Abstract

This paper presents an overview of a proposed linearisation grammar, which relies solely upon information residing in lexical heads to constrain word order. Word order information, which encompasses discontinuity as well as linear precedence conditions, is explicitly encoded as part of the feature structure of lexical heads, thus dispensing with a separate LP specification or linearisation-specific feature like DOM for phrases. Instead, such lexicon-originated word order constraints are enforced in projections, propagated upwards and accumulated in the compound PHON feature, which represents phonological yields in an underspecified manner. Though limited somewhat in generative capacity, this approach covers the key phenomena that motivated linearisation grammars with a simpler grammar architecture without phrase structure rules.

1 Introduction

In this paper I would like to show there can be a serious *monostratal* alternative to the standard linearisation grammar in HPSG (Reape, 1994; Kathol, 2000) which posits a separate, 'phenogrammatical' representation, in particular Word Order Domain initiated by Reape, in order to account for, inter alia, scrambled discontinuity phenomena frequently observed in freer word order languages like German, Japanese and Korean. My central proposal consists in representing word-order related constraints that encompass discontinuity as well as linear precedence explicitly *inside* the feature structure, as values of the Word Order Constraints (WOCs) feature. In what follows I present a rather radical version of implementing this idea, wherein all the WOCs originate from *lexical heads* and are applied to local sisters. By way of compensation, we render PHON a compound feature enriched with word order information, through which WOCs propagate upwards, to ensure that the LP conditions in discontinuous phrases are enforced. Admittedly, this setup would require somewhat extensive modifications to other components of the grammar, at times dictating particular phrase structure construals. Also, the fully lexicalised system presented here does not quite achieve the same constraining power as the versatile DOM-oriented system. However, I will argue that our conservative extension to the classical HPSG can handle most of the phenomena claimed to require a separate linearisation-specific domain.

It would be worth noting, before getting into the details, that the main motivation behind my proposal is of a rather technical nature, namely the search for a simpler and reusable grammar architecture rather than a linguistically plausible account. The standard ID/LP style framework, which is largely inherited by the existent linearisation grammars (cf. Daniels (2005)), may well be a more intuitive and plausible route. However, given the usual advantages of a lexicalist framework, I believe it is worthwhile to push its boundary. For if word order information – a source of great many language-specific idiosyncrasies – was incorporated into the lexicon in its entirety, not only could we dispense with phrase structure rules

but also reuse many of the general schemata – such as Head Complement Schema – cross-linguistically. This in turn would bring immense benefits to computational grammar building too, as all the parsing work could then be borne by a single, universal word order free algorithm for any language (Sato, 2006).

2 Standard Linearisation Account

Below is an example of scrambled discontinuity from German of the kind that motivated linearisation grammars, where (1) is in canonical word order while (1') shows its scrambled variants.

(1) Ich glaube, dass der Vater dem Jungen das Buch zu lesen erlaubt.
I believe Comp the father(nom) the boy(dat) the book(acc) to read allow

'I think that the father allows the boy to read the book'

(1') Ich glaube, dass der Vater [das Buch] dem Jungen [zu lesen] erlaubt
Ich glaube, dass dem Jungen [das Buch] der Vater [zu lesen] erlaubt
Ich glaube, dass [das Buch] dem Jungen der Vater [zu lesen] erlaubt
...

Notice that the lower VP is realised discontinuously in (1') (in square brackets).[1] Such instances are not adequately covered by context free phrase structure rules (Suhre, 2000) and call for some non-CFG machinery for constituent ordering, such that (1) discontinuity/interleaving can be allowed and (2) appropriate LP constraints are enforced. Reape's account invokes some separate mechanisms to handle such ordering, in addition to the introduction of DOM (Reape, 1994). Firstly, Reape's 'default' combinatorial operation for a phrasal projection is *domain union* (rather than *append* as in context free rules), which is essentially discontinuity-allowing but order-preserving merging of lists. Secondly, in order to distinguish between the potentially discontinuous and obligatorily contiguous cases, the UNIONED feature is introduced into phrases, which indicates whether the phrase is intervenable at upper nodes. For example the lower zu-infinitival VP in the above example is UNIONED + and hence is domain-unioned into its mother, allowing for discontinuous realisation. Thirdly, LP constraints are stated in the LP component of the grammar. For example, the constraint COMPS$\prec$ZU-INF-V in German blocks the ungrammatical *zu lesen das Buch* sequence. The fact that the domain union operation preserves the relative order of constituents ensures that the LP compliance is preserved non-locally at upper nodes. In sum, the interaction of domain union, the UNIONED feature and LP statements controls the way that

[1] Under the 'biclausal' construal, which is generally accepted to be more appropriate for the 'incoherent' object control constructions in question (Gunji, 1999) than the 'monoclausal' alternative, or argument composition (Hinrichs and Nakazawa, 1990). Note that I am not employing a biclausal construal throughout, however. I am in agreement with Kathol and Müller in preferring argument composition for 'coherent' constructions (Kathol, 2000; Müller, 2002).

constituents are linearised in DOM, ruling out the unacceptable sequences while endorsing grammatical ones such as the examples in (1').

DOM is a list of signs or 'domain objects' (consisting of PHONs and *synsem*s) cumulatively percolated and as such contains a considerable duplication of information with other parts of the feature structure. This is necessitated, it is claimed, by the existence of non-local word order constraints that operate across local domains. Yet what I find striking about Reape's work is that despite his invocation of separate machineries to enforce the potentially non-local constraints, the majority of the word order conditions are applied in fact to *sisters*. Even for discontinuity, inherently non-local though it is, the intervenability information originates from a local feature, UNIONED. Genuinely non-local word order conditions, namely those that linearise particular constituents from inside different local nodes, seem far and few between. Provided all LP constraints are rendered locally applicable – a contentious proposition I will discuss in the next section – all that would remain for DOM to do is percolation of intervenability information. This suggests the possibility to dispense with a linearisation-specific feature like DOM, if the fragmented word-order related information can be accordingly streamlined. I will argue that this is indeed possible in the following section.

3 Word Order Constraints Lexicalised

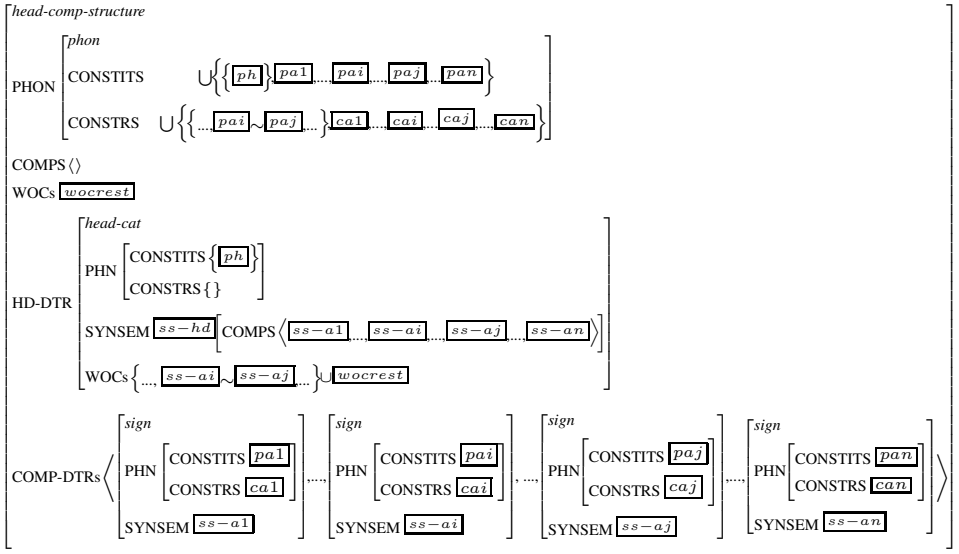
The underlying idea for lexically encoded word-order constraints (WOCs) is simple: since the dependents of a lexical head are available as its valences, it should be possible to state the relative linear order and adjacency between the head and a dependent sister, as well as between its dependent sisters, *inside* it. The WOC-incorporated feature structure would look like the following, with the German verb and noun we saw earlier in the examples:

$$\left[\begin{array}{l} \textit{zu-inf-verb} \\ \text{PHON}\left[\begin{array}{l}\text{CONSTITS}\left\{\text{zu-lesen}\right\}\\ \text{CONSTRS}\{\}\end{array}\right] \\ \boxed{v}\,\text{SYNSEM}\,|\,...\,|\,\text{COMPS}\left\langle \boxed{np3}\left[\begin{array}{l}np\\ \text{CASE Acc}\end{array}\right]\right\rangle \\ \text{WOCS}\left\{\boxed{np}\prec\boxed{v}\right\}\end{array}\right] \quad \left[\begin{array}{l} \textit{noun} \\ \text{PHON}\left[\begin{array}{l}\text{CONSTITS}\left\{\text{Buch}\right\}\\ \text{CONSTRS}\{\}\end{array}\right] \\ \boxed{n}\,\text{SYNSEM}\,|\,...\,|\,\text{SPR}\left\langle \boxed{det}\left[\begin{array}{l}det\\ \text{GEN Neut}\end{array}\right]\right\rangle \\ \text{WOCS}\left\{\boxed{n}\sim\boxed{det},\ \boxed{det}\prec\boxed{n}\right\}\end{array}\right]$$

Let us first focus on the WOCs feature, whose value is a set of word-order related constraints. For the current proposal I include ADJ (for adjacency, represented above as $\sim$) and LP ($\prec$) though the feature may contain any relational constraint with the proviso of its formalisability. The crucial point is that intervenability and LP constraints both come from a single feature, working essentially in the like manner. Naturally, there is a restriction on the operands of these relations: they have to be either the synsem of the head or of one of the complements. Also,

it is stipulated that one cannot state a constituent is adjacent to/precedes itself. [2] In the examples the WOCs feature of *zu-lesen* says, for its projection, its accusative complement NP must precede the verb itself, while that of the noun *Buch* says that the attached determiner must both precede and be adjacent to itself.[3]

These lexically encoded WOCs are enforced in a modified *Head-Complement Schema* (Pollard and Sag, 1994) (in the case of the head-complement projection), as shown below. I am assuming a flat structure for VPs, therefore COMPS include the subject.[4] For simplicity only the ADJ constraint is shown, but the LP constraint would work in an analogous manner. Notice that a new, enriched PHON feature now contains the subfeature CONSTRS (constraints), as well as the CONSTITS (constituents), the unordered set of its phonological components. Thus, the PHON feature overall represents any of the legitimate word order patterns endorsed by CONSTRS with the words in CONSTITS in an underspecified way. Crucially, this is where WOCs are percolated into, and hence linearisation takes place.



The reader is asked to interpret $\boxed{ss\text{-}ai}$ and $\boxed{ss\text{-}aj}$ in the head daughter's WOCs to represent any two *synsem*s chosen from the daughters including the head, namely $\boxed{ss\text{-}ai}, \boxed{ss\text{-}aj} \in \{\boxed{ss\text{-}hd}, \boxed{ss\text{-}a1}, \ldots \boxed{ss\text{-}an}\}$. The structure sharing of $\boxed{ss\text{-}ai}$ and $\boxed{ss\text{-}aj}$ between WOCS and COMPS indicates that the ADJ constraint applies to these two arguments, i.e. $\boxed{ai}$ must be adjacent to $\boxed{aj}$. Notice that the categories being unified

[2] Furthermore we define A[lex]$\prec$B, where A is a lexical head, to mean A linearly precedes *all* the constituents of, or alternatively, the right periphery of, B. A$\prec$B[lex] can be similarly defined, such that the left periphery of A precedes B. Meanwhile A[lex]$\sim$B is taken to mean A and B together constitute a contiguous string, whatever the order is. Therefore the adjacency relation is symmetric. Also, the non-head string, B, may itself be non-contiguous.

[3] For the sake of the argument I am glossing over two facts here: (1) *zu lesen* is not really a word and (2) a noun can be non-adjacent if adjoined by a nominal modifier e.g. an adjective. We will come back to this point in Section 4.1.

[4] Our treatment is extended to the configurational analysis in Section 4.1.

between WOCS and COMPS, their *synsem* information is fully available for linearisation. Now, only for these WOC-applicable daughters, the PHON|CONSTITS values are paired up with the appropriate operator (in this case $\boxed{pai} \sim \boxed{paj}$) and pushed to the mother's PHON|CONSTRS feature. In short, the relevant WOCs, originally stated in a lexical head on a pair of categories, is converted into the LP or ADJ specification between the corresponding PHONs and passed up into the mother.

Another important point is that the CONSTRS subfeature is *cumulatively* inherited. Notice that all the *non-head* daughters' CONSTRS values ($\boxed{ca_1}$,...,$\boxed{ca_n}$) – the word order constraints applicable to each of *their* daughters, namely the result of WOC application at the lower nodes – are also passed up, collecting effectively all the CONSTRS values of its descendants. This means the information concerning word order, as tied to particular string pairs, is never lost and passed up all the way through, enabling WOCs to be enforced at any point at an upper node. This is how the discontinuity/adjacency condition can be enforced, since the ADJ specification gets percolated up to the top node and blocks/endorses the relevant phrase being intervened wherever such intervention is to take place. This is the task that was borne by the UNIONED feature and domain union in Reape's framework.

Lastly, the applied WOCs are discharged, in a similar manner to the COMPS feature except that for WOCs both operands of an ADJ/LP pair have to be encountered for discharge. Thus there may remain undischarged WOC pairs in the mother ($\boxed{wocrest}$). This is in anticipation for extending the schema to other phrasal structures, which we will discuss in the next section.

Let us now see how the Schema works out with our control verb examples (1) and (1'). Following is the WOC specification of the head, *erlaubt*. Notice in particular that there is no WOC involving the infinitival VP complement:

$$\left[\begin{array}{l} \textit{subord-obj-ctrl-verb} \\ \text{PHON} \left[\begin{array}{l} \text{CONSTITS} \left\{ \text{erlaubt} \right\} \\ \text{CONSTRS} \{\} \end{array}\right] \\ \boxed{v}\ \text{SYNSEM} \mid \ldots \mid \text{COMPS} \left\langle \boxed{np1}\left[\begin{array}{l} np \\ \text{CASE Nom} \end{array}\right], \boxed{np2}\left[\begin{array}{l} np \\ \text{CASE Dat} \end{array}\right], \left[\textit{zu-inf-vp}\right] \right\rangle \\ \text{WOCS} \left\{ \boxed{np1} \prec \boxed{v}, \boxed{np2} \prec \boxed{v} \right\} \end{array}\right]$$

The result of successively applying the Schema up to the *erlaubt* projection is shown below (only the PHON feature).

$$\left[\begin{array}{l} \textit{subordinate-clause} \\ \text{PHON} \left[\begin{array}{l} \text{CONSTITS} \left\{ \begin{array}{l} \boxed{v1}\{\text{erlaubt}\} \cup \boxed{np1}\{\boxed{n1}\{\text{Vater}\}, \boxed{d1}\{\text{der}\}\} \cup \boxed{np2}\{\boxed{n2}\{\text{Jungen}\}, \boxed{d2}\{\text{dem}\}\} \\ \cup \boxed{vp}\{\boxed{v2}\{\text{zu-lesen}\} \cup \boxed{np3}\{\boxed{n3}\{\text{Buch}\}, \boxed{d3}\{\text{das}\}\}\} \end{array} \right\} \\ \text{CONSTRS} \{ \boxed{np1} \prec \boxed{v1}, \boxed{np2} \prec \boxed{v1}, \boxed{d1} \sim \boxed{n1}, \boxed{d2} \sim \boxed{n2}, \boxed{np3} \prec \boxed{v2}, \boxed{d3} \sim \boxed{n3} \} \end{array}\right] \end{array}\right]$$

All the scrambled variants as in (1') would be endorsed by this representation. Notice that it endorses extraposed instances e.g. *der Vater dem Jungen erlaubt das*

Buch zu lesen, due to the lack of LP requirement between *erlaubt* and its complement VP, as well as 'the third construction' *der Vater dem Jungen das Buch erlaubt zu lesen*, coupled with the lack of adjacency requirement therebetween. It seems that all the acceptable word order patterns are captured by this representation.

The 'weakness' – or price for simplicity – of our monostratal representation lies in the fact that the PHON feature, if augmented by the word order information in CONSTRs, is (naturally) still devoid of local, above all synsem, features. Once a (maximal) projection of a phrase has been completed, the local information of its non-immediate lower nodes is no longer available, making a higher-node LP condition impossible that works 'down' the trees and checks the LP between elements in its non-immediate lower nodes. For example, problematic cases arise when a control verb like *erlauben* further embeds another control verb in a non-extraposed, or intraclausal, construction. The first of the following examples is generally considered ungrammatical, as opposed to the second, grammatical extraposed counterpart:

(2) * ...dass der Vater dem Jungen zu versuchen das Buch zu lesen erlaubt.
Comp the father the boy the book to read try allow

intended: '...that the father allows the boy to try to read the book'

(2') ...dass der Vater dem Jungen erlaubt, zu versuchen, das Buch zu lesen.

There is nothing to rule out (2) in our current WOC specification for *erlauben* and it might seem as if some non-local constraint was at play, presumably to the effect that *if* another control verb (in this case, *zu versuchen*) is embedded, *its* complement VP (*das Buch zu lesen*) must precede it. To generalise, in the intraclausal environment, multiply embedded zu-infinitive VPs must obey what can be called *directionality* of government: let the highest governor that appears at the clause-final position be V_1 (in this case *erlaubt*), its immediate governee and second highest governor V_2 (*zu versuchen*) and *its* governee V_3 (*zu lesen*), then $V_3 \prec V_2 \prec V_1$ is the only acceptable order, not the 'crossing' $V_2 \prec V_3 \prec V_1$.

My tentative response is as follows: I am sceptical about the validity of describing the constraint operating in examples such as the above as instances of non-local LP condition. Generally speaking, other means inside our lexicalist approach are available that render the LP constraints local that would nevertheless have the same effect. Regarding the above case, differentiating intraclausal and non-intraclausal VPs[5] by means of subtyping would do the job of ruling out (2) while retaining (2'), as we will see in Section 4.2, where we discuss subtyping. To be sure, there are more difficult cases in German[6] or in Japanese and Korean[7] and it would be a

[5] I am using the term 'non-intraclausal' as a cover term to refer both the (fully) extraposed case and the third construction (partially extraposed) case. Further subdivision may well become necessary if, as indicated by Rambow (1994) in his analyses of the relevant data, the two cases differ in word order patterns.

[6] As Rambow points out, the third construction shows more involved constraints if a control verb is further embedded.

[7] Floating quantifiers could count as examples.

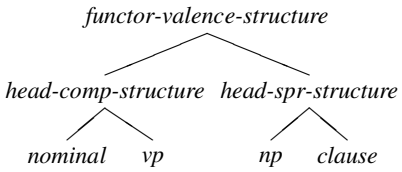
folly to prejudge for other languages. However, our locality-abiding head-driven approach can adequately cover the core phenomena with a due augmentation.

4 Extension

So far we have only been focusing on Head-Complement Structure, of a particular clausal type at that. I do aspire to make the proposed lexicalised WOCs applicable generally, so some additions and modifications to the standard theory are in order.

4.1 Head-Specifier Structure

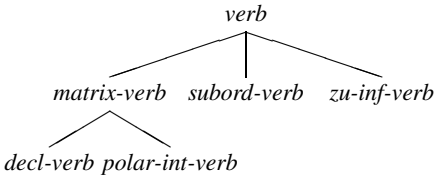
Firstly, the same treatment can be extended to cover Head-Specifier Structure such as NPs as well as clauses in a configurational analysis quite straightforwardly. WOCs can be written into a specifier-taking word in pretty much the same way, and the corresponding Schema would be analogous to Head-Complement Schema. I assume both verbs and nouns select for both SPR and COMPS valences (though either may be an empty list), so the both WOCs applicable to the head-complement projection and to the head-specifier projection should be written into these word types. Given the similarity between these structures, a supertype, *functor-valence-structure*, that contains the WOCs feature is proposed, as in the following type hierarchy:



The preceding consideration also leads us to a second point, mentioned earlier in the footnotes in the preceding section: it is not just words but also their bar-level projections that should carry WOC information. Nominals or the subject-less VP in a configurational analysis should keep its SPR valence undischarged, and hence retain the WOCs for SPR. This is why we employed the staggered discharge mechanism: WOCs are applied step by step, first to COMPS and next to SPR, each time the relevant WOCs being discharged.

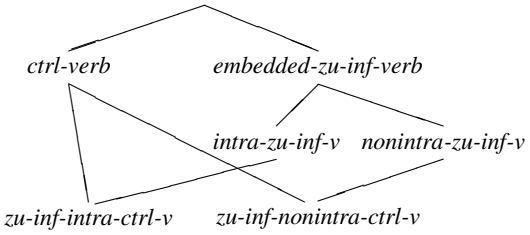
4.2 Subtyping

Now that the WOCs are encoded in lexical heads, it is essential, for succinct and non-redundant specification of word order, to have a type hierarchy of words in terms of WOCs for specific languages. For example German verbs may be subtyped as in the following. Types *subord-verb* and *zu-inf-verb* should contain a WOC that requires that its complements precede the verb, while for the matrix verb types one needs to specify the V2 (declarative) and V1 (polar interrogative) word order patterns.



I expect such subtyping based on the word order of complements to raise some issues of broader concern. One is of *plausibility*: as Kathol (2000) argues (Ch. 7), the issue of clause types may be a matter that should not be determined on the level of the head a clause is a projection of but on the level of clause itself. However, I defer this question for later consideration, as our first priority is to examine whether our approach is technically extensible at all to other principal constructions. Closer to the bone in this sense are two technical issues the German V2 word order evokes, as this word order pattern involves the requirement that *any, but only one* of the *arguments/adjuncts* be in the preverval position. We consider here the first issue, the singularity of the fronted constituent, and will discuss the second issue of adjuncts in the following separate section. The singularity of the fronted constituent could cause a problem under our lexicalist but linearisation-based approach, since the standard lexicalist device invoked for this purpose, SLASH percolation (Pollard, 1990; Netter, 1992), would be at odds with our linearisation-based WOCs feature, but linearisation is usually neutral to the number of fronted constituents.[8] However, we could get around the problem by using disjunctive WOCs, namely by requiring that only one of the complements of a verb both precedes and is adjacent to the verb and all the other complements follow it. That is, provided that V of the type *decl-verb* subcategorises for Comp_1, ... Comp_i, ... and Comp_n, we require that $\text{V} \precsim \text{Comp}_i$ and $\text{V} \prec \text{Comp}_1$, ... and $\text{V} \prec \text{Comp}_n$ for any (but only one) i.[9]

Such subtyping affords us certain flexibility to adapt to more subtle differences in word order. We have seen in Section 3 (examples of (2)) that a stronger constraint applies to intraclausal zu-infinitive VPs than extraposed counterparts, namely that of directionality. The following subtyping is proposed, essentially to make a distinction between intraclausal and non-intraclausal zu-infinitives, the attributes of which may be inherited by control verbs.



[8] In fact a purely linearisation-based account that ensures this singularity of the preverbal constituent is offered by Kathol (ibid., Ch.5), but clause-types, on which he crucially relies to enforce LP conditions, are not available to our lexicalist approach.

[9] The actual processing of such WOCs however would require a mechanism of satisfying disjunctive constraints, which can be a source of inefficiency. For methods to process such a disjunctive statement efficiently see Sato (forthcoming); Maxwell III and Kaplan (1981).

We could then add an extra WOC only for the *zu-inf-intra-ctrl-verb* type, as below. The additional WOC (underlined) requires for this type of verb that the complement VP must precede it, in order to enforce the desired directionality effect.

$$\left[\begin{array}{l} \textit{zu-inf-intra-ctrl-verb} \\ \boxed{v}\ \text{SYNSEM} \mid \ldots \mid \text{COMPS} \left\langle \boxed{np1}, \ldots, \boxed{vp}\left[\textit{zu-inf-vp}\right] \right\rangle \\ \text{WOCS} \left\{ \boxed{np1} \prec \boxed{v}, \ldots, \underline{\boxed{vp} \prec \boxed{v}} \right\} \end{array}\right]$$

The last jigsaw to complete the picture is to specify a finite control verb like *erlaubt* to subcategorise either for *zu-inf-intra-verb* or for *zu-inf-nonintra-verb*, and to require in its WOCs that it follows its complement VP for the former case.

4.3 Head-Adjunct Structure

The distinction between complement and adjunct is notoriously elusive and has been a matter of considerable debate (see e.g. Przepiórkowski (1999)). This fuzziness also manifests itself in the German V2 word order, where an adjunct equally qualifies as the constituent to front to the preverbal position. The need somehow to treat adjuncts on 'equal' terms to arguments is particularly acute in our approach, since we would need an access to adjuncts as well as arguments in the same valence entry of a lexical head. The tentative solution I offer here is to adopt the increasingly influential Adjunct-As-Complement account proposed by Bouma and van Noord amongst others (van Noord and Bouma, 1994), which will afford us a local list including adjuncts to operate on. Under a more recent version of this proposal (Bouma et al., 2001), an adjunct is iteratively added through *Argument Structure Extension* to the COMPS list and this is combined with other valence lists (e.g. SUBJ) to form an extended list, DEPS (dependents) list. This list enables us to state the desired WOC statements that hold between a head, its complements and (now dependent) adjuncts in a straightforward manner.[10] Below is an example of a noun, English or German, which states it is modified by an adjective, which must precede the noun. We could drop this LP requirement for verb modification by adverbs to express they can appear before or after the verb.

$$\left[\begin{array}{l} \textit{noun} \\ \text{COMPS}\ \boxed{comps} \\ \text{WOCs}\ \boxed{w} \end{array}\right] \Rightarrow \boxed{n} \left[\begin{array}{l} \text{HEAD}\ \boxed{cat} \\ \text{COMPS}\ \boxed{comps} \oplus \left\langle \boxed{mod} \left[\begin{array}{l} \text{HEAD}\ \textit{adj} \\ \text{MOD}\left[\text{HEAD}\ \boxed{cat}\ \textit{noun}\right] \end{array}\right] \right\rangle \\ \text{WOCs}\ \boxed{w} \cup \left\{ \boxed{mod} \prec \boxed{n} \right\} \end{array}\right]$$

[10] Bouma et al. (op. cit) are however sceptical about the uniform application of Adjunct-As-Complement theory to all the head-adjunct structures (pp.35f). Also, under this setup an infinite number of DEPS list is produced for a single head, which can be problematic in (particularly bottom-up) processing. For an eclectic approach to adjuncts that controls such explosion and can adapt to both traditional and Adjunct-As-Complement treatments see Sato (forthcoming).

5 Conclusion and future tasks

In the above I have given an overview of a possible lexicalist grammar with the incorporated WOCs feature that handles word order phenomena problematic to CFG including discontinuous constituency. In particular, I have shown that with a due augmentation of the PHON feature the classical cases of discontinuity-causing scrambling can be adequately covered, without invoking a linearisation-specific domain.

Yet the ideas presented here remain at a rather high level of abstraction and need yet to be tested thoroughly against more real data. One issue missing from the discussion above is how to constrain linearisation according to categories/types of the constituents involved rather than cases/obliqueness of complements. For example, it is generally preferred to put pronominals before non-pronominals in the Mittelfeld of a German subordinate clause. In our framework, where no linearisation-specific domain is available, this information would have to be somehow written into the WOCs. This would involve putting into a lexical supertype generic WOCs, which are then to be unified with the dependents of its subtypes, as and when applicable. However, since such a generic WOC is not anchored to particular dependents, quantified statements (such as '*all* the pronominal complement NPs should precede non-pronominal counterparts') would be required.

Another major issue yet to be addressed is unbounded dependency. A fully linearisation-based account of UDCs would be advantageous to our approach in terms of uniformity, but no such account has been fully developed to the best of my knowledge, though Penn (1999) attempts at a limited use of linearisation for this purpose. If the standard SLASH mechanism was to be adopted as well, then the way the gapped element should interact with WOCs would need to be specified. On the other hand, a linearisation account of UDCs does not seem entirely inconceivable, if the singularity of the gap/filler can be warranted by disjunctive WOCs.[11]

Also, what has been presented here is a rather radicalised (fully lexicalist) version, the plausibility of which may well be a matter of debate particularly as we have been witnessing a significant shift towards the constructionist paradigm in HPSG. A radicalism can breed a bias: we have already seen that our insistence on lexicalised WOCs compels us to adopt a non-traditional treatment of adjuncts. This radicality is an intended one, however, to make the contrast with the existent approaches clear. Though I intend to pursue the lexicalist possibility further, it is worth noting our central proposal, a 'head-driven' mechanism of word order specification, would essentially remain intact if the WOCs feature was introduced to phrasal heads as well. This move may pave way to a more plausible and powerful grammar, where one could state non-local word order conditions more naturally.

[11] Unboundedness would pose no problem to such a linearisation-based account as discontinuous phrases can be endorsed however long the interval may be, but the main difficulty would concern how to prevent the gap from being filled in some intermediate (non-leftmost) position.

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