A Phase-Based Comparative Approach to Modification and Word Order in Germanic

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Abstract. This paper proposes a novel phase-based approach to directionality parameters in Germanic. Basic OV and basic VO order are argued to follow from two interacting types of mapping constraints at the interfaces. The properties of event-related adjuncts are shown not to follow from a dual structure involving cascades but are derived by (silent) scrambling of arguments and adjuncts plus vP intraposition, which serves to license event-related adjuncts as (superimposed) predicates.

1. Introduction

In this paper, I propose a novel integrated approach to the syntax of event-related adjuncts and to the head–complement parameter. I argue for a comparative approach in which event-related adjuncts—though base-generated outside of the vP—are not taken to be part of the extended projection of the verb, but project separate phases and superimpose a predication relation on the projections of the verb.

In this approach, event-related adjuncts are licensed via movement of the vP that serves as a subject for the predication established by the adjunct (cf. Cinque 2006, 2008 for a similar approach to the syntax of adjuncts in the DP in terms of NP movement). Empirical evidence for the movement account is provided based on the scope/binding asymmetry of right-peripheral adjuncts in English.

While vP movement is triggered by the licensing requirements of adjuncts and is thus the same for OV and VO languages, the movement of the vP itself may either involve extraction or pied-piping. I argue that this constitutes a basic option in the grammar and show that the different marked and unmarked orders of event related adjuncts in OV and VO languages follow from specific interface conditions that determine whether the extraction option or the pied-piping option is taken.

I also address Pesetsky's paradox and argue that cascades are not available in German. Instead, I propose that the c-command effects between arguments and adjuncts in German and English involve A-movement (scrambling) into a scope position and argue that the differences between the two languages follow from the differential spell-out of this operation. The analysis is embedded in a phase-based account in which syntactic computation and prosodic evaluation are intertwined and allows for a novel take on the pertinent OV/VO order distinction in Germanic. The head–complement parameter is replaced by the workings of

two interface conditions that define a transparent mapping between syntax and prosody on the one hand and between syntax and logical form on the other hand.

The following section introduces the main issues concerning the syntax of event-related adjuncts in OV and VO languages.

2. Event-Related Adjuncts in OV and VO Languages

In a framework subscribing to the Universal Base Hypothesis (UBH) (see Kayne 1994, Chomsky 1995) differences between OV and VO languages cannot be relegated to a basic parameter like the head–complement parameter, but must be related to other properties in the individual grammars. In a minimalist approach to grammar, these differences should—in the ideal case—be linked to different properties at the interfaces. Given that LF representations should be nondistinct universally, a good candidate for locating crosslinguistic variation, next to morphology proper, is the mapping between syntax and phonology in general and between syntactic structure and prosodic structure in particular.

One difference between VO languages like English and OV languages like German that strikes me as being essentially prosodic in nature is the fact that adjuncts that can occur between the subject and the vP in VO languages are subject to restrictions absent in OV languages (see Haider 2000).

(1) a. John (more) often (*than Peter) read the book.
     b. Hans hat öfter (als der Peter) das Buch gelesen.

Descriptively speaking, the head of the adjunct must not have material to its right in VO languages. This is only possible if the adjunct appears in sentence final position. An option, on the other hand, that is not available in OV languages, as the contrast illustrated in (2) shows. In sum, material that can remain in the middle field in a VO language must be light, while the middle field of an OV language can contain also rather heavy constituents and their heaviness alone is not a license for postpositioning.

(2) a. John read the book more often than Peter.
     b. *Hans hat das Buch gelesen öfter (als Peter).

Another difference between German and English that cannot possibly be subsumed under the head–complement parameter is the observation that the position of event-related adverbs—that is, Time, Place and Manner adverbs—correlates with the position of the object with respect to the position of the verb.[1] In the unmarked case, these adverbs occur preverbally in

[1] It is shown by Hinterhölzl (2002) that the properties of these adjuncts in OV and VO languages cannot be done justice to if it is assumed that they left-adjoin to the VP in OV languages but right-adjoin to the VP in VO languages.

the order T>P>M in OV languages but postverbally in the exact mirror image in VO languages (cf. Haider 2000, Hinterhölzl 2002), as illustrated in (3).

(3) a. C T P M–V   OV languages
     b. C V–M P T   VO languages

Alternative orders are found in OV as well as in VO languages. In English, manner adjuncts can also occur preverbally, if they are nonbranching. As illustrated in (4) for German, OV languages like German and Dutch also allow for postverbal occurrences of these adjuncts. These orders are generally assumed to be derived either in terms of extraposition of the adjunct or in terms of intraposition of the vP. As discussed in detail in section 3.2, cases like (4) represent marked orders in German, since they are connected with specific interpretations and are not possible with quantificational types of event-related adjuncts. Here we are concerned with base-generated unmarked order of these adjuncts with respect to each other and with respect to the verb.

(4) weil   der Hans die Sabine getroffen hat   gestern   in Wien
     since the Hans the Sabine met   has   yesterday in Vienna
     'since Hans met Sabine yesterday in Vienna'

The properties of event-related adjuncts raise various interesting questions. First, their distribution within OV and VO languages raises the question of what makes exactly these adjunct types special such that their positioning, but not the positioning of, say, higher adverbs, seems to be correlated with the head–complement parameter. Second, these adjuncts display an asymmetry between scope and binding relations in English. Note first they can be interchangeably in the scope of each other, as illustrated in (5). However, whereas scope may go from right to left (see (6a)), binding is only possible from left to right, as illustrated by the contrast in (6b,c).

(5) a. They met students every day of the week in a different university.
     b. They met students in each university on a different day.

(6) a.   John met Mary in a (different) park every Sunday.
     b. *Sue met Mary in his house on everybody's birthday.
     c.   Sue met Mary on everybody's birthday in his house.

Third, event-related adverbs give rise to Pesetsky's paradox. The standard account of postverbal adverbs in VO languages was given in terms of layered adjunction to the vP/VP on the right, as illustrated in (7).

(7) [$_{IP}$ SU [$_{VP}$ [$_{VP}$ V DO] Adjunct]]

Right-adjunction structures, either base-generated or derived by movement, are incompatible with Kayne's (1994) UBH. Independently of the UBH,

Larson (1988), Stroik (1990), and Pesetsky (1995) have argued that the standard approach to the syntax of adverbs is mistaken, since it fails to account for basic c-command relations between them and the complements of the verb. Typical c-command diagnostics, as NPI licensing (8a) and quantifier-bound pronouns (8b), indicate that postverbal adjuncts are in the c-command domain of postverbal complements.

(8) a. John saw no student in any classroom.
    b. John met every girl on her birthday.

Since in the representation in (7) the direct object fails to c-command the postverbal adjunct, Larson (1988) proposed that event-related adverb(ial)s are part of a (multi-) layered vP shell in which these elements are deeper embedded than the complements of the verb, as indicated in (9).

(9) [$_{VP}$ SU V [$_{VP}$ DO t_V Adjunct]]

This proposal was extended by Pesetsky (1995) to generalized cascades to account for c-command out of PP arguments and PP adjuncts, as illustrated in (10a,b). The cascading structure of (10b), where the argument of the higher head is reanalyzed as the specifier of the next head down, is given in (11).

(10) a. Sue spoke to these people about each other's friends.
     b. Sue gave books to these people on each other's birthdays.

(11) [Sue gave [$_{PP}$ [books] [to [$_{PP}$ [these people] on [each other's birthdays]]]]]

While this analysis neatly accounts for the c-command relations between postverbal complements and adjuncts, it fails to account for standard constituency tests such as VP preposing and VP ellipsis which show that verb and object form a constituent excluding postverbal adjuncts. This state of affairs is called Pesetsky's paradox and led him to propose a dual structure: a cascading (Larsonian) structure to account for the binding facts and a layered structure (parallel to the traditional analysis given in (7)) to account for the constituency facts. This state of affairs is highly unsatisfactory. It would be advantageous to settle for one basic underlying structure and derive the effects of the other structure via movement. However, Pesetsky argues that there is strong evidence for the parallel availability of both structures since the binding relations, for example, between a postverbal argument and an anaphor in a temporal adjunct (due to a cascade representation) remain available in VP topicalization that requires

the layered representation [[V DO] Adjunct] of these constituents, as illustrated in (12).[2]

(12) John said that he would visit every girl …
  …and visit every girl$_i$ he did on her$_i$ birthday.[3]

Pesetsky (1995:285ff.) points out that cascades must also be available in an OV language like German, since one finds the same c-command effects between arguments and adjuncts like in English, as illustrated in (13).

(13) Hans besuchte jede   Frau$_i$ an ihrem$_i$ Geburtstag.
   Hans visited   every woman on her   birthday
   'Hans visited every woman on her birthday.'

However, an analysis in terms of cascades of (13) cannot be right. First, note that binding from arguments into adjuncts is not available in German if the argument stays in its base (or Case) position, as would be expected from the syntax of cascades, but requires scrambling of the argument to a position c-commanding the adjunct, as illustrated by the contrast in (14a,b). The order in (14a) corresponds to the unmarked order between an argument and a temporal adjunct, whereas the order in (14b) involves scrambling of the argument into a higher position in the middle field. In (14a) the NPI *jemals* 'ever' fails to be licensed for the lack of a c-commanding negative element.

(14) a. *weil Hans jemals mit keiner Frau sprach
   b.   weil Hans [mit keiner Frau]$_j$ jemals t_j sprach
       since Hans with no   woman   at-any-time spoke
       'since Hans spoke with no woman at any time'

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[2] Heavy XP shift, as illustrated in (i), is another piece of evidence that Pesetsky (1995:249ff.) adduces in favor of dual structures.

  (i) a. We gave __ to John on Friday [a brand new toy].
    b. John depends __ for his livelihood [on royalties from his many books].

Pesetsky shows that heavy-shifted XPs behave as being high attached (adjoined to VP) with respect to standard constituency tests but at the same time appear to be attached low with respect to standard c-command tests. The latter facts are illustrated in (ii) (Pesetsky 1995:(643a,c)); this prediction cannot be tested for German, which does not license heavy shift. I will return to the data in (ii) in section 7.

  (ii) a. *We gave ___ to him$_i$ on Friday [John$_i$'s brand new toy].
    b.   Bill heard __ from each committee member$_i$ on Friday [a report on his$_i$ activities].

[3] Colin Phillips (2003) argues that the topicalization data and parallel facts can be captured with cascading structures alone, if it is assumed that syntactic structures are built and processed incrementally from left to right. I will not go into the details of his proposal, since I argue below that cascades do not provide a satisfactory solution for the problem at hand.

Second, arguments cannot bind into stranded adjuncts in cases of VP topicalization in German, as illustrated in (15).

(15)   Hans sagte er würde jede Frau   besuchen…
          Hans said   he would every woman visit
          'Hans said that he would visit every woman…'
          *…und jede Frau$_i$ besucht hat er an ihrem$_i$ Geburtstag.
          *… and every woman visited had he on her   birthday
          '…and visit every woman he did on her birthday.'

This follows immediately from the scrambling approach to (14), since the direct object that is affected by VP topicalization in (15) cannot at the same time take scope over the adjunct that is stranded by this operation. If cascades are available in the syntax of German, then the contrast between (12) and (15) comes as a surprise. Thus the German data strongly suggest that the c-command effects of cascades are properties derived through movement and should not be accounted for with structures assumed to be base-generated in the vP in this language. At best Pesetsky could have a parametric account that links the availability of cascades to the (un)availability of scrambling in language.

   Independently of this, it is argued by Hinterhölzl (2002) that the Larsonian approach to event-related adjuncts (which Pesetsky adopts and generalizes) is also inappropriate for English. On the basis of comparative and semantic arguments, it is proposed that these adjuncts are base-generated outside of the vP in the order T>P>M, as illustrated in (16), with the English order being derived from the German order via successive cyclic intraposition of verbal projections.

(16)   [Temp…[Place…[Manner [SU v [V DO]]]]

In this unified account, an English sentence like (17a) is derived from the base structure in (17b) in the following way. First, the vP containing the verb and its arguments moves in front of the locative PP (17c), then the resulting structure is moved in front of the temporal PP (17d) and in the final step the subject is extracted to be licensed in Spec,TP or an appropriate Agreement position above TP, as indicated in (17e).

(17)   a.   John visited them in Vienna on Friday.
          b.   [… [on Friday [in Vienna [$_{vP}$ John visited them]]]]
          c.   […[on Friday [[$_{vP}$ John visited them] in Vienna t_{vP}]]]
          d.   […[[$_{vP}$ John visited them] in Vienna] on Friday]
          e.   [$_{IP}$ John$_i$ [[[[$_{vP}$ t_i visited them]$_k$ in Vienna t_k]$_j$ on Friday t_j]]

This account derives the vP-constituency facts from a base common to German and English. To account for the c-command effects, Hinterhölzl

1 (2002) argues that English has preserved scrambling of the Dutch type—that
2 is, movement of arguments across adjuncts in the syntax—but spells out the
3 lower copy. In this approach, Pesetsky's paradox is resolved in that LF
4 interprets the higher copy in the middle field, while PF interprets the lower
5 copy in the vP and the bound reading in (12) is derived in the following way:
6 at some point in the derivation (after merging the adjunct), the argument
7 undergoes scrambling (as it does in German) to a position c-commanding the
8 adjunct, but spells out the lower copy in the vP. vP topicalization can then
9 affect the verb plus the argument and the resultant structure in (18) will then
10 be shipped to PF and LF. LF finds a copy of the argument—the unpronounced
11 one in the middle field—that c-commands the pronoun in the adjunct and
12 gives rise to the bound pronoun reading (with unpronounced copies being
13 crossed out in (18)).

15 (18) and [visit every girl] he did ~~every girl~~ on her birthday ~~[visit every girl]~~

17 Hinterhölzl (2002) provides strong empirical evidence for the existence of
18 (silent) scrambling in English. It is shown that the different properties of
19 inverse linking in German and English and the cases of antecedent-contained
20 deletion (ACD) in English can be better explained in terms of scrambling than
21 by the traditional analysis in terms of QR.
22   To summarize, the unified comparative approach assumes: (a) that the
23 basic word order is T-P-M-V-O; (b) that there is obligatory vP intraposition
24 in OV and VO languages; (c) that there is scrambling both in German and
25 English, but that English spells out the lower copy; and (d) that there is
26 obligatory (Case-) licensing movement of the arguments out of the vP in the
27 course of the derivation (see Zwart 1993) that is common to all UBH-based
28 approaches. The novel proposal that I will make is that that this licensing
29 movement spells out the higher copy in German, but the lower copy in
30 English.
31   This proposal raises a number of questions that will be addressed in the
32 subsequent sections. First, which kind of movement do verbal projec-
33 tions in German and English undergo and what is the trigger of these
34 movements?. Second, given that vP intraposition also applies in German,
35 how is the unmarked preverbal position of event-related adjuncts in German
36 derived? Third, which factor is responsible for the differential placement of
37 these adjuncts in German and English and which factor is responsible for
38 the differential spell-out of licensing movement and scrambling in German
39 and English? Fourth, is there a connection between the latter two properties
40 in German and English? In the remainder of the paper, I argue that there
41 is a unique condition that accounts for the positioning of event-related
42 adjuncts as well as for the spell-out of licensing and scrambling chains.
43 Furthermore, I will show that this condition follows from the prosodic
44 restriction illustrated in (1). In the following section, I will start with

providing a rationale for obligatory vP intraposition (in German and English).

3. The Licensing of Event-Related Adjuncts

In this section, I would like to address the question of why the syntax of adjuncts should require vP intraposition. In the approach sketched above, we noted that different answers have been given to this question so far. To my knowledge, Barbiers (1995) was the first to propose that postverbal adjuncts in OV languages are due to vP intraposition. His approach is very similar to the approach that I develop in this paper. Barbiers argues that vP intraposition is semantically motivated and targets a specifier position within the adjunct PP. Pearson (2000) proposed that postverbal arguments and adjuncts in Malagasy are derived via vP intraposition that serves to identify the categorial nature of functional heads in the extended projection of the verb. This approach is adopted and generalized by Cinque (2006).

My approach differs from these two approaches in that it is assumed that adjuncts do not belong to the extended projection of the verb but are part of separate projections. vP intraposition is argued to serve a licensing purpose that involves the establishment of a predication relation. In this respect, my account can be seen as a version of Barbiers's original proposal. In contradistinction to his proposal, vP movement obligatorily applies in the syntax. This has the advantage that restrictions and interpretive effects connected with vP intraposition can be captured better in a phase-based framework that allows for an influence of prosodic constraints in the course of the derivation, as discussed in detail in sections 3.2 and 3.3.

3.1 Modification and Predication in a Phase-Based Framework

In the standard account to modification, it is assumed that adjuncts are adjoined to the maximal category of the head they modify. Thus, the attachment site of the adjunct is determined by its interpretation (it minimally has to attach to the constituent it modifies). Second, the syntactic operation of adjunction is interpreted semantically as intersection between the set denoted by the adjunct and the set denoted by the maximal projection of the modified head. In informal terms, this operation may be decribed as identification of the individual variables introduced by adjunct and modified head, as illustrated in (19) for the nominal domain and in (20) for the verbal domain.

(19) a. red ball
      b. $[_{NP}$ AP(y) $[_{NP}$ N(x)]]
      c. identification: x = y > there is an individual x such that ball(x) & red(x)

(20) a. meet in the park
 b. $[_{VP} [_{VP} V(e_1)] PP (e_2)]$[4]
 c. identification: $e_1 = e_2 >$ there is an event e such that meet (e) & in the park (e)

In Cinque's (1999) proposal, adjuncts are introduced as specifiers of functional heads that are ordered according to a universal hierarchy in the extended projections of the modified head. In this approach, (16) can be viewed as representing a small section of the universal hierarchy of modifiers pertaining to the verb (see Schweikert 2005 for a more complete picture of this hierarchy). Cinque's proposal can thus be taken to provide an alternative account to the question of how adjuncts are to be attached to the head they modify, but it fails to address the question of how the individual variables of adjunct and modified head are identified.

In other words, if we want to dispense with adjunction altogether, we must consider how an adjunct, being base-generated as the specifier of a functional head is interpreted and how, for instance, the event variable of the verb is identified with the individual variable of an adjunct that sits higher up in the tree in the specifier of a functional head, possibly separated from the verb by various heads dedicated to the licensing of the arguments of the verb.

I would like to make the following proposal. The adjunct introduced as the specifier of a functional head is interpreted as a predicate on the category it is taken to modify in the standard theory. In other words, there is a predication relation between the adjunct and vP in the clause, in which the vP acts as subject of the predication by the adjunct. This predication relation is established via movement in the following manner. Assuming that every (complex) predicate provides a licensing domain for its arguments, introducing an adjunct in the functional skeleton of either CP or DP will always involve two functional heads: the one that introduces the adjunct as an additional predicate (called F1 in (21)) and the other one that licenses the argument of this predicate (called F2 in (21)). In the course of the derivation vP/NP moves into Spec,F2 and the two individual variables are identified via predication, as illustrated in (21).[5]

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[4] Davidson (1966) argued that events should be treated as referential entities in the logical description of sentences (see also Higginbotham 1985, Parsons 1990, and Kratzer 1995 for applications of this proposal).

[5] Cinque (2008) presents comparative data on the distribution of DP-internal modifiers in Germanic and Romance that can be taken to support this general approach. For a more detailed discussion of NP movement in the DP, I refer the reader to Cinque 2008. In this paper, I concentrate on the issue of vP movement in the clause.

(21) a. $[[_{VP}\ V\ (e_1)]\ F2\ [PP\ (e_2)\ F1\ \ldots[t_{VP}]]]$
      b. $[[_{NP}\ N\ (y)]\ F2\ \ [AP\ (x)\ F1\ \ldots[t_{NP}]]]^6$
      c. $\lambda\ e\ [meeting\ (e)\ \&\ in\ the\ park\ (e)]$

For the verbal adjunction structure in (20a), this means that the meeting event denoted by the vP is predicated to be an element of the set of events (happening) in the park. In (21c), the result of this predication is given in terms of a λ-expression. In other words, the vP that acts as (main) predicate in the clause, constitutes the subject of predication in the adverbial domain. One can reasonably expect that a phrase cannot act simultaneously as a predicate and as a subject in the very same domain. However, in a phase-based framework this possible complication can be avoided, if it is assumed that the vP obtains these interpretations in different phases in the clause.

Thus, I would like to propose that F1 and F2 in (21) constitute projections of a separate phase and are not considered as being part of the extended projection of the verb or the noun. F1 introduces an additional predicate in the clause (or DP) that has its own licensing domain, namely F2. In other words, Spec,F2 can be compared with Spec,IP in the clause. vP intraposition, therefore, has to be considered as a case of A-movement that serves to license the adjunct as a (secondary) predicate. Some evidence for the assumption that vP intraposition is a case of A-movement will be given in the following section.

Having said this, a note on the predication relation in (20a,b) is in order. An anonymous reviewer points out that a functional head typically mediates a relationship between the subject in its specifier and a predicate that constitutes its complement. The complement of F2, however, contains more than just the PP or AP that is to be predicated of the derived subject in (20a,b). At this point the phase status of the two functional specifiers in (20a,b) becomes relevant. F2 mediates a predication relation between its specifier and the constituents in its complement domain that belong to the same phase as F2, that is, Spec,F1. All other constituents below F2 belong to the extended projection of the verb and, as stated above, constitute material of a separate phase.

That the projections F1 and F2 and their respective specifiers constitute a separate phase follows from the following typology of phases. I propose that the main phases (the CP in the clausal domain and the DP in the nominal domain) comprise the following subphases: a predicate domain (roughly the vP in the clause) that introduces a predicate and its arguments, the I domain, in which the (properties of the) arguments of the predicate are licensed, and a C

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[6] Relative clauses are generally taken to be interpreted as predicates on the relative noun phrase. In the present account, it can be assumed that the relative clause is merged prenominally (see Cinque 2008) and that the relative operator just selects the variable that is to be identified with the variable of the head noun via predication, as illustrated in (i). Since the relative clause is presupposed, identification leads to the interpretational effect that the relative clause determines/specifies the reference of the relative head. See Cinque 2008 for good arguments for a combined head-raising and matching analysis of relative clauses.

(i) $[[_{NP}\ N\ (x)]\ F2\ [\ [CP\ the\ y\ such\ that\ [IP\ldots y\ldots]]\ F1\ldots[t_{NP}]]]$

domain (or completing domain) that embeds the predicate in another clause or in the relevant context. I will call these subphases *homorganic,* since they are projected by the same phase predicate (in the sense of Grimshaw 1991).

This typology of subphases recapitulates the three ways in which two predicates (and their projections) can be combined in the syntax. (A) A second predicate, usually an adjectival, nominal, or prepositional small clause, only projects a predicate domain and has its arguments licensed in the I domain of the (main) predicate, that is, the verb in the clause. In this case, the second predicate forms a complex predicate with the verb. (B) In the case of an adjunction, the adjunct is argued to project a predicate domain (= Spec,F1) and a licensing/I domain (F2P), but crucially does not project a completing or C domain, which bars it from being embedded like a complement under the main predicate, that is, the verb in the clause. (C) A second predicate may project a predicate domain, a licensing domain and a completing domain, which allow it to embed or to be embedded under another predicate.

In conclusion, adjuncts comprise a predicate domain and an I domain, but lacking a completing domain, they are barred them from being embedded like complements. Instead of being embedded, they are superimposed in the I domain of another predicate. To be licensed, event-related adjuncts must enter into a predication relation with the vP in the clause. It also follows from the above typology that the subphases of adjuncts are nonhomorganic with respect to the subphases of the predicate they modify, because they constitute projections of a separate predicate. This will become important when we talk about the differences in prosodic-domain formation between arguments and adjuncts in sections 6 and 7.

To summarize, I argued that vP intraposition is triggered by the licensing requirement of adjuncts. The intraposed vP acts as subject of predication and vP movement is thus to be considered as obligatory A-movement.[7] Furthermore, I propose that Tense is a separate predicate that projects its own subphases (which are nonhomorganic with respect to the subphases projected by the verb) in the I domain of the verb. In the following section, I provide an argument for the claim that vP intraposition is to be treated as a case of A-movement.

3.2 Argument Movement and Scope/Binding Asymmetry

In section 1, we observed a peculiarity of the inverted order of adjuncts in English—namely, that scope may go from right to left, whereas binding may only go from left to right (see (6)). In the present account the strange asymmetry between scope and binding can be explained as an effect of A-movement of the extended vP into the *subject position* of adjunct

[7] I am not considering here the option of Agree at a distance or the use of (empty) expletives, since we are not dealing with a simple feature-checking operation. I am following Barbiers (1995) in assuming that the establishment of a predication relation is in need of a specific local relationship, as it is defined above as one between specifier and complement of a mediating functional head that belong to the same phase.

predicates. This asymmetry parallels the effects of scrambling in German. Hinterhölzl (2004a) argues that scrambling is an instance of A-movement into the specifier of a functional head in the licensing domain of the verb. It is shown that scrambling can be reconstructed for reasons of scope but fails to reconstruct for reasons of binding. The relevant examples are given in (22) and (23).

(22) a. weil   [mindestens eine Frau]   [fast   jeden   Mann]
          since   at-least   one   woman-NOM almost every   man-ACC
          liebt
          loves

      b. weil   [fast   jeden   Mann]   [mindestens eine   Frau] *t*
          since   almost   every   man-ACC at-least   one   woman-NOM
          liebt
          loves

Example (22a), displaying the base order SU > DO > V, is unambiguous, whereas (22b), in which the direct object has scrambled over the subject, is ambiguous. In addition to the reading obtainable from the surface order, it has the additional reading that corresponds to the base order.

It is important to note that binding relations are strictly read off from surface relations, since scrambling represents a case of A-movement. Example (23) shows that scrambling may (not only create but also) destroy binding possibilities, as illustrated by the examples taken from Haider & Rosengren (1998), which is unexpected if scrambling could be reconstructed for reasons of binding.[8]

(23) a.   dass der Mann die Bilder   einander   anglich
           that the man the pictures-ACC each other-DAT made-alike

      b. *dass der   Mann einander   die   Bilder *t*
           that the   man   each other-DAT   the   pictures-ACC
           anglich
           made-alike

      c.   dass ich   gestern jedem Professor$_i$ seine$_i$
           that I   yesterday each professor-DAT   his
           Sekretärin   vorstellte
           secretary-ACC   introduced

      d. ?*dass ich   gestern   seine$_i$ Sekretärin   jedem
           that   I   yesterday his   secretary-ACC   each
           Professor$_i$ vorstellte
           professor-DAT   introduced

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[8] To prevent confusion about what the basic word order in German is, it should be noted here that base orders are verb-class-dependent in German: *angleichen* (assimilate to) belongs to a small class of ACC-DAT verbs, whereas *vorstellen* (introduce) belongs to the large class of DAT-ACC verbs (see Haider & Rosengren 1998, Hinterhölzl 2006 for details).

Example (23a) corresponds to the base order in which the reciprocal is bound and licensed by the higher argument in accusative Case. In (23b), scrambling of the reciprocal leaves it without a licensing antecedent. The ungrammaticality of (23b) follows only if reconstruction is not available. Similar considerations apply to (23c,d). Example (23c) represents the base order in which the quantifier can bind a pronoun lower down in the structure. In (23d), which represents the scrambling order, binding of the pronoun by the quantifier is impossible. Again, this follows trivially, if interpretation cannot make use of the lower copy of the scrambled phrase *his secretary*.

As said above, in the present account we consider movement of the extended vP into the subject position of an adjunct predicate an instance of A-movement and therefore expect it to behave like A-scrambling in German. The asymmetry in (6), illustrated here again in (24), is explained if vP movement, pied-piping an adjunct, can be reconstructed for reasons of scope but cannot be reconstructed for reasons of binding.

(24)   a.   John met Mary in a (different) park every Sunday.
       b.   [Every Sunday [in a (different) park [John met Mary]]].

                                                            base structure

       c.   [[[John met Mary] in a different park] every Sunday].

                                                            derived structure

As illustrated in (24c), the temporal adjunct does not have scope over the locative in the derived structure. The relevant reading can only be obtained if the vP together with the pied-piped locative is reconstructed. An option, however, that is not available for reasons of binding, as illustrated again in (25a).

(25)   a.   *Sue met Mary in his$_i$ house on everybody$_i$'s birthday.
       b.   Sue met Mary on everybody$_i$'s birthday in his$_i$ house.

If binding out of an adjunct is at issue, vP-movement must be taken to extract at the relevant steps in VO languages such that c-command relations are preserved in this process, as illustrated in (25b). In (25b), it must be assumed that the vP extracts without pied-piping an adjunct when it moves from one subject position to the other. This is possible since pied-piping is just the option that is prosodically preferred in VO languages, as I argue in section 4.2. This in turn implies that scrambling of adjuncts must be assumed, if inverse binding relations obtain between a locative and a higher temporal adjunct, as in (26).[9]

(26)   a.   He happened to sing in each shop on its owner's birthday.
       b.   He happened to [on its owner's birthday [in each shop [sing]]].

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[9] An anonymous reviewer correctly points out that in (26) the necessary binding relation obtains neither in the base structure nor in the derived structure.

In the present approach, scrambling of the lower locative PP is the only option of obtaining the required configuration.[10] In this case as well, the vP must be taken to extract at each step during its movement through the adjunct phases. I will come back to the issue of PP scrambling in section 5.

To summarize, the alternative account of adjunct licensing in terms of movement of the extended vP into an argument position can shed some light on the strange asymmetry in binding and scope between postverbal adjuncts and the arguments of the verb. In addition to the choice between pied-piping and extraction, scrambling of adjuncts must be assumed as well in order to derive all binding options.

3.3 Arguments against an LF Account

The present proposal is similar to Barbiers's (1995) account in proposing that a) vP intraposition is responsible for postverbal occurrences of event-related adjuncts (cf. (22a) and (22b)) that vP intraposition is semantically triggered. In his account, vP movement occurs to establish a qualification relation between vP and PP which requires a configuration of mutual immediate c-command between these elements. This is achieved by moving the vP into Spec,PP, as shown in (27c). Barbiers states that the interpretive result of moving vP into Spec,PP is that the PP qualifies the vP. For (27b), this implies that the PP qualifies the event denoted by *gewerkt* as being in the garden (Barbiers 1995:33).

(27)   a.   Jan   heeft   [in   de tuin]   gewerkt.
            John   has   in   the garden worked
       b.   Jan   heeft   gewerkt [in de tuin].
            John   has   worked   in the garden
       c.   Jan heeft [$_{PP}$ gewerkt [$_{PP}$ in the tuin]] t_{vP}.

If the vP moves into Spec,PP in covert syntax, the nonextraposed order in (27a) is derived. In short, in Barbiers's account, vP movement serves to establish a qualification relation, but this can be done in syntax or by movement at LF. I see two problems with Barbiers's original proposal. First, I have argued in the previous section that vP intraposition constitutes an instance of A-movement. This property does not square well with the assumption that vP intraposition takes place at LF (to my knowledge this would constitute the only case of A-movement at LF). Second, in Barbiers's account, no interpretative differences between intraposed and nonintraposed vP are to be expected.

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[10] Frey (2003) argues that adjuncts belonging to the same class can be base-generated in any order. In this approach scrambling of adjuncts could be dispensed with and the vP must be taken to extract at each step to preserve the relevant binding configuration.

The problem with this LF-based account is that the intraposed and nonintraposed versions are often not identical in their readings, at least in German. The postverbal PP in (28) cannot be interpreted as being in the scope of the adverbial *often* in (28b), as it must in (28a), and is interpreted obligatorily as a frame adverbial (*when he is in the coffee house, Hans often sits*).

(28) a. weil   Hans   oft   im   Kaffeehaus   sitzt
          since   Hans   often   in-the   coffee-house sits
      b. weil   Hans   oft   sitzt   im   Kaffeehaus
          since   Hans   often   sits   in-the   coffee-house

Second, nonreferential adjuncts are generally bad in postverbal position in German and quantified PPs lead to ungrammaticality, as illustrated in (29). One possible explanation for the ungrammaticality of (29b) is that the quantifier in postverbal position fails to bind the variable in the vP due to lack of c-command (see Haider 1993).

(29) a. weil   Hans   in   keinem   Garten   arbeitet
          since   Hans   in   no   garden   works
      b. *weil   Hans   arbeitet in   keinem   Garten
          since   Hans   works   in   no   garden

Note that this explanation is not open to Barbiers (1995), given that, in his account, the PP c-commands the vP in the relevant qualification relation. For sure, Barbiers's account must be revised to do justice to the German data; the question is only whether an LF-based account is appropriate for these data in the first place, since the restrictions illustrated in (27)–(28) are induced prosodically, as I argue in section 4.3. As an alternative, I propose that vP intraposition always takes place in overt syntax with the different orders following from an elementary choice in the syntax, namely vP extraction versus vP pied-piping, as discussed in detail in the following section.

4. Accounting for the Comparative Dimension

To remind us of the general outline of the comparative approach that will be developed in the following sections, I reenumerate the basic tenets (A–D) of as analysis from section 2:

(A) I assume that event-related adjuncts are introduced preverbally, in OV and VO languages alike, in the order T P M.
(B) The licensing of these adjunct involves vP intraposition both in OV and in VO languages.
(C) C-command effects between arguments and adjuncts are captured by scope-taking A-movement (scrambling) in English and in German rather than by Pesetsky-style cascades.

(D) Arguments are licensed in the I domain in OV as well as in VO languages.

Furthermore, I will also argue for the assumptions in (E–G):

(E) The grammar allows for a limited amount of options that are fixed by interface constraints.
(F) These options involve the spell-out of A-movement chains (overt versus covert) and pied-piping versus extraction employed by vP intraposition.
(G) Syntax and the interfaces interact in a cyclic phase-guided fashion.

In this section, I will outline the general frame of this account and present two interface constraints that are argued to be responsible for fixing the given choices concerning spell-out and movement options. In section 7, I show in detail how these interface constraints interact with the syntax to determine word order in the course of the derivation in which syntactic computation and prosodic evaluation operate in a cyclic fashion as determined by the relevant phases.

As sketched in the derivation in (17) above, I have tacitly assumed that in a VO language like English the vP pied-pipes the relevant PPs at each step. However, this is just one option; the vP could also extract at each step. I will argue that the latter option constitutes the unmarked case in OV languages, where vP movement leaves the original order of adjuncts intact, but also occurs in VO languages, when the order of adjuncts is not permuted, as in (6c) above.

This account raises several questions. The first issue that we must address is the question of whether the option that is taken, pied-piping or extraction, has any semantic consequences. Second, there is the issue of which factors decide which option is taken. Third, if the vP extracts at each step in the process of licensing adjuncts in the middle field in OV languages, then there must be an additional step that moves the entire middle field in front of the vP again before the end of the derivation. In the following section, I argue that pied-piping versus extraction constitutes a real option in the syntax insofar as the option taken is irrelevant for the semantic interpretation of these adjuncts.

4.1 Specified Events and Stacked Predication

It is important for the present account, which rests on the assumption that there is a basic option in the syntax between pied-piping and extraction, that this choice does not have any semantic effect, since event-related adjuncts are interpreted alike in OV and VO languages.

In other words, if the vP pied-pipes a lower adjunct this should not be interpreted differently from the case in which the vP has extracted from the domain of this adjunct. Note that even if a lower adjunct is pied-piped, the predication relation at the next level up may only hold between the vP and the higher adjunct; otherwise we would predict a reading akin to an embedded

predication. For instance, it would be wrong to assume that in (30), in which the locative PP is pied-piped by the vP, the temporal predicate *at two O'clock* is predicated of the entire constituent [vP F1 PP F2], that is, of the predication between the event and the locative. The temporal adjunct is predicated of an event-denoting category and the only event-denoting category in the specifier of F1P of the temporal adjunct is the vP in (30b).

(30) a. John kissed Mary in the garden at two O'clock.
       b. [[[John kissed Mary] in the garden] at two O'clock].

In fact, no semantic difference between pied-piping and extraction option is to be expected since the pertinent semantic operation is associative, as illustrated in (31).

(31) there is an event e [kissing (J, M, e) & in the garden (e)] & at two
       O'clock (e) =
       there is an event e [kissing (J, M, e) & at two O'clock (e)] & in the
       garden (e)

An anonymous reviewer points out that in the example (32), *at two O'clock* is predicated of *John kissed Mary in the garden* not just only of *John kissed Mary*. If there is such an effect in (32), it is the result of the order in which these predicates are stacked on each other and computed in the course of the derivation, but not the result of whether pied-piping has applied or not.

(32) John kissed Mary in the garden at two O'clock and in the bedroom at
       midnight.

Given that pied-piping versus extraction is a real option in the grammar, the question arises of how the correct word order is achieved in OV languages in which I have proposed that the vP extracts at each step in moving through the row of sentence medial adjunct predicates. This question is addressed in the following section.

4.2 TP Movement and vP Movement into the C Domain

Hinterhölzl (2006) proposes on the basis of restructuring infinitives that the extended vP (AspP)[11] and the TP undergo licensing movement into the C domain in German, as illustrated in (33). These movements are argued to

[11] Hinterhölzl (2006) argues on the basis of VP topicalization data that AspP constitutes the edge of the V domain. As will become evident, I propose that there is an AspP in the V domain that defines different event types (see Vendler 1967) and there is an AspP in the T domain (so-called viewpoint aspect) that together with an abstract Tense predicate defines different Tenses (see Smith 1991, Kratzer 1998). For example, the English simple past tense (as in *Peter ran*) expresses past tense *and* perfective viewpoint.

follow from a general theory of sentential complementation, in which the complementizer acts as a placeholder for the selectional requirements of the matrix verb. In particular, it is argued that movement of the AspP into FinP (see Rizzi 1997) (called Status Phrase in Hinterhölzl 2006) serves to check the morphological subcategorization of the matrix verb and that movement of the TP into MoodP serves to temporally link the embedded event to the matrix event time. In (33), ForceP encodes clausal force and represents the highest head in the C domain. In this account, the complementizer is taken to be inserted in Fin^0 and to move up to $Force^0$, thereby establishing a checking configuration with the subcategorized categories in Spec,FinP and Spec,-MoodP. In a V2 clause, the finite verb is taken to undergo head movement from Spec,FinP to $Force^0$, establishing the relevant checking configuration (see Hinterhölzl 2006).

(33)   a. $[_{CP\,=FP}$ Force $[_{MP}$Mood $[_{FinP}$Fin $[_{TP}$T $[_{AspP}$V]]]]]

base structure

   b. $[_{CP\,=FP}$ Force $[_{MP}$Mood $[_{FinP}[_{AspP}$V] Fin $[_{TP}$T]]]]]

finiteness

   c. $[_{CP\,=FP}$ Force $[_{MP}[_{TP}$ T] M $[_{FinP}[_{AspP}$V] Fin]]]$

temporal anchoring

In this paper, I propose that this account be extended to nonrestructuring contexts. In particular, I propose that the dependency relations between C and T (Chomsky 2005) and between Fin and v (Rizzi 1997) are embodied via XP movement of TP and AspP into the C domain in English and German. The rationale behind these movements is that different speech acts (forces) are connected with different verbal moods that determine the situational and temporal anchoring of the event in TP and different verbal moods select different finite and nonfinite verbal forms that are expressed in the V domain.

   On its way to the C domain the extended vP moves into the specifier of (viewpoint) Aspect in the T domain, as illustrated in (34). I will argue in the following section that interface conditions determine that the extended vP pied-pipes the containing Aspect phrase in English, while in German the extended vP extracts from the Aspect phrase when moving on into the C domain.[12]

(34) $[_{T\ domain}\ [_{T\ domain}$(Spec Agr$_S$) [Spec PRES/PAST [vP Asp]]]
       $[_{V\ domain}\ t_{vP}]]$[13]

[12] For reasons of simplicity, I assume here that the relevant difference between English and German is extraction versus pied-piping. An alternative option is to assume that vP pied-pipes the Aspect phrase in the T domain also in German but spells out vP in its base position. Exploring this option is, however, beyond the scope of this paper.

[13] In (34), the specifier of the tense predicate contains a referential temporal argument (Stowell 1996) with respect to which the event denoted by vP is situated.

Given this scenario, we can assume that on its way to the T domain, the extended vP moves through all the *subject* positions introduced by modifying adjuncts in the middle field. The modifying adjuncts will remain in the original order in preverbal position, if vP is subextracted at each step, since TP movement will then move the entire middle field anew in front of the extended vP in the C domain. On the other hand, the adjuncts will appear in the mirror order, that is typical of VO languages, if the extended vP at each step on its way up to the C domain pied-pipes the respective functional projections containing the adjuncts. In this case, as is typical for VO languages, the entire middle field will follow the verb in the C domain, with only the subject and possibly some higher adverbs being moved via TP movement to MoodP in front of the verb (phrase) again.

Note, however, that we must assume that pied-piping in a VO language like English is the preferred but not the only option. To derive the correct word order in (6c), in which case the original hierarchical relationship between temporal adverbial and local adverbial is preserved, we have to assume that vP extraction may also take place in the derivation of (6c). In (6c), vP extracts after having moved into the licensing position of the lower locative adverbial and will induce pied-piping only after having moved into the licensing position of the higher temporal adverb. The rationale could be that extraction in this case takes place in order to preserve the binding relation between the temporal adverbial and the locative adverbial. We see in (6b) above that reconstruction cannot apply to establish the necessary binding relation if the pied-piping option is taken. Given that I argued earlier that there is a real choice from the syntactic point of view, vP extraction may apply deriving the sentence with the grammatical binding relation in (6c).[14] This implies that pied-piping is the default option in a VO language. Although the two options are equivalent from a syntactic/semantic point of view, I will argue in the following section that they can yield prosodically more or less marked output structures. The prosodically less marked option will then count as the default option in a language.

However, this default can be overruled by interface requirements, like the availability of certain binding relations. Another interface requirement that can be taken to enforce extraction instead of the default operation of pied-piping is focus articulation. Since VO languages like English demand that focused constituents occupy the right edge within the intonational phrase, focussing of the lower adjunct is expected to induce extraction in order to remain in clause final position. In the following section, I argue that the default option of

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[14] An anonymous reviewer points out that this case is reminiscent of reconstruction of anaphors in cases of A′-movement that Chomsky (1995) discusses in connection with the Preference Principle, as shown in (i). The cases are indeed similar insofar as both anaphors and bound variables obligatorily require a c-commanding antecedent. No implications, however, follow from this for avoiding violations of conditions B and C.

(i) John asked which friend of himself Mary would invite to her party.

pied-piping is due to a prosodic requirement that only allows light material (to be defined below) in the middle field of English.

4.3 Prosodic Restrictions on Extraction/Pied-Piping

In this section, I outline the interface conditions which derive why pied-piping is the default option in English, while in German the default option is vP extraction. Given that extraction versus pied-piping is a real option in the syntax and given that we want to dispense with the head–complement parameter and similar directionality parameters, the choice must be taken to be fixed by an interface requirement.

I will argue that there are two types of interface requirements that enforce uniformity in applying the extraction versus pied-piping option. One type pertains to the syntax–PF interface and is prosodic in nature. The other type pertains to the syntax–LF interface and involves restrictions on scope relations. I will outline two prosodic conditions (one for German and one for English) and discuss their effects on the choice of the extraction versus pied-piping option. In section 7, I provide some motivation for them and discuss in detail how they interact with the LF-based interface constraint that applies both in English and in German.

When the extended vP moves into the licensing domain of an adjunct in the middle field, the adjunct is licensed and the phase of the adjunct closes (see also Svenonius 2001, Epstein & Seely 2002), in the sense that the phase can be evaluated prosodically and semantically at this point of the derivation. Prosodic evaluation means that a prosodic constituent is computed, if possible, and that prosodic constraints that are relevant for the given phase (see below and section 7) apply. With the vP functioning as subject of the predication by the adjunct, the prosodic constituent that is derived is right-headed or has the pattern (w(eak) s(trong)), given that the relation between subject and predicate universally instantiates the metrical pattern (w s).

In a VO language this pattern conforms to the default and thus constitutes a valid prosodic unit. If we then assume that syntactic processes preferably affect (i.e., move) constituents that are also well-formed prosodically, the result is a preference for pied-piping in VO languages.[15]

In an OV language like German, on the other hand, the resulting prosodic constituent does not constitute a valid prosodic pattern, which would have to be (s w) for any constituent involving the verb. Note that German does not allow a postverbal focus and hence postverbal stress in the same intonational phrase that contains the verb. Thus, a postverbal focus is realized in a separate intonational phrase which leads to marked structures like (35).

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[15] This condition should follow from the economy of computation penalizing a derivation in which a prosodic constituent that has been computed at a particular point in the derivation is destroyed by a syntactic operation later on which only affects a part of this prosodic constituent.

(35) a. #Auf Gleis 5   fährt   ein| der IR   nach Straubing
          at   platform 5 comes in the Interregio to   Straubing
      b. [$_{iP}$ (Auf Gleis 5) (fährt ein)] [$_{iP}$ (der Interregio) (nach Straubing)]

(36) Focus constituents are mapped into the intonational phrase that
      contains the verb.   (Nespor & Vogel 1986)

The sentence in (35) is marked, since it violates the interface condition in (36) and since DPs normally do not form intonational phrases on their own. Thus no prosodic constituent comprising the vP and the adjunct is formed at this stage of the derivation in German and movement will only affect the vP, resulting in a case of extraction.[16] In conclusion, the proposal is that the unmarked option in German is vP extraction, given that pied-piping leads to a marked prosodic pattern as long as the adjunct is to receive stress (i.e., is part of the new information or focus domain of the clause).

What about the postverbal occurrences of these adjuncts in German? The descriptive generalization that emerges from the data discussed in (28)–(29) is that German only tolerates postverbal adjuncts that are part of the background information in the clause. Note first that background material is generally part of a separate intonational phrase from the one containing the verb (see Frascarelli 2000, Kanerva 1989). Second, note that discourse-given information as a rule scrambles to the top of the middle field in German (see Meinunger 2000, Hinterhölzl 2006). This explains why the postverbal PP in (28) is forced to have a high reading: postverbal material must be interpreted as part of the background, since assigning stress to it, which is the prosodic correlate of nonbackground material, would lead to a marked prosodic output in German. In a similar vein, (29) is ungrammatical since the negatively quantified PP does not qualify as background material (it does not introduce a discourse referent nor does it qualify as a frame adverbial that defines a spatiotemporal location for the assertion of the remainder of the clause).

At this point a note on my assumptions about the interaction between syntax and prosody is in order. Following standard theory, beginning with Nespor & Vogel (1986), I assume that prosodic structure is derived from syntactic structure. Different syntactic structures thus may lead to different prosodic patterns. Additionally, I assume that prosodic patterns are ranked according to their frequency yielding a matrix of (prosodically) more or less marked structures. If a certain prosodic pattern becomes too dominant, that is, its frequency crosses a certain threshold, alternative prosodic patterns will become highly marked and are in danger of being blocked by the default pattern unless they give rise to a different interpretation (this explanation is parallel to the blocking effect of alternative (morphological) forms in the lexicon). The

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[16] I will also argue that there is another interface constraint, scope transparency, that favors extraction over pied-piping in German so that the two types of interface conditions converge on the same parametric option (see also section 7).

assumption of an extra prosodic evaluation matrix is necessary in order to account for very slow gradual change in word order, as argued in detail by Hinterhölzl (2004b). German has increasingly marginalized postverbal arguments and adjuncts in the course of its history. I propose that if a prosodic pattern becomes highly marked, the pertinent blocking effect can be modelled as following from an interface constraint. A possible candidate for the case at hand is (37), in which boldface letters mark a constituent that receives stress. Note that it will not do for (28) and (29) above, if we simply request that postverbal material needs to be background material. An account using just an information-structural restriction would rule out postverbal (extraposed) clauses in German that may and typically do provide new information.

(37)   Interface constraint on the syntax–prosody mapping in German:
        *[$_{iP}$ …(V) (**XP**)]

(38)   dat   Jan   het   boek   wil   **lezen** (= [$_{iP}$ …(V) (**VP**)])
       that   Jan   that   book   wants   read

A correct account of vP intraposition must therefore take into consideration the complex interaction between syntax, prosody, and information structure. Such an account is best cast in a phase-based framework in which syntactic and prosodic computation work in parallel, as I will argue below.

Barbiers (1995) does not report any restrictions on vP intraposition in Dutch. It is possible that similar restrictions also apply in Dutch or that Dutch is more liberal. The latter would not come as a surprise since Dutch allows for postverbal stress (on a predicate) within the same intonational phrases in cases of verb clusters, as illustrated in (38). However, I will have to leave this issue for further research.

Starting from an OV/VO base (Pintzuk 1999, Hinterhölzl 2004b), English has taken the inverse development by increasingly marginalizing preverbal arguments and adjuncts. Some important differences between modern English and modern German are that (a) German tolerates heavy constituents in the middle field, while English—with the exception of the subject—does not allow them (cf. (1)–(2) above) and (b) that the middle field in German is scope transparent in the sense that if a constituent A (an argument or adjunct) c-commands a constituent B, it precedes B. Assuming that condition (a) is prosodic in nature and that heaviness can be defined in terms of prosodic branchingness, I would like to propose the following pair of interface constraints in (39).[17] It is this pair of interacting conditions that accounts for

[17] An anonymous reviewer asks what the conceptual rationale is behind making the condition in (39a) sensitive to the head of the predicate phase. Since (39a) is a condition that constrains the mapping between syntactic structure and prosodic structure, the reason seems to be that prosodic constituents are built around lexical heads (Nespor & Vogel 1986) and lexical heads in the syntax constitute the heads of predicate phases. In section 7, it will be argued that (39a) guarantees a monotonous mapping of smaller prosodic constituents into bigger ones.

the major differences in argument and adjunct placement in Germanic OV and VO languages, as will be shown below and in section 7.

(39) a. Mapping Condition to PF (prosodic transparency): A right-headed prosodic constituent (w s) may not sit
   on a left branch with respect to the head of the predicate phase.
   b. Mapping Condition to LF (scope transparency): If *a* scopes over *b*, the spell-out copy of *a* should c-command the spell-out
   copy of *b*.

The impact of scope transparency will be discussed in detail in section 7. Here I will briefly outline the effect of the prosodic condition on the pied-piping/ extraction option in English. The prosodic condition in (39) is phase-based in the sense that it may operate only in specific phases in a language. The condition (39a) is introduced by Hinterhölzl (2006) to account for the spell-out of verb clusters in German. It is restricted to the V domain in German in the sense that it does not apply in the I domain or the C domain in this language. Here, I would like to propose that this condition is also relevant in English and that it applies in the V domain and in the I domain (with the exception of the subject which is taken to be licensed in the T domain, a separate phase as proposed above) in this language.[18]

Let us now see what this condition can contribute to explaining why the default option is vP extraction in German and vP pied-piping in English. For the sake of simplicity, I will assume here that this condition is checked at the end of the derivation in the C domain, applying in the complement domain of the Force head (this assumption will be refined in section 7). As outlined above, the extended vP will move into the T domain in the course of the derivation. Since the TP phase will be evaluated in the C domain, no prosodic constituent is computed at this point and vP extraction is the default option. If the extended vP extracts from TP, the entire middle field will be moved via TP movement into the C domain.

In German, the result is grammatical, since (39a) does not apply in the licensing domain (the I domain) of the verb. In English, the result will only be grammatical if the middle field does not contain heavy, that is, right-branching prosodic constituents. If the middle field contains heavy adjuncts, the extended vP in the T domain must induce pied-piping such that the entire middle field will be moved with the verb on top of it into the C domain, while the TP that is moved into a higher specifier (in the C domain) will maximally contain the subject that is exempt from (39a).

To summarize, since German tolerates heavy right-branching constituents in the middle field, the option of vP extraction yields valid prosodic output, while

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[18] As far as subjects are concerned, I propose for the sake of simplicity that this condition does not apply to the specifier of a phrase that is headed by T (given that T defines an extra phase [cf. section 3.1]).

it follows for English that the default option is pied-piping and that vP extraction (for scope reasons) will only be possible as long as the result at the end of the derivation does not yield heavy (right-branching) constituents in the middle field.

5. Silent Scrambling and the Problem of C-Command out of PPs

In this section, I address the issue of how to account for the fact that DPs contained in argumental and adverbial PPs can c-command constituents in the postverbal domain. In section 2, I briefly outlined Pesetsky's solution of this problem in terms of cascades. Cascades, however, presuppose that adjuncts are base-generated within the vP. In the present account, adjuncts are taken to be base-generated outside of the vP. Within this type of approach to adjuncts, Cinque (2006) proposes an account in terms of vP-remnant movement. I will discuss Cinque's proposal in detail and argue that an account in terms of PP pied-piping provides a better solution to this problem.

5.1 The Problem of C-Command out of PPs

As stated above, the present approach assumes that adjuncts are base-generated outside of the vP and silent scrambling is held responsible to account for the c-command effects between postverbal arguments and adjuncts. The explanation in terms of silent scrambling is sufficient in the case of (40a), where the argument is a simple DP, but obviously runs into problems when the argument of the verb is realized as a PP, as illustrated in (40b), or in general, if we want to account for cases where an original lower adjunct, realized as a PP, binds into a higher adjunct. In this case, simply assuming scrambling of the lower PP into a position c-commanding the other adjunct, will not do the job for lack of c-command out of PPs.

(40) a. Mary called every professor on his birthday.
      b. Mary talked about every professor on his birthday.

This problem is addressed by Cinque (2006), who proposes that PPs of all kinds, be they adjuncts or arguments, are base-generated as DPs in the vP and then joined with their selecting preposition in a second step via movement that can be assumed to be triggered for purposes of Case licensing. In this approach, an adjunct, like an argument, moves from its vP-internal position to the specifier of a functional head in the extended projection of the verb. In a second step, the preposition moves to a higher functional head and the remnant below the DP adjunct moves into the specifier of the higher head (see Kayne 1998), as illustrated in (40). The latter movement, according to Cinque (2006) and very much following Pearson's (2000) original idea, is motivated in order to identify the extended projection as a verbal category.

(41)   [VP [F1+P [DP [F2+t$_P$ [t_{VP}]]]]]

I cannot go into the details of this proposal, but it should be obvious that the problem of c-command out of PPs disappears in this account if one assumes that DPs can bind from their Case-licensing positions into base-generated positions in the vP. For instance, let us consider (40b). In this approach, Cinque argues, there is a stage in the derivation where the DP *every professor* in the specifier of the preposition *about* in the middle field c-commands the DP *his birthday* in its base position, that is, its θ-position, in the vP.

   This account has several merits. For instance, it provides an elegant uniform mechanism for licensing both arguments and adjuncts. However, it runs into a number of technical difficulties and cannot be taken to solve the c-command problem with binding out of PPs, as I will argue in the following section.

5.2 Some Problems Concerning Cinque's Proposal

The first issue that I want to address in this section concerns overgeneralization. The proposed mechanism must be appropriately restricted to prevent overgeneralization. First, binding into the subject must be excluded in principle, otherwise all kinds of ungrammatical sentences cannot be ruled out, as illustrated in (42).

(42)   a.   *Friends of each other met them.
        b.   *Friends of each other met John near them.

A possible solution to this problem could be the so-called Base Constraint (Lechner 2006), which states that subjects cannot be interpreted in their θ-position. This, however, raises the question of why subjects should not reconstruct while arguments and adjuncts must be taken to reconstruct in order to solve the binding problem in Cinque's proposal.

   Second, different types of surface constraints on the availability of the purported binding relations must be assumed to exclude binding from a right-peripheral adjunct (43) and to explain subject–object asymmetries in cases of binding into adjuncts (44).

(43)   *Sue met Mary in his$_i$ house on everybody$_i$'s birthday.

(44)   a.   They hit him$_i$ [without John$_i$ being able to defend himself$_i$].
        b.   *He$_i$ was hit [without John$_i$ being able to defend himself$_i$].

Granted, the coindexation in (43) can be taken to be ruled out by the Leftness Condition on bound pronouns and the coindexation in (44b) can be taken to be ruled out as a violation of condition C at S-Structure. Note, however that these two surface constraints taken together are detrimental: On the one hand, there

is a valid coindexation early on in the derivation that needs to be excluded later on in the derivation. This is the case of (43). On the other hand, there is an invalid coindexation at an earlier level that is ruled in later in the derivation, as is the case in (44a). This state of affairs can be taken to imply that no coindexation relation should be established at such an early point in the derivation as envisaged by Cinque (2006).

The second issue concerns the comparative dimension. Cinque's approach, like Pesetsky's cascade theory, raises the interesting question of why VO languages use binding into θ-positions (or binding within the vP in Pesetsky's account), while OV languages like German and Dutch use scrambling to establish binding relations between arguments and adjuncts. It seems that no uniform account to the syntax of event-related adjuncts in OV and VO languages is possible within these approaches. Furthermore, we will see that scrambling cannot be dispensed with in a VO language either.

5.3 Reconsidering the Problem of C-Command out of PPs

The main problem with Cinque's proposal in my view concerns the fact that the proposed solution to the problem of c-command out of PPs cannot be taken to cover all cases where one would like to assume that c-command out of PPs holds. Note first that Cinque's solution only works for one A-dependency relation. But it fails in a case where two dependency relations are involved, as illustrated in (45). It is important for the understanding of (45) to remind ourselves that Cinque also assumes that temporal adjuncts are base-generated in a higher position than locatives.

(45)   John met every girl in her school on its opening day.

To get the binding between the direct object *every girl* and the pronoun *her* in the locative in (45), it must be assumed that the locative DP *her school* is interpreted in its base position in the vP. However, in this position the locative DP cannot be taken to c-command the temporal DP *opening day*, which is base-generated in a higher θ-position in the vP. To get the dependency between the locative and the temporal adjunct, the locative DP should be interpreted in its Case position in the middle field. We arrive at a contradiction. Unless further scrambling of the direct object *every girl* is assumed the dependency relations in (45) cannot be accounted for in Cinque's approach.

I think that the argument in (45) already weakens the appeal of Cinque's proposal. But the argument can be strengthened further with cases of scope extension via A′-movement. First, there is the question of how to account for PP pied-piping in cases of *wh*-movement. The standard assumption is that either the head or the specifier, via feature projection or agreement, can induce movement of the entire phrase. To account for cases like (46a) a special

mechanism of feature percolation from the complement to the head is generally assumed.

(46)   a.   On which day did John meet Mary?
       b.   About which problem did everyone talk to Sue?

Note, however, that feature percolation is probably not enough to account for the wide scope reading of the *wh*-object *which problem* over the subject *everyone* in (46b). Assuming that scope is expressed via c-command, the relevant c-command relation in (46b) cannot be taken to be established by reconstructing the subject into its θ-position, since this would violate the Base Constraint that was shown to be necessary for ruling out the ungrammatical binding relations in (42).[19] We must assume that A′-movement of the entire PP to a position c-commanding the subject is sufficient for allowing the *wh*-phrase to c-command the subject.

Given this observation, we can relatively safely reject Cinque's proposal as a general solution to the problem of c-command out of PPs. Based on data like (46b), I would like to propose that there is silent scrambling within PPs, as shown in (47).

Hinterhölzl (2004a) argues that scope-taking is a trigger that motivates scrambling in German. Hence, we can assume that if a DP within a PP needs to take scope outside of the containing PP, it will undergo scrambling and move into the highest specifier in the I domain of the preposition. From this position the DP c-commands whatever is c-commanded by the entire PP, according to the standard assumptions within the antisymmetry approach. In a phase-based framework, we may assume that movement of phrase into the edge of a domain not only allows this phrase to be seen from outside of this domain, but also to look outside of this domain, which is to say, allows it to c-command whatever is c-commanded by the entire domain.

This proposal may consequently be seen as a possible solution to pied-piping in general: if a constituent that cannot be extracted out of a certain domain needs to take scope outside of this domain, it will move to the edge of this domain and cause the entire domain to move to the respective scope position. What is special with PP pied-piping is that movement to the edge is silent, in the sense that in this operation the lower copy is spelled out.

(47)   Silent scrambling in PPs: [$_I$ Domain DP [Predicate Domain P DP]]

This solution might seem like a mere stipulation, but note that if it is taken, then an interesting generalization emerges: in head initial structures, scrambling spells out the lower copy; in head final structures, scrambling

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[19] Note that this argument carries over to Pesetsky's account in terms of cascades. Given cases like (46b), an approach in terms of cascades cannot account for all cases of apparent c-command out of PPs.

spells out the higher copy. In other words, I am proposing that the prosodic
mapping condition in (39) above applies in the I domain of PPs in German and
English alike: DPs map into right-headed phonological phrases in German and
English and the preposition arguably constitutes the phase head of the
predicate domain of a PP, as illustrated in (47).

In fact, there is no reason to assume that PPs behave differently in German
and English. Note that though cascades are arguably not available in German,
it displays the same c-command effect with argumental and adverbial PPs, as
English does:

(48) a. John talked with every woman$_i$ about her$_i$ past.
b. Hans sprach mit jeder Frau$_i$ über ihre$_i$ Vergangenheit.
Hans talked with every woman about her past

To conclude, I have argued that the solution of the problem of c-command out
of PPs in terms of pied-piping is superior to Pesetsky's cascades as well as to
Cinque's alternative, since it can account for all cases of C-command out of
PPs, including those involving A′-movement. Furthermore, I argued that the
pied-piping solution leads to an interesting crosslinguistic generalization about
the spell-out of A-movement chains: the spell-out correlates with the
headedness of the phrase. In section 7, I will show how the distinction
between silent and nonsilent scrambling can be derived from phase-based
mapping conditions at the PF and LF interface, which are argued to replace the
traditional head–complement parameter.

6. Phases and Prosodic-Domain Formation

In section 3, I proposed that adjuncts project separate phases, which therefore
count as nonhomorganic with respect to the phases projected by the verb. In
this section, I argue that the differentiation between homorganic and
nonhomorganic phases plays an important role in prosodic-domain formation.
In section 7, I will introduce two modes of prosodic composition that depend
on this distinction. In this section, I provide some empirical arguments for the
claim that prosodic-domain formation is phase-based, which will set the basis
for the technical execution of this idea in a cyclic derivation in section 7. I will
show that adjuncts cannot restructure with material that belongs to phases
projected by the verb.

6.1 Adjuncts and the Verb Form Separate Phonological Phrases

The first argument comes from the observation that the verb cannot restructure
with an adjunct. Many researchers noted that there is an asymmetry in
prosodic-domain formation between arguments and adjuncts (Gussenhoven
1984, Krifka 1984, and Jacobs 1992, among others), as illustrated in (49).
Every lexical word can form a phonological phrase on its own, as shown in

(49b), which represents phrasing in a case of slow speech. In normal speech the verb restructures with the adjacent direct object (see Nespor & Vogel 1986 for the restructuring of nonbranching prosodic constituents). In this case the nuclear stress (NS) is placed on the direct object (according to the rule that NS falls on the last phonological phrase within an intonational phrase that marks the clause), as illustrated in (49c).[20]

(49)   a.   weil   Hans   das   Buch   liest
             since   Hans   the   book   reads
         b.   [(weil Hans) (das Buch) (liest)]
         c.   [(weil Hans) (das Buch liest)]

However, restructuring may not apply between an adjunct and the adjacent verb such that NS is placed obligatorily on the verb in this case, as illustrated in (50a). In the present account the phrasing in (50a) can be made to follow from the fact that adjunct and verb belong to nonhomorganic phases, if we assume that only phonological phrases that belong to homorganic phases can restructure with each other.

(50)   a.   [(weil   Hans) (im   Garten) (LIEst)]
             since   Hans   in-the garden   reads
         b.   [(weil   der   Vater) (im   Garten)
             since   the   father   in-the garden
             (ARbeitet)]
             works (he is working on his book)
         c.   [(weil   die   Mutter   (im   GARten
             since   the   mother   in-the garden
             arbeitet)] (she is doing some gardening work)
             works

As the contrast in (50b,c) shows, restructuring is only possible if adjunct and verb can be taken to form a semantic unit with a specialized meaning like *doing some gardening work*. In this case, I propose that the PP and verb form a complex predicate. As I pointed out in section 1, the PP in this case does not project its own licensing domain and therefore does not give rise to separate nonhomorganic phases. I assume that PPs of this type, like small-clause APs and NPs, are licensed in a Predicate phrase (Bowers 1994, Koster 1994).

The data in (49)–(50) indicate that adjunct predicates can either be part of separate phases, in which case they cannot form a joint phonological phrase with the verb, or form a complex predicate with the verb, in which case they can (or must) restructure with the verb.

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[20] In (49), main stress is indicated by capitalizing the accented syllable, round brackets indicate phonological phrases, and square brackets indicate intonational phrases.

6.2 Adjuncts and Weak Pronouns Form Separate Phonological Phrases

The second argument comes from the syntax of weak pronouns. The relevant observation is due to Vikner (1994). He observed that object shift in Danish cannot land a pronoun in between adverbs (51). That the restriction exemplified in (51) should not be treated as an intrinsic property of object shift but constitutes a general property of weak pronouns in between adjuncts is shown by the fact that the same constraint also holds in German (52).

(51) I gar   laeste Peter (den) uden   tvivil   (*den) ikke (*den).
      Yesterday read   Peter it   without   doubt   it   not it
                                                              (Danish)

(52) Gestern   hat (ihn) Peter   (ihn) ohne   Zweifel (*ihn) nicht
      Yesterday has (him) Peter   him   without doubt   him   not
      (*ihn)   getroffen.   (German)
      him   met

The data in (51) and (52) follow if we assume that weak pronouns cannot form a phonological phrase of their own (Nespor & Vogel 1986) and have to form a joint phonological phrase with their host. Weak pronouns in German are enclitic and as indicated in (52) can be licensed by (restructuring with) a preceding verb or the preceding subject. In the present account, verb and subject belong to phases that are homorganic with respect to the weak object pronoun. The weak pronouns in (52) are ungrammatical in positions in which they are preceded by an adjunct or by negation. In the present account, an adjunct belongs to a separate phase that is not homorganic with respect to material that belongs to phases projected by the verb. Interestingly negation patterns exactly like adjuncts with respect to weak pronouns. It is not clear to me why this should be so. One possibility is that negation is to be analyzed as an adjunct. In the present account, it suffices to assume that negation introduces a phase of its own. I will leave this question for further research and will assume here for the sake of the argumentation that negation is part of a phase that is nonhomorganic with respect to the phases projected by the verb.

To summarize, the examples in (51) and (52) show that weak pronouns in general cannot be licensed in between adjuncts since they cannot form a phonological phrase of their own and restructuring with an adjunct is blocked. I have argued that this restriction can be explained on the basis of assuming homorganic and nonhomorganic phases.

6.3 Object Shift and Phases

The above observations about the licensing of weak pronouns offer a new account of the regularities behind object shift in general. The restrictions on

object shift can be subsumed under the general approach that has prosodic conditions decide on spell-out options of A-movement chains that I am pursuing in this paper, if we assume that (53) holds.

(53) a. Weak pronouns undergo A-movement to check their specificity feature in a functional position in the I domain.
 b. Weak pronouns are spelled out in the smallest domain that contains a possible host to restructure with.

These assumptions will be important when we talk about the licensing of weak pronouns in English in section 7. But let us first see how (53) can account for the basic regularities of object shift in Scandinavian.

In a recent account called the ''true nature of Holmberg's generalization,'' Holmberg (1999) argues that object shift is blocked by any phonological material intervening between the base position in the VP and its licensing position. The only exception to this rule are adjuncts and negation. Holmberg concludes from these observations that object shift should be treated as phonological movement that is subject to a phonological type of minimality effect. It remains mysterious in his account, however, why adjuncts and negation fail to induce a violation of phonological minimality.

The basic data are given in (54). The difference between (54a,b) has often been taken to be due to failure of head movement of the verb in (54b) that could extend the domain for A-movement of the object pronoun. But as (55) shows object shift is blocked, even when verb movement applies, by other phonological material that intervenes between the base position of the object and its licensing position. In (55a), the phonological intervener is a preposition, in (55b), it is a verb particle. To unify the ungrammatical cases, Holmberg (1999) proposes that object shift in (54b) is blocked by the intervening participle.

(54) a. Jag kysste **henne** inte.   (Swedish)
 I   kissed her   not
 b. *Jag har **henne** inte kysst.
 I   have her   not kissed

(55) a. *Jag talade **henne** inte med.   (Swedish)
 I   talked her   not with
 b. *Dom kastade **mej** inte ut.
 they threw   me   not out

As stated above, I propose that object shift constitutes syntactic movement after all, applying in all contexts its trigger is satisfied irrespective of intervening phonological material. Since a weak pronoun cannot form a phonological phrase on its own, as we have seen in the previous section, it has to restructure with the phonological phrase of its host. Therefore, an

intervening verb, noun or preposition will induce the pronoun to be spelled out in its base position and to restructure with the adjacent verb, preposition, or particle in (54b) and (55), respectively.

(56)   (Jag) (kysste *henne*) (inte) (*henne).

Since weak pronouns cannot restructure with adjuncts and negation, as we have seen in the previous section, it follows that the pronoun in (54a) cannot be spelled out in its base position, since it can neither restructure with the phonological phrase preceding it nor form a phonological phrase on its own, as illustrated in (56). The round brackets in (56) are meant to indicate phonological phrases. Spell-out of the pronoun in the lower position will either yield a violation of a prosodic constraint at PF, if the pronoun is deaccented, or a violation of the givenness condition (that demands that given material is destressed), if the pronoun is stressed to form a valid separate prosodic constituent.

   This proposal is similar to Erteschik-Shir's (2005) analysis of Danish object shift, which proposes that weak pronouns in Scandinavian undergo phonological movement since adverbs fail to form a prosodic unit with weak pronouns without providing an explanation for the latter fact. In the present account, restructuring is dependent on the phase status of host and weak pronoun. In the following section, I will bring all these observations together and show how the spell-out options of A-movement and the choice between extraction versus pied-piping can be fixed by the phase-based cyclic application of prosodic conditions in the course of the derivation.

7. Interface Conditions and the OV/VO Parameter

The comparative account to adjuncts that I have been developing in the previous sections rests on the assumption that adjuncts are base-generated outside of the vP. The strength of Pesetsky's proposal in terms of vP-internal adjunct cascades rests on its ability to account for the c-command effects between postverbal arguments and adjuncts in English. To account for these c-command effects, I have proposed (silent) scrambling of arguments around adjuncts. The appeal of this alternative to Pesetsky's cascades crucially depends on a principled explanation of when a given A-chain is to spell out the higher or the lower copy.

   The purpose of this section is to specify the conditions that determine the spell-out of A-movement chains and also fix the choice between the extraction and the pied-piping option in adjunct licensing. I will argue that the choice between these options is determined by two types of interface conditions that apply in a phase-based derivation in which syntactic computation and prosodic computation and evaluation are intertwined. The two interface conditions,

though universal, apply in different domains in German and English and are argued to replace the traditional OV/VO parameter.

7.1 Silent Scrambling and Prosodic Constraints

The challenge for the present account is to provide a principled explanation of when an A-movement chain spells out the lower or the higher copy in German and English. Here are the basic facts that we need to account for:

In English, vP-internal phrases, that is to say DP and PP arguments, when moved into the middle field, spell out the lower copy in the vP, while PP adjuncts spell out the higher copy when they scramble to take scope over another adjunct. PP-internal scrambling, however, always spells out the lower copy. In German, on the other hand, A-movement of arguments and adjuncts for scope-taking reasons always spells out the higher copy with only PP-internal scrambling resorting to the spell-out of the lower copy. The generalization that emerges is the following: argument scrambling spells out the lower copy in VO structures (and the higher copy in OV structures) while adjunct scrambling is not affected by the OV/VO Parameter and always spells out the higher copy.

The basic idea that I will develop is that this generalization follows from two basic modes of prosodic composition of arguments, adjuncts and heads. Let us start with the more complex case that English represents. In sections 2 and 4.3 above, I argued that A-movement of arguments (scrambling) in English spells out the lower copy since the English middle field does not tolerate heavy constituents and formulated the prosodic mapping condition in (39a), repeated here as (57). Furthermore I argued that this prosodic condition motivates also pied-piping of vP-external material, that is, of PP adjuncts.

(57)   Prosodic Mapping Condition
       A right-headed prosodic constituent (w s) may not sit on a left branch
       with respect to the head of the predicate phase

The first question that arises is why A-movement in English could not also spell out the higher copy to obey this prosodic condition, given that vP movement into the TP phase moves the verb around scrambled arguments again any way. The answer to this question must be that the spell-out of an argument is decided before Tense is merged.

In fact, there is ample empirical evidence that VO orders in English cannot be derived by object movement that spells out the higher copy plus vP movement around it. First note that the vP cannot be topicalized excluding the direct object, as illustrated in (58). Furthermore, note that the object cannot be separated from the verb and appear in its *scope position* between adverbs, as illustrated by the contrast between German and English in (59a,b). The intended reading of (59a) is possible in the order given in (59c),

indicating again that Pesetsky's cascades fall short of representing all scope possibilities.

(58) a.   John wanted to buy something yesterday…
            *…and buy John did a book today.
      b.   Hans wollte gestern etwas kaufen…
            …und gekauft hat er heute ein Buch.

(59) a.   *John met every day two girls in their classrooms.
            (Temp > DO > Loc)
      b.   Hans traf jeden Tag zwei Mädchen in ihren Klassenzimmern.
      c.   John met two girls in their classrooms every day.

I propose that a constituent is spelled out at the point at which all its features have been checked, guided by the prosodic constraints that apply in the phase that contains it. The crucial distinction between argument and adjunct scrambling follows from the point in time at which the condition in (57) applies to right-headed constituents on a left branch in the I domain. I would like to propose that this mapping condition applies at the time at which an argument or an adjunct is joined with the head of the predicate domain into a single prosodic constituent.

7.2 Modes of Prosodic Composition

We have seen that there is an asymmetry in prosodic-domain formation between arguments and adjuncts. In section 6.1, I argued that adjunct and verb form separate prosodic constituents (on a lower level as we will see below) since they belong to nonhomorganic phases, while a verb may restructure with an argument to form a single prosodic constituent since they belong to homorganic phases. In analogy to recent work by Wagner (2005), I propose that there are two modes of prosodic composition which are determined by the phase status of the constituents to be phrased: subordination and coordination.[21] Subordination pertains to arguments and their selecting head, that is, material in homorganic phases: when an argument and a head are combined the result is a single prosodic constituent (of a certain type), as shown in (60a). Coordination pertains to the composition of an adjunct and a head, that is, material in nonhomorganic phases: the combination of an adjunct and a head yields two prosodic constituents of the same type (that can be combined at the next cyclic level), as illustrated in (60b).

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[21] Wagner (2005) calls them *subordination* and *sister-matching* and invokes a directionality parameter. Here I assume that no directionality parameter is necessary to account for the data.

(60) Modes of prosodic composition
  a. subordination: (DP) + V $\rightarrow$ ((DP) V)[22]
  b. coordination: (PP) & V $\rightarrow$ (PP) (V)

When a right-headed prosodic constituent that is an argument is licensed in the I domain, the mapping condition applies immediately since according to (60a) a single prosodic constituent with the verb is computed at this point.[23] A sample derivation is given in (62). Note that we must assume that argument licensing is interleaved with adjunct licensing in the I domain in our comparative account. For the sake of illustration, I will assume the hierarchy of licensing heads given in (61) that displays the unmarked order of arguments and adjuncts in the German middle field.[24]

(61) [Tense [Temp [SU [Place [IO [DO [Manner [vP]]]]]]]]

Example (62) illustrates the case of the licensing/spell-out of the direct object. Square brackets indicate syntactic constituents and round brackets indicate prosodic constituents. The derivation will then proceed in a strict cyclic fashion, as illustrated. First, the adjunct is licensed (62b) and the result is prosodically evaluated (62c). Then the argument is extracted to be Case-licensed by the higher head (62d) and prosodic evaluation creates a joint prosodic constituent of verb and argument (subordination). At this point the condition in (57) applies, with the result that the argument is spelled out in its

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[22] Subordination as defined in (60a) creates recursive prosodic structures. An alternative to (60a) would be to assume that the verb restructures with the prosodic constituent of its complement, yielding the prosodic structure (DP V) that obeys the Strict Layer Hypothesis (Selkirk 1984, Nespor & Vogel 1986). However, Ladd (1986), Selkirk (1995), and Peperkamp (1997) provide arguments for the availability of recursive prosodic structures in certain languages. Truckenbrodt (1999) points out that many languages lack the phonological evidence that could rule out recursive prosodic structures, since they exhibit either phonological rules that are sensitive for right edges but not for left edges and vice versa. Here I propose that syntax derives an initial recursive prosodic phrasing which at a later level may be flattened by language specific rules that either delete outer or inner boundaries according to global prosodic parameters like rhythm, length, and branchingness of constituents and the like. Also information structure may play a role in the selection of inner or outer boundaries (see Kanerva 1989 on Chichewa). Pursuing these questions, however, is beyond the scope of this paper.

[23] The deep reason behind (57) could be the preservation of peripherality of the head in prosodic-domain formation. Note that when a right-headed prosodic constituent that is an argument is joined with the verb, the result is a left-headed prosodic constituent, as is illustrated in (i).

(i) (w s) + V $\rightarrow$ (s w)

Note that no change in peripherality occurs if a prosodically left-headed argument is combined with the verb on its right (as is typically the case in purely head-final languages, suggesting that what really is at stake in (57) is a monotonous mapping of head status in prosodic-domain formation.

[24] I assume that German has two subject positions: a lower one in the I domain in which Nominative Case is assigned and a higher one in the T domain which is reserved for specific DP subjects. English has lost the lower position in the course of its history.

base position. The same rationale applies to DP scrambling within PPs both in
English and German (modulo the effect of the presence of the adjunct).

(62) a. $[_{IP} \ldots [\ldots \text{Adjunct}] [_{vP} \text{ V DP}]$ adjunct licensing $\rightarrow$
    b. $[_{IP} [[_{vP} \textbf{ V DP}] \text{Adjunct}] t_{vP}]$ coordination $\rightarrow$
    c. $[_{IP} [(\text{V DP}) (\text{Adjunct})]]$ DP extracts for Case/scope
                                               checking $\rightarrow$
    d. $[_{IP} \textbf{DP} [(\text{V DP}) (\text{Adjunct})]]$ subordination $\rightarrow$
    e. $[_{IP} (\text{DP} [\text{ V DP}) (\text{Adjunct})]]$ mapping condition $\rightarrow$ spell-out
                                               of the lower copy
    f. $[_{IP} (\text{DP} [\text{ V DP}) (\text{Adjunct})]]$

When a right-headed prosodic constituent that is an adjunct is licensed in the I
domain, the mapping condition does not apply immediately, since according
to (60b) no single prosodic constituent is computed at this point in the
derivation.

    The actual prosodic composition of verb and adjunct can come about in two
ways. (A) The adjunct has no scope feature to check: When the extended vP
moves into the adjunct phase, a joint right-headed prosodic constituent can
optionally be formed in accordance with (60) (and monotonicity), due to the
fact that they are part of the same phase that closes. This will yield pied-piping
of heavy event-related adjuncts in English, as already outlined in section 4.3.
(B) The adjunct has a scope feature to check and moves out of the adjunct
phase into the I domain of the verb, for instance, to take scope over another
adjunct: After scrambling and checking its scope features (Hinterhölzl 2006),
the adjunct has licensed all its features and decisions about its spell-out can be
made. According to (60b) adjunct and verb are phrased separately (and the
adjunct will spell out the higher copy according to the interface condition in
(65), as we will see below). The mapping condition in (57) will apply to it,
only when a single prosodic constituent is formed at the level of the C domain
that combines the verb and other elements in the I domain. In this case, the
application of (60) will ensure that only light adjuncts may remain in the
middle field in English.

7.3 A2-Movement and Prosodic Phrasing

Before we take a look at the spell-out of pronouns, I would like to address the
fact that PP and DP arguments in English can also undergo nonsilent
scrambling, as shown in (63). Larson (1988) reports that (63a) represents the
unmarked order, whereas the inverted order in (63b) is most natural when the
outer complement is stressed or heavy. Pesetsky (1995) agrees with this
observation and treats cases like (63b) as resulting from optional movement to
a focus position, an operation that he subsumes under the traditional term
heavy XP shift.

(63) a. Max talked to Mary about Bill.
      b. Max talked about Bill to Mary.

I propose that scrambling in (63) involves leftward movement into a focus position in the I domain (or higher), as illustrated in (64).

(64) a. [Max talked [$_F$ to Mary] about Bill]

                                                    focus movement →

      b. [$_{I\ domain}$ to Mary [Max talked ___ about Bill]

                                                    merger of Tense →

      c. [$_{T\ domain}$ [Max talked __ about Bill] [to Mary]][25]

We must assume that (60) does not apply immediately in the derivation in (63). Since we are arguably dealing with a case of movement into a focus position,[26] I propose that the DP/PP argument is not phrased with the verb in step (64b) due to an interface property of focus. It has been observed that a focused constituent induces additional prosodic boundaries (see, among others, Kanerva 1989 for Chichewa, Hayes & Lahiri 1991 for Bengali, Frascarelli 2000 for Italian), which appear on its right edge in VO languages. If the boundary induced by focus prevents an argument from being subordinated with the verb, leading to the coordination of focused argument and verb in prosodic composition, then spell-out of the higher copy is not excluded by (60). I leave this issue for further research.

7.4 The Spell-Out of Pronouns

It is clear that the mapping condition in (57) does not affect the spell-out of pronouns. Given the basic assumptions adopted in the present account, we would expect pronouns to be spelled out in the middle field in English. This is certainly a problem for our account. However, note, that pronouns often have

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[25] How can we explain the binding facts in heavy XP shift constructions noted by Pesetsky (1995), repeated here in (i)? I cannot give a full account of these facts here but will only point out what type of explanation one can pursue in the present account. The condition C effect in (ia) derives from obligatory scrambling of a given pronoun to a high specificity position in German (an operation that remains silent in English). Note that with a narrow focus present, the rest of the clause (including the pronoun) constitutes given information. As far as (ib) is concerned, note that the operator is forced to scope over the focussed constituent, since focus is interpreted as (part of the) nuclear scope. Since scope taking scrambling is an operation of A-movement, silent scrambling in (ib) does not lead to a WCO violation (Hinterhölzl 2006).

(i) a.   *We gave ___ to him$_i$ on Friday [John$_i$'s brand new toy].
     b.   Bill heard __ from each committee member$_i$ on Friday [a report on his$_i$ activities].

[26] Note also that scrambling in (62) constitutes a case of A′-movement. A′-movement is certainly subject to different types of spell-out conditions from the ones I have proposed here for A-movement (both in English and in German) and I cannot venture into deriving these differences in this paper.

a special syntax and exhibit particular prosodic licensing conditions. In VO languages like the Romance languages they are proclitic or enclitic to a specific host. Therefore, I propose that weak pronouns in English are analyzed like weak pronouns in Scandinavian, as has been discussed in detail in section 6.3: they are spelled out in the smallest domain that contains an accessible phonological host to restructure with. Since the verb in English arguably never undergoes head movement, weak pronouns in English are thus always spelled out in their base position, that is, within the vP in the clause and within the containing PP, given that prepositions count as licensing hosts as argued in section 6.3.

7.5 Overt Scrambling and Scope Transparency

In German, the prosodic condition (57) does not apply in the I domain of the verb such that arguments, which move into the middle field for scope reasons, can be spelled out in their scope position and adjuncts—independently of their weight—can be stranded by vP movement in the clause. This raises the question of which factor is responsible for the spell-out of the higher copy in German and in all those cases in English in which the mapping condition (57) does not apply at the relevant point in the derivation.

Note that while we can say that VO structures (with right-headed arguments and adjuncts) guarantee a monotonous, more perspicuous mapping of word order onto prosodic structure on the PF side (see fn. 23), OV languages are more transparent with respect to the mapping of word order onto scope relations on the LF side of the computation. Arguments and adjuncts in German appear in their scope positions allowing scope to be read off directly from their respective surface positions. Therefore we can envisage, parallel to the interface condition on the mapping to PF in (57), an interface condition on the mapping to LF, as given in (65).

(65) Scope Transparency
      If *a* scopes over *b*, the spell-out copy of *a* should c-command
      the spell-out copy of *b*.

Let us now address the important question of how these two interface conditions interact with each other. The data discussed so far indicate that we do not need to resort to an mechanism like competition or constraint ranking in OT. Their application can be described with an elsewhere condition, where Scope Transparency presents the general condition which can be overruled by more specific prosodic conditions, as stated in (66).

(66) The spell-out of an A-movement chain in a given phase is
      determined by prosodic constraints that hold in that phase, if
      applicable; if not, spell-out is fixed according to Scope Transparency.

In this context, it is interesting to note that the Germanic languages started out from a similar basis and developed into different directions. In Old High German, Old Norse, and Old English, light elements tended to precede the thematic verb whereas heavy (branching constituents) followed the verb (Behaghel 1932). Although the placement of arguments and adjuncts in modern German is thoroughly scope transparent (also PP stranding by vP movement serves to preserve preexisting c-command relations among adjuncts) and their placement in modern English is predominantly determined by prosodic constraints, Icelandic has opted for a split solution: referential DPs are spelled out in a low position obeying the prosodic condition, while quantificational DPs (including negative quantifiers) are spelled out in their scope positions in the middle field. I will come back to this issue in the final section.

To sum up this section, I have been proposing that the properties of OV and VO languages are not determined by directionality parameters but follow from different choices in obeying two types of transparency constraints at the interfaces.

7.6 Unmarked Word Order and Focus Restructuring

The spell-out of arguments in the vP is blocked in German by the interface condition in (37) (introduced in section 4.3) repeated here as (67).

(67)   Interface constraint on the syntax–prosody mapping in German:
        *$[_{iP} \ldots (V) \ (\mathbf{XP})]$

In this final section, I want to address the question of what may lie behind this interface constraint and pursue the idea that focus plays an important role in fixing the unmarked word order in intonational languages. It has been noted that a narrowly focussed phrase undergoes phonological restructuring with an adjacent verb (Nespor & Vogel 1986, Frascarelli 2000). There are languages in which the verb builds a joint phonological phrase with a narrow focus to the right and languages in which it does so with a narrow focus to the left. Thus, a preverbal focus will give rise to left-headed phonological phrases and thus strengthen the prosodic pattern (s w) involving the verb, while a postverbal focus will give rise to right-headed phonological phrases, strengthening the prosodic pattern (w s) involving the verb. Assuming that the direction of phonological restructuring is determined by the direction of focus restructuring, a language with fixed word order can be described as a language in which phonological restructuring of the verb has been fixed to one direction. In German, the verb restructures obligatorily to the left, as we saw in section 4.3 (see (35)). Given the mapping condition

in (68), it follows that German cannot license a postverbal focus within the same intonational phrase.

(68)   IS requirement on the prosodic mapping of syntactic structures:
       A narrowly focused constituent introduces an intonational-phrase
       boundary on one side and restructures with the adjacent verb on its
       other side (generalized from Frascarelli 2000).

These observations have implications for the prosodic operation subordination. If prosodic-domain formation by subordination ultimately involves restructuring of phonological phrases—an issue that I have to leave for future research—we can assume that the direction of subordination is open, but can be fixed by interface properties like the realization of focus in terms of stress prominence and phonological restructuring.

Assuming that the direction of phonological restructuring is relevant for prosodic subordination[27] provides an explanation for the fact of why the prosodic condition (57) does not apply in the I domain in German: Given that prosodic restructuring of the verb is uniformly to the left in German, the condition would always be violated. A condition that is always violated in a given phase is irrelevant for selecting alternatives in this phase and can be taken to be excluded from the evaluation of that phase. Assuming that the direction of phonological restructuring is relevant for prosodic subordination can also give us a handle on the Icelandic facts alluded to in the previous section. Assuming that phonological restructuring may go to the left and to the right in Icelandic, nonquantificational DPs are spelled out in the vP obeying prosodic transparency since their interpretation is independent of scope, while quantificational and negative DPs are spelled out in their scope positions in the middle field. Given that their movement into the middle field involves A-movement (rather than A′-movement), they would violate prosodic transparency, but obey scope transparency. Note that prosodic transparency must be taken to hold in the Icelandic I domain, as evidenced by the placement properties of heavy (branching) adjuncts in this language.

To sum up, in this paper I have first tried to develop an account of unmarked word order without assuming any directionality parameter. In this section, I provided two arguments that favor considering a directionality parameter in prosody, namely the direction of phonological restructuring. Thus, we can nevertheless conclude that directionality does not play any role in the syntax, but enters the game at the PF interface, since prosodic phrases (in contradistinction to syntactic phrases) are either left- or right-headed and

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[27] Given that subordination results in the prosodic constituent (i) ((DP) V), as given in (60a), subordination may be seen as providing the precondition for prosodic restructuring of the verb, which can be described in the simplest fashion as an operation that deletes the prosodic boundaries of DP (the inner boundaries) in (i).

since phonological restructuring may be ambivalent or operate toward the left or towards the right exclusively.

8. Conclusions

In this paper, I argued that syntactic directionality parameters in argument and adjunct licensing can be dispensed with. The different distribution of event-related adjuncts in OV and VO languages was argued to follow from a unique derivation employing the single syntactic parameter extraction versus pied-piping that is fixed language- and phase-specifically by interface constraints. The different distribution of arguments in OV and VO language was argued to follow from the high or low spell-out (silent scrambling) of A-movement that is also fixed by the very same interface constraints.

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