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The Phase Condition and cyclic Spell-out: Evidence from VP-topicalization

Roland Hinterhölzl

In this paper, I argue that next to the C-domain, which constitutes the left-periphery of the TP, there is a V-domain which forms the left-periphery of the VP. This V-domain comprises a number of functional heads which serve to license finite and different types of nonfinite complements of the verb. As is evidenced by phase condition effects, this V-domain constitutes a strong phase the left-edge of which is formed by the Aspect phrase. The empirical evidence for this proposal comes from the formation of verb clusters in West Germanic.

1. Introduction

There are two long standing unsolved problems with restructuring in West Germanic and I argue that their solution involves assuming that extraction out of verb clusters is subject to the Phase Impenetrability condition. Furthermore, I will argue that the Aspect phrase constitutes the left edge of the VP-phase and provide evidence that Spell-out and the application of prosodic conditions are tied to phases.

The empirical issue concerns verb cluster formation, a morphological effect related with it and VP-topicalization in West Germanic (WG). Verb clusters in German, Dutch and West Flemish (WF) give rise to the so-called IPP-effect, in which the expected participle in the perfect construction of a restructuring verb is replaced with a bare infinitive, the *Infinitivus Pro Participio*, as is illustrated in (1a-b) for Dutch and in (1c-d) for German.

(1) a. **dat Elsje hem een brief heeft* ***gewild*** *schrijven*
that Elsje him a letter has wanted-PP write

b. *dat Elsje hem een brief heeft* ***willen*** *schrijven*
that Elsje him a letter has want-IPP write

c. **dass Else ihm einen Brief schreiben* ***gewollt*** *hat*
that Elsje him a letter write wanted-PP has

d. *dass Else ihm einen Brief hat schreiben* ***wollen***[1]
that Elsje him a letter has write want-IPP

The IPP-effect is generally voided in cases of VP-topicalization in Dutch and WF (2). In German, the IPP-effect also shows up in cases of VP-topicalization (3a) and is only voided with perception verbs (3b). This raises the question of why the IPP-effect is voided in Dutch and WF but only in a subcase in German. I will argue that these differences follow from the fine structure of the verb clusters in these languages plus the Phase Impenetrability Condition.

(2) a. *een boek lezen heeft hij niet* ***gewild*** */* ****willen*** (Dutch)
a book read has he not wanted-PP / want-IPP

b. *in nen bank werken ee se niet* ***gewild*** */* ****willen*** (WF)
in a bank work has she not wanted-PP / want-IPP

(3) a. *in einer Bank arbeiten hat sie nicht* ***wollen*** */* ****gewollt***
in a bank work has she not want-IPP / wanted-PP

b. *kommen hat Hans die Maria nicht* ***gesehen*** */* ****sehen***
come has Hans the Maria not seen / see-IPP

VP-topicalization in Dutch is also special since it can involve the dependent infinitive plus its direct object, as is also illustrated in (2a). Note that this is unexpected since after restructuring the dependent infinitive and its arguments and adjuncts modifying it do not form a constituent anymore. Instead, the verbs form a verb cluster which is thought to be the result of Verb Raising (VR) and all the other constituents of the infinitival clause join up in the middle field of the matrix clause. VR may only 'pied-pipe' additional material, such as the direct object of the dependent infinitive, if the language or dialect allows for Verb Projection Raising (VPR), as is the case in WF, Swiss Germain and many other WG dialects. Parallel cases of VR and VPR in WF are given in (4). However, as is illustrated in (5), Dutch, contrary to German and WF, does not allow for VPR, neither with a participle, nor with an IPP-infinitive.

(4) a. *da Valere* [*ze morgen nen boek*] *wilt* [*geven*] (VR)
that Valere her tomorrow a book wants give
'that Valere wants to give her a book tomorrow'

b. *da Valere* [*ze morgen*] *wilt* [*nen boek geven*] (VPR)
that Valere her tomorrow want a book give

(5) a. **hij heeft niet gewild een boek lezen* (VPR)
he has not wanted a book read

b. **hij heeft niet willen een boek lezen* (VPR)

c. *hij heeft een boek niet willen lezen* (VR)
he has (a book) not want-IPP (a book) read

Given that verb cluster formation in Dutch necessarily involves VR, this raises the question of why VR can be dispensed with in cases of VP-topicalization. Or put in more general terms, the question arises of what the derivational source of VP-topicalization in Dutch is. Haider (1990) and Zwart (1993) argue that topicalized VPs are base-generated in the C-domain. I have argued in Hinterhölzl (1999) that such an analysis runs into a number of technical difficulties and should therefore be avoided if possible. In this paper, I argue that VP-topicalization structures and VR clusters can be derived from the same derivational source, employing competition and blocking between the regular infinitive and the gerund as complements of restructuring verbs.

The paper is organized in the following way. In Section 2, I address the bleeding or rather the lack of the bleeding of the IPP-effect in German. I will first provide an account of the IPP-effect and then argue that the solution to this intralinguistic variation involves assuming that there are two types of infinitives in WG, one giving rise to the IPP-effect in verb cluster formation and one failing to do so.

In Section 3, I provide an account of the properties of restructuring infinitives in terms of remnant movement that derives the necessary movement operations from a general theory of sentential complementation. Furthermore, I provide a motivation for the formation of verb clusters that explains why infinitives induce an IPP-effect, while gerunds fail to do so.

In Section 4, I show that the differences in VP-topicalization between German on the one hand, and Dutch and WF on the other hand, follow from the different fine structure of the verb clusters in these languages plus the Phase Impenetrability Condition (PIC). I argue that VR- and VPR-

structures in Dutch result from competition between the regular infinitive and the gerund, where the gerund is blocked by the more economic derivation involving the infinitive, unless extraction of the infinitive out of the verb cluster is blocked by the PIC in cases of VP-topicalization.

In Section 5, I discuss the quirky properties of topicalized right-branching verb clusters in German and argue that these properties follow straightforwardly if it is assumed that Spell-out applies in a cyclic fashion. Evidence for this proposal is provided by showing that there is a prosodic condition that only applies in the V-domain in German.

2. The IPP-effect and two types of infinitives in West Germanic

In this section, I address the (non-)voiding of the IPP-effect in VP-topicalization in German and argue that the appearance of the IPP-effect signals the availability of two types of infinitives in WG.

I will argue that the IPP-effect is a syntactic effect of verb cluster formation which can be avoided by nominalized infinitives since they are licensed in a different structural position in the V-domain.

The interesting question that verb clusters displaying the IPP-effect raise is the issue of whether IPP-infinitives are real infinitives or hidden participles of some sort. Already Grimm (1898/1969) put forth the hypothesis that IPP-infinitives are prefixless participles. I will adopt the hidden participle hypothesis, since it allows us to treat IPP-infinitives as participles for the purpose of checking the subcategorisation of the auxiliary as well as for the purpose of the temporal interpretation of these verb clusters.[2] Second, there is distributional evidence from WF and Afrikaans showing that IPP-infinitives and participles pattern alike (cf. Hinterhölzl 1999, to appear) for the details.

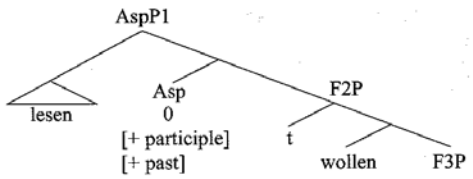
Let us now address the issue of how to account for the IPP-effect (cf. also van den Wyngaerd 1994). In Hinterhölzl (1999), I have argued that the IPP-effect is due to a structural incompatibility between the participial prefix (of the selecting verb) and the dependent infinitive in the formation of verb clusters on account of the fact, that those WG languages and dialects (namely Frisian and Low German) that never display an IPP-effect build the participle without a prefix.

In the WG languages displaying the IPP-effect, the participle is formed by affixation of the prefix *ge* and the suffix *t/d*. I follow Halle and Marantz (1993) in assuming that inflected forms are (partially) derived in the syntax. In particular, I have proposed in Hinterhölzl (1999) that the prefix *ge* is inserted in [Spec,F2P], while the suffix is inserted in the head position of the Aspect phrase. The verb will then first move to F2, to check its prefix, and then up to Asp^0 to adjoin to its suffix. The prefix then undergoes head movement and left-adjoins to the complex of verb and suffix to form the participle before Spell-out. This is illustrated in (6).

(6) $[_{AspP}$ -t $[_{F2P}$ [ge] [F2 $[_{VP}$ V]]]]

If we assume that dependent infinitives are licensed in [Spec,F2P] of the selecting verb, then it follows that a verb in participial form and a dependent infinitive selected by such a verb rule each other out. In Hinterhölzl (1999), I propose that in this case the prefix is blocked and that the suffix selected by it is dropped. Instead, a zero-affix is inserted in Asp^0 that comprises the relevant features and the verb is spelled-out with the default morphology of an infinitive in $F2^0$, as is illustrated in (7).

(7)



Let us now address the bleeding of the IPP-effect in VP-topicalizations involving perception verbs. It is important to note that verb clusters with perception verbs give rise to the IPP-effect only optionally, as is illustrated in (8).

(8) a. *weil Hans die Maria kommen gesehen hat*
since Hans the Maria come seen has

b. *weil Hans die Maria hat kommen sehen*
since Hans the Maria has come see-IPP

How can we explain the optionality in the appearance of the IPP-effect with perception verbs? In order to avoid assuming optionality in the triggering of the IPP-effect, I propose that there are two types of infinitives in German,

the regular infinitive, here simply called infinitive, and a nominal infinitive, called gerund. Given these assumptions, we can assume that the licensing of the infinitive in the verb cluster always gives rise to the IPP-effect, as discussed above, while the gerund fails to induce the IPP-effect due to being licensed in a different position in the verb cluster. In this scenario, the optionality in the triggering of the IPP-effect with perception verbs is explained by the assumption that perception verbs are special in that they can select both types of infinitives, similarly to perception verbs in English which can either take the infinitive or the gerund as in *He saw her come* versus *He saw her coming*.

Though there is no morphological evidence for the proposed distinction in (modern) German, there is comparative and diachronic evidence for the existence of two types of infinitives in WG. First, Frisian morphologically distinguishes two types of infinitives, called the *Doelfoarm* (ending in *-n*) and the *Nammefoarm* (ending in *-e*) which are in complementary distribution. According to Wolf (1996), Doelfoarms occur after the infinitival marker *te* and in the complement of perception verbs, as is illustrated in (9), while Nammefoarms occur in most other positions including the complement of *litte* ('let', 'make'), as is illustrated in (10). Furthermore, it is important to note that the class of verbs that select the Doelfoarm in Frisian largely overlaps with the class of verbs that fail to trigger the IPP-effect in German (cf. Hinterhölzl 1999, to appear).

(9) *Ik kin har der rinnen /*rinne sjen*
I can her there run see

(10) *Ik sil har mar restich *lezen / leze litte*
I will her just calmly read let

Secondly, Old High German had, next to the regular infinitive, an inflected infinitive which displayed both nominal and verbal properties, matching the envisaged category of a gerund. For example, in sentence (11) (taken from Demske 2001) the inflected infinitive (*tuonne*) is marked with the Dative Case ending *-e* (since it is selected by the preposition *zi* ('to')), a typical nominal property, and at the same time displays a typical verbal property in licensing the adverb *ubelo* ('badly').

(11) *uuanda imo lussam uuas ubelo zi tuonne* (N Ps 413.28)
since to him desirable was badly to act

The morphological distinction between infinitive and gerund was lost in the Middle High German period, but I assume that the gerund is still available in the grammar of WG. I propose that the gerund in (modern) German, Dutch and WF is analyzed as a zero-affix on the infinitive with nominal properties. To explain the absence/presence of the IPP-effect, I propose that the gerund and the infinitive are licensed in different positions in the verb cluster, as is illustrated in (12). Infinitives are licensed in [Spec,F2P], thereby blocking the participial prefix and giving rise to the IPP-effect, while gerunds are licensed in [Spec,AspP] without interfering with the participle morphology of the selecting verb. Furthermore, I assume, a fact that will become important for the analysis of verb clusters below, that CP-complements are licensed in [Spec,F3P] of the selecting verb.

(12) $[_{\text{AspP (=F1P)}}$ gerund $[_{\text{F2P}}$ dependent infinitive $[_{\text{F3P}}$ CP $[_{\text{VP}}$ V]]]]

Given the existence of two types of infinitives in WG, the assumptions about their licensing in (12) and the account of the IPP-effect decribed above, we do not need to assume that VP-topicalization can somehow circumvent verb cluster formation. In this scenario, we can treat restructuring and verb cluster formation as obligatory assuming that VP-topicalization that bleeds the IPP-effect involves the gerund, while VP-topicalization that fails to bleed the IPP-effect must involve the infinitive. I will argue in Section 4 that the choice between the infinitive and the gerund, or between the bleeding and the lack of bleeding of the IPP-effect in VP-topicalization follow from the PIC and the fine structure of the verb clusters in German, Dutch and WF. But before we take a closer look at verb clusters, it is important to understand what motivates the formation of verb clusters in restructuring infinitives.

3. Restructuring and the formation of verb clusters

Restructuring is a notoriously difficult phenomenon that raises several questions. First, there is the issue of what forces the formation of verb clusters. Second, there is the issue of how to explain the transparency of restructuring infinitives that displays itself in different phenomena like clitic climbing in Romance and extended scope possibilities of the infinitival complement in Germanic.

There are two types of approaches to explaining the properties of restructuring infinitives, monoclausal approaches and biclausal approaches.

In monoclausal approaches the issue of transparency disappears trivially but reappears in the form of the question under which conditions two (main) verbs can project a single clause (cf. Cinque 2001 and Wurmbrand 2001, for interesting new answers to this question). In particular, Cinque (2001) put forth the hypothesis that restructuring verbs in Italian – essentially modal and aspectual verbs in this language – are those verbs that can be taken to occupy functional positions in the clausal skeleton above VP. Wurmbrand (2004b) proposed an important distinction between lexical and functional restructuring verbs, arguing that the majority of restructuring verbs in German are of the lexical type, since they are not subject to order restrictions that are typical of functional restructuring verbs.

Biclausal approaches, on the other hand, assume that restructuring infinitives are reduced clauses or employ special operations (like VR) that make them transparent (cf. Hinterhölzl 1997; Koopman and Szabolcsi 2000, for accounts in terms of remnant movement).

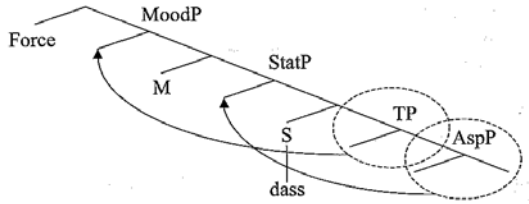
However, as is also pointed out by Wurmbrand (to appear), what is still missing is a satisfactory answer to the question of what motivates restructuring and the formation of verb clusters (for some discussion of this question see also the papers in Kiss and Van Riemsdijk 2004).

I argue that the complements of restructuring verbs are full CPs and that the formation of verb clusters is due to the presence of a deficient complementizer (cf. Hinterhölzl 1999; to appear). This account is embedded in a general theory of sentential complementation in which the complementizer a) is essential for rendering a sentential complement (a TP) into an argument and b) plays a crucial role in linking the embedded TP to the matrix event time (cf. Den Besten 1977/1983; Enç 1986; Guéron and Hoekstra 1988).

In this approach, the complementizer acts as place holder for the selectional restrictions of the matrix verb (cf. Hinterhölzl to appear for further details). It is inserted in the head position of the Status phrase[3] to check the subcategorization of the matrix verb against the Aspect phrase of the embedded clause. Then it moves through MoodP – where it assigns a temporal index to the embedded TP – to the head of ForceP, which constitutes the highest head position in the C-domain, as is illustrated in (13a). The features of the complementizer are then checked by movement of the entire CP (=ForceP) into [Spec,F3P] of the selecting verb. In this account, not only arguments need to be licensed, but also the main phases of the clause, namely TP and AspP are licensed by moving into dedicated licensing positions in the C-domain, as is illustrated in (13b).

(13) a. functional heads licensing sentential complements
$[_{CP}$ Force $[_{MoodP}$ M $[_{StatP}$ S $[_{TP} \ldots]]]]$

b. licensing movements in an embedded clause



c. licensing movements in a restructuring clause
$[_{CP1}$ $[_{TP1}$ $[_{PredP1}$ [TP2] $[_{AspP1}$ [AspP2] V1 $[_{F3P}$ $[_{CP2}$ 0 t_{TP2} $t_{AspP2}]$ $[_{VP1}]]]]]$

In restructuring infinitives the embedded complementizer, being defective, fails to value the infinitival TP and AspP completely, hence they undergo, in a parallel manner to subjects in subject raising constructions, licensing movement into dedicated positions in the matrix clause, as is illustrated in (13c).

The infinitival TP, not being temporally linked, fails to denote an event token, hence does not qualify as an argument and is licensed as predicate in [Spec,PredP] of the selecting verb (for the relevance of PredP see also Bowers (1993) and Koster (1995)). This movement accounts for the transparency and the monoclausal middle field of restructuring infinitives. The infinitival AspP in this approach is taken to move into a Specifier in the higher V-domain to check the subcategorisation of the selecting verb and to link the embedded event to the matrix event time.

In this approach, movement of the infinitival AspP leads to VR-constructions, whereas VPR-constructions are derived, if the infinitival AspP pied-pipes additional structure, for instance the infinitival AgrOP, when it is moved into the V-domain of the matrix verb.

To conclude, verb cluster formation has two motivations. It serves to temporally link the embedded event and to check the subcategorization of the matrix verb.

4. The fine structure of verb clusters in West Germanic and the Phase Condition

In this section, I will first explain why the IPP-effect in VP-topicalizations with perceptions verbs in German is voided, that is to say, why only the gerund is available for VP-topicalization in this context. This account will then provide us with a clue for tackling the voiding of the IPP-effect in Dutch and WF, as well as for the constituency paradox in Dutch.

4.1. Verb clusters in German

First, it is important to note that nonfinite verbs in German, contrary to nonfinite verbs in WF, obligatorily precede IPP-infinitives, as is illustrated in (14). Given that IPP-infinitives occupy [Spec,F2P] of the selecting verb, it follows that the selecting verb in German, whether finite or nonfinite, always moves into the highest head position in the V-domain, that is, into Asp^0 (cf. Hinterhölzl 1999, to appear for further discussion).

(14) a. *Else wird ihm einen Brief* ***haben*** *schreiben wollen*
Else will him a letter have write want-IPP

b. **Else wird ihm einen Brief schreiben wollen* ***haben***
Else will him a letter write want-IPP have
'Else will have wanted to write him a letter'

c. *dan-ze kosten willen dienen boek kuopen* ***een***
that they could want-IPP that boek buy have

d. **dan-ze kosten* ***een*** *willen dienen boek kuopen*
that they could have want-IPP that boek buy
'that they could have wanted to buy that book'

This in turn implies that in left branching verb clusters, which are prevalent in German, the dependent infinitive preceding the selecting verb occupies [Spec,AspP]. Given that infinitives first move into [Spec,F2P] of the selecting verb thereby inducing the IPP-effect, it follows that infinitives in German touch down twice in a verb cluster, raising the question of what the motivation for this double checking is.

Returning to the motivations for the formation of verb clusters discussed in the previous section, I propose that [Spec,F2P] is responsible for the temporal linking of nonfinite verbs and that, possibly depending on the extent of verb movement in a language, both [Spec,AspP] and [Spec,F2P] can check the subcategorisation of the selecting verb.

In German, where the (selecting) verb moves up to Asp^0, a dependent infinitive is temporally linked in [Spec,F2P] (triggering the IPP-effect) and moved on into [Spec,AspP] to check the subcategorisation of the selecting verb.

This raises the question about the temporal licensing of the second infinitive, that is, the gerund. In (12), we have assumed that gerunds move directly into [Spec,AspP], thus failing to give rise to the IPP-effect. However, this may not be a problem given that the gerund is a nominal category. Enç (1986) argued that only verbs must be temporally anchored, while nominals are interpreted independently of tense: if nominals were bound by tense, then sentences like *Fugitives will be put in prison* should be contradictory, contrary to what is the case. In conclusion, this analysis of the licensing of the two types of infinitives strengthens our assumption that the second type of infinitive has nominal properties.

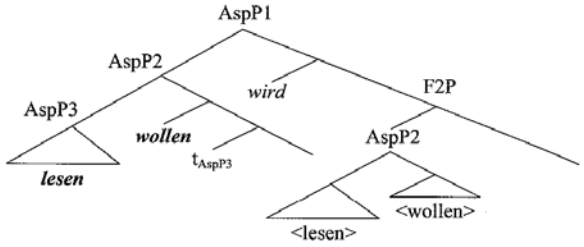
The same analysis can be applied to verb clusters involving participles. The participle being a verb first moves into [Spec,F2P] of the selecting auxiliary to be temporally licensed. Then the participle moves on to [Spec,AspP] to check the subcategorisation of the auxiliary. In the case of the participle, however, there is an additional motivation for the latter step in the derivation. It is plausible to assume that movement of the participle phrase into [Spec,AspP] of the selecting auxiliary also serves to make the temporal information contained in the participial morphology visible for further computation (this will follow from the Phase condition to be introduced below).

(15) shows a verb cluster involving a participle of a perception verb selecting a gerund. In this case, the gerund moves directly into [Spec,AspP2] without giving rise to an IPP-effect.

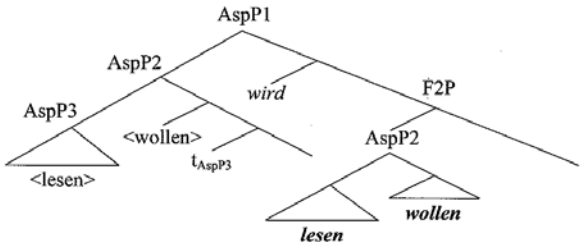
Given this analysis, I propose that the Spell-out of the infinitive in the higher Specifier yields left-branching verb clusters, while Spell-out of the infinitive in the lower Specifier yields right-branching verb clusters in German, as is illustrated in (16) and (17).[4]

(15) verb cluster involving participle + gerund
$[_{AspP1}\ [_{AspP2}\ [_{AspP3}$ *lesen*-GER] *gesehen*] *hat*]]]

(16) left branching verb cluster: *lesen wollen wird* (read want shall)



(17) right branching verb cluster: *wird lesen wollen* (shall read want)



Verb clusters with IPP-infinitives are obligatorily right-branching, as we have seen in (14) above. In the case of an IPP-infinitive, all the relevant information is contained in the empty participial morpheme, as is illustrated in (18a). I propose that in IPP-infinitives the zero morpheme undergoes head movement to the Aspect head of the auxiliary to check its subcategorisation and to make the temporal information accessible for further computation. Head movement in this case would follow, if we make the plausible assumption that an empty morpheme cannot induce pied-piping of the entire Aspect phrase. This analysis implies that the highest Specifier of a verb cluster with an IPP-infinitive is empty and available as an escape hatch. This will become important when we talk about extractions out of verb clusters in the following section. Some indirect evidence for this analysis comes from IPP-infinitives in Bavarian dialects which regularly fill the highest empty Specifier with the dependent infinitive yielding verb clusters displaying the order V3-V1-V2, as is illustrated in (18b).

(18) a. The analysis of infinitive + IPP-infinitive
$[_{AspP1}$ 0-*hat* $[_{F2P1}$ $[_{AspP2}$ $[_{AspP3}$ *lesen*] t_0 $[_{F2P2}$ *wollen*]]]]

b. IPP-infinitive in Bavarian
$[_{AspP1}$ $[_{AspP3}$ *lesen*] 0-*hat* $[_{F2P1}$ $[_{AspP2}$ t_{AspP3} t_0 $[_{F2P2}$ *wollen*]]]]

4.2. The Phase Condition and VP-topicalization

In this section, I argue that the VP-topicalization facts discussed in Section 1 follow if we assume that the Aspect phrase, not the *v*P itself, as proposed in Chomsky (1998, 2001), constitutes a (strong) phase, implying that extraction out of a verb cluster is only possible via [Spec,AspP], given that under these assumptions this Specifier constitutes the left-edge of the relevant phase.

In Chomsky's theory of phases, the access to the lexicon is a one-time selection of a lexical array LA. LA enters the derivation in different steps. In each step a subarray of LA is put in active memory. The syntactic object that is formed when a subarray is exhausted is called a *phase*.

Furthermore, Chomsky assumes that *v*Ps and CPs, but crucially not IPs, are strong phases. A derivation by phases involves a cyclic Spell-out of (sub)structures, the point of which is determined by (19). Computation is strictly local and constrained by the Phase Impenetrability Condition as given in (20).

(19) *Phase Condition* (Chomsky 2001)

Evaluation for a phase is done at the level of the next highest strong phase

(20) *Phase Impenetrability Condition* (PIC)

The complement of a strong phase *a* is not accessible to operations at the level of the next highest strong phase *b*, but only the head and the edge of *a* are

Since VP-topicalization involves movement of a constituent contained in a strong phase, namely *v*P/AspP, to the next highest strong phase, namely the C-domain, it is expected that the Phase condition constrains VP-topicalization.

(21) again illustrates the facts of VP-topicalization that we need to account for in German. Extraction out of a verb cluster involving a perception

verb leads to a bleeding of the IPP-effect (21b), while extraction out of all other verb clusters including modal verbs, fails to induce a bleeding of the IPP-effect (21a). (21a) also indicates that extraction out of a verb cluster involving an IPP-infinitive must be licit in principle.

(21) a. *lesen hat er das Buch wollen /*gewollt*
read has he the book want-IPP/ wanted-PP

b. *lesen hat er ihn das Buch gesehen /*sehen*
read has he him the book seen / see-IPP

Let us start with verb clusters involving perception verbs. Perception verbs can optionally select an infinitive or a gerund. If the gerund is selected, the verb cluster that results from restructuring is given in (15). Given that the Aspect phrase constitutes the left-edge of the *v*P-phase, the gerund occupying a specifier of the Aspect phrase of the auxiliary, that is, the highest verb in the verb cluster, can be extracted without further ado.

On the other hand, if the infinitive is selected, the verb cluster that results from restructuring is parallel to the structure illustrated in (18a). In this structure, the dependent infinitive, as is evidenced by the grammaticality of (21a) is extractable, since the escape hatch, the left-edge of the verb cluster, that is [Spec,AspP] of the auxiliary, is empty. Note, however, that in this structure the dependent infinitive does not occupy the left-edge of the Aspect phase, but is contained in a lower Specifier namely [Spec,F2P] of the auxiliary, from which position it cannot extract without violating the PIC at this point of the derivation.

To insure extractability, the dependent infinitive must undergo last resort movement to the edge of the phase in the previous cycle, parallel to the movement of dependent infinitives in Bavarian illustrated in (18b). This movement of the dependent infinitive to the left-edge of verb clusters involving IPP-infinitives must be taken to be a last resort operation, since it does not serve any licensing purposes and parallels the movement of a wh-element to the local [Spec,CP] in cases of long distance wh-movement. This last resort operation will only then be licit, if the grammar does not provide another option leading to a convergent derivation, as is the case with verb clusters involving modal verbs in German. With verb clusters involving perception verbs, however, there is an alternative derivation, since the gerund could have been selected instead.

In other words, VP-topicalization with perception verbs leads to a bleeding of the IPP-effect since the derivation involving the gerund is more economic: it requires one movement step less, than the derivation involving the infinitive.

4.3. Verb clusters in Dutch and West Flemish

While verb clusters in German are (predominantly) left-branching, verb clusters in Dutch and WF are generally right-branching. Furthermore, as we have also seen in (14) above, nonfinite verbs in Dutch and WF, contrary to German, fail to move to the highest head in the V-domain. This implies that a dependent infinitive, while moving into [Spec,F2P] of the selecting verb and thereby inducing the IPP-effect, must be taken to be spelled-out in [Spec,F3P] below, that is to say, within the containing CP that is licensed in [Spec,F3P] (cf. (23)).

Another feature that distinguishes verb clusters in German and Dutch, is the fact that particles can climb in the verb cluster in Dutch but not in German, as is illustrated in (22).[5] I propose that particle-climbing is analyzed as movement of the particle into [Spec,AspP] of the higher verb, as is shown in (24). Since infinitives, gerunds and participles in German check the subcategorization in [Spec,AspP] of the selecting verb, particle climbing is correctly predicted to be ruled out in this language. On the other hand, this implies that the subcategorisation of nonfinite verbs in Dutch and WF is also checked in [Spec,F2P]. This is in accordance with the amount of verb movement in the V-domain in these languages.

(22) a. *dat hij mij (weg) kan (weg) horen (weg) rijden* (Dutch)
that he me (away) can (away) hear (away) drive
'that he can hear me drive away'

b. *dass er mich (*an) wird (*an) haben (an) rufen wollen* (G)
that he me (up) will (up) have (up) call (up) want-IPP
'that he may very well have wanted to call me up'

(23) right branching dependent infinitive in Dutch: (*zal*) *willen uitlezen*
$[_{AspP1}\ [_{F2P1}\ [_{AspP2}$ <uit lezen>] *willen* $[_{F3P1}\ [_{AspP2}$ ***uit lezen***]]]]

(24) verb cluster + particle climbing in Dutch: (*zal*) *uit willen lezen*
$[_{AspP1}$ ***uit*** $[_{F2P1}\ [_{AspP2}$ <uit lezen>] *willen* $[_{F3P1}\ [_{AspP2}$ <uit> ***lezen***]]]]

Let us now look at VP-topicalization in the two languages. The relevant data are given again in (25a–b). Topicalization of the dependent infinitive, either alone or with its direct object, leads to a bleeding of the IPP-effect. The structure of the verb cluster feeding VP-topicalization in (25a) is given in (25c).

(25) a. *lezen heeft Jan het boek niet gewild*
read-INF has Jan the book not wanted

b. *een boek lezen heeft Jan niet gewild*
a book read-INF has Jan not wanted

c. [$_{AspP}$ *heeft* [$_{F2P}$ [$_{AspP}$ 0 [$_{F2P}$ <lezen> *willen* [$_{F3P}$ ***lezen***]]]]]

Like in German IPP-infinitives, the left-edge of the verb cluster is available as an escape hatch. However, in this case the dependent infinitive has to undergo last resort movement to the left-edge crossing its own unspelled-out copy in [Spec,F2P], which we may assume is excluded in principle. Thus, since extraction of the infinitive is blocked in Dutch and WF, the gerund is inserted in the course of the derivation as a means of last resort. The gerund being licensed in [Spec,AspP] of the selecting verb will not induce an IPP-effect and occupying the left-edge of the verb cluster is accessible for extraction to be topicalized in the final step of the derivation. Note that for this account to work, it is crucial that Spell-out decisions in the verb cluster are fixed before the derivation reaches the C-domain. If Spell-out of the verb cluster could be deferred to the point where VP-topicalization applies, then the question arises why the dependent infinitive could not be spelled-out (as a last resort operation) in [Spec,F2P] in Dutch and WF. In this case, the dependent infinitive could be extracted out of the verb cluster and, contrary to the fact, the IPP-effect would not be voided. Thus it is important that Spell-out proceeds in a cyclic fashion. In Section 5, I will provide some evidence for the assumption that Spell-out is phase-based, by showing that also prosodic constraints must be taken to apply to specific phases only. Before this, however, we must discuss how (25b) can be derived, since Dutch does not allow for VPR.

4.4. The syntax of gerunds

The proposal is that the derivation of (25b) in Dutch involves the insertion of the gerund as a means of last resort. I analyze the gerund as a phrasal affix that morphologically selects for an infinitive. To satisfy its selection, the gerund affix can attach to the infinitive or to any extended projection of it, including a projection in which the direct object of the dependent infinitive is licensed. That is to say, at the point of the derivation at which the direct object of the infinitive is Case-licensed in [Spec,AgrOP] (and VPR applies to this constituent in German or in WF), a functional head containing the empty affix is inserted (cf. (26a)). This affix will attract its complement into its Specifier and fuses with the adjacent infinitive at Morphological Form (cf. Halle and Marantz 1993) to fulfil its morphological selection, as is illustrated in (26b).

(26) a. [$_{GP}$ [$_{G'}$ 0 [$_{AgrOP}$ *een boek* [$_{AspP}$ *lezen* [$_{VP}$]]]]
Insertion of a functional head

b. [$_{GP}$ [$_{AgrOP}$ *een boek* [$_{AspP}$ *lezen* [$_{VP}$]]] [$_{G'}$ 0 t$_{AgrOP}$]]
Adjacency allowing the affix to be fused with the infinitive

This constituent is then moved in the very same fashion as a VPR-constituent into a licensing position in the V-domain of the selecting verb. However, since the derivation involving the gerund is less economic or contains more steps than the parallel derivation involving the infinitive, the alternative derivation with the gerund will only be available if the derivation with the infinitive does not converge, as is the case in VP-topicalization. In all other environments a derivation involving the insertion of a gerund will be blocked in Dutch by the less complex derivation involving an infinitive which will give rise to the IPP-effect and to VR structures only.

5. Cyclic Spell-out and phase specific prosodic constraints

In this section, I will argue that Spell-out decisions are tied to phases by showing that also prosodic constraints apply phasewise. The evidence comes from the properties of topicalized right-branching verb clusters in German. It will be shown that these verb clusters are subject to a prosodic constraint that does not apply in the other phases of the clause.

Right-branching verb clusters in German are possible as long as the most deeply embedded verb cluster is left-branching. This means that as soon as we have a verb cluster with at least three verbs, a right-branching verb cluster is possible, as is illustrated in (27a). In this case the verb cluster has the structure V1-V3-V2. As discussed in Section 4.1, I assume that a right-

branching verb cluster is derived in that the dependent infinitive is moved into [Spec,AspP] of the selecting verb but spelled-out in [Spec,F2P] below.

(27) a. *weil er den Text muß lesen können*
since he the text must read can
'since he must be able to read the text'

b. ??*weil er den Text* [[*müssen* [*lesen können*]] *wird*]
since he the text must read can will

c. *weil er den Text* [*wird* [*müssen* [*lesen können*]]
since he the text will must read can
'since he will have to be able to read the text'

Right-branching verb clusters are also subject to the following restriction. If a right-branching verb cluster is introduced at one cycle it has to be right-branching in the next cycle as well, as is illustrated by the contrast in (27b–c). This restriction, however, cannot be taken to be due to a hard syntactic-type of condition in WG, since it is violated regularly by IPP-infinitives in WF and Afrikaans (cf. Hinterhölzl 1999, to appear).

Thus I would like to propose that this restriction is the effect of an interface requirement on the mapping between syntactic and prosodic structures.[6] Assuming that left- and right-branching verb clusters are mapped onto left- and right-headed phonological phrases, this restriction can be formulated as given in (28a). (28b) is taken to account for the ungrammaticality of purely right-branching verb clusters in the standard language.

(28) Prosodic Constraint

a. A right-headed phonological phrase in a verb cluster must sit on a right branch with respect to the non-head

b. The most deeply embedded phonological phrase in a verb cluster must be left-headed

Furthermore, I assume that the violation of interface requirements leads to marked structures that count as ungrammatical only if there is no alternative derivation which does not violate the given interface condition. Therefore, (27b) is prosodically marked since it violates the prosodic condition in (28a) and counts as ungrammatical since there is an alternative derivation that involves a Spell-out option that does not violate it, namely the derivation yielding (27c).

In this context, it is interesting to note that the topicalization of right-branching verb clusters in German gives rise to rather subtle grammatical differences. As is illustrated in (29), while the topicalization of a right-branching verb cluster without an IPP-infinitive is ungrammatical, the topicalization of a right-branching verb cluster including an IPP-infinitive is slightly marked but fully grammatical.

(29) a. ?*[*müssen* [*lesen können*]] *wird er den Text*
must read can will he the text

b. ?[*haben* [*lesen wollen*]] *wird er den Text*
have read want-IPP will he the text
'he will have wanted to read the text'

How can we account for the above contrast? I will argue that the subtle differences in (29a–b) follow from the interaction between the PIC and the prosodic condition in (28). Given the PIC, the verb cluster [*müssen* [*lesen können*]] must be extracted from [Spec,AspP] of the finite verb. In this position it will incur a violation of the prosodic constraint in (28a). This violation induces ungrammaticality, since there is an alternative derivation that involves a Spell-out option that does not violate (28a). This is the derivation in which the infinitives are spelled-out in the highest Specifier of the V-domain in the previous cycle yielding the purely left-branching verb cluster [[*lesen können*] *müssen*]. In the case of the verb cluster involving the IPP-infinitive in (29b), however, there is no alternative derivation that does not violate (28a), since IPP-infinitive only allow for right-branching verb clusters. Therefore (29b) is judged as prosodically marked but fully grammatical.

It is important to note that the violation of this prosodic constraint must be incurred at the level of the V-domain, since at the CP level no such constraint can be taken at work, as is evidenced by the right-branching phrases occupying [Spec,CP] in (30).

(30) a. [$_{CP}$ [*behauptet dass die Erde rund ist*] *hat* [$_{IP}$ *keiner* t]]
claimed that the earth round is has noone

b. [$_{CP}$ [*der Bruder von Peter*] *hat* [$_{IP}$ *Maria getroffen*]]
the brother of Peter has Mary met

The above data therefore show that the violation of prosodic constraints can be incurred in the course of the derivation. This implies that Spell-out must

be cyclic proceeding from phase to phase. Furthermore, the above discussion has shown that prosodic constraints can be relevant in one domain but fail to apply in another domain. Therefore, we can conclude that prosodic constraints not only apply phase-wise but can also be tied to specific phases. We have seen evidence that the German V-domain is subject to a prosodic constraint that is typical of VO-languages, but does not apply in other domains, that is, in any other phase in German.

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Notes

1. An anonymous reviewer points out that IPP-infinitives can also show up in main verb uses of modals in Swiss German, as is illustrated in (i). In this dialect, the IPP-infinitive replaces a participle that is lost in the lexicon. The important point of the data in (1), however, is that in this environment the IPP-effect shows up, even when the participle is still available in the lexicon of a variety, as is the case in the Standard language.
   (i) *Das han ich nöd wele* (Swiss German)
   Das habe ich nicht gewollt (Standard)
   this have I not want-IPP/wanted-PP
2. An anonymous reviewer points out that this approach is supported by the occurrence of prefixless participles in certain IPP-environments in Dutch.: instead of the expected form *zijn* ('be') we find the strong participle *wezen*. A similar case occurs in the German passive, as is illustrated in (i). The regular appearance of infinitives in IPP-context with modals can be related to the fact that modals lost their strong participles in late Middle High German (cf. Hinterhölzl (to appear)).
   (i) *weil die Maria geliebt* ***(*ge) worden*** *ist*
   since the Maria loved been is
   'since Maria has been being loved'

3. The name Status is taken from Bech (1955/1983) who compares the status of non-finite verbs with Cases in the nominal domain (StatP can be taken as a generalization of Rizzi's (1997) FinP).
4. An anonymous reviewer raises the question, why t_{AspP3} cannot be rendered via alternative Spell-out as *lesen* in (16) and (17). In section 5, I will discuss prosodic restrictions on Spell-out options in verb clusters. In the standard language the above option is excluded by the condition in (28b).
5. See also Ackema (2004) for a discussion of the issue of whether verb particles can climb within the verb cluster.
6. The idea that prosodic factors condition the linearization of verb clusters at least goes back to Haegeman and van Riemsdijk (1986), where it is argued that the heaviness (of a branching node in the cluster) determines whether flip is optional or obligatory. See also Williams (2004) and Wurmbrand (2004a) for more discussion on the linearization of verb clusters.

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