP and YP will undergo movement to higher positions, leaving just the verb cluster at the end of the clause, but this is not necessary.

As a point of implementation, I propose that a V head can be merged with a feature that I will call “[L<sub>P</sub>].” A V with this feature is only licensed if it has moved and adjoined to its own projection on the left. (This feature will be important in section 4.8.)

It is not the goal of this paper to account for all of the facts of verb clusters, but it is important to show that this proposal for verb cluster reordering is compatible with the major facts that have been discussed in the literature. One of the most discussed topics is which orders are allowed and which are not. Salzmann (2019b) shows that all six logically possible orders in three-verb clusters are in fact attested. The current proposal correctly generates all six. The base order is V3–V2–V1. V1–V2–V3 is derived by moving both V2 and V1 to the left. V1–V3–V2 is derived by moving just V1 to the left. V2–V3–V1 is derived by moving just V2 to the left. The last two orders require additional movements. V2–V1–V3 is derived by moving both V2 and V1 to the left, and then moving V2 further, above V1. V3–V1–V2 is derived by moving V1 and V3 to the left, and then moving V3 further, above V1. I will return to these two orders in section 4.13.

In the current proposal, multiple verbs never form a complex head (there is no “clustering”). So we do not expect any but the highest, tensed, verb to move to C in a verb second clause (see Salzmann 2019b: 105).

Another issue is penetrability. See especially Salzmann (2013, 2019b) on this issue. In V1–V2–V3 order, elements can come in between the three verbs, but nothing can come between them in what is assumed here to be the base order, V3–V2–V1. This makes sense, if West Germanic VPs are head-final: All arguments and adjuncts will generally occur on the left. There is a possibility of extraposition, but it would be entirely natural for this to be constrained in various ways. For instance, one could limit extraposition to phasal nodes, as in Bruening (2018a); if only the topmost VP is a phasal node, then extraposition could not target any of the lower VPs. Alternatively, Wurmbrand (2007) proposes a prosodic constraint that blocks the pronunciation of extraposed material between the verbs in V3–V2–V1 order. If something does block extraposition between the heads of head-final VPs, then most of the rest of the facts follow, too. According to Salzmann (2019b), in V1–V3–V2 order, something can come in between V1 and V3 but not between V3 and V2. In the current proposal, this is because V3 and V2 are head-final, but V1 has moved to the left. In V2–V3–V1 order, something can come in between V2 and V3 (in West Flemish, at least; see Haegeman 1998), but not in between V3 and V1; this follows in the same way, namely that V3 and V1 have not moved, while V2 has moved to the left. Without adding additional constraints, however, the current proposal incorrectly allows material to intervene between any of the verbs in the more complicated orders V2–V1–V3 and V3–V1–V2. According to Salzmann (2019b), V2

and V1 cannot have anything between them in the V2–V1–V3 order, and the V3–V1–V2 order is completely impenetrable. This slight overgeneration problem is not that troubling, though, as different varieties often impose additional constraints. For instance, Standard Dutch apparently severely limits material between the verbs in V1–V2–V3 order, but Hoeksema (1994 manuscript cited in Salzmann 2019b: 116) argues that this is a matter of usage, not grammar. The point is that there can be additional constraints beyond those of the workings of the syntax of verb reordering that can limit the available options.

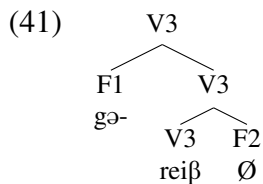
Obviously there is much more to say about verb clusters in West Germanic, but from what I can see, the current proposal is at least as successful as any existing ones in the literature. It should therefore be taken seriously both in its own right, and, more importantly for the present paper, for how it helps to explain the phenomenon of displaced morphology.

#### 4.5 Effect of Reordering on Merge + Agree

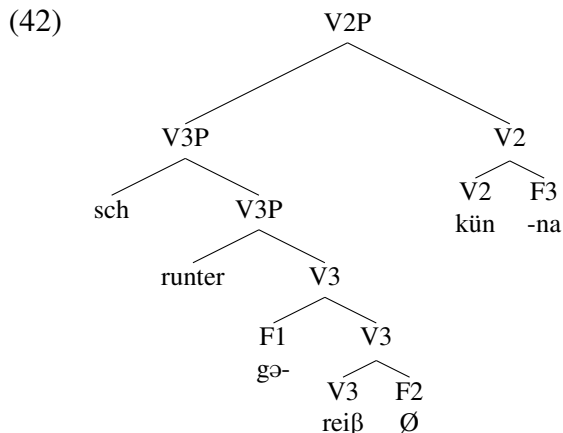
The proposed A-bar movement of V has no effect on Merge + Agree. Recall that the Sonneberg dialect has no displacement:

- (40)    ich waar=sch<sub>1</sub>    runtər kün-na<sub>2</sub>    gə-reiβ<sub>3</sub>  
           ich werde's    runter können.G reißen.IN  
           I    will=it    down can-Ger    GE-tear.Inf  
           ‘I am probably able to tear it down’ (Sonneberg; Höhle 2019 [2006]: (33a))

This is a verb second clause, so V1 has moved to C. The most deeply embedded verb is *gəreiβ*. In this dialect, GE-infinitives are merged directly:

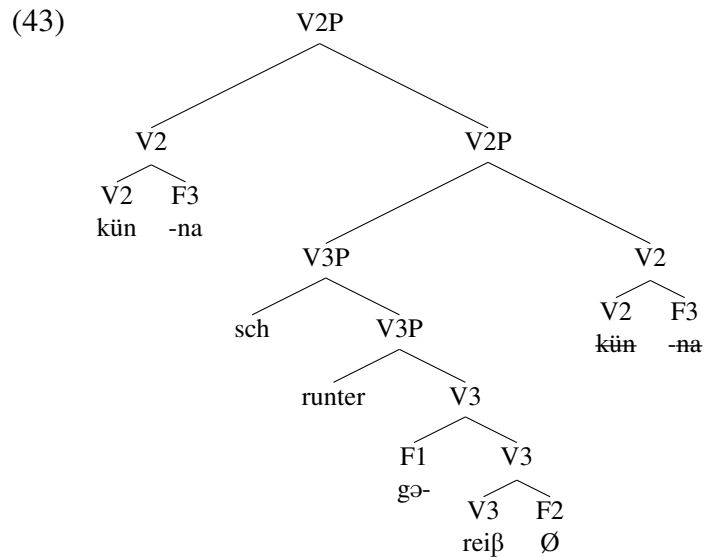


The pronouns merge as arguments of this V (but will move away; the exact structure is not important here). Then the next higher V *künna* merges. It is also put together with its inflection directly:

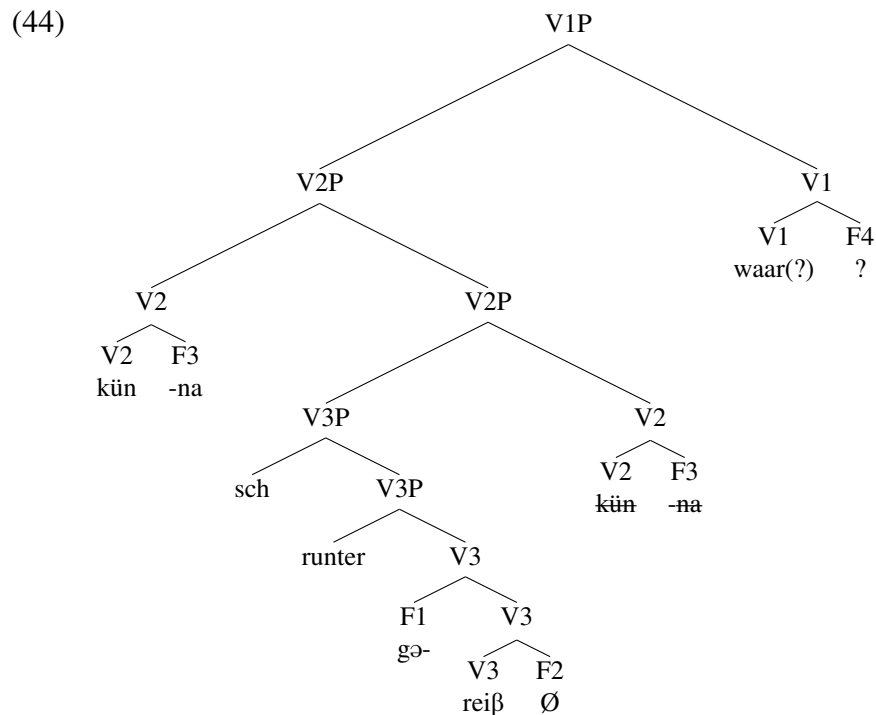


At this point F1 and F2 check their features against V2. V2 selects the GE-infinitive, so their features are checked and licensed.

Next, V2 reorders to the left:



Now V1 is merged, along with its inflectional morphology (the tensed morphology; it is not clear to me how to break this morphology down given the phonology, so I will leave it vague):



F3 now checks its features against V1. It can either do this as a chain, from both of its occurrences, or just from the one in the equivalent of an A-position (the base position), it does not matter. The fact that F3 has moved with V2 makes no difference to Agree, F3 can still Agree with V1. Since V1 selects the (bare) gerund, the features match and F3 is licensed.

F4 is then licensed by agreeing with finite T once it is merged. V1 will eventually move to C, but this will not disrupt any licensing Agree relations. F3 has already been licensed, and F4 is licensed by Agree with T prior to verb second movement. Thus, in this dialect, all the inflection follows the selectional relations. Reordering in verb clusters has no effect.

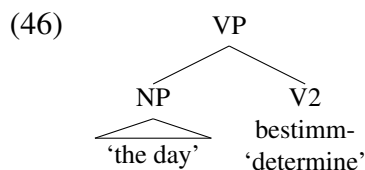
## 4.6 Effect of Reordering on Head Movement

I will go through a relatively simple example of displacement to illustrate how verb cluster reordering affects head movement, before considering more complex examples. Consider the following example from Swiss German:

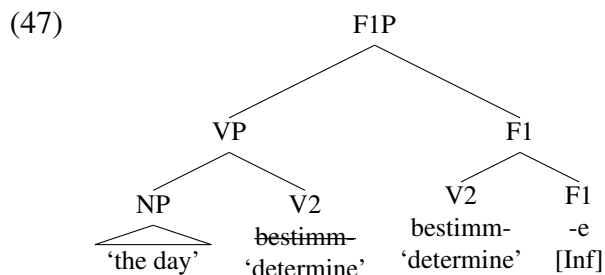
- (45) Ich liebe d freiheit, selber de tag chöne<sub>1</sub> z bestimme<sub>2</sub>.  
 I love.1Sg the freedom self the day can.Inf to determine.Inf  
 ‘I love the freedom to determine my schedule.’ (Swiss German; Salzmann 2019a: (14a))

In this example, the complement of a noun like *freiheit* is assigned the ZU-infinitive. This should go on V1, but in V1–V2 order, it goes on V2 instead. V1 appears in the bare infinitive, and it itself selects the bare infinitive.

The embedded clause begins with V2. I assume that bare infinitives are constructed through head movement in this dialect (perhaps in all of them except Sonneberg), so V2 is merged without an F:

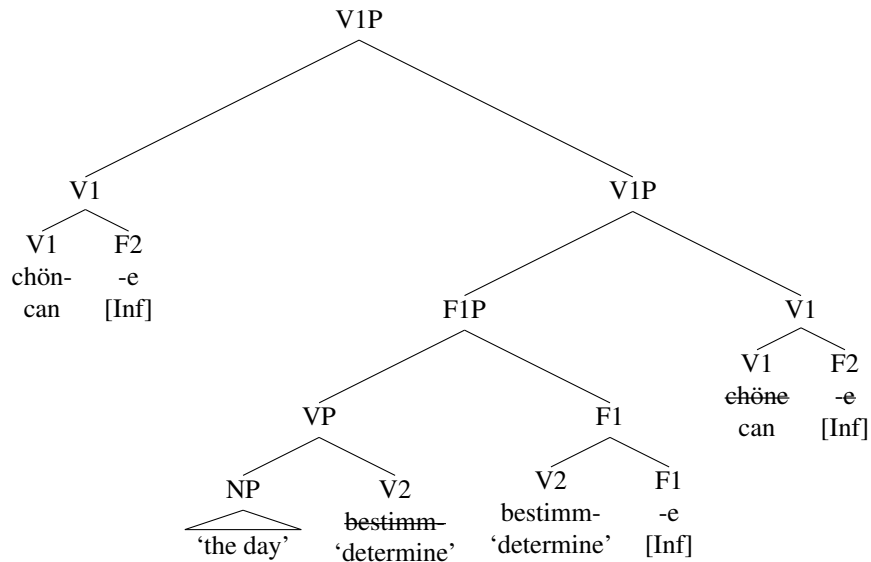


Then an F1 is merged, and V2 moves to it:



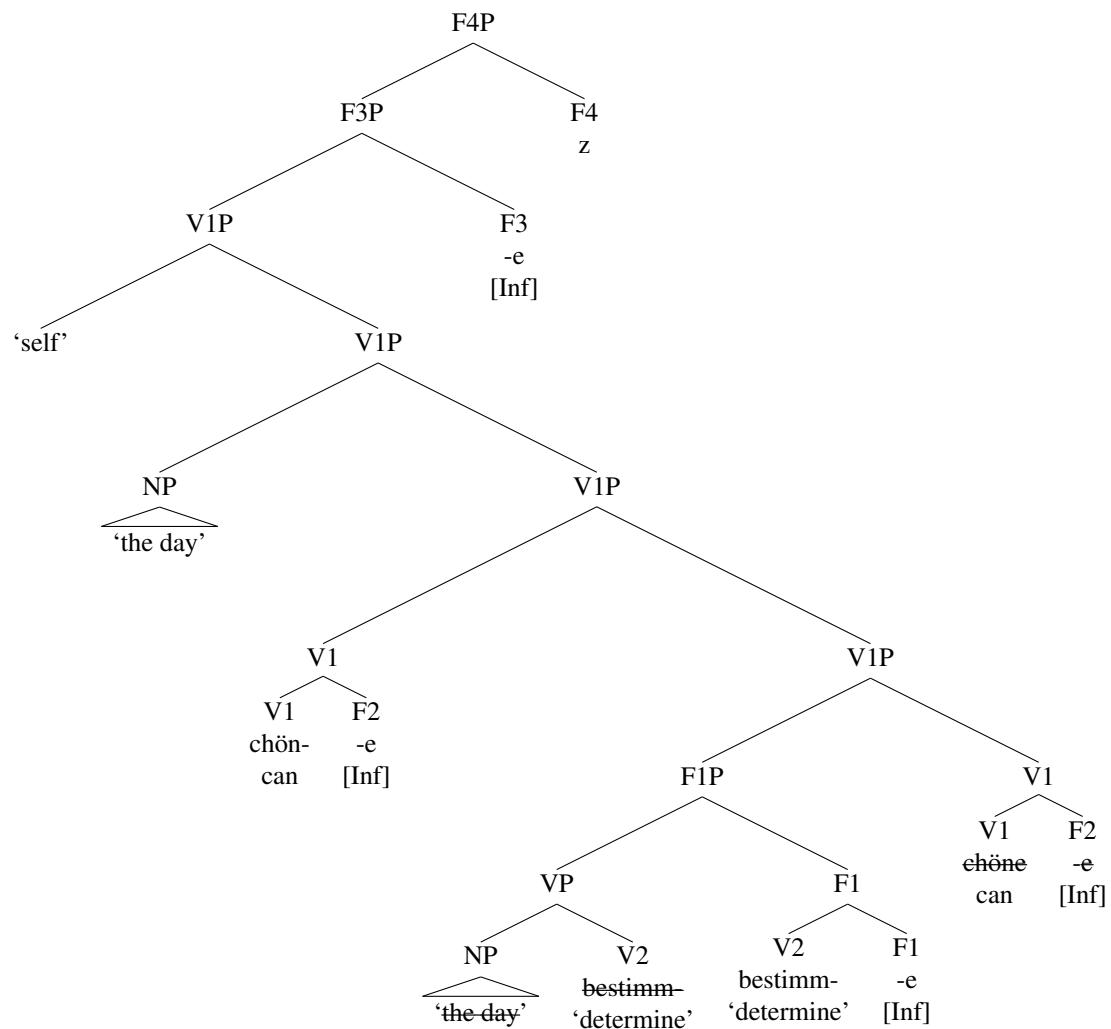
V1 then merges. It licenses F1 through Agree. V1 is also in the infinitive, which is also constructed by head movement. However, V1 is merged with an [L<sub>P</sub>] feature so that it will move to the left. If it does this by itself, it will not be licensed, because German Vs are only licensed if they form a complex head with another element, like an F. So an F has to be merged with V1 as soon as it is merged (F2). F2 has to be the default infinitive, because nothing else will end up being licensed (see below). Subsequently, V1 moves to the left and adjoins to its own projection, licensing its [L<sub>P</sub>] feature:

(48)



The lowest NP moves and adjoins, and 'self' also adjoins; I will assume that they both adjoin to V1P, but the exact position is unimportant. Then two more Fs merge, F3 and F4:

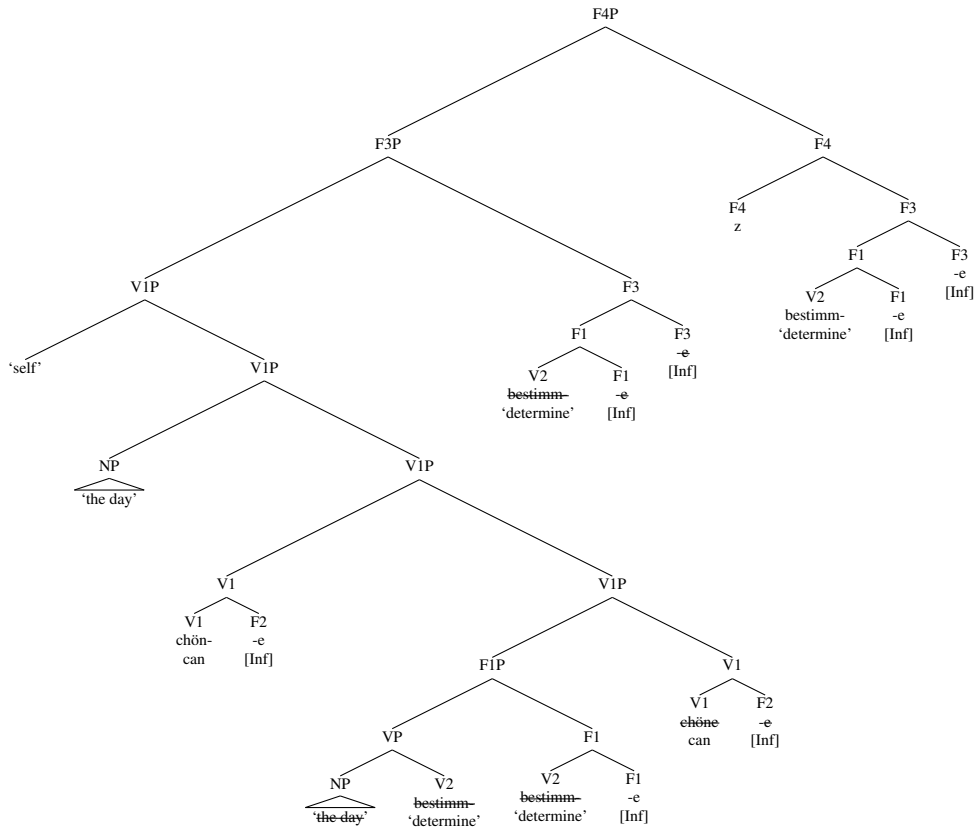
(49)





F3 and F4 both require head movement. If V1 had not moved, it would be the only eligible verb to move to F3 and F4 (it would block V2 from moving). However, it has moved, to the equivalent of an A-bar position. It is not eligible for head movement anymore. The closest eligible verb is therefore F1 (F1 contains category V, V2). F1 moves first to F3 and then to F4. F4, *z*, requires adjunction to its right, overriding the default leftward adjunction:

(50)



Finally, F3 and F4 are licensed by Agree with a higher head (the N, say, or a null C, not shown).

This derivation puts two infinitive endings on V2. One of them has to remain unpronounced, in an instance of morphological haplology. Note that this is not a separate operation purely for morphology, it is the same operation that the phrasal syntax needs for resolving chains. It is common in phrasal syntax for something to have to be left unpronounced. I will not spell out this operation, however, and will just assume that it exists.

Importantly, *z* ends up on V2, not on the expected V1, because V1 had moved away to the left. This is how the current proposal derives displaced morphology in German: The verb that should have taken the morphology has moved, to a position from which it is no longer eligible for head movement. Note, however, that the displaced morphology is still placed by head movement. We therefore predict that the locality restrictions on displaced morphology are exactly those of head movement, which they are (see section 3.3).

The verb that moved (V1) ends up with the infinitive ending. As in Salzmann (2019a), the infinitive is a default. I assume that an F that is unable to enter into any Agree relation can still be licensed only if it is the infinitive. In (50), F2 cannot Agree with V2 after it moves to F3, because V2 does not c-command F2. F2 could potentially be licensed by the same head that licenses F3 and F4, but I assume that this head can only license two Fs, one with [Inf] features and the other *z*.

This leaves F2 unlicensed, and so it can only be the default infinitive.

In this analysis exactly the same mechanism places the morphology in the well-behaved cases (section 4.3) as in the apparently displaced cases. This was one of the attractive features of Salzmann’s (2019a) analysis, and it is maintained here.

## 4.7 Non-Displaced Participles

Let me now go through one of the examples that was problematic for Salzmann (2019a). Example (8) is repeated here as (51):

- (51) d Froid, di ghööre<sub>2</sub>/ghöört<sub>2</sub> singe<sub>3</sub> z haa<sub>1</sub>  
 the joy you hear.Inf/hear.Ptcp sing.Inf to have.Inf  
 ‘the joy to have heard you sing’ (Swiss German; Salzmann 2019a: (14d))

Recall that Salzmann’s (2019a) account correctly locates *z* and the infinitive morphology on the last verb of the cluster, here ‘have’, but it would incorrectly put the participle morphology assigned by ‘have’ on ‘sing’, which is the last verb in the complement of ‘have’.

The current analysis does not run afoul of this problem. Recall from section 3.1 that the participle morphology selected by ‘have’ is never displaced in most of the modern dialects. Participle morphology either appears where it should according to selection, as in (51), or it is replaced with the substitute infinitive or the supine (sections 3.2 and 4.8). In the following example, the participle morphology appears where it should given selection. It appears on V3, which is the complement of V2, ‘have’ (‘have’ appears in the GE-infinitive selected by V1):

- (52) öb hä: dā:s wærglich gəsæ:d<sub>3</sub> kon<sub>1</sub> gə-hā:2  
 if he that really say.Ptcp can.3Sg GE-have.Inf  
 ‘if he really can have said that’ (Steinbach-Hallenberg; Salzmann 2019a: (20b))

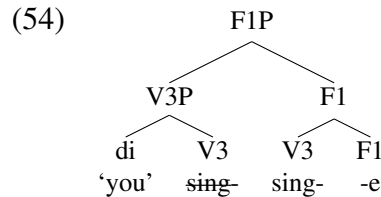
In contrast, in the following example, the participle is replaced with the supine:

- (53) a hād<sub>1</sub>=s müs-d<sub>2</sub> mǎxə<sub>3</sub>  
 er hat.es müssen.SS machen.IN  
 he have.3SgPast=it must-Sup do.Inf  
 ‘he had to do it’ (Kranichfeld; Höhle 2019 [2006]: (12b))

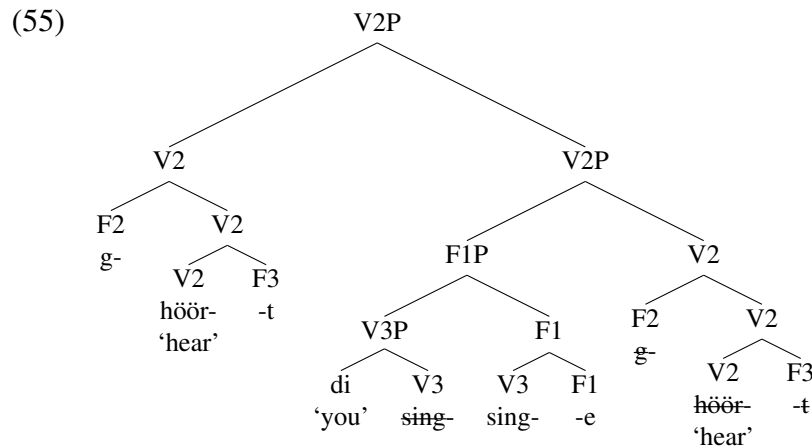
The conditions on the supine are complex; see section (4.8). What is important is that the participle morphology is never displaced to the final verb of the cluster in most dialects. In Salzmann’s (2019a) analysis it is, but it always deletes in preference to other morphology, even the infinitive. In (53), for instance, the participle selected by V1 and the infinitive selected by V2 both end up on V3, the last verb in the complement of both. The participle has to delete in favor of the infinitive. I find this suspicious, as the participle appears to be very marked, while the infinitive is the default. One would expect the participle to surface, at least sometimes, yet it never does. (Salzmann posits an operation of Impoverishment that deletes the participle under certain conditions. The current analysis can do without this operation entirely.)

In the current account, the fact that participle morphology is never displaced means that it is merged directly with the verb and licensed by an Agree relation (with ‘have’). The derivation of

the problematic Swiss German example in (51) starts with V3. This verb is in the infinitive, which is what V2 ‘hear’ selects. As discussed above, the fact that the infinitive can be displaced means that it is merged as an F and put together with the verb by head movement. So V3 is merged (with its arguments) by itself. Then an F is merged, F1. F1 requires head movement of a V, so V3 moves to F1:



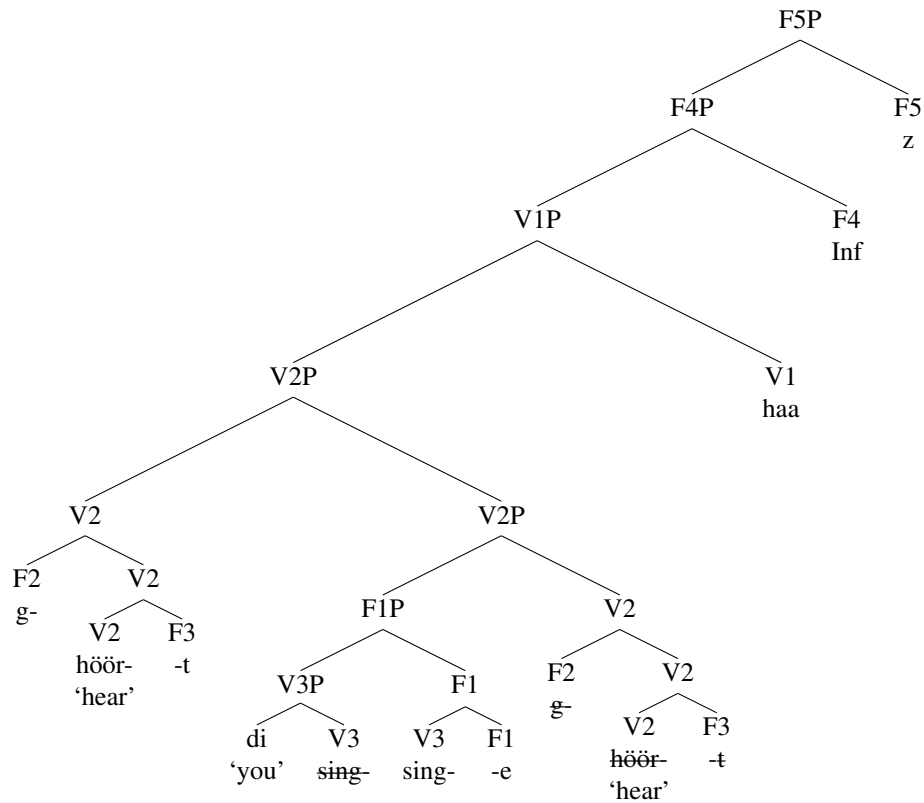
Now V2, ‘hear’, is merged. It Agrees with F1, licensing it. V2 has participle morphology, which merges with the V from the beginning. This morphology includes two Fs, one a prefix and the other a suffix.<sup>8</sup> Both are merged directly with V2 (the order of Merge of F2 and F3 does not matter). V2 is also merged with an [L<sub>P</sub>] feature, so it moves and adjoins to its own projection on the left:



Next, V1 will merge. The infinitive ending and the *z*- morpheme are their own functional heads, so they merge after V1, licensed by an external head (N, say):

<sup>8</sup>It is actually not clear whether the *g* is a prefix or part of the stem, since it appears in the infinitive as well. I will assume that it is the participle prefix, but nothing hinges on this.

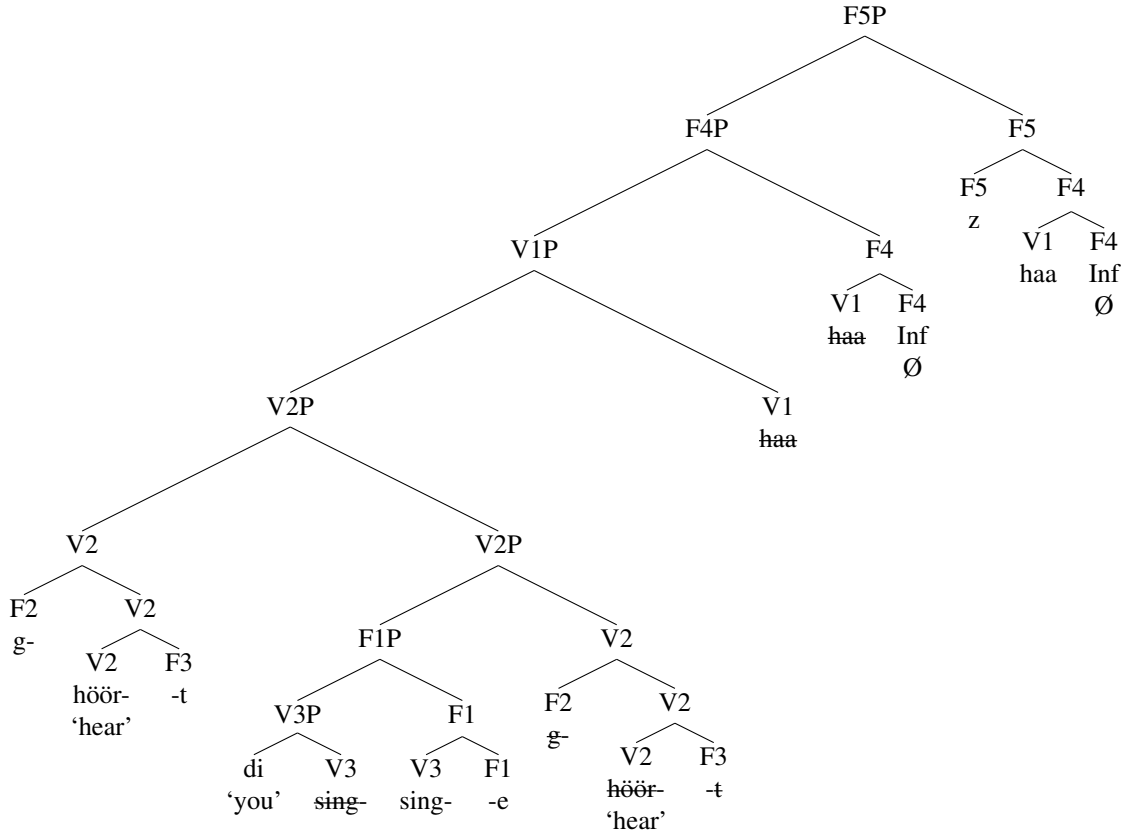
(56)



Before F4 and F5 merge, F2 and F3 Agree with V1. This licenses the participle features of F2 and F3.

Both F4 and F5 have a V feature. V1 is the closest eligible V head, so it moves first to F4 and then to F5. F5, z, requires adjunction on its right:

(57)



Once the pronoun ‘you’ scrambles to the middle field (adjoined to V1P, say, but the exact location is unimportant here), the correct order is derived. The participle morphology correctly appears on V2. This is because it is merged directly and licensed by Agree, which is not disrupted by the reordering operation that takes place in verb clusters.

As for why the infinitive is also allowed on V2, it is probably the substitute infinitive. The conditions for the substitute infinitive are partially met here (see section 4.8): V2 has moved to the left of its own complement. V1 ‘have’ is still to its right, however. The dialects seem to differ on whether the substitute infinitive is used in this configuration. It appears to be optionally so in Swiss German. I propose that there are two grammars here, one where moving V2 is sufficient to require the substitute infinitive, and one where it is not, and the participle is the form that is licensed (V1 has to also be on the left). A given speaker may have both grammars, leading to optionality.

The next subsection outlines my analysis of the substitute infinitive and the supine in the dialects that have it.

## 4.8 The Supine and the Substitute Infinitive

The substitute infinitive has been heavily discussed in the literature, usually under the name of *infinitivus pro participio* or IPP (see, among many others, Hoeksema 1988, Wyngaerd 1996, den Dikken & Hoekstra 1997, Wurmbrand 2001, Schmid 2005, Zwart 2007, Hinterhölzl 2009, Kjeldahl 2010, den Dikken 2018). The distribution of the supine matches that of the substitute infinitive (Höhle 2019 [2006], Hinterhölzl 2009), and so I regard them as the same thing. I will say up front that I do not have an explanatory analysis of the supine/substitute infinitive to offer. All

I can do is describe the effects and model them formally within the proposed analysis. I will have to leave pursuing an explanation for the effects to future work. The focus of this paper is displaced agreement, not the supine/substitute infinitive, so I do not think this detracts from the analysis. A different analysis could also be substituted for the supine/substitute infinitive while leaving the analysis of displaced morphology intact. The important point for the proposed analysis is that the supine/substitute infinitive is *not* a default that arises when the morphology that should have been assigned to the verb is displaced (see section 3.2). Understanding this is necessary for understanding displaced morphology generally. (I also note that the competitor analysis, that of Salzmann 2019a, also requires something extra for the substitute infinitive beyond resolving multiple inflectional forms on a single verb. In (65) below, for instance, the only inflection that should end up on the final verb is the participle, and yet the participle disappears in favor of the infinitive. This does not follow from Salzmann’s analysis of displacement, but requires an additional rule of Impoverishment.)

As discussed above, in the analysis of Salzmann (2019a), the participle inflection has to suspiciously delete every time it is displaced to the final verb of the cluster. My analysis instead is that the supine and the substitute infinitive are alternative forms of the selected morphology that appear in a very specific context. Specifically, they are assigned to V2 when one or both of V1 and V2 have moved to the left. Additionally, V2 has to take a VP complement (so, there are at least three verbs). Most typically, the order of the verb cluster is V1–V2–V3. V1 is usually the auxiliary ‘have’, though it may be some modals in some dialects. V2, which would be expected to be in the participle form (or another form if V1 is a modal), is instead the supine or the substitute infinitive, depending on the dialect (and the verb).

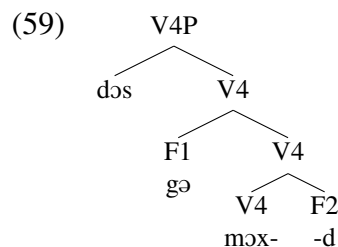
As described in section 4.7, the participle is never displaced in most dialects, and so it is built by direct Merge plus Agree (with ‘have’). I propose that the supine/substitute infinitive is just an alternate realization of the same thing. A single F (rather than two) is merged with the V, and then licensed through Agree with V1.

I will show how the analysis works by going through the following example, which has two instances of the auxiliary ‘have’. One of them licenses the supine and the other licenses the participle:

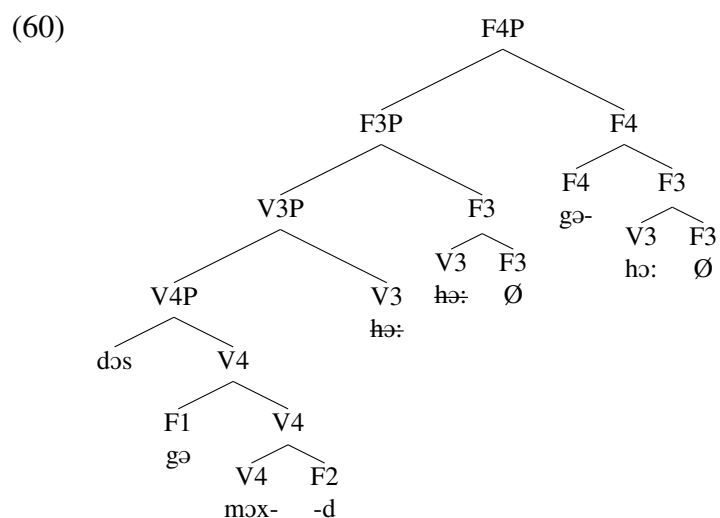
- (58)     $\varepsilon i$      $had_1$              $d\acute{o}s$   $f\acute{o}nd$      $kon-d_2$      $g\acute{a}-m\acute{o}x-d_4$      $g\acute{a}-h\acute{o}:_3$   
            $ihr$      $h\ddot{a}ttet$              $das$   $schon$      $k\ddot{o}nnen.SS$   $gemacht.P$      $haben.IN$   
           you.PL have.2PIPast that already can-Sup    GE-do-Ptcp GE-have.Inf  
           ‘you could have done that already’ (Barchfeld; Höhle 2019 [2006]: (56c))

V1 is ‘have’, which selects the participle, but it is instead realized as the supine on V2; V2 is ‘can’ which selects the GE-infinitive, realized on V3; V3 is again ‘have’, which selects the participle; and V4 is the main verb, in the participle form required by V3 (there is no displacement in this example, in my analysis).

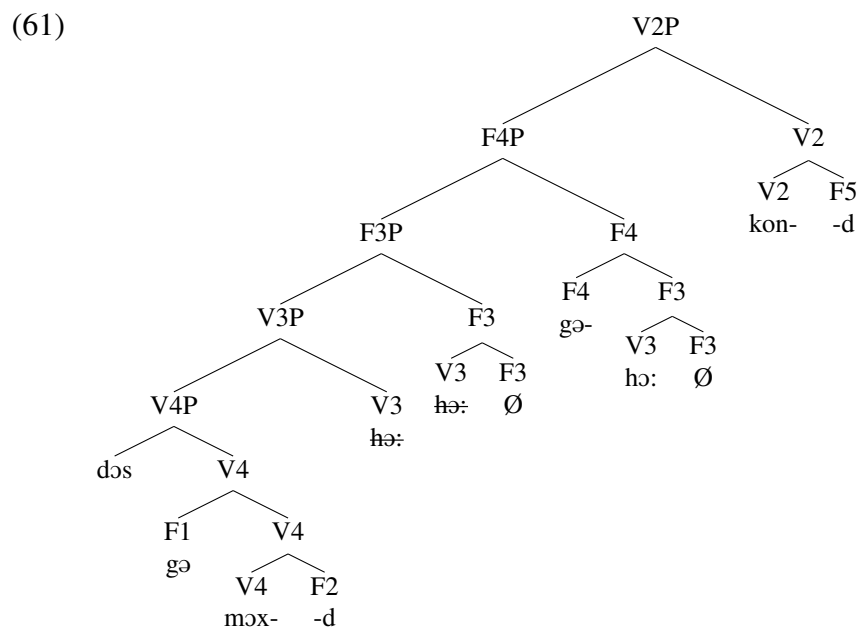
The derivation starts with V4. The participle is built by direct Merge, in this case using two Fs, F1 and F2:



Next, V3 merges. In this dialect, the GE-infinitive is built by head movement. So V3 merges by itself. F1 and F2 Agree with it, licensing the participle features. Subsequently, F3 and F4 Merge, and V3 moves to form a complex head with them:

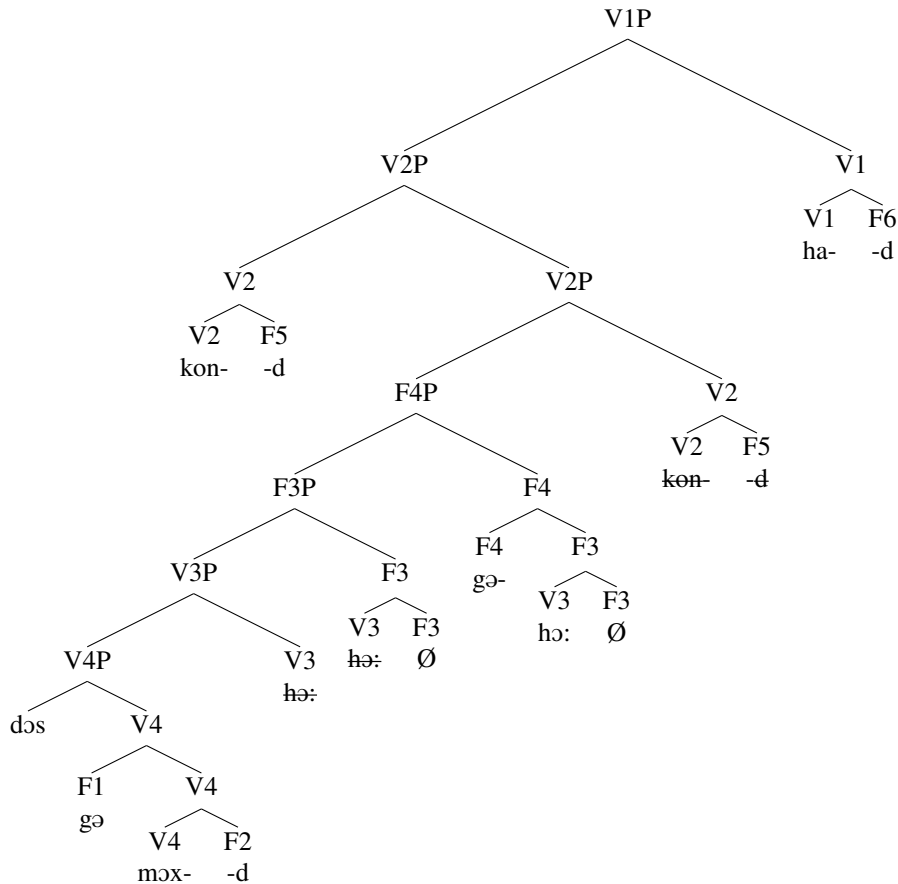


Now V2 merges, licensing F3 and F4 by Agree. V2 is in the supine, which will be licensed by a higher 'have'. This morphology is built by Merge + Agree. So another F, F5, merges directly with V2:



V2 is going to move to the left, so it is merged with an  $[L_P]$  feature. This causes V2 to move and adjoin to its own projection, on the left. Subsequently, V1 is merged. V1 bears the finite morphology of the clause, which is always built by Merge + Agree, so it is merged directly with another F, F6:

(62)



V1 is also going to move to the left, this time to C in a verb-second clause. I propose that the highest verb in a verb-second clause is also merged with a feature, call this one  $[L_C]$ . This feature does not cause the verb to move and adjoin to its own projection, but it is only licensed by the verb that bears it undergoing head movement to C. The feature  $[L_C]$  is also in the class of  $[L]$  features, so licensing statements that refer to  $[L]$  will include both it and  $[L_P]$ .

Now, the grammar contains licensing statements with the following effects:

- (63) In a configuration where F forms a complex head with V2, and F Agrees with V1:
- If V2 is an F-licenser, V1 is {‘have’, ...}, and V1 and V2 both have  $[L]$  features, then F must be supine/infinitive.
  - Otherwise, V1 licenses the form it is lexically specified to license (Ptcp for ‘have’, other forms for modals).

V2 being an F-licenser limits the configuration to one where V2 takes a VP complement. V2 must be a verb that can license an F on a lower V3.

In (62), V1 has an  $[L_C]$  feature and V2 has an  $[L_P]$  feature. Both verbs have  $[L]$  features, and the form of F on V2 therefore has to be supine. Had V2 been merged with participle Fs, they would



not have been licensed. V4, in comparison, does not have an [L] feature, nor does the immediately higher verb V3, so F on V4 is the participle (actually, there are two Fs). Had V4 instead been merged with the supine F, it would not have been licensed.

This accounts for the conditions on the supine/substitute infinitive: V2 must take a VP complement, because only verbs that take VP complements can license Fs on lower heads; and the form is specifically licensed when the two verbs that are in an Agree relation (indirectly, via F on V2) both move to the left. (Note that in some dialects, the form of V2 also changes in the subjunctive. I will not formalize this additional complication here, but assume it is a form of contextual allomorphy triggered by the indirect Agree relation between V1 and F on V2.)

There are points of dialectal variation in (63). One is the list of verbs that trigger it as V1: ‘have’ is ubiquitous, but some dialects add some modals. A second point of variation is in the form being supine versus infinitive. Many of the dialects have the special supine form in this configuration, although in all of these dialects the supine is lexically restricted. Only some verbs have a supine form. The rest occur in the infinitive in this configuration.<sup>9</sup> Standard German does not have a supine at all and instead has the substitute infinitive:<sup>10</sup>

- (64) a. sie soll<sub>1</sub> ihn schnarch-en<sub>4</sub> ge-hör-t<sub>3</sub> hab-en<sub>2</sub>  
 she.Nom should him.Acc snore-Inf Ptcp-hear-Ptcp have-Inf  
 ‘she is said to have heard him snore’ (Standard German; Höhle 2019 [2006]: (5a))
- b. sie soll<sub>1</sub> ihn hab-en<sub>2</sub> schnarch-en<sub>4</sub> hör-en<sub>3</sub>  
 she.Nom should him.Acc have-Inf snore-Inf hear-Inf  
 ‘she is said to have heard him snore’ (Standard German; Höhle 2019 [2006]: (4a))

In (64a), where both ‘have’ and ‘hear’ take their complements to the left, ‘hear’ is in the participle form (‘hear’ assigns the infinitive to its complement). In (64b), where ‘have’ has moved to the left and so has an [L<sub>P</sub>] feature, ‘hear’ is instead in the infinitive. Movement of ‘have’ to C in a verb-second clause also has this effect:

- (65) Hans hat<sub>1</sub> das Buch lesen<sub>3</sub> wollen/\*gewollt<sub>2</sub>  
 Hans has.3SgPres the book read.Inf want.Inf/\*want.Ptcp  
 ‘Hans wanted to read the book.’ (Standard German; Hinterhölzl 2009: (1))

The other point of variation concerns whether both V1 and V2 have to have an [L] feature, or only one of them does. In Standard German, the condition is that V1 has the [L] feature. In (64b), ‘hear’ does not have an [L] feature, as it takes its complement to its left. So the licensing statement in Standard German is the following:<sup>11</sup>

- (66) Standard German Substitute Infinitive  
 In a configuration where F forms a complex head with V2, and F Agrees with V1:

<sup>9</sup>It is conceivable that the substitute infinitive is just the default infinitive in Standard German and in all the dialects where the infinitive occurs rather than the supine. Something would have to block the licensing relation in the supine configuration, leading to the default F. I will not pursue this here, however, and will leave the licensing statements as given.

<sup>10</sup>Höhle (2019 [2006]) did not provide a gloss for these examples.

<sup>11</sup>According to Wurmbrand (2004b: 55) and Höhle (2019 [2006]: 464), some speakers of Standard German allow the infinitive in the V3–V2–V1 order, too. For these speakers, neither verb would have to have an [L] feature. Zwart (2007) reports on two dialects that also allow the infinitive in the V3–V2–V1 order (the Dutch of Achterhoek, and Swabian).

- a. If V2 is an F-licenser, V1 is ‘have’, and V1 has an [L] feature, then F must be infinitive.
- b. Otherwise, V1 licenses the form it is lexically specified to license.

In one grammar of Swiss German, the licensing condition refers only to V2. The example is repeated below:

- (67) d Froid, di ghööre<sub>2</sub>/ghöört<sub>2</sub> singe<sub>3</sub> z haa<sub>1</sub>  
 the joy you hear.Inf/hear.Ptcp sing.Inf to have.Inf  
 ‘the joy to have heard you sing’ (Swiss German; Salzmann 2019a: (14d))

In the grammar that produces the participle form of ‘hear’ in this example, both V2 and V1 have to have [L] features in order for the substitute infinitive to be licensed. V1 does not, as it is on the right. In the other grammar, only V2 has to have the [L] feature. It does in this example, since its complement is to its right. In this grammar, the substitute infinitive is licensed, and the participle is not.

The points of variation are therefore the following: (1) Which verbs trigger it as V1; (2) whether the substitute form is the supine or the infinitive; (3) whether the licensing condition requires [L] on both V1 and V2, just V1, or just V2.<sup>12</sup>

This completes the analysis of the supine/substitute infinitive. It is a specialized form for a very particular context, and it is always built by direct Merge, not by head movement. This means that it is never displaced, just as the participle is never displaced in most dialects. However, the verb that appears in the supine/substitute infinitive can also bear other morphology that is displaced onto it:

- (68) die Ohnmacht, nicht haben<sub>1</sub> helfen<sub>3</sub> zu können<sub>2</sub>...  
 the powerlessness not have.Inf help.Inf to can.Inf  
 ‘the powerlessness [of] not having been able to help’ (Standard German; Salzmann 2019a: (13))

Recall that the licensing condition on the substitute infinitive in Standard German is just that V1 have an [L] feature. In this example, it does, as it is on the left. V2 does not have an [L] feature, it occurs to the right of its complement. In this case, it is also bearing the ZU-infinitive morphology assigned to the complement of a noun. In the current analysis, V2 is merged directly with an F which is licensed as the substitute infinitive by V1, and then it undergoes head movement to the two Fs that form the ZU-infinitive (V1 is ineligible since it has moved to the left). So while

<sup>12</sup>Zwart (2007) reports that Samatimeric, Luxemburgish, and Austrian Bavarian have the participle in main clauses with V1–V2–V3 order, surprisingly. However, in embedded clauses, the order is always V2–V1–V3, with ‘have’ after the participle. Zwart (2007) hypothesizes that, in main clauses, the presence or absence of the substitute infinitive is calculated before verb second movement, where the order is V2–V1–V3, as it is in embedded clauses. If this is correct, another point of variation would be whether the licensing statement refers to [L] features in general, or to [L<sub>P</sub>] in particular. In these three dialects, if the order before verb second movement is V2–V1–V3, then only V2 would have an [L<sub>P</sub>] feature. V1 would have an [L<sub>C</sub>] feature, but if the licensing statement specifically refers to [L<sub>P</sub>], then these main clauses would not trigger the substitute infinitive. As a last point of variation, Zwart (2007: 96) reports that Zimbrisch has V1–V2–V3 order but no IPP effect; V2 is in the participle form. This dialect would lack the licensing statements proposed here altogether, and ‘have’ would then always license the participle. According to De Vos (2003), Afrikaans optionally allows the participle in V1–V2–V3 order, which I would analyze as two different grammars, one like Zimbrisch.

the supine/substitute infinitive is never displaced, the verb that bears it can also bear displaced morphology, if it ends up as the last verb in the cluster (which is only possible in dialects where it is not necessary for V2 to bear an [L] feature in order to be in the supine/substitute infinitive).

## 4.9 Supine and Displacement on Different Verbs

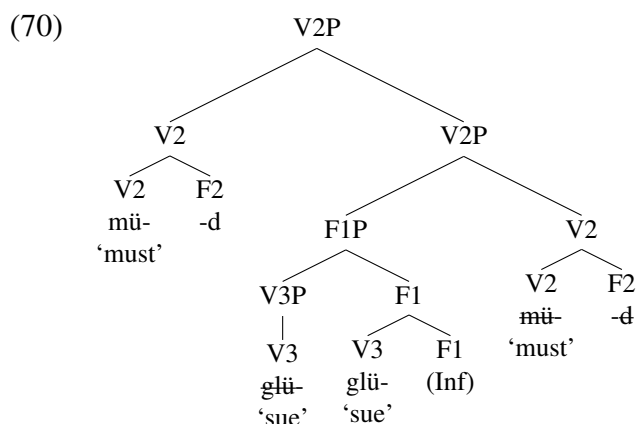
While the supine is never displaced, it is possible to have V2 in the supine form while V1's selected morphology is simultaneously displaced to the final verb of the cluster. Consider the following example from Kleinschmalkalden:

- (69)      mə wæn<sub>1</sub>      mü-d<sub>2</sub>              glü-n<sub>3</sub>  
              wir werden   müssen.CS      klagen.G  
              we will.1Pl must.Sbjv-Sup litigate-Ger  
              'we probably have to go to law' (Kleinschmalkalden; Höhle 2019 [2006]: (35b))

In this example, the gerund selected by V1 has been displaced to V3, while at the same time, V2 appears in the supine. This might appear to be a problem for the current analysis, but in fact, the licensing approach adopted here actually predicts examples like (69).

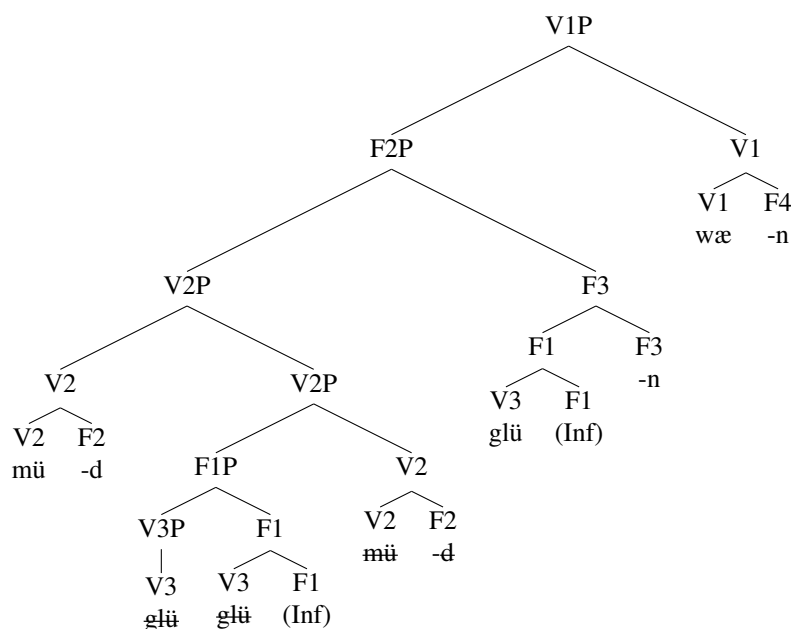
Note first that this displacement never happens with the participle, where V1 is 'have'. That is because participle morphology is always built by direct merge, not by head movement. The gerund, in contrast, is apparently built by head movement in Kleinschmalkalden.

The derivation starts with V3. In this dialect, the gerund is not merged directly, nor is the infinitive that V2 selects. V3 therefore merges by itself. V2 is the second verb to merge. However, V2 selects the infinitive, so an F is merged first (F1). F1 requires head movement, so V3 moves to F1. Then V2 merges, licensing F1 through Agree. V2 is in the supine. As described in the previous subsection, the supine is merged directly with V. So V2 is merged directly with another F, F2. V2 has an [L<sub>P</sub>] feature, so it moves to the left, adjoining to its own projection:



V1, the future auxiliary, is the next verb to merge. In this dialect, the inflection it selects, the gerund, is built by head movement. So, first an F is merged, F3. F3 requires a verb to move to it and form a complex head with it. If V2 had not moved to an adjoined position, it would be the closest verb that could move to F3, and V2 would then be required to move to F3. However, V2 has undergone the equivalent of A-bar movement, making it ineligible for movement to F3. The closest head with a V feature is then F1 (which contains V3). So F1 undergoes head movement to F3:

(71)



V1 is finite, so it is merged directly with an F, F4 (which will be licensed through Agree with finite T). At this point, F3 Agrees with V1, and is licensed. Since V1 Agrees with F3, it can also Agree with F2 (F1 does not intervene, because it does not asymmetrically c-command F2). V1 has an  $[L_C]$  feature, while V2 has an  $[L_P]$  feature, so F2 has to be supine. The licensing constraints as given actually predict that both the supine and the gerund can co-occur here.

Note that V3 forms a complex head with two Fs, F1 and F3. F1 is the infinitive while F3 is the gerund. These two are not compatible with each other, so one of the Fs has to fail to be pronounced. In this case, F3 is more marked than F1, so F1 is left unpronounced, and V3 is pronounced as the gerund.

Completing the above derivation, V1 undergoes verb second movement to C, putting it on the left as well. This derives the correct word order and the correct morphology. In the current account, when V1 selects a morphological form that is built by head movement (so, not the participle), and it is the kind of head that participates in supine licensing, then it is predicted that the supine can co-occur with displaced morphology in the V1–V2–V3 order. (If one were to propose within the analysis of Salzmann 2019a that the supine/substitute infinitive were an F placed by Lowering rather than Local Dislocation, then the analysis would *not* allow this. Salzmann’s analysis is only compatible with the supine/substitute infinitive being a default, but section 3.2 gave good reasons it cannot be.)

One thing to note is that the current account can appeal to markedness for reconciling multiple Fs on a single head. In every case, the more marked form is the one that is pronounced. In Salzmann’s analysis, in contrast, it has to be stipulated that the participle always deletes; given this, markedness cannot be appealed to, and every other case has to be stipulated as well.

## 4.10 Multiple Displacements

It is possible to have multiple Fs displaced in a single clause, as was pointed out earlier. However, in my analysis, this happens much less frequently than it does in Salzmann’s. In Salzmann’s (2019a) analysis, multiple displacements happen frequently, for instance in every instance of V1–V2–V3

order. In this order, both V1's selected morphology and V2's end up on V3. This is because V3 is the final verb in both V1's complement and V2's. Whenever V1 is 'have', Salzmann has to delete the participle morphology on V3 in favor of whatever morphology V2 assigned. In my analysis, in contrast, the supine/substitute infinitive on V2 is what is licensed by V1 in this configuration, and only the morphology assigned by V2 merges with V3.

When V1 is not 'have', then my analysis mostly aligns with Salzmann's in having multiple displacements to V3. For example, in (72), both V1 and V2 select the GE-infinitive. V2 appears in the supine, while V3 bears only one instance of the GE-infinitive:

- (72)    ə meçd<sub>1</sub>            lɪwə<sup>ə</sup> ken-d<sub>2</sub>            gə-aɪwəd<sub>3</sub>  
           er möchte            lieber können.CS    arbeiten.In  
           I would.like.1Sg rather can.Sbjv-Sup GE-work.Inf  
           'I would rather like to be able to work.' (Barchfeld; Höhle 2019 [2006]: (45), gloss altered from Salzmann 2019a: (75))

As described in the previous subsection, when V1 licenses an F that is built by head movement, and it is a verb that participates in licensing the supine, then both can occur. In this example, the GE-infinitive is displaced to V3, while the supine is also licensed on V2. At the same time, the GE-infinitive licensed by V2 will also appear on V3 (V3 will undergo head movement through two instances of the GE-infinitive). Only one prefix and one suffix can be realized, however, so we only see one instance of the GE-infinitive (this is haplology, as in Salzmann's analysis).

In a similar example, V1 selects the bare gerund and V2 selects the ZU-gerund. The final verb, V3, appears as the more marked ZU-gerund:

- (73)    si wiɪd<sub>1</sub>    dəs ned    bɪyç-d<sub>2</sub>            tsə dɔ-n<sub>3</sub>  
           sie wird    das nicht brauchen.CS    zu tun.G  
           she will.3Sg this not need.Sbjv-Sup to do-Ger  
           'She won't have to do this.' (Barchfeld; Höhle 2019 [2006]: (47b), gloss altered from Salzmann 2019a: (76))

V2 appears in the supine form. In my analysis, V1 licenses both an F put together with a verb by head movement (the gerund) and the supine. V2 gets the supine, while V3 moves through the ZU-gerund Fs licensed by V2 to the gerund F licensed by V1. V3 is put together with two instances of the gerund, so one has to remain unpronounced.

In a five-verb example from Wasungen, V1 selects the gerund while V3 selects the GE-infinitive. What is realized on the last verb of the cluster, V5, is the GE-infinitive:

- (74)    ich wü:əɪn<sub>1</sub>            ned    hɑ:2            laəs<sub>4</sub>            kön<sub>3</sub>            gə-ruf<sub>5</sub>  
           ich würde.ihn            nicht haben.IN lassen.IN können.IN rufen.IN  
           I would=him.Acc Neg have.Inf let.Inf can.Inf GE-call.Inf  
           'I wouldn't have been able to have [s.o.] call him' (Wasungen; Höhle 2019 [2006]: (60))

In Salzmann's analysis, four different morphological forms will end up on V5 in this example. In my analysis, V1 licenses the substitute infinitive on V2 and (optionally) the gerund on V5 (Wasungen has the supine only for one verb, 'must', according to Höhle 2019 [2006]: 468). V2 normally licenses the participle and so it only licenses the substitute infinitive on V3 in this word

order. V3 licenses the GE-infinitive, which ends up on V5. V4 licenses the bare infinitive. So V5 ends up with three morphological forms: the bare infinitive from V4, the GE-infinitive from V3, and (optionally) the gerund from V1. It appears that the GE-infinitive is the most marked of these options, and so it is what is pronounced. (V4 is either the default infinitive, or the substitute infinitive, if ‘can’ licenses that in Wasungen; there is not enough information in Höhle 2019 [2006] to tell.)

In the current analysis, whenever a verb ends up with multiple Fs, the most marked one will be the one that is pronounced.<sup>13</sup>

## 4.11 Cumulative Exponence

There is one particularly interesting case where it appears that two morphological forms are displaced to the final verb, and, rather than one failing to be pronounced, they are both realized. In this case, the resulting form is a combination of two existing forms, where the combination does not exist otherwise. The example comes from Steinbach-Hallenberg. V1 selects the gerund while V2 selects the GE-infinitive. V3 is the last verb of the cluster and has the combination, with the *ge* prefix of the GE-infinitive but the suffix of the gerund:

- (75)    **öb-sd=e    wörschd<sub>1</sub> könd<sub>2</sub>   ge-kom-e<sub>3</sub>**  
           if-2Sg=you will.2Sg   can.Sup GE-come-Ger  
           ‘whether you will be able to come’ (Steinbach-Hallenberg; Salzmann 2019a: (79))

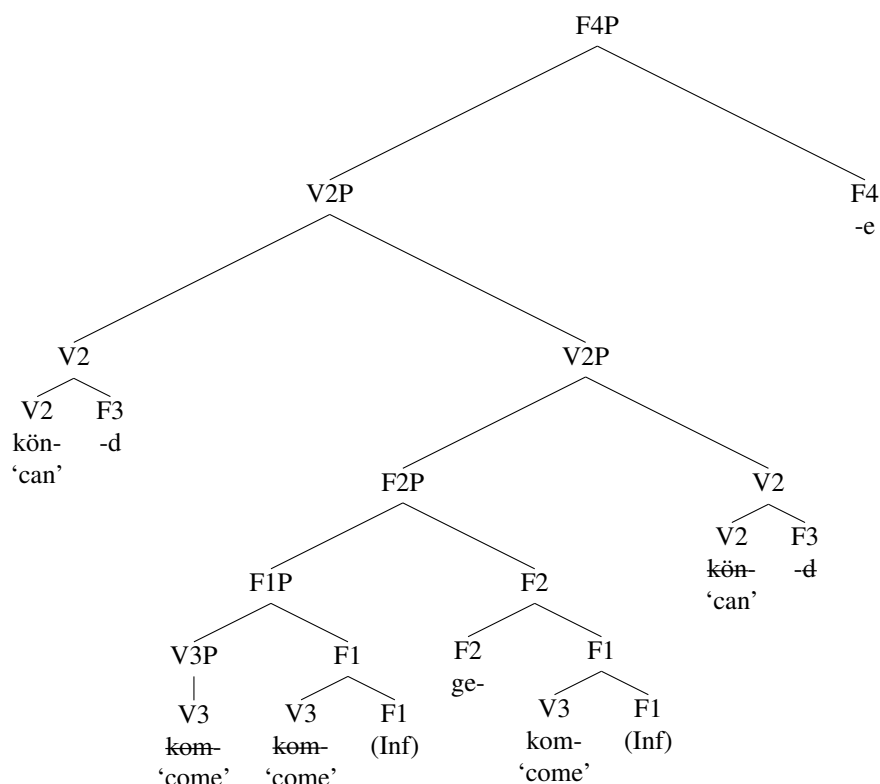
Since *ge*+gerund is not a form that exists outside of this context, Salzmann (2019a: 35) says this is “one of the strongest arguments for a post-syntactic perspective.” However, the current—purely syntactic—theory also allows the existence of such forms.

In the current analysis, both the gerund and the GE-infinitive are put together by head movement in most dialects. So V3 is merged into the derivation as a bare V. Then two Fs are merged, one for *ge* and the other for the infinitive ending. V3 moves to each of those Fs in turn, F1 and then F2. Then V2 merges. It is in the supine, agreeing with V1. So V2 merges with an F, F3, and then moves to the left (it has an [L<sub>P</sub>] feature). Suppose now that an F for the gerund selected by V1 merges, F4:

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<sup>13</sup>Höhle (2019 [2006]) gives an example from Barchfeld (example 41) where V1 selects the ZU-gerund and V2 selects the GE-infinitive, and V3 appears as the ZU-gerund. Salzmann (2019a: note 30) states that in Steinbach-Hallenberg, in the same configuration V3 appears instead as the GE-infinitive. I suggest that the GE-infinitive and the ZU-gerund are equally marked according to general principles, and so the dialects choose which one they regard as more prominent.

(76)



This will be licensed, because V1 licenses the gerund. The supine on V2 will also be licensed, through Agree with V1, once V1 merges. All licensing requirements will have been met. V2 is then ineligible to move to F4, so V3 must (the complex head F2 is what moves). V3 will end up with three Fs, F1, F2, and F4. The infinitive suffix will remain unpronounced, since the gerund is the more marked of the two.

Thus, the current, purely syntactic, analysis also derives the existence of forms that do not exist outside of instances of displacement. Therefore, such forms do not constitute an argument for post-syntactic morphology, contra Salzmann (2019a).

It should be noted that there is variation here. According to Höhle (2019 [2006]: note 24), speakers are split, with some preferring *ge* plus the gerund as in (75), and others preferring the GE-infinitive, with the gerund unexpressed. According to Salzmann (2019a: note 23), citing Anita Steube, the gerund suffix occurs with epistemic readings of ‘will’ and is missing in purely futurate readings. The current analysis can capture this readily: Purely futurate ‘will’ can fail to Agree with and license the gerund in the supine configuration, as a lexical property (it will still participate in supine licensing).

One other thing to note is that other dialects do not realize both the gerund and the GE-infinitive at the same time, according to Höhle (2019 [2006]: 479). In these other dialects, only the GE-infinitive is realized, even though both the gerund and the GE-infinitive can be displaced on their own. For instance, in Kleinschmalkalden, the gerund selected by ‘will’ can be displaced to V3:

- (77)    ə            wyəd<sub>1</sub>=s ned    wöl-d<sub>2</sub>            hu-n<sub>3</sub>  
           er            wird's    nicht wollen.CS    haben.G  
           he.Nom will=it    not    want.Sbjv-Sup have-Ger  
           ‘he won’t want to have it’ (Kleinschmalkalden; Höhle 2019 [2006]: (38a))

The GE-infinitive selected by ‘can’ can also be displaced (in this case, there is no supine for ‘let’, so it is in the substitute infinitive instead):

- (78)      ə          kon<sub>1</sub>    ən          iu    lās<sub>2</sub>          gə-kom<sub>3</sub>  
              er          konnte ihn          ja    lassen.IN kommen.IN  
              he.Nom could him.Acc Part let.Inf      GE-come.Inf  
              ‘he could let him come’ (Kleinschmalkalden; Höhle 2019 [2006]: (39a))

But when V1 is ‘will’ and V2 is ‘can’, only the GE-infinitive appears on V3:

- (79)      ə    wyəd<sub>1</sub>=s    ne(d)    kön-d<sub>2</sub>          ərāb    gə-ris<sub>3</sub>  
              er    wird’s      nicht können.CS      herab reißen.IN  
              he will=it    not    can.Sbjv-Sup down GE-tear.Inf  
              ‘he probably isn’t able to tear it down’ (Kleinschmalkalden; Höhle 2019 [2006]: (40))

The current analysis can also capture this pattern. In the current analysis, the F that is the gerund is not required to merge in V1–V2–V3 order. I assume that each verb that is an F-licenser must license at least one F. However, in V1–V2–V3 order, V1 already licenses another F, namely, the supine/substitute infinitive on V2. This is sufficient to satisfy its requirements. Nothing stops the gerund from merging, as it can be licensed, but it does not need to. In cases like (79), the grammar could prefer to leave it out, since it is unnecessary and its presence will result in some F not being pronounced anyway.

Note that Salzmann’s (2019a) analysis will always place both the gerund and the GE-infinitive on V3 in all of these dialects. In order to capture the dialectal variation, dialects will have to differ in which suffix they prefer to delete. Once again, Salzmann (2019a) has to stipulate how morphological forms are resolved when there are too many of them. The current analysis, in contrast, can appeal to the more general notion of markedness. When the more marked gerund fails to surface in favor of the less marked infinitive, it is because the gerund failed to merge in the first place.

## 4.12 Further Dialectal Variation

In Steinach (near Sonneberg), the gerund selected by ‘will’ as V1 is never displaced to V3. Instead V3 appears in the infinitive (which is what is selected by V2):

- (80)      iç          wa:<sub>1</sub>=f          rāu    müs<sub>2</sub>          rais<sub>3</sub>  
              ich      werde’s      runter müssen.IN reißen.IN  
              I.Nom will.1Sg=it down must.Inf      tear.Inf  
              ‘I probably have to tear it down’ (Steinach; Höhle 2019 [2006]: (55a))

V2 is also in the substitute infinitive (Steinach does not have the supine).

In the current analysis, this would mean that the gerund is built by Merge + Agree in Steinach, and not by head movement (see the discussion of Sonneberg in section 4.2). The gerund is therefore replaced with the supine/substitute infinitive and does not co-occur with it. The dialects of Coburg and Hämmerl are the same, according to Höhle (2019 [2006]: 480). At the same time, the GE-infinitive *is* displaced in Steinach:



- (81)    iç   hâu<sub>1</sub>=s=nΛ       los<sub>3</sub>       khün<sub>2</sub>       gə-māx<sub>4</sub>  
          ich habe's.ihn       lassen.IN können.IN machen.IN  
          I   have.1Sg=it=him let.INF   can.INF   GE-do.INF  
          'I could make him do it' (Steinach; Höhle 2019 [2006]: (59b); gloss from Salzmann 2019a: (21))

In this example, V2 selects the GE-infinitive, but it is realized on V4, not on V3 (V3 is in the substitute infinitive, just like V2). This means that, while the gerund is built by direct Merge in Steinach, the GE-infinitive is not, it is built by head movement.

Displacement of the gerund is optional in Wasungen and Ruhla:

- (82)    sü:   wæ:rn<sub>1</sub>=s   ü:r   mütt<sub>2</sub>       gā-nn<sub>3</sub>   /   gā:3  
          sie   werden's   ihr   müssen.IN   geben.G / IN  
          they will.3Pl=it her must.Inf   give-Ger / give-Inf  
          'they probably have to give it to her' (Ruhla; Höhle 2019 [2006]: (43))

We can capture this in the same way as described above for Kleinschmalkalden. Recall that when V1 participates in supine/substitute infinitive licensing, it licenses one F through Agree with V2. It may also license another F that is placed on a verb through head movement, but this is not necessary. In Wasungen and Ruhla, it is apparently optional whether this F is merged or not. If it is, it is licensed, and the gerund appears on V3. If it is not, all licensing requirements are also met, and V3 will be in the infinitive (with the infinitive ending selected by V2).

As can be seen, the current proposal successfully captures the rather considerable dialectal variation that exists in displacement.

### 4.13 Orders that Require More Complicated Movements

Recall from section 4.4 that some orders in verb clusters require more than just leftward adjunction of a verb to its own maximal projection (in three-verb clusters, V2–V1–V3 and V3–V1–V2). Sometimes a verb has to move further, across multiple maximal projections. However, when it does so, it appears that it has to adjoin to its own projection first, since leftward movement always makes it ineligible for head movement. Consider example (81), repeated below:

- (83)    iç   hâu<sub>1</sub>=s=nΛ       los<sub>3</sub>       khün<sub>2</sub>       gə-māx<sub>4</sub>  
          ich habe's.ihn       lassen.IN können.IN machen.IN  
          I   have.1Sg=it=him let.INF   can.INF   GE-do.INF  
          'I could make him do it' (Steinach; Höhle 2019 [2006]: (59b); gloss from Salzmann 2019a: (21))

In this example, V3 has to be undergoing a longer-distance movement to get across V2. Note, however, that it does not carry any morphology with it: V2 assigns the GE-infinitive, which is displaced to the final verb of the cluster, V4. V3 appears in the default infinitive. In the current analysis, V3 must have moved to adjoin to its own projection first, because this made it ineligible for head movement to the two Fs that merge immediately above V3P. Then it must have moved on to adjoin to an even higher position, above V2 (which also moved leftward, since it precedes V4, and it is in the substitute infinitive).

If the moving verb has morphology that was put together by direct merge, in contrast, we expect it to continue to bear that morphology as it moves leftward. This is the case with the participle in most dialects. Consider the following example of V3–V1–V2 order:

- (84)    öb hä: dā:s wœrglich gə-sœ:-d<sub>3</sub>    kon<sub>1</sub>    gə-hā:<sub>2</sub>  
           if he that really    Ptcp-say-Ptcp can.3Sg GE-have.Inf  
           ‘if he really can have said that’ (Steinbach-Hallenberg; Salzmann 2019a: (20b))

In this example, V1 selects the GE-infinitive and V2 selects the participle. V2 appears as the GE-infinitive and V3 as the participle. That is, there is no displacement. This follows in the current analysis. V1 has moved to the left (it has an [L<sub>P</sub>] feature), but V2 has not, so V2 is not in the supine (in Steinbach-Hallenberg, both V1 and V2 have to have an [L] feature). V2 is the closest verb to the GE-infinitive morphology selected by V1, so it moves to those two Fs. V3 must have moved to the left, and it must have crossed its own projection, since it precedes V1. Whatever this movement is, it would not affect the participle morphology, since the participle morphology is always directly merged with the verb.

Even when the moving verb bears participle morphology, though, we can see that it must have done the first step of movement that made it ineligible for head movement. Recall example (10), repeated here as (85):

- (85)    Wieder en grund meh zum glücklich drüber sii,    niä    agfange<sub>2</sub>    ha<sub>1</sub>    z  
           again a reason more to happy about.it be.Inf never begin.Ptcp have.Inf to  
           rauche<sub>3</sub>!  
           smoke.Inf  
           ‘Another reason to be happy to have never started smoking!’ (Swiss German; Salzmann 2019a: 14e)

In this example of V2–V1–V3 order, V1 must have moved to the left (to precede V3), and then V2 must have undergone a longer-distance movement, to precede V1. Once again this does not affect the participle morphology, since the participle is built by direct merge in Swiss German. V2 takes its participle morphology with it. However, in this case, we can see that the ZU-infinitive selected from outside the cluster ends up on V3. Long-distance movement makes V2 ineligible for head movement, along with V1, so that V3 ends up with the ZU-infinitive. In the current proposal, this must be because any long-distance movement must be preceded by the initial leftward adjunction to the verb’s own projection described above.

## 4.14 Summary

The current proposal successfully captures the patterns of displaced morphology in German dialects. There are two mechanisms for putting inflectional morphemes on verbs, direct merge and head movement. The latter is affected by the reordering operation in verb clusters. Specifically, a verb that moves to an adjoined position on the left is no longer eligible for head movement, and so the next lower head moves instead. Morphemes that are combined with verbs through direct merge are never displaced. This proposal, using only the tools necessary for phrasal syntax, captures a

wide range of data, in fact more data than Salzmann’s (2019a) Distributed Morphology analysis. It also does not suffer from the problems identified for that analysis in section 3.<sup>14</sup>

## 5 Conclusion

This paper began by describing what should be the default model of morphosyntax. This model has only a single component of grammar that puts together all complex forms (the morphosyntax), and it has only the mechanisms that are necessary for phrasal syntax anyway. There are no post-syntactic levels and no extra-syntactic mechanisms. I have shown here that it is possible to capture the complex patterns of displaced morphology in German varieties within this default model, without needing to appeal to post-syntactic levels and extra-syntactic mechanisms. Given that the analysis is at least as successful as the competing Distributed Morphology analysis, the phenomenon of displaced morphology in German dialects therefore does not constitute an argument for the model of grammar proposed by Distributed Morphology, contra Salzmann (2019a).

As mentioned earlier, the analysis of Salzmann (2019a) does have the tools to overcome some of the problems for that analysis that were identified here (although the blocking effect of CPs would require something additional). If suitably altered, its empirical coverage could come close to the one proposed here. We should then compare the two on standard metrics of theory comparison. The current analysis needs only the phrasal syntax and only the mechanisms of Merge, Move, and Agree, which are necessary for phrasal syntax anyway. The current analysis does not need a second component of syntax for converting hierarchical structure into linear order. Salzmann’s (2019a) Distributed Morphology analysis, in contrast, requires a syntax and a post-syntax. It requires the operations of Vocabulary Insertion, Linearization, Lowering, Local Dislocation, and Impoverishment (and some form of node-sprouting for insertion of a default), all of which the current analysis does without. Salzmann’s analysis also has to stipulate how to resolve morphological conflicts, whereas the current analysis can appeal to the general notion of markedness. In every way, then, the current analysis is simpler and preferable.

As has already been noted, the Distributed Morphology architecture also runs afoul of the Strict Cycle Condition. Every operation at Morphological Structure violates the Strict Cycle Condition, as they will all require that an operation modify just a sub-part of an already built derivation. This may seem minor, but it is actually conceptually very problematic. Distributed Morphology always imposes a strict order on operations at Morphological Structure. For instance, Vocabulary Insertion is said to proceed from most deeply embedded outward (Bobaljik 2000). For Salzmann (2019a), it is crucial that a hierarchically lower F undergo Local Dislocation with the V to its left *before* a hierarchically higher one does (Salzmann 2019a: 25). (For Georgieva et al. 2021, in contrast, it is crucial that Lowering affect a hierarchically higher head *before* a hierarchically lower one.) The problem is that, in syntax, it is a combination of locality restrictions (like something that requires immediate satisfaction of requirements) and the Strict Cycle Condition that ensures that the derivation takes place in a particular order. At Distributed Morphology’s level of Morphological Structure, every operation violates the Strict Cycle Condition equally, so there is no way to ensure that operations happen in a particular order, short of stipulating that order. With no basis for stipulating an order, it is not clear why one order would be preferred over another. (See also the

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<sup>14</sup>For reasons of space, I am unable to discuss the interesting patterns of *te* displacement in Dutch. See Cavarani-Pots (2020).

discussion of ordering and the Strict Cycle Condition in Bruening 2024, as well as the discussion of similar conceptual problems with Distributed Morphology operations in Collins & Kayne 2023.)

The architecture posited by Distributed Morphology is then not only unmotivated and unnecessary, it is conceptually problematic. I argue that it should be dispensed with, and that it can be, in every case. The phenomenon of displaced morphology is one of the few cases where it has been argued that this type of post-syntactic analysis is *necessary*. I have shown here that it is not. In most cases, practitioners of Distributed Morphology just assume that we need a post-syntactic level with extra-syntactic mechanisms. They almost never *argue* that we do. In the few cases where they do, I contend that those arguments do not go through. For instance, Georgieva et al. (2021) argue that Mari and Udmurt negation requires post-syntactic operations, but Bruening (2024) shows that a purely syntactic account works for that case, as well. Harley (2008) argues that the operation of Impoverishment is necessary for syncretism, but Collins & Ordóñez (2021), Collins & Kayne (2023) show that it is not (at least in Spanish). In every other case, it is likely that making slightly different assumptions about the syntax will make a purely syntactic analysis not only plausible, but preferable.<sup>15</sup> More generally, I believe that there is no need at all for any levels or mechanisms beyond those of the syntax. All morphosyntactic phenomena are amenable to a purely syntactic analysis, and there is no barrier to maintaining the default, minimal model of morphosyntax.

Finally, the assumption behind the Distributed Morphology model of grammar is that there are mismatches between the morphology and the syntax. That is impossible, in the default model; such a mismatch would be a syntax-syntax mismatch, which is a contradiction. If there are apparent mismatches, like German displaced morphology, we should rethink our assumptions about syntax. In the German case, all that is required is a different view of how reordering in verb clusters works. I suggest that taking the default model seriously will lead researchers to new ways of looking at old problems in morphosyntax.

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<sup>15</sup>A reviewer cites De Belder (2017) as arguing for the need for the Distributed Morphology operation of Fission. The arguments in this work seem to me to depend on very particular assumptions, and the arguments it contains against a syntactic account are really only problematic for a Bare Phrase Structure analysis. I do not consider this work to include a strong argument for the necessity of a Fission operation. The proposed Fission operation is also conceptually very problematic (it violates the Strict Cycle Condition, quite complex compounds would be simplex throughout the syntax and semantics, etc.).

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