

IPP through Agree*

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1. Introduction

This article discusses the *Infinitivus pro Participio* effect (henceforth: IPP-effect). The phenomenon is illustrated in (1).

- (1) a. Piet gelooft dat Jan hem heeft **gezien**/***zien**. [Standard Dutch]
Pete believes that John him has-AUX see-PPC/see-INF
'Pete believes that John has seen him.'
b. Piet gelooft dat Jan heeft ***gekund**/**kunnen** komen. 1-2-3
Pete believes that John has-AUX can-PPC/can-INF come-INF
'Pete believes that John was able to come.'

The puzzle that the IPP-effect poses is why the past participle spells out as an infinitive in the 3-verb cluster in (1b), but not in the 2-verb cluster in (1a). The aim of this article is showing when exactly the IPP-effect shows up and what the syntactic mechanism is that underlies it.

The article is structured as follows. In section 2 I discuss the empirical data regarding the IPP-effect. Section 2.1 discusses the correlation between the ordering of verbs in a verb cluster and the IPP-effect. Section 2.2 discusses whether the *ge*-prefix can be the cause of the IPP-effect, as has sometimes been claimed. In section 3, I will present my analysis of the IPP-effect in terms of post (narrow) syntactic Agree. In section 4 I discuss two types of dialects that show different behaviour with regard to the IPP-effect. In section 5 it will be shown that the account of the IPP-effect extends to the *Participium pro Infinitivo* effect, i.e. the doubling of past participles. Section 6 discusses the IPP-effect in 2-verb clusters. Section 7 shows that the analysis correctly predicts that the IPP-effect is a restructuring phenomenon. Section 8 contains a small remark on dialects that lack a *ge*-prefix and show the IPP-effect. Section 9 is a summary.

2. Approaches to the IPP-effect

2.1 Word-order generalizations

There is a vast body of literature on the IPP-effect (see e.g. De Schutter 1995; 2000, Vanden Wyngaerd 1994; 1996, Ijbema 1997, Hinterhölzl 1998; 2006, Zwart 2007). Space prevents me from presenting an exhaustive overview of the literature. I only mention here that there are two predominant approaches to explaining the IPP-effect. One line of research relates the IPP-effect to the verb order (or hierarchical relations) in verb clusters. The other line of research takes it that there is a direct relation between the IPP-effect and the perfective prefix *ge*-.

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In the SAND-project (Barbiers et al. 2006), 261 dialects of Dutch were investigated. The SAND-database reveals that the 2-1-3 order is not attested in 3-verb clusters (cf. Barbiers 2005; 2008. The other five orders – the 1-2-3, 1-3-2, 2-3-1, 3-1-2 and the 3-2-1 order – are all possible orders for a AUX-PPC-INF construction such as (1b).

The 1-2-3 order is the only order used in Standard Dutch. The IPP-effect always shows up in this order. In fact, there are no dialects that do not exhibit the IPP-effect in the 1-2-3 order. The 2-3-1 order is the only other order in which the IPP-effect always shows up. The correct generalization therefore appears to be that when the 2-3 part of the cluster is intact, the IPP-effect always shows up (cf. Zwart 2007). In the 1-3-2 and the 3-1-2 order, on the other hand, the IPP-effect is exhibited by some dialects, but not by others. What is interesting in the light of the absence of the IPP-effect in the 2-3 orders, is that the IPP-effect is not exhibited in the fully descending 3-2-1 order.¹

It has been suggested that the IPP-effect is somehow related to word order (e.g. De Schutter 2000), or more specifically, the 1-2-3 ‘clustering’ order (e.g. Bennis and Hoekstra 1989; Den Dikken 1989). While it is tempting to account for the IPP-effect in terms of word-order, because of the fact that the IPP-effect always shows up in 2-3-clusters and never in the 3-2-1 order, the 1-3-2 and the 3-1-2 order will never conform to a single generalization. This is so because in these orders the IPP-effect is exhibited by some dialects but not by others: a single generalization cannot capture this variation unless it takes account of this parametric variation.²

I conclude that a generalisation that posits a split between ascending and descending orders cannot explain the variation in the 1-3-2 and the 3-1-2 clusters. A similar conclusion is reached by Hoekstra (1994), who observes that the IPP-effect in Zaans occurs in the word order in which the auxiliary precedes the past participle, but also points out that this is not the case in all dialects. Hoekstra subsequently notes that it might be necessary to abandon the idea to relate the IPP-effect to verb order altogether and that, instead, we have to search for an explanation of the IPP-effect in the presence of the *ge*-prefix.

2.2 The *ge*-prefix approaches

The *ge*-prefix approaches argue that the perfective prefix *ge*- is the cause of the IPP effect (see e.g. Vanden Wyngaerd 1994; 1996, Hinterhölzl 1998; 2006, Hoekstra 1998). These accounts hold that only dialects with a perfective *ge*-prefix can exhibit IPP, whereas dialects that don't have a *ge*-prefix will never show it.

¹ One exception that is mentioned in the literature to the generalization that IPP is absent in the 3-2-1 order is the Achterhoeks dialect (see Hoekstra and Blom 1996). However, in that dialect the occurrence of the IPP-effect in the 3-2-1 order is tied to cases where the past participle is a modal or causative verb. To the best of my knowledge, the type of verb normally does not influence the IPP-effect, only the verb order does. Since the analysis to be presented below shows that IPP can be predicted by the hierarchical relations between verbs in clusters, Achterhoeks is clearly an exception in this respect. Further research is needed to find out where this exceptionality stems from.

Wurmbrand (2004: p.55) notes that the 3-2-1 order is not always rejected in the Austrian Bavarian dialect. I will come back to this issue in section 4.2.

² Another argument against a ‘clustering’ account (i.e. accounts in which a verb cluster is taken to be a complex verbal head derived through head-movement of verbs) is that some dialects exhibit the IPP-effect in VP-raising constructions (cf. Den Dikken 1994, Haegeman 1998) and in the Third Construction and extraposition (cf. Hartevelt and Hoekstra 1999). These constructions cannot be verb clusters, since VP-material intervenes between the verbs, thus ruling out the possibility that such clusters are complex verbal heads.

While the *ge*-prefix generalisation holds for the majority of the Continental West-Germanic dialects, it does not seem to make the right predictions with regard to West Frisian and Interference Frisian. De Haan (1994) notes that Interference Frisian doesn't have a perfective prefix, but does exhibit the IPP-effect when the 2-3 part of the cluster is intact.

- (2) Ik ha dy sangeres hearre sjongen [Interference Frisian, (1)-2-3]
I have that singer hear-INF sing-INF

Hoekstra and Taanman (1996) show that the same holds for West Frisian. The predominant order in this dialect is 3-2-1, but in some cases a 1-2-3 order is possible. Interestingly, the IPP-effect shows up in these cases.

- (3) Hai was nag wat bleven tot-ie d'r had zien weggaan [West-Frisian, 1-2-3]
He was yet some stay until-he her had see-INF leave-INF
'He stayed a while until he had seen her leave.'

Moreover, there are also dialects that have a *ge*-prefix, but do show the IPP-effect in certain orders (e.g. German has a *ge*-prefix, but does not exhibit the IPP-effect in the 3-2-1 order). On the basis of these exceptions, De Schutter (2000) expresses scepticism over a *ge*-prefix approach. One might oppose that the fact that these 'exceptional' dialects show the IPP-effect only in some 'special' cases might indicate that other factors are at play. Both De Haan (1994) and Hoekstra and Taanman (1996) suggest for Interference Frisian and West Frisian, respectively, that these dialect speakers exhibit the IPP-effect due to the influence of Standard Dutch. However, even if we assume that *ge*-prefix approaches are able to explain away the exceptions, these approaches will still need to say something about the verb order in clusters, since the *ge*-prefix must cause the IPP-effect in the 2-3 orders and in some dialects in the 3-1-2 and 1-3-2 orders, but never in the 3-2-1 order.³

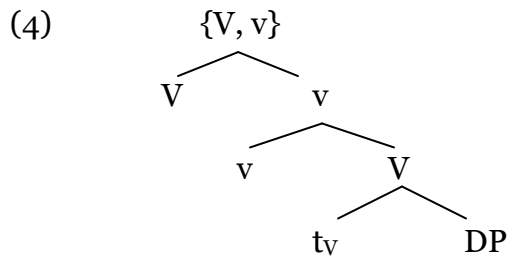
The account I will propose below argues implicitly against the *ge*-prefix approaches, since we will see that it is not needed to take the *ge*-prefix into account to explain the distribution of the IPP-effect. The IPP-effect will instead be shown to be dependant on c-command relations in the cluster, and the account can as such be seen as a descendant of the verb order approaches.

2.3 The syntax of verb clusters

In the previous section we have established which verb orders show the IPP-effect. Before we proceed to an account of the IPP-effect, I want to clarify my assumptions regarding verb clusters. The question is how the different orders of verbs in clusters are derived. There is a lot of literature on the topic. It is beyond the scope of this paper to discuss all of it here. For my purposes knowing how verb clusters are derived is only important to the extent that the verb cluster should correctly reflect the

³ Some *ge*-prefix approaches explain the IPP-effect by claiming that *ge*- is generated in the same position as the complement of the past participle (or the same position the complement must move to) (see e.g. Vanden Wyngaerd 1994, Hinterhölzl 1998). In these cases the *ge*-prefix is dropped, which gives rise to IPP. In section 6 I show that the IPP-effect also arises in 2-verb clusters in some German dialects (that have a *ge*-prefix). In such clusters the past participle does not take a verbal complement. Hence, the IPP-effect cannot be explained by saying that the complement of the past participle blocks *ge*- from being generated, simply because there is no complement. These constructions thus constitute a strong argument against such 'blocking accounts'.

c-command relations between the verbs. I adopt the view that verb clusters are head-initial underlyingly (Zwart (1994)). I will furthermore assume that clusters are derived through head-movement. I adopt Citko's (2008) analysis of head-movement. She overcomes the problems associated with the traditional analysis of head-movement, namely the fact that head-movement violates Chomsky's (1995) Extension Condition, and the fact that the moved element does not c-command its trace. She does so by assuming that head-movement targets the root of the clause. Under this conception head-movement is identical to XP-movement, except for the resulting label. With XP-movement, the attractor will be the label, while head-movement results in *Project Both*: both the moved head and the attracting head project. This is illustrated in (4) for V-to-*v* movement.



This implementation of head-movement predicts that head-movement has syntactic and semantic effects, which has been argued to be the case (see Surányi (2005) for evidence of syntactic effects and Lechner (2006) for semantic effects of head-movement). As (4) illustrates, if *V* moves to *v*, then *V* will c-command *v*, but not the other way around. As we will see, this makes the right predictions for the relations that hold in verb clusters.

3. Doubling of morphology

In this section I outline my proposal for the IPP-effect. After discussing that doubling of morphology takes place through Agree (section 3.1), I argue that Agree that gives rise to morphological doubling takes place at the Morphology component (section 3.2). I then go on to show that the IPP-effect can be explained by the mechanism of morphological doubling through Agree at Morphology (section 3.3).

3.1 Doubling of morphology through Agree

The IPP-effect is not the only form/meaning mismatch that occurs in verb clusters. The copying of past participial morphology, the so-called *Participium pro Infinitivo* effect, also occurs in verb clusters (Den Dikken and Hoekstra (1997)). In these constructions, infinitives take on the form of a past participle. An example is given in (5) (from Den Dikken and Hoekstra 1997).

- (5) Hy soe it dien wollen ha. [Frisian, (1) 4-3-2]
 he would it do-PPC want-PPC have
 'He would have liked to do it.'

Wiklund (2007) shows that copying of morphological inflection in Scandinavian is possible for Tense, Mood and Aspect (TMA) morphology. She argues that such copying of morphological inflection is only possible in restructuring contexts. This is

one of the reasons that led her to propose that copying takes place under Agree.⁴ Under an Agree approach, a non-finite verb can enter the syntax with an underspecified (i.e. unvalued) TMA-feature (henceforth: F_{TMA}). To become valued, the verb with the unvalued feature needs to enter into an Agree relation with a verb with a valued F_{TMA} . Hence, what is underlyingly (and thus semantically) an infinitive can superficially spell out as a past participle, as the result of this Agree relation. Let us go back to (5). In this example, the parasitic past participle *dien* ‘do’ (which is semantically an infinitive) enters the syntax with a $[TMA: _]$. To get its feature valued, the parasitic past participle enters into an Agree relation with the auxiliary *ha* ‘have’, which, according to Den Dikken and Hoekstra (1997) carries the PPC-feature (i.e. $[TMA: PPC]$) that ‘licenses’ past participles. The result is that the parasitic past participle ends up with a $[TMA: PPC]$ and will consequently spell out as a past participle. To sum up, copying arises in restructuring contexts in which a verb enters the syntax with a $[TMA: _]$. Subsequent valuation of this F_{TMA} can lead to a form/meaning mismatch, as the value of this feature might not correspond to the semantics of the verb that carries it.

The biggest difference between parasitic copying and the IPP-effect is that copying of TMA-morphology is always optional, whereas the IPP-effect is never optional. In copying constructions, the verb with parasitic morphology could also be spelled out in its regular form. In cases of IPP the past participle can only spell out as an infinitive. Den Dikken and Hoekstra (1997) and Wiklund (2007) account for the optionality of parasitic morphology by assuming that in dialects that allow for this, a non-finite verb *may* enter the syntax with a $[TMA: _]$.⁵ In the remainder of this article I will argue that the IPP-effect exists because a past participle *always* enters the syntax with a $[TMA: _]$ in Continental West Germanic dialects. Contra Den Dikken and Hoekstra (1997) and Wiklund (2007), however, I will assume that copying arises from post spell-out Agree, not narrow syntactic Agree. The specifics of my proposal are outlined in the following section.

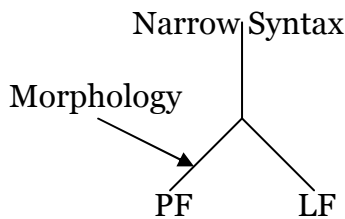
3.2 Post spell-out Agree

Recently it has been claimed that agreement is a post-syntactic phenomenon (see Bobaljik 2008, but also Fuß 2007; 2008, although the latter argues that agreement piggybacks on syntactic Agree and as such is not a purely post spell-out phenomenon). I will assume here that TMA-agreement arises from post spell-out Agree, although I remain agnostic as to whether all agreement is regulated after narrow syntax. Under the conception that sharing of TMA-features (i.e. *agreement*) is a post spell-out process, agreement relations are calculated on the output of narrow syntax before linearization, see (6). I follow Bobaljik (2008) in calling this part of the derivation Morphology (basically: ‘PF before linearization’), see (6).

⁴ Wiklund actually notes that in Swedish copying takes place under ‘Inverse Agree’: the infinitive, which has an unvalued TMA-feature, is valued by the closest verb that it is c-commanded by. As it is not necessary for the account of the IPP-effect below to adopt Inverse Agree, I will not discuss it here. Note, however, that the account proposed below extends to the doubling of morphological inflection in Scandinavian only if Inverse Agree is adopted.

⁵ Because Den Dikken and Hoekstra (1997) adopt a checking theory of features (cf. Chomsky (1995)), they actually assume that dialects that allow for copying allow infinitives to enter the syntax with an uninterpretable, as opposed to an interpretable, PPC-feature.

(6) Y-model



Sharing is instantiated when an Agree relation holds between two verbs. I adopt Pesetsky and Torrego's (2007) definition of Agree:

(7) Agree

- (i) An unvalued feature F (a *probe*) on a head H at syntactic location α (F_α) scans its c-command domain for another instance of F (a *goal*) at location β (F_β) with which to agree.
- (ii) Replace F_α with F_β , so that the same feature is present in both locations.

This definition of Agree states that a probe (i.e. a verb with a valued F_{TMA}) must c-command the goal (i.e. a verb with an unvalued F_{TMA}). It follows that, if Agree between TMA-features takes place post spell-out, Agree can only take place if both probe and goal are located in the same spell-out domain (where spell-out domains correspond to the complements of v and C). If a potential goal is not situated in the same spell-out domain as the probe, no Agree relation can be established because the goal is inaccessible to the probe (this is formalized in the *Phase Impenetrability Condition* of Chomsky (2001). As I will show in section 6, this correctly predicts that the IPP-effect is a restructuring phenomenon. For now it is sufficient to note that sharing of TMA-features through Agree is only possible when both probe and goal are located in the same spell-out domain.

As said above, copying constructions arise when a verb, typically an infinitive, enters the derivation with an unvalued F_{TMA} instead of a valued F_{TMA} . From this it follows that there is no strict probe/goal distinction. If a verb enters the derivation with an unvalued F_{TMA} it will function as a probe, whereas it will function as a goal in cases where it enters the derivation with a valued F_{TMA} .⁶ Once probes have their [TMA: $_$] valued, it becomes a potential goal for a higher probe (see also Baker and Willie (2010), who adopt this particular view to account for agreement patterns in Ibibio).⁷

⁶ Note that this state of affairs follows from analyzing copying constructions in terms of Agree (cf. Wiklund 2007). It does not follow specifically from the claim that TMA-agreement takes place post spell-out.

⁷ From the perspective of the standard theory on Agree (Chomsky 2000; 2001, Pesetsky and Torrego 2007) a problem arises when we postulate that Agree can take place after spell-out. If Agree can take place to value an inflectional feature after spell-out, this feature will not be valued at the LF interface. At the point at which valuation takes place at Morphology, the structure containing the unvalued feature is already shipped off to LF (cf. the model in (6)). I reconcile this problem by proposing that Agree at Morphology can only take place if it involves features that are only legible to the PF interface. By hypothesis, these features are invisible at the LF interface. I assume that such features are not specified for interpretability.

TMA-features only seem to feed Vocabulary Insertion. If it is correct that these features are not specified for interpretability, this accounts for the fact that copying in verb clusters occurs frequently: a form/meaning mismatch arises because the form, which is dependant on the value of the TMA-feature, is dissociated from the meaning, which is determined configurationally. A past participle, for example, gets a perfective interpretation by virtue of being selected by the auxiliary of tense. As we will see

Apart from the point of instantiation, the operation of Agree itself does not differ when it applies in narrow syntax or at Morphology. However, the point of instantiation (pre- or post spell-out), leads to differences when it comes to locality and ‘goal-hood’. For locality, we already noted that post spell-out Agree requires that probe and goal are located in the same spell-out domain. Another property of post spell-out Agree that sets it apart from syntactic Agree, is that linguistic items that will not be subject to Vocabulary Insertion cannot participate in Agree relations. More concretely this means that a probe cannot Agree with a potential goal when that goal is a trace or is elided. For example, Fuß (2007; 2008) shows that complementizer agreement, which he argues takes place post-syntactically, is blocked when the goal (in this case the subject) has been elided.⁸ In (8a) there are two instances in which the C-head agrees with the subject. In the first clause of (8a), this results in the complementizer *dass* ‘that’ in C spelling out a *-ts* agreement morpheme. In the second clause of (8a), there is no complementizer and the agreement morpheme *-ts* is spelled out on the *wh*-item *wo* ‘where’. (8b) is an example of sluicing, in which a TP is deleted (Merchant 2001). The first clause of (8b) is identical to that of (8a). In the second clause, with sluicing, spelling out the agreement morpheme on *wo* is not possible.

- (8) a. I woass dass-ts ihr a Madl gseng hoabts, owa I woass net wo-ts ihr a Madl gseng hoabts.
I know that-2PL you a girl seen have-2PL but I know not where-2PL you a girl seen have-2pl
b. I woass dass-ts ihr a Madl gseng hoabts, owa I woass net wo(*-ts) ~~ihr a Madl gseng hoabts~~.
I know that-2PL you a girl seen has-2PL but I know not where-2PL (you a girl seen have-2pl)
‘I know that you’ve seen a girl, but I don’t know where (you’ve seen a girl).’
(example from Fuß (2007), attributed to Günther Grewendorf, p.c.)

(8b) shows that agreement between C and the subject is blocked by the deletion of the subject.⁹ Why should post spell-out agreement between a probe and a goal be blocked

shortly, a past participle acquires its surface form by agreeing with a verb in its c-command domain. Note that this dissociation is completely unexpected in a theory that postulates a single TMA-feature that is responsible for both form and meaning.

⁸ While Fuß assumes that complementizer agreement takes place post-syntactically, he argues that a syntactic Agree relation is a necessary precondition for agreement to take place. In other words, agreement between two linguistic items at PF requires that these two items have Agreed in the syntax. Since I do not assume that this precondition needs to hold for TMA-agreement to take place, I will gloss over it here, as it is not important for the point I want to make, namely that ellipsis bleeds post spell-out agreement.

In fact, an important reason why I assume that Agree for TMA-features takes place post-syntactically is the fact that it is not clear what the syntactic Agree relation between verbs in a verb cluster could be (if there is any). One would have to assume that multiple *Agree* relations can potentially hold in a verb cluster, but that TMA-agreement is dependant only on the output of narrow syntax. This would mean that we would have to give up the assumption that there is a direct correspondence between Agree and agreement, in my opinion an undesirable move. Given this, plus the fact that any verb can in principle be a probe or a goal, a post-syntactic account seems to be on the right track. The fact that copies and elided material do not participate for the purposes of TMA-agreement also seems to fit more naturally in a post spell-out rather than a narrow syntactic Agree account of TMA-agreement.

⁹ Note that the subject and the complementizer are not in the same spell-out domain, which constitutes a problem for the claim that both probe and goal must be in the same spell-out domain. Fuß (2007) overcomes this problem by arguing that the head and the edge of the phase are also taken into account for the purposes of agreement. This derives the fact that the subject in complementizer agreement cases can agree with the C phase head. Whether or not a spell-out domain corresponds to just the complement of the phase head, or includes the phase head and edge as well, it does not make a difference for the cases of IPP discussed below. For that reason I leave the issue outside of the

when the goal is not subject to Vocabulary Insertion? A possible answer could be that post spell-out Agree only involves inflectional features that instruct Vocabulary Insertion what item to insert into a node and do not drive syntactic computation. If we accept this view, we can see why probes needn't be valued through Agree if they are not subject to Vocabulary Insertion. The only purpose of Agree is to value the inflectional feature of a probe that instructs Vocabulary Insertion what Lexical Item to insert. If a probe is not subject to Vocabulary Insertion, it does not need a valued inflectional feature. The question remains, however, why a goal that will not be spelled out can't value a probe. The simple answer that I adopt here is that copies and elided material are invisible for the purposes of post spell-out Agree.¹⁰ I leave the question why this should be so for future research.

3.3 The IPP-effect as morphological doubling

Let us now consider IPP-clusters under the assumption that a past participle has an unvalued F_{TMA} . I furthermore assume that the auxiliary of tense carries a $[TMA: PPC]$. This accounts for Den Dikken and Hoekstra's (1997) hypothesis that the copying of past participial morphology is licensed by the auxiliary (and not by the past participle). The situation is illustrated in (9).

(9) $[VP_1 AUX_{[PPC]} [VP_2 PPC_{[]}] [VP_3 INF_{[INF]}]]$

As shown in (9), the past participle enters the syntax with a $[TMA: _]$. Consequently, it will probe for a goal with a valued F_{TMA} . In (9), the past participle probes its c-command domain and finds the infinitive V_3 , which has a $[TMA: INF]$. As a result of the Agree relation established between the past participle and the infinitive, the INF -value of the infinitive is now shared with the past participle. The resulting situation is given in (10).

(10) $[VP_1 AUX_{[PPC]} [VP_2 PPC_{[INF]}] [VP_3 INF_{[INF]}]]$



discussion, but do note that nothing argues against Fuß's assumptions about the size of agreement domains.

¹⁰ For ellipsis there are good reasons to believe that the elided material is not only invisible for the purposes of post spell-out Agree, but that it is altogether invisible at the PF interface. According to Merchant (2001), ellipsis arises when an E(llipsis)-feature is present on a head, which licenses ellipsis of its complement. The syntactic, phonological and semantic properties of the complement are encoded in E. As for the phonology, the E-feature present on a head instructs PF not to parse the complement of this head. If PF does not parse the elided constituent, anything inside that constituent is 'invisible' for computation. Merchant (2008) gives a strong argument for this view. He argues that it is invisibility in this sense that is responsible for the fact that island violations are 'repaired' under ellipsis. What his proposal boils down to is that island violations are 'repaired' because the offending traces responsible for the ungrammaticality of island sentences are 'invisible' (i.e. will not be parsed).

For copies it is not so clear why they should be invisible for purposes of post spell-out Agree. The difficulty lies in the fact that copies are not invisible altogether at the PF interface. This much can be established from cases where PF spells out a lower member of a movement chain (see e.g. Bobaljik 2002, Bošković and Nunes 2007). Spelling out a lower member (i.e. a copy) is only possible if this member is visible at that point. An easy way to resolve this problem would be to say that Copy Deletion applies before Agree at PF. This, however, runs counter the claim made in Bošković and Nunes (2007), that even a late operation such as stress assignment can trigger pronunciation of a lower copy, which not only indicates that copies are visible at the PF interface, but even that they are at a relatively late stage. As pointed out in the main text, I leave this as a problem for future research.

We have now derived why the IPP-effect shows up in a sentence like (1b), repeated here as (11) (slightly modified).

- (11) Piet gelooft dat Jan heeft_[PPC] ***gekund**_[PPC] / **kunnen**_[INF] komen_[INF].
Pete believes that John has can-PPC / can-INF come
'Pete believes that John was able to come.'

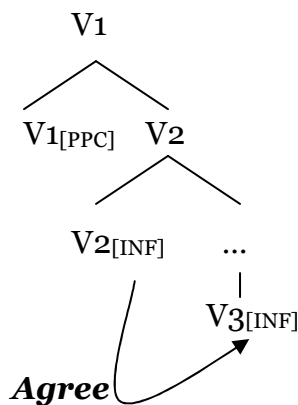
The fact that the IPP-effect is obligatory follows. Since the [TMA: INF] of the infinitive is the only accessible feature for the [TMA: _] of the past participle, the latter will have to take on the INF-value of the infinitive. The past participle simply cannot spell out as a past participle in this case, because there is no accessible goal with a [TMA: PPC] in its search domain that can value its [TMA: _] with a PPC-value.

Next, let's go over the possible verb cluster orders to see what predictions we make with regard to valuation. (12) shows the possible verb cluster outputs of narrow syntax as they enter Morphology.

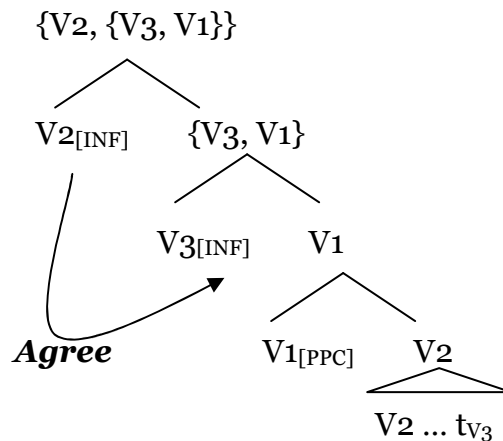
- (12) a. V1_[PPC] V2_[] V3_[INF] 1-2-3 order
b. V1_[PPC] V3_[INF] V2_[] 1-3-2 order
c. V2_[] V3_[INF] V1_[PPC] 2-3-1 order
d. V3_[INF] V1_[PPC] V2_[] 3-1-2 order
e. V3_[INF] V2_[] V1_[PPC] 3-2-1 order

Not in all verb orders can the past participle V2 find a goal to Agree with. Only in the 1-2-3, 2-3-1 and 3-2-1 clusters, can the past participle find a goal to value its [TMA: _]. This is illustrated in (13).

- (13) a. **1-2-3 order**¹¹:

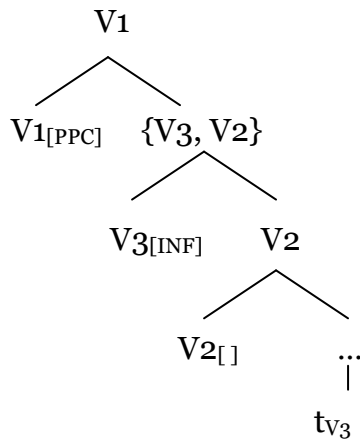


- b. **2-3-1 order**:

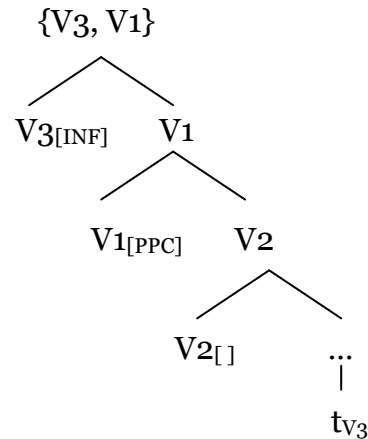


¹¹ I assume that V2 c-commands V3 and that V3 does not c-command V2. The '...' indicate that there are low projections dominating V3.

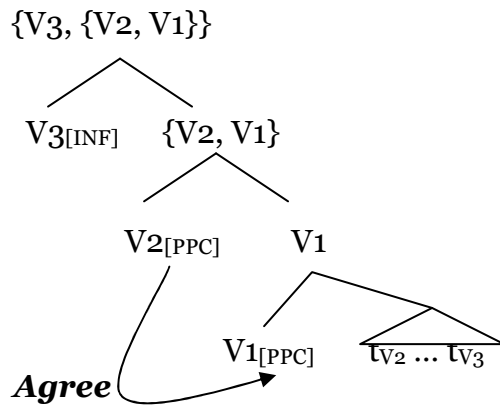
c. 1-3-2 order:



d. 3-1-2 order:



e. 3-2-1 order:



Observe that in the 1-3-2 (13c) and 3-1-2 (13d) orders, the past participle has no goal in its c-command domain. These are precisely the clusters in which variation with regard to the IPP-effect was encountered (see section 2.1). What happens in the cases where the past participle does not c-command a goal to Agree with? In other words, how does its [TMA: _] get valued if it cannot acquire a value through Agree? I argue that in those cases a default value will be assigned to the [TMA: _] at Morphology. If Morphology would always assign the same default value, however, we wouldn't expect any variation to occur, contrary to fact. I will show below that there are in fact two default values that Morphology can assign to the [TMA: _] of a past participle, namely a PPC-value and an INF-value. Variation with regard to the IPP-effect reduces to this single parameter setting: PPC or INF. I will refer to these dialects as default [TMA: PPC] dialects and default [TMA: INF] dialects, respectively. I discuss them in turn in the next section.

4. Two types of dialects

4.1 Default [TMA: PPC] dialects

In this section we will look at dialects in which morphology assigns PPC as a default value in case a past participle cannot find a goal to value its [TMA: _]. If we fill in a PPC-value for the [TMA: _]s in the 1-3-2 and the 3-1-2 order we obtain the following pattern for a default PPC-dialect.

- | | | | | |
|---------|---------------------|---------------------|---------------------|-------------|
| (14) a. | V1 _[PPC] | V2 _[INF] | V3 _[INF] | 1-2-3 order |
| b. | V1 _[PPC] | V3 _[INF] | V2 _[PPC] | 1-3-2 order |
| c. | V2 _[INF] | V3 _[INF] | V1 _[PPC] | 2-3-1 order |
| d. | V3 _[INF] | V1 _[PPC] | V2 _[PPC] | 3-1-2 order |
| e. | V3 _[INF] | V2 _[PPC] | V1 _[PPC] | 3-2-1 order |

As (14) shows, default [TMA: PPC] dialects will only exhibit the IPP-effect (i.e. V2 has an INF-value) in the orders in which the 2-3 part of the cluster is intact (14a, c). Standard Dutch can be shown to be a [PPC]-dialect. Although Standard Dutch does not allow all the orders in (14), there is a way to test what kind of dialects we are dealing with. Recall that Morphology does not operate on items that are not subject to Vocabulary Insertion, such as copies and elided items (section 3.2). Given this, we can test what the default value is that Morphology assigns to the [TMA: _] of the past participle by looking at cases in which the goal is elided or moved (cf. Den Besten and Edmondson (1983) on the bleeding of ‘infinitivization’, i.e. IPP). To make this test clear, consider once again a standard case of IPP:

- (15) Jan heeft_[PPC] willen_[INF] vliegen_[INF]
 John has want-INF fly-INF
 ‘John has wanted to fly.’

(15) illustrates the by now familiar case in which the [TMA: _] of the past participle gets its INF-value through Agree with the V3 goal. If V3 is either moved or elided, it is no longer in a position where it can Agree with the past participle at Morphology. This results in the past participle ending up not having its [TMA: _] valued. Subsequently, the past participle will be assigned a default value. The default value is PPC in Standard Dutch, as can be established from examples such as (16) and (17), in which V3’s [TMA: INF] can’t value the past participle’s [TMA: _] through Agree, because VP3 is topicalized (16) or deleted (17).

- (16) a. [_{VP3} op zalm vissen] heeft Jan nooit gewild_[] t_{VP3}
 On salmon fish-INF has John never want-PPC
 ‘To fish on salmon, John has never wanted.’
 b. [_{VP3} op zalm vissen] heeft Jan nooit gewild_[PPC] t_{VP3}
 past participle does not find a goal
 default [PPC]-value
 past participle does not find a goal
- (17) a. Mijn broer kon niet komen, maar ik had wel graag gewild_[] komen_[INF]
 My brother could not come but I had AFF gladly will-PPC (come-INF)
 ‘My brother couldn’t come, but I would have wanted to.’
 b. Mijn broer kon niet komen, maar ik had wel graag gewild_[PPC] komen_[INF]
 (From Aelbrecht 2010: 110c)
 default [PPC]-value

In sum, default [TMA: PPC] dialects exhibit the pattern in (14): they only exhibit the IPP-effect in the clusters where the 2-3 part is intact. In these dialects the IPP-effect is bled when V3 is moved or deleted.

4.2 Default [TMA: INF] dialects

In this section we consider dialects in which morphology assigns a default INF-value in cases where a past participle hasn't found a goal to value its [TMA: __]. If we fill in an INF-value for the unvalued [TMA: __]s in the 1-3-2 and the 3-1-2 order, we obtain the following pattern.

- (18) a. V1_[PPC] V2_[INF] V3_[INF] 1-2-3 order
 b. V1_[PPC] V3_[INF] V2_[INF] 1-3-2 order
 c. V2_[INF] V3_[INF] V1_[PPC] 2-3-1 order
 d. V3_[INF] V1_[PPC] V2_[INF] 3-1-2 order
 e. V3_[INF] V2_[PPC] V1_[PPC] 3-2-1 order

As noted above, a default [TMA: INF] dialect differs from a default [TMA: PPC] dialect only in the 1-3-2 and 3-1-2 orders. More specifically, whereas a default [TMA: PPC] dialect does not exhibit the IPP-effect in the 1-3-2 and the 3-1-2 order, a default [TMA: INF] dialect does. As we will see shortly, differences also arise when it comes to bleeding of the goal that values the [TMA: __] of the past participle.

Lets consider Standard German, which is an [INF]-dialect. Standard German allows for a 1-3-2 and a 3-2-1 order (whether the 3-2-1 is possible next to the 1-3-2 order depends on the type of the past participle, e.g. modal vs. perception verb). Given (18), we expect that Standard German will always exhibit the IPP-effect in the 1-3-2 order, whereas it will never show the IPP-effect in the 3-2-1 order. As we will see in this section, this prediction is borne out. Modal verbs allow only for the 1-3-2 order and in this order the IPP-effect always shows up, as shown in (19a). The past participle has no goal in its c-command domain to value its [TMA: __], hence a default INF-value will be assigned at Morphology. (19b) shows that, irrespective of the form of the past participle, the 3-2-1 order, with V2 a modal verb, is ungrammatical.

- (19) a. dass Sie nicht in einer Bank hat_[PPC] arbeiten_[INF] *gewollt/wollen_[INF]. (1-3-2)
 that she not in a bank has work-INF want-PPC/want-INF
 'that she didn't want to work in a bank.'
 b. *dass Sie nicht in einer Bank arbeiten gewollt/wollen hat. (3-2-1)
 that she not in a bank work-PPC/work-INF want-INF has

default [INF]-value



Perception verbs allow for both a 1-3-2 and a 3-2-1 order. (20a) illustrates that the IPP-effect is obligatory in the 1-3-2 order, just as it was in the 1-3-2 order with a modal past participle (19a). (20b) shows that the IPP-effect is absent in the 3-2-1 order. In this order the [TMA: __] of the past participle is valued by the [TMA: PPC] of the auxiliary which is in its c-command domain in the 3-2-1 order. As a result, the past participial form *gesehen* 'seen' is spelled out and not the infinitival form *sehen* 'see'. Spelling out the infinitival form would require the past participle to have a [TMA: INF]. This can be obtained in two ways. Either the past participle c-commands a goal with a [TMA: INF], which is not the case in (20b), or the past participle gets an INF-feature assigned as a default value. Default valuation, however, only takes place if valuation through Agree fails, which is not the case in (20b).

- (20) a. weil Hans die Maria hat_[INF] kommen_[INF] *gesehen/sehen_[INF]. (1-3-2)
 since Hans the Peter has make-music-INF see-PPC/see-INF
 'since Hans has seen Peter make music.'

default [INF]-value



- b. weil Hans die Maria kommen_[INF] gesehen_[PPC]/*sehen hat_[PPC]. (3-2-1)
(Hinterhölzl 2006)
- 

(19) and (20) illustrate that German conforms to the pattern in (18). As we have seen in the previous section, we can ascertain what dialect we are dealing with by utilizing a ‘bleeding-test’. If the goal of the past participle is moved or elided, it can no longer value the past participle’s [TMA: _] at Morphology. In the 1-3-2 order, however, default valuation already takes place. In this order, V₃ has moved to a position outside the c-command domain of the past participle V₂ prior to topicalization. Further movement will not effect the relation between V₃ and the past participle V₂. Topicalization of VP₃ is thus predicted to have no effect. (21) illustrates that this prediction is borne out.¹²

- (21) [_{VP3} lesen] hat er das Buch t_{VP3} *gewollt/wollen_[INF]
Read has he the book want-PPC/want-INF
‘He has never wanted to read the book.’
(from Hinterhölzl 2006)
- 

(21) sharply contrasts with (16) above, where we saw that for a default [TMA: PPC] dialect, movement of VP₃ (out of the 1-2-3 order) bleeds the IPP-effect.

Lets now turn to the case of perception verbs. Although both a 1-3-2 and 3-2-1 verb order is allowed with a V₂ perception verb, VP₃ topicalization constructions never show IPP.

- (22) Lesen hat er ihn das Buch gesehen/*sehen.
Lesen has he him the book see-PPC/see-INF
‘He has seen him read the book.’
(from Hinterhölzl 2006)

The fact that (22) does not allow IPP is surprising, since VP₃ topicalization from a 1-3-2 cluster should not bleed IPP. Apparently VP₃ topicalization always takes place from the 3-2-1 order and not the 1-3-2 order when both orders are available. The situation is depicted in (23).

¹² If verb clusters are derived by head-movement, we might expect that VP₃-topicalization bleeds head movement of V₃ to a position above V₂. If this movement weren’t bled, V₃ would be separated from its complement at the point of VP₃-topicalization, see (i).

- (i) a. V₁ V₂ V₃-complement V₃ → V₃ head-movement to V₂
b. V₁ V₃ V₂ V₃-complement → VP₃-topicalization
c. [V₃-complement + V₃] V₁ V₂

The problem with VP₃-topicalization out of a 1-3-2 cluster is that V₃ is not a constituent at the point of movement, see (ib). If for this reason we must conclude that VP₃-topicalization bleeds V₃ head-movement, our predictions regarding bleeding would be different. If VP₃-topicalization bleeds V₃ head movement, the case we must consider in our bleeding test is VP₃-topicalization from a 1-2-3 cluster. In this cluster, the past participle can Agree with V₃ at Morphology. VP₃-topicalization should bleed this Agree relation and default valuation should take place. In the end, whether or not VP₃-movement bleeds V₃ movement, the result of VP₃-topicalization will be default valuation. That this default valuation gives rise to the IPP-effect in German is the main point here.

For 3-2-1 clusters, it does not matter whether movement of V₃ is bled by VP₃-topicalization. Whether topicalization of V₃ takes place from an underlying 3-2-1 or 2-1-3 cluster does not affect Agree between the past participle V₂ and the auxiliary V₁.

- (23) a. [_{VP} lesen_[INF] gesehen_[PPC] hat_[PPC]]

 A horizontal line with a downward arrow on the left and an upward arrow on the right, labeled 'topicalization' below it. The line connects the VP boundary to the auxiliary 'hat'.

The observation to be made here is that VP3 topicalization does not add any possibilities when it comes to the IPP-effect. VP3 topicalization from a 1-3-2 order with V2 a modal still results in default valuation, just as VP3 topicalization from a 3-2-1 order with V2 a perception verb does not bleed Agree between the past participle V2 and the auxiliary V1. This state of affairs contrasts with VP3 topicalization from a 1-2-3 order in Dutch, where the IPP-effect is bled.

Before turning to discuss the Zaans dialect, another default [TMA: INF] dialect, I must address a problem (brought up in fn. 1). In the Austrian Bavarian dialect, IPP is not rejected by all speakers as shown by Wurmbrand (2004: p.55). This is clearly a problem for our account, since in the 3-2-1 order, the past participle V2 can Agree with the auxiliary V1. V1 in that case values V2's [TMA: _] with a PPC-value and V2 will subsequently be spelled out as a past participle. If we want our theory to extend to the Austrian Bavarian dialect, we must conclude that speakers of this dialect can opt for default valuation, even in cases where Agree is possible. Note that our theory predicts that if the Austrian Bavarian dialect in fact has a choice between Agree and default valuation, this will lead to variation only in the 3-2-1 order, but not in the 1-3-2 order. In the latter order, there is no Agree possible, since there is no goal in V2's c-command domain at Morphology. Default valuation is the only option in the 1-3-2 order. This prediction is borne out; the Austrian Bavarian dialect can only exhibit IPP in the 1-3-2 order; V2 cannot be spelled out as a past participle in this order. This may seem surprising at first sight given the variation in the 3-2-1 order, but is expected under our account, since there is only one option for valuation in the 1-3-2 order.¹³

Lets turn to the case of the Zaans dialect. Recall that Hoekstra (1994) put forth the generalization that the IPP-effect always shows up in the Zaans dialect when the auxiliary precedes the past participle. Since Zaans only allows the 1-2-3, 1-3-2 and the 3-1-2 order, it is always the case that the auxiliary precedes the past participle. In other words, Zaans always shows the IPP-effect. Given our current analysis, we can see that Zaans fits the pattern of a default [TMA: INF] dialect. Given that such dialects only void IPP in the 3-2-1 order, and seeing that Zaans lacks this order, it is clear why Zaans always displays the IPP-effect. Representative examples are given in (24) (from Hoekstra 1994).

- (24) a. Toe ze tien minuten hadde_[PPC] zitte_[INF] lillepitte_[INF] [...] (1-2-3)
 When they ten minutes had sit-INF shiver-INF
 'When they had been shivering for ten minutes...'

¹³ If we would assume that default valuation in general competes with Agree, we don't loose much for the 3-2-1 order. In a default [TMA: PPC] dialect Agree and default valuation give the same outcome. Either V2 Agrees with V1, in which case it will end up having a [TMA: PPC], or it will receive a PPC-value by default. In both cases the result is that V2 will be spelled out as a past participle. The problem that arises when we assume that Agree and default valuation compete is that default valuation in the 1-2-3 and 2-3-1 would lead us to expect that a past participle could be spelled out in default [TMA: PPC] dialect in these orders. We have seen in section 2.1 that IPP is obligatory in these orders across dialects. For this reason we must assume that default valuation is a last resort, that is only initiated when Agree fails.

- default [INF]-value
- b. Ome Cor heb gien vrouwevlees, al had ie der an elleke vinger ientje kraige_[INF] kenne_[INF] /
Uncle Cor has no woman-meet, although had he there at every finger one get-INF can-INF
‘Uncle Cor doesn’t have women’s meet, although he could have had one at every finger.’
(1)-3-2
- c. Et geval wul dat ze de keuningin met een bus deur de streek raie_[INF] hewwe_[PPC] lete_[INF] /
The case wants that they the Queen with a bus through the area drive-INF have let-INF
‘The thing is that they have let people drive the queen around the area.’
(3-1-2)
- default [INF]-value

Only in (24a) is the past participle V2 valued through agreement with the accessible infinitive V3 in its search domain. In both (24b) and (24c) there is no goal in the c-command domain of the past participle. From these examples we can establish that Zaans is a default [TMA: INF] dialect.

5. Parasitic past participles

I have taken the IPP-effect to arise from the fact that past participles are stored in the lexicon with a [TMA: _]. The main idea behind this theory is that parasitic morphology arises whenever an infinitive enters the syntax with a [TMA: _], an idea based on the works of Den Dikken and Hoekstra (1997) and Wiklund (2007). We can conclude from this that the optional ‘copying phenomena’ described by these authors and the IPP-effect are one and the same phenomenon. The only difference is that past participles always enter the syntax with a [TMA: _], whereas infinitives may optionally do so. In this section I will show that the post spell-out Agree analysis for the IPP-effect given above extends to parasitic past participles (PPPCs) in Frisian.

An example of a PPPC-construction in Frisian is given in (25b). (25a) presents the regular counterpart without parasitic morphology.

- (25) a. hy soe it dwaan wollen ha [Frisian (1)-4-3-2]
He would it do-INF want-PPC would
b. Hy soe it dien wollen ha
he would it do-PPPC want-PPC have would
‘He would have liked to do it.’
(Den Dikken and Hoekstra 1997)

Under our theory, (25b) is derived as follows. The past participle *wollen* ‘want’ enters the syntax with a [TMA: _]. The PPPC *dien* ‘do’ also enters the syntax with a [TMA: _], something that the grammar of Frisian happens to allow. These unvalued F_{TMA} s must get a value at Morphology. For (25b) this proceeds as in (26):

- Agree
- (26) Hy soe it dien_[PPC] wollen_[PPC] ha_[PPC] (1)-4-3-2
He would it do-PPPC want-PPC have would
‘He would have liked to do it.’

The [TMA: _] of the past participle V2 c-commands the auxiliary V1. This allows the [TMA: _] of the past participle to be valued by the [TMA: PPC] of the auxiliary. The [TMA: _] of the parasitic past participle *dien* ‘done’ then enters into an Agree

relation with the past participle, which will value the PPPC's [TMA: _] with a PPC-value.

Den Dikken and Hoekstra observe that an infinitive may not intervene between a PPPC and the auxiliary, see (27a). Under our account, (27a) is ruled out because the PPPC *dien* can only spell out as a past participle if it Agrees with a verb that carries a [TMA: PPC], which is not the case in (27a). *Dien* carries a [TMA: _] and the only value that this feature can acquire is the INF-value of *kinne*. Default valuation can only take place when Agree fails, which is not the case for *dien*. It can Agree with *kinne*, which will result in the PPPC spelling out as an infinitive (*dwaan*), see (27b).

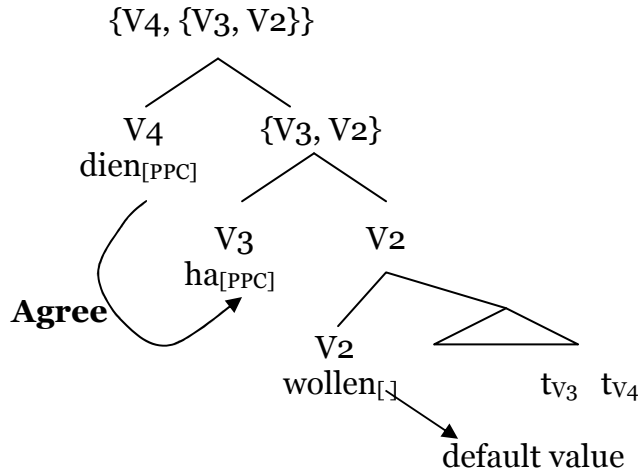
- (27) a. ??Hy soe it dien_[PPC] kinne_[INF] wollen_[PPC] ha_[PPC]
He would it do-PPPC can-INF want-PPC have
- b. Hy soe it dwaan kinne wollen ha
he would it do-INF can-INF will-PPC ha
'he would have liked to be able to do it.'

Note that (27b) is thus ambiguous between a derivation in which *dwaan* has entered the syntax as a real infinitive with an INF-value and a derivation in which *dwaan* is a parasitic verb that has entered the syntax with a [TMA: _] and has acquired its INF-value through Agree at morphology. The latter situation would be an instance of the IPP-effect, if we employ that term for the occurrence of parasitic infinitives.

Because of its descending verb order, it is not easy to utilize our 'bleeding test' to see whether Frisian is a default [TMA: PPC] dialect. The reason is that topicalization takes away the (structurally) highest verbs. Topicalization of those verbs will not affect the Agree relations of the verbs that remain in the cluster, since Agree applies under c-command, and the topicalized verbs were not c-commanded by any verbs. However, there is another way in which we can test what kind of dialect Frisian is. If an infinitive enters the syntax with a [TMA: _], but is base-generated higher than the auxiliary, it will receive a default value. This is so, since the infinitive will not c-command the auxiliary at Morphology. This is illustrated in (28). (28b) is the 'D-structure' of (28a). (28c) shows the relevant part of the verb cluster and the Agree relations at Morphology.

- (28) a. Hy soe it dien ha wollen (1)-4-3-2
b. D-structure:
Hy it wollen_[] ha_[PPC] dien_[] soe
He would it want-PPPC have do-PPC

c.



As we can see in (28b), *wollen* ‘want’ has entered the syntax with a [TMA: _] and is merged higher than the auxiliary *ha* ‘have’. It ends up, however, lower than the auxiliary. The auxiliary can thus not value *wollen*’s [TMA: _] with a PPC-value. In fact, since *wollen* ends up with no verb in its c-command domain to value its [TMA: _] it must receive a default value. This default value is PPC as can be concluded from the fact that *wollen* spells out with participial morphology.

We can conclude that downward ‘parasiticism’ (e.g. *dien* ‘do’ c-commands *ha* ‘have’ in (28c)) proceeds through Agree, whereas (what seems like) upward parasiticism (cf. *wollen* ‘want’ in (28c)) proceeds through default valuation at Morphology.

We have now shown that our account of the IPP-effect extends to morphology doubling in general. Under our account, the IPP-effect and parasitic doubling are one and the same phenomenon. We thus predict the IPP-effect and parasitic past participles not to be mutually exclusive. This prediction is borne out. Vogel (2009) discusses a construction in German which he dubs ‘skandal’ because all verbs in this construction take on different forms than expected. An example is given in (29).

- (29) ohne es verhindert haben zu können 3-1-2
without it prevent-PPPC have-INF to can-INF
‘without having been able to prevent it.’

I ignore here the infinitival marker *zu* ‘to’, which normally occurs before the auxiliary. What we are left with, then, is a case of IPP and a case of PPPC. The Skandal construction occurs (at least) in Standard German, which, as we have seen in section 4.2, is a default [TMA: INF] dialect. We can establish this from (29). V3 *verhindert* ‘prevent’ has moved out of the c-command domain of *können* ‘can’. *Können*, therefore, has no verb in its c-command domain at Morphology that can value its [TMA: _]. Consequently, a default value is assigned to this verb. We can establish that this is an INF-value from the fact that the past participle surfaces as an infinitive. The situation that holds at Morphology is presented in (30).

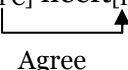
- (30) ohne es verhindert_[PPC] haben_[PPC] zu können_[INF] 3-1-2
without it prevent-PPPC have-INF to can-INF
‘without having been able to prevent it.’
-

By assumption, *verhindert* ‘prevent’ has entered the syntax with a [TMA: _]. Since it c-commands the auxiliary at Morphology, the latter can value the [TMA: _] of *verhindert* with a PPC-value, resulting in parasitic morphology. As expected, the derivation where V3 is an infinitive is grammatical as well. (30) shows that the IPP-effect and PPPCs are not mutually exclusive, something that is expected under our analysis, since they are two sides of the same coin (both phenomena arise from underspecified TMA-features).

6. Two-verb clusters

IPP is often considered to be a 3-verb cluster phenomenon. However, under our analysis a difference between a default [TMA: PPC] and a default [TMA: INF] dialect is expected to arise in the 1-2 order. In the 1-2 order the past participle V2 has no potential goal in its c-command domain. Hence, a default value will be assigned to its [TMA: _] at Morphology. A default [TMA: PPC] dialect will assign a PPC-value and a default [TMA: INF] dialect will assign an INF-value to the past participle’s [TMA: _]. We thus expect a default [TMA: PPC] dialect to spell out a past participle, whereas we expect a default [TMA: INF] dialect to spell out an infinitive (i.e. exhibit the IPP-effect). Before I show that this prediction is borne out, let’s consider Standard Dutch and Standard German, to see how our analysis explains the pattern of 2-verb clusters.

Standard Dutch allows for both a 1-2 and a 2-1 order in an AUX-PPC construction. Given our analysis, we expect the past participle V2 to be valued by the [TMA: PPC] of the auxiliary V1 through Agree only in the 2-1 order, since in that order the past participle c-commands the auxiliary. In the 1-2 order, the past participle does not c-command the auxiliary and a default PPC-value will be assigned. Hence, both in the 1-2 and the 2-1 order, the past participle will be spelled out as a past participle. The data conform to our analysis, as shown in (31).

- (31) a. dat Jan het heeft_[PPC] gewild_[] 1-2
that John it has wanted-PPC
b. dat Jan het gewild_[PPC] heeft_[PPC]. 2-1
- 

Agree

Standard German allows only a 2-1 order in an AUX-PPC construction. Since the past participle V2 c-commands the auxiliary V1, a past participle will be spelled out, as it will have acquired a [TMA: PPC] by Agreeing with the auxiliary.

- (32) a. *dass Jan das hat gewollt/wollen. 1-2
that John that has want-PPC/wollen-INF
b. dass Jan das gewollt_[PPC] hat_[PPC]. 2-1
- 

Agree

The interesting case would be a default [TMA: INF] dialect that allows a 1-2 order for the AUX-PPC construction. As it turns out, such dialects exist. Bader and Schmid (2009) report that some dialects of German accept the 1-2 order next to the 2-1 order.

- (33) a. dass Peter nach Paris hat müssen. 1-2
that P. to Paris has must
'that Peter had to go to Paris.'
b. dass Peter in die Stadt gemüsst hat. 2-1
that Peter to the town must-PPC has
'that Peter had to go to town.'

This dialect shows the IPP-effect in the 1-2 order as shown in (33a). This is expected under our analysis if (33) in fact represents data from an [INF]-dialect. Such a dialect would assign a default INF-value to the past participle in (33a), since the past participle does not have a goal in its c-command domain to Agree with. Evidence that (33) is in fact data from a default INF-dialect is presented in (34). According to Bader and Schmid, dialects that accepted (33a) also accepted (34). (34) shows that movement of V₃, which takes away the [TMA: INF] goal for the past participle, does not void the IPP-effect. We can conclude that in these dialects the default value that Morphology assigns to the past participle's [TMA: _] is an INF-value.

- (34) dass Peter nach Paris fahren_[INF] hat_[PPC] müssen_[INF]. 3-1-2
that Peter to Paris drive-INF has must-INF
'that Peter had to drive to Paris.'
- default [INF]-value
↙

The fact that the IPP-effect occurs in the 1-2 verb order in default [TMA: INF] dialects provides us with more evidence for our account of doubling of morphology in terms of underspecified TMA-features.

7. IPP is a restructuring phenomenon

Recall that spell-out domains are the domains in which Agree takes place at Morphology. This predicts that the IPP-effect only shows up when there is no phase boundary intervening between the past participle and the infinitive in its complement. If a phase boundary would intervene between the past participle and the infinitive, the infinitive would be in a different spell-out domain than the past participle. For example, if a past participle selects for a *v*P-complement, the complement of the *v*-head is a spell-out domain and will be inaccessible to the past participle. It follows that only in the case where a past participle selects for a complement no bigger than a VP, will the verbs within its complement be accessible to it at Morphology.

Below I will present two arguments that show that the IPP-effect is void when a past participle takes a complement that is bigger than a VP. If a past participle takes a *v*P or TP-complement, we expect that the infinitive within the *v*P or TP-complement is no longer an accessible goal for the past participle, since they are not within the same spell-out domain.

I first turn to show that the IPP-effect is void when the complement of the past participle has a *v*P-layer. If a *v*P-layer is present, we predict that a PRO can be present (which is assumed to be generated in the spec,*v*P subject position). Ter Beek (2008) provides the following test for the presence of PRO. As pointed out by Van

Haaften (1991), PRO in a *without*-adjunct can only be controlled by a subject. Thus, in (35), PRO cannot corefer with the direct object *Marie*, only with the subject *ik*.

- (35) Ik_i heb $Marie_m$ geholpen zonder $PRO_{i/*m}$ $me_i/*zich_m$ ongemakkelijk te voelen.
I have Mary helped without myself/herself uneasy to feel
'I have helped Mary without feeling uncomfortable about it.'

We predict that coreference between PRO in a *without* clause cannot corefer with the DP internal argument of the complement of a past participle XP₃. This coreference would have to be mediated by a PRO inside XP₃, since PRO in the *without* clause can only corefer with a subject, but not with the DP internal argument directly. PRO in XP₃ would indicate the presence of a *vP* projection. The prediction that PRO in a *without* clause and the DP internal argument of the complement of the past participle cannot corefer is borne out. PRO may be coreferent with the direct object in the Third Construction case (36a), but not in the IPP-case (36b).

- (36) a. Ik_i heb $Marie_m$ geholpen PRO_m te verhuizen zonder $PRO_{i/m}$ $me_i/zich_m$ onhandig te voelen.
I have Mary help-PPC to move-INF without myself/herself clumsy to feel
b. Ik_i heb $Marie_m$ helpen verhuizen zonder $me_i/*zich_m$ onhandig te voelen.
I have Mary help-INF move-house without myself/herself clumsy to feel
'I have helped Mary move-INF without feeling clumsy.'

The necessary absence of PRO in the case with IPP shows that the IPP-effect does not occur when the complement of the past participle is bigger than a VP. The IPP-effect can thus be said to be a 'full restructuring phenomenon' in the sense of Wurmbrand (2001); it will only show up in clusters that consist of bare VPs.

The same conclusion can be drawn when we look at cases where the past participle takes a TP-complement. In these cases we again expect the IPP-effect to be blocked, because a phase boundary prevents Agree between the past participle and the infinitive in its complement.

Ter Beek (2008) shows that *proberen* 'try' may have a special interpretation that requires a mismatch of the matrix and embedded event times. In these cases, *proberen* is interpreted as 'make arrangements to establish'. In cases where the matrix and embedded event times may differ, I will assume that a TP-layer is present in the embedded clause. (37) shows that XP₃ may be a TP in the non-IPP sentence, but cannot be a TP in the IPP-sentence.

- (37) a. ?Jan heeft geprobeerd morgen bij Marie's lezing te zijn.
John has try-PPC tomorrow at Mary's lecture to be
b. *Jan heeft morgen bij Marie's lezing proberen te zijn.
John has tomorrow at Mary's lecture try-INF to be
'John tried to be at Mary's lecture tomorrow.'

The ungrammaticality of the IPP-case in (37b), indicates that the past participle cannot have selected for a TP-complement. This supports our analysis in terms of Agree. Agree is blocked (i.e. the IPP-effect is void) when a phase boundary intervenes between the past participle and the infinitive in its complement, because the two will be in different spell-out domains. This is the case in (37a), but not in (37b).

8. The IPP-effect in *ge*-less dialects

Recall that Interference Frisian and West Frisian do not have a *ge*-prefix, but can nonetheless exhibit the IPP-effect, but only when the 2-3 part of the cluster is intact and not in the canonical 3-2-1 order (section 2.2). The relevant examples ((2) and (3)) are repeated here.

(38) Ik ha dy sangeres hearre sjongen [Interference Frisian, (1)-2-3]
I have that singer hear-INF sing-INF

(39) Hai was nag wat bleven tot-ie d'r had zien weggaan [West-Frisian, 1-2-3]
He was yet some stay until-he her had see-INF leave-INF
'He stayed a while until he had seen her leave.'

Any theory that takes the *ge*-prefix to be the cause of the IPP-effect has to acknowledge that these examples present a problem, since any dialect that doesn't have this prefix (i.e. the alleged cause of the IPP-effect) is expected not to show the IPP-effect. One might look for a possible solution to this problem in extra linguistic factors. The problem with such solutions, from a theoretical perspective, is that they are hard to prove.

The present account straightforwardly accounts for (38) and (39). Note that the IPP-effect never shows up in the 3-2-1 order, as the past participle V2 c-commands the auxiliary V1 which will value the [TMA: _] of the past participle with a PPC-value. For this reason, Interference Frisian and West-Frisian are expected to void the IPP-effect in the 3-2-1 order, just like any dialect is expected to. Similarly, as in any dialect, West-Frisian and Interference Frisian are expected to exhibit the IPP-effect in the orders in which the 2-3 part of the cluster is intact. In these orders, the past participle V2 will c-command the infinitive V3 in its complement, which will value the [TMA: _] of the past participle with an INF-value at Morphology. While it might well be the case that language contact roots the availability of the 1-2-3 order in West-Frisian and Interference Frisian, the fact that the IPP-effect shows up in these order has nothing to do with language contact. Instead, IPP shows up, because West-Frisian and Interference Frisian have past participles that are stored in the lexicon with a [TMA: _]. This [TMA: _] needs to receive a value at Morphology and this happens to be an INF-value in the 1-2-3 order.

9. Conclusion

In this paper I have presented an account of the IPP-effect in terms of morphology doubling through post-syntactic Agree. I started from the empirical generalization that the IPP-effect always shows up in the 2-3 order, but never in the 3-2-1 order. I then drew a parallel with the copying of parasitic morphology. Under the assumption that copying arises when a verb carries an unvalued F_{TMA} , I have taken the IPP-effect to arise from the fact that the F_{TMA} of past participles in Continental West Germanic dialects is stored unvalued in the lexicon. The valuation of this inflectional feature takes place at Morphology. Hence, a past participle will have to find an accessible goal at Morphology. If it fails to find one, a default value will be assigned to the [TMA: _]. This is where the parametric variation with respect to the IPP-effect comes from. Some dialects assign a default PPC-value, whereas others assign a default INF-value to a [TMA: _]. By utilizing a 'goal-bleeding test' I showed that dialects fit

either one of the two patterns. This account derives the fact that variation with regard to the IPP-effect is only found in the 1-3-2 and 3-1-2 clusters. This is so, since only in these clusters the past participle's [TMA: _] cannot enter into an Agree relation at Morphology. Therefore, Morphology assigns a default value to the [TMA: _], which leads to variation because dialects differ in the default value that Morphology assigns to this [TMA: _]. Since IPP comes about through Agree at Morphology, it follows that it is a restructuring phenomenon: for Agree to take place, probe and goal must be located in the same spell-out domain.

The account of the IPP-effect presented here makes strong predictions about what is possible and impossible in verb clusters. The account predicts the following distribution of IPP across default [TMA: PPC] and default [TMA: INF] dialects.

Verb order	default [TMA: PPC]	default [TMA: INF]
1-2-3	IPP	IPP
2-3-1	IPP	IPP
1-3-2	PPC	IPP
3-1-2	PPC	IPP
3-2-1	PPC	PPC (%IPP)

The correctness of the account presented in this paper can thus easily be tested. This can be done by looking at the empirical variation in verb clusters. For example, what is predicted not to be possible empirically, is a dialect that exhibits IPP in the 1-3-2 order, but not in the 3-1-2 order (or vice versa). The 'bleeding test' that was utilized above can also be used to test the correctness of the account presented here. For example, movement or ellipsis of V3 can only have an effect on the IPP-effect in the 1-2-3 and 2-3-1 order. In default [TMA: PPC] dialects movement or ellipsis of V3 is predicted to bleed the IPP-effect, whereas in default [TMA: INF] dialects Agree is bled, but IPP is still exhibited due to the default INF-value that the past participle receives in these cases.

I based my analysis mainly on data from Standard Dutch and German. Clearly more work needs to be done to see whether the account holds up when more dialects are taken into account. I hope to have shown in this paper that a lot of variation can already be accounted for, and moreover, that the variation with respect to IPP is not random, but is in fact fully predictable. In light of the Minimalist Program, this is a desirable result.

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