

The Distribution of Floating Quantifiers

A Dependency Grammar Analysis

Timothy Osborne
615 6th Street Apt. 110
Kirkland, WA 98033
USA

tjo3ya@yahoo.com

Abstract

This contribution provides a dependency grammar analysis of the distribution of floating quantifiers in English and German. Floating quantifiers are deemed to be “base generated”, meaning that they are not moved into their surface position by a transformation. Their distribution is similar to that of modal adverbs. The nominal (noun or pronoun) over which they quantify is an argument of the predicate to which they attach. Variation in their placement across English and German is due to independent word order principles associated with each language.

1 Introduction

The quantifiers *all* (in English) and *alle* (in German) in the following sentences are “floating”:

- (1) a. They have *all* understood.
- b. Sie haben *alle* verstanden.

The noteworthy trait of these quantifiers is that they are positioned at a distance from the definite nominal (noun or pronoun) over which they quantify. In the examples here, *all* and *alle* are separated from the pronouns *they* and *sie* by the finite verbs *have* and *haben*. This situation is contrary to expectation, since the modifiers of nominals generally appear adjacent to them. Data such as (1a-b) are, however, a frequent occurrence, and the term *floating quantifier* has long been established in order to denote the phenomenon. Typical quantifiers

that float in English are *all*, *both* and *each*, and in German *alle* ‘all’ and *beide* ‘both’.¹

For the most part, there are two possible and competing theoretical analyses of floating quantifiers. The one is associated with transformational syntax, the assumption being that the quantifier and nominal form a constituent at some underlying level of representation or stage of a derivation (e.g. Sportiche 1988, Carrillo 2009). The quantifier ends up “floating” because its host nominal is moved out of its base position up the structure, whereby the quantifier remains behind. This approach is called the *movement approach* here. The other approach assumes that there is no movement (e.g. Dowty and Brodie 1984, Bobaljik 2003, Hoeksema 2012), but rather floating quantifiers are a type of adverbial, and their distribution is similar to that of, for instance, modal adverbs (e.g. *certainly*, *probably*, *mainly*). This approach is called the *adverb approach* here.

Of these two approaches, this contribution rejects the first in favor of the second. It rejects the movement approach for two reasons, the first being that movement is not consistent with the tradition of dependency grammar (DG), a majority of DGs rejecting the movements and derivational processes associated with transformational syntax, favoring representations instead. The second reason for rejecting the movement approach is empirical. There are a number of problems with the movement approach (see Bobaljik 2003 and Hoeksema 2012), not the least of which is the fact that floating quantifiers at times quantify

¹ Partitive quantifiers can also float, e.g. *They were all of them deceived*. The distribution of partitive quantifiers is not examined in this contribution, although they behave similarly to their non-partitive counterparts.

over material with which they cannot be construed as forming a constituent at some underlying level or point in a derivation, e.g.

- (2) a. Bob, Bill, and Tom have *all* called.
 b. **All* Bob, Bill, and Tom have called.

Based on the unacceptability of (2b), it is difficult to see how the quantifier *all* in (2a) could be construed as forming a constituent with the subject *Bob, Bill, and Tom* at some underlying level or point in a derivation.

The adverb approach is more congruent with the DG tradition, since it sees the quantifier as “base generated” in its surface position. More importantly, it is supported by a number of empirical considerations, not the least of which is the simple observation that floating quantifiers have a distribution that is similar to that of modal adverbs:

- (3) a. [?]The kids *likely* will have been seen.
 b. The kids will *likely* have been seen.
 c. The kids will have *likely* been seen.
 d. ^{??}The kids will have been *likely* seen.
- (4) a. [?]The kids *all* will have been seen.
 b. The kids will *all* have been seen.
 c. The kids will have *all* been seen.
 d. ^{??}The kids will have been *all* seen.

The adverb approach is supported by the similar acceptability judgments across these two groups of sentences. The movement approach, in contrast, comes up short when confronted with these data, since it has no reason to put floating quantifiers on par with modal adverbs.²

This contribution presents a DG analysis of the distribution of floating quantifiers in English and German, whereby the adverb approach is pursued. It will be demonstrated that the principle of distribution is consistent across the two languages. The differences that do exist across English and German are due to independent principles of word order that have little to do with floating quantifiers.

² Note that by claiming that floating quantifiers distribute like modal adverbs, I am not claiming that floating quantifiers *are* modal adverbs. A similar distribution does not necessitate that the two types of words belong to the same syntactic class.

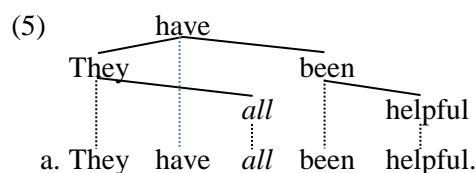
2 Floating?

An analysis of floating quantifiers must first be in a position to distinguish between quantifiers that are and are not floating. In a DG, this task can be accomplished if one sees the quantifier as floating when its position in relation to the nominal it quantifies over would constitute a projectivity violation:

Floating quantifier (initial version)

A quantifier is floating if interpreting it as a dependent of a nominal that it quantifies over would mean the presence of a projectivity violation in the dependency tree.

Given this guideline, any time a quantifier is separated from the noun it quantifies over by one or more words that dominate the noun, that quantifier must necessarily be “floating”, e.g.



The crossing lines in this tree identify a projectivity violation, which means the quantifier is floating.

The status of *all* as a floating quantifier in examples like (5) is beyond contention. There are other cases, however, where one might overlook the fact that the quantifier is floating, e.g.

- (6) The boys all left.

Since the quantifier *all* is adjacent to the noun *boys* and it quantifies over *boys*, the guideline above does not necessitate that it be viewed as floating. Further considerations, however, demonstrate that *all* is not a dependent of *boys* in (6), which means it must be floating. When a quantifier attaches to the noun over which it quantifies, it attaches as a predependent, never as a postdependent, and when it appears as a dependent of a pronoun, it is always a postdependent, never a predependent. These facts are visible in the following sentences:

- (7) a. Fred liked all the candies.
 b. *Fred liked the candies all.

- c. *Fred liked all them.
- d. Fred liked them all.

These sentences show that when a quantifier attaches to the noun it quantifies, it must be a predependent, but when it attaches to a pronoun, it must be a postdependent. These traits of nouns, pronouns, and quantifiers are probably motivated by prosodic factors, the quantifier preferring to attach as a postdependent to prosodically weak elements.

The V2 principle of German delivers support for the conclusion. The V2 principle requires one and only one constituent to appear as the predependent of the finite verb in standard declarative matrix clauses and *w*-constituent questions, e.g.

- (8) a. *Die Leute alle kennen es.
The people all know it
- b. Wir alle kennen es.
we all know es
- (9) a. *Welche Leute alle hast du gehört?
Which people all haveyou heard?
- b. Wen alles hast du gehört?
who all haveyou heard

When the left-most constituent before the finite verb is an NP, the quantifier cannot immediately follow it, but if that element is a pronoun, the quantifier CAN immediately follow it. The V2 principle predicts that the b-sentences would be bad like the a-sentences if the quantifier were floating in the b-sentences, for two constituents, not just one, would be preceding the finite verb.

The same sort of acceptability contrast shows up in English:

- (10) a. *Which people all did you see?
- b. Who all did you see?

This contrast is explained in part if we assume that in English as well, only one constituent can precede the finite verb in such *wh*-questions.

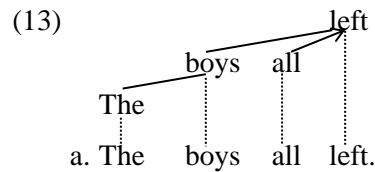
The following contrast further supports the general insight:

- (11) a. ?The boys all had done their work.
- b. The boys had all done their work.

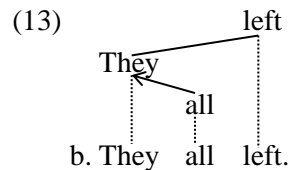
- (12) a. They all had done their work.
- b. They had all done their work.

Sentence (11a) is marginally acceptable, the word order in (11b) clearly being preferred. This contrast in acceptability disappears in (12), where both word orders are fine. The difference is explained in part if one assumes that the quantifier *all* is floating in (11a), but it is a postdependent of the pronoun *they* in (12a).

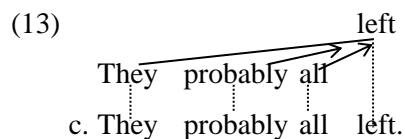
This peculiar asymmetry between nouns and pronouns with respect to quantifiers is, again, probably explained by prosodic considerations; the quantifier prefers to immediately follow a prosodically weak element (such as a pronoun or an auxiliary verb). This asymmetry must be kept in mind when exploring the distribution of floating quantifiers. What it means is that the guideline above is not completely accurate. The relevant criterion for identifying floating quantifiers is not whether its position necessitates a projectivity violation, but whether the quantifier can be construed as a dependent of the nominal that it quantifies over. If it cannot, then it is floating. Thus in the case of (6), which is repeated here as (13a) with the dependency structure added, the quantifier *all* is floating because it is a dependent of the verb, not of the noun:



(The arrow dependency edge marks a constituent that is not selected or subcategorized for by its head – in other words, it marks an adjunct.) But if the subject is a pronoun, the quantifier is a postdependent of the pronoun:



Note that the analysis shown in (13b) does not prohibit the quantifier from floating if need be, e.g.



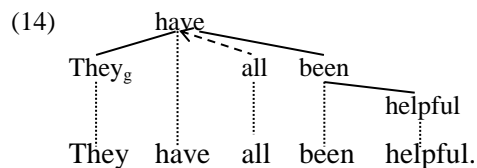
These points motivate a reformulation of the guideline for identifying floating quantifiers:

Floating quantifier (final version)

A quantifier is floating if, for whatever reason, it cannot be construed as a dependent of the nominal that it quantifies.

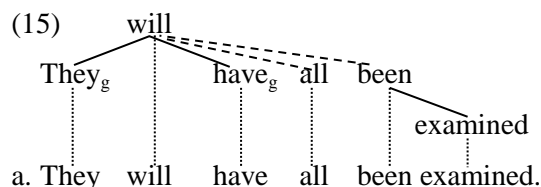
3 Rising?

A widespread means of addressing projectivity violations like the one shown in (5) is to assume that the displaced constituent climbs up the structure and attaches to a word that dominates its governor (e.g. Duchier and Debusmann 2001, Gerdes and Kahane 2001, Bröker 2003:294). Groß and Osborne (2009) call this mechanism *rising*, and they indicate its presence in dependency trees using a dashed dependency edge to mark the “risen” constituent and a g subscript to mark the governor of the risen constituent.³ On a rising analysis, the tree for sentence (5) might be as follows:



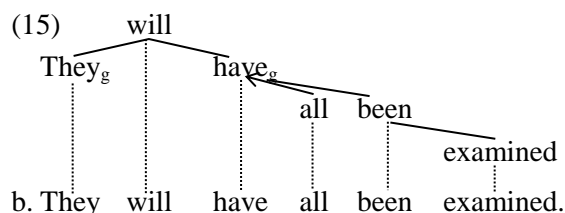
This sort of analysis has been shown to be valid for the major types of discontinuities acknowledged in the literature (extraposition, scrambling, topicalization, wh-fronting) – see Groß and Osborne (2009) and Osborne et al. (2012). The analysis cannot, however, be valid for floating quantifiers. We know it cannot be valid for floating quantifiers because floating quantifiers can appear much lower down in the syntactic hierarchy, a fact that a rising analysis really cannot accommodate, since it would necessitate more than one instance of rising, e.g.

³ Groß and Osborne (2009) emphasize that the term *rising* should not be understood as indicating a transformational approach. They use the term as a convenient metaphor to denote a constellation in which the head of a given constituent is not its governor.



The rising analysis shown in this tree is implausible because it sees both the quantifier *all* and the nonfinite VP *been examined* rising. There is no independent evidence that nonfinite VPs headed by an auxiliary verb can rise in this manner.

A more plausible approach is to assume that the quantifier attaches as a postdependent to the infinitive auxiliary *have*:



An alternative analysis here that attaches the quantifier *all* as a predependent to the participle *been* is implausible for reasons that will be made clear further below.

The greater point to these examples is that many floating quantifiers appear too low in the syntactic hierarchy to allow an analysis in terms of rising. This insight leads immediately to the following question: then what is a floating quantifier? As stated in the introduction, the current contribution follows an established tradition in assuming that floating quantifiers are essentially a type of adverb that has a distribution similar to that of modal adverbs.

4 Why float?

Floating quantifiers have similar quantificational powers to the corresponding non-floating quantifiers. They are quantifying over a nominal, restricting or expanding the set of entities that can be denoted by the nominal. Thus the following two sentences translate to the same formula of predicate logic:

- (16) a. All the guests were hungry.
- b. The guests were all hungry.
- $\forall x ((\text{guest } (x)) \rightarrow (\text{hungry } (x)))$

Given this complete overlap in meaning, one can ask why floating quantifiers exist: what do they accomplish? The answer to this question is that they can disambiguate utterances.

Dowty and Brody (1984) demonstrate that the use of a floating quantifier can disambiguate an utterance. Floating quantifiers do not, namely, allow the scope ambiguities associated with their non-floating counterparts. The following sentence is ambiguous depending on whether the quantifier scopes over the negation, or vice versa:

- (17) a. *All* the women didn't protest.
 $\forall x ((\text{woman}(x)) \rightarrow \neg (\text{protest}(x)))$
 $\neg \forall x ((\text{woman}(x)) \rightarrow (\text{protest}(x)))$

When the quantifier floats, in contrast, the ambiguity disappears:

- (17) b. The women *all* didn't protest.
 $\forall x ((\text{woman}(x)) \rightarrow \neg (\text{protest}(x)))$
 $* \neg \forall x ((\text{woman}(x)) \rightarrow (\text{protest}(x)))$
- c. The women didn't *all* protest.
 $* \forall x ((\text{woman}(x)) \rightarrow \neg (\text{protest}(x)))$
 $\neg \forall x ((\text{woman}(x)) \rightarrow (\text{protest}(x)))$

When a quantifier floats, scope is determined strictly by linear order; the logical operator that appears first in the left-to-right sequence takes scope over an operator that follows.

The ability of floating quantifiers to disambiguate utterances justifies their existence.

5 C-command?

The fact, however, that a floating quantifier is often not adjacent to the nominal that it quantifies over should motivate one to question how it picks out its argument. Why, for instance, is the quantifier incapable of quantifying over the italicized constituent in the following sentence?

- (18) **His parents'* idea has both upset him.

This sentence fails obviously because the quantifier *both* cannot pick out *his parents'* as its argument, but why not?

Some constituency grammars might seek to answer this question by appealing to c-command, the assumption being that the argument of a floating quantifier must c-command its antecedent (e.g. Radford 2004:239, Cirillo

2009:2). Given a DP analysis of noun phrases, however, it is not obvious that an explanation in terms of c-command will work, since such an analysis might take *his parents'* to be a determiner that heads the phrase and thus c-commands out of it.

An approach to the distribution of floating quantifiers in terms of c-command will clearly not work for languages such as Dutch and German, as pointed out by Hoeksema (2012:3), because these languages allow the floating quantifier to precede its nominal, as the following examples from German, taken from Hoeksema, demonstrate:

- (19) a. *Alle* haben sie gelogen.
all have they lied
'They have all lied.'
- b. *Beide* waren sie dabei.
Both were they present
'They were both present.'

The pre-verb position is widely believed to be the most prominent syntactic position, the one position that c-commands everything to its right. Thus there is no way that the subject pronouns *sie* and *sie* in these sentences can be construed as c-commanding the quantifiers.⁴

The relevant insight concerning sentence (18) is that *his parents'* is not an argument of the matrix predicate, but rather it is embedded in an argument of the matrix predicate. In order to be an argument of the matrix predicate, it would have to be directly dependent on it. The rule of quantifier binding is therefore that a floating quantifier can quantify only over an argument of the predicate to which it attaches:

Principle of floating quantification

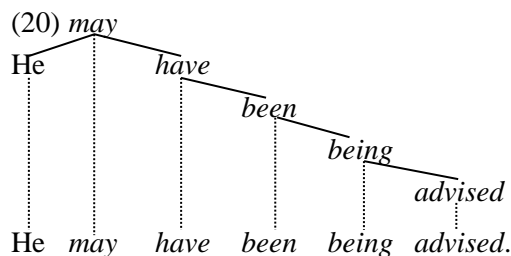
A floating quantifier can quantify only over an argument of the predicate to which the quantifier attaches.

It is important to note that predicates in dependency structures are often multi-word *catenae* (Osborne et al. 2012), that is, they consist of a word or a combination of words that are chained together by dependencies. Thus what

⁴ Unlike German, English never allows a floating quantifier to precede its nominal. The difference across the two languages probably has to do with differences in how topicalization occurs.

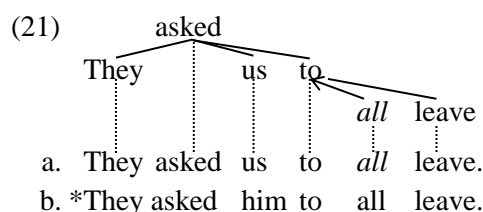
this principle says is that a floating quantifier can quantify over a given nominal only as long as it attaches to any part of the predicate for which that nominal is an argument.

The catena concept as it bears on predicates is illustrated using the following structure:



The matrix predicate is in italics. Each of the auxiliary verbs, starting with the modal auxiliary, is part of the matrix predicate. We know that these verbs are part of the matrix predicate because they do not select any arguments and they thus do not each constitute a separate predicate. They certainly subcategorize for specific syntactic categories, but they do not semantically select any arguments; they contribute only functional meaning to the core of the predicate represented by *advised*. Hence what the principle of floating quantification says is that by attaching to any one of the words of such a predicate catena, a floating quantifier is quantifying over one of the arguments of that multi-word predicate catena.

The principle allows a floating quantifier to attach to a predicate that is embedded under a dominant control predicate, e.g.

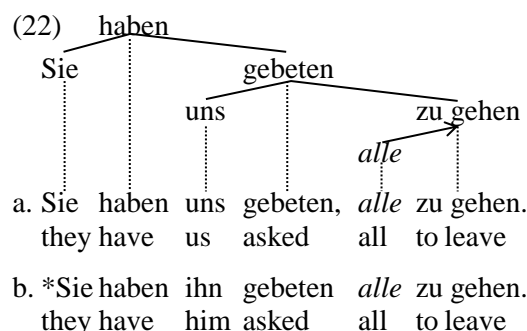


Since the position of the quantifier between *to* and *leave* prevents it from attaching to the matrix predicate *asked*, the quantifier is restricted to quantifying over the argument of the embedded predicate *to...leave*, that argument being *us/him*.⁵ This explains the fact that *all* can-

⁵ The quantifier in (21) is shown as a postdependent of the particle *to*. This analysis is plausible for a couple of reasons, the one being that English prefers right-branching structures, and the other is that there is no evi-

not quantify over *they*, for *they* is an argument of *asked*, not of *to...leave*. Note that a basic trait of control predicates liked *asked* in (21) is that they assign one of their arguments to also be the subject argument of the infinitive predicate that they embed. What this means is that a floating quantifier can attach to an embedded predicate yet still quantify over a dependent of the matrix predicate, as shown in (21).

The principle is also valid for German, e.g.



We again see that when the quantifier attaches to the embedded predicate, it is capable of quantifying over only the one argument of the embedded predicate, *uns/ihn* in this case. Note the status of *all* in (21) as a postdependent of *to* in contrast to *alle* in (22), which is a predependent of *zu gehen*. *Zu*-infinitives in German behave as single words in every respect, hence they are granted just a single node here.

6 Pre- or postdependents?

An aspect of floating quantifiers that has not been addressed so far in this contribution concerns their status as either pre- or postdependents. Do they prefer to be pre- or postdependents of their heads? The answer to this question is not obvious. In fact, an examination of the data suggests that floating quantifiers obey language specific constraints; they are at times predependents of their heads, and at other times postdependents, depending in part on the extent to which the language at hand prefers centrifugal (right branching) or centripetal (left branching) structures.

The fact that quantifiers cannot attach to nouns as postdependents, as illustrated with

dence that floating quantifiers can attach as predependents to infinitives embedded under a finite verb. The issue is touched on below.

examples (7a-b), impacts the analysis of floating quantifiers in relation to auxiliary and full verbs. In particular, it helps motivate the insight that floating quantifiers only reluctantly attach as a predependent to finite auxiliary verbs in English, but they readily attach as predependents to finite full verbs:

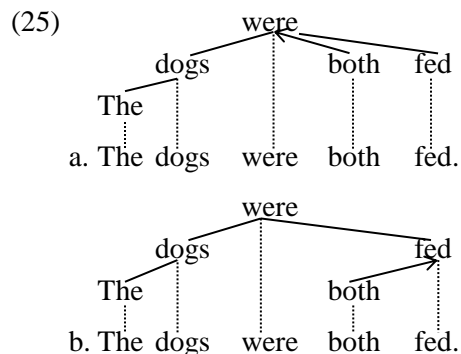
(23) a. [?]The workmen all will show up.

b. The workmen will all show up.

(24) The workmen all showed up.

Sentence (23a) is marginal, the order in (23b) clearly being preferred, whereas sentence (24), where the floating quantifier also immediately precedes the finite verb, is perfectly fine. The reason for this contrast between auxiliary verbs and full verbs is not entirely clear, although as stated above, it probably has to do with prosodic differences between auxiliary verbs, which tend to be unstressed, and full verbs, which tend to be prosodically more prominent. Floating quantifiers prefer to attach as postdependents to prosodically weak words in English. If such a word is not available, only then do they readily attach as a predependent to a prosodically more prominent word.

Despite the fact that sentence (23a) is not very good, examples like (24) demonstrate that floating quantifiers can easily attach to verbs as predependents. But this insight does not clarify whether a floating quantifier that appears between two verbs of a predicate catena is a pre- or postdependent. For instance, which of the following two analyses is correct?



Three considerations support the analysis shown in (25a) over the one in (25b). The first is that English VPs are by and large right branching. In this regard, the analysis in (25b) would necessitate viewing *both fed* as a left-

branching VP, which does not seem right for English.

The second consideration supporting (25a) over (25b) has to do with the category status of the floating quantifier. One can make a case that floating quantifiers can be nominals, since quantifiers can appear as argument dependents of verbs, e.g. *All is good*, *We saw both (of them)*, etc. Nominals do not generally attach to nonfinite verbs as predependents in English. The analysis in (25a) accommodates this fact, whereas the analysis in (25b) contradicts it.

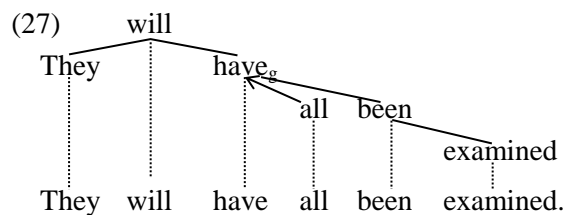
The third consideration supporting (25a) over (25b) is evident when a measure adverb appears in addition to the floating quantifier, e.g.

(26) a. The dogs are all completely fed.

b. *The dogs are completely all fed.

Measure adverbs attach directly to the predicate word that they modify. They can be displaced with their head, e.g. *Completely fed, the dogs definitely were*. If *all* were a predependent of *fed* in (26), we would expect both sentences to be acceptable. Since only (26a) works, we can assume that *all* is not attaching to *fed* as a predependent, but rather it must be a postdependent of *are*.

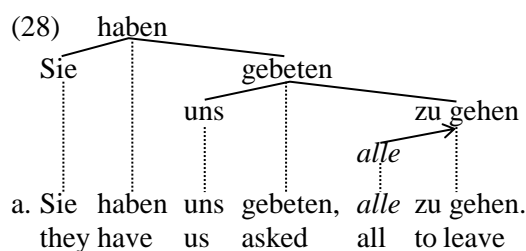
The analysis can be extended to similar cases such as (15) above, which is repeated here as (27):



The floating quantifier is taken as a postdependent of *have* as opposed to as a predependent of *been*. The three considerations enumerated for examples (25) and (26) extend to this case, where the quantifier appears lower in the structure.

Applying the reasoning to further cases, the account here sees floating quantifiers as pre- and postdependents of finite verbs, but generally only as postdependents of nonfinite verbs in English (overlooking an exception discussed below). This analysis does not extend to Ger-

man, however, since there is clear evidence that floating quantifiers can be predependents of nonfinite verbs in German. Example (22) from above is repeated here as (28):



The analysis shown here, where *alle* is a predependent of *zu gehen*, is the only plausible analysis for two reasons: because *zu*-infinitive phrases tend to behave as single constituents in German and because the only alternative would be to position the quantifier as a postdependent of *gebeten*, which cannot be correct, since the nonverbal dependents of nonfinite verbs in German are by and large predependents, not postdependents.

The long and the short of these considerations is that nonfinite verbs in English take floating quantifiers as postdependents in line with the tendency for nonfinite VPs in English to be right branching. In German in contrast, floating quantifiers attach to nonfinite verbs as predependents in line with the tendency for nonfinite VPs in German to be left branching.

7 Predicate catenae

The observations and reasoning employed above do not make the correct prediction for floating quantifiers in nonfinite clauses. When the floating quantifier appears in a clausal constituent the head of which is a participle, for instance, the quantifier has the option to precede or follow the participle, e.g.

- (29) a. The beers all tasting the same, ...
 b. The beers tasting all the same, ...

- (30) a. The boys both having been examined, ...
 b. The boys having both been examined, ...

The same optional position occurs in nonfinite clauses even when the predicate is not a verb form, e.g.

- (31) a. With the two girls both in love with it, ...
 b. With the two girls in love with it both, ...

These data suggest that the generalization arrived at in the foregoing section cannot be correct. Nonfinite verb forms can in fact take floating quantifiers as predependents in English, as the a-sentences in (29-31) demonstrate.

To accommodate these additional data, the role of predicate catenae can be acknowledged. The relevant criterion for determining when a floating quantifier can be a predependent concerns the root word of the predicate catena involved. A floating quantifier can precede or follow the root word of a predicate catena, regardless of whether this root word is a finite verb or not. Below this root word, however, a floating quantifier can attach to a nonfinite verb only as a postdependent:

Distribution of floating quantifiers in English

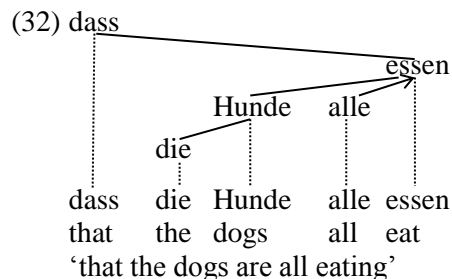
Floating quantifiers in English can attach as a pre- or postdependent to the root word of a clause predicate, or as a postdependent to a nonfinite verb below the root.

The principle is similar for German, the only difference being that the quantifiers attach as predependents to the nonfinite verbs below the root, not as postdependents:

Distribution of floating quantifiers in German

Floating quantifiers in German can attach as a pre- or postdependent to the root word of a clause predicate, or as a predependent to a nonfinite verb below the root.

Of course this rule cannot flout the V2 principle, meaning that floating quantifiers in German cannot precede the finite verb of a matrix V2 (or V1) clause – see example (8a) above. They can easily precede a finite verb in VF clauses, though, e.g.



In sum, the distribution of floating quantifiers in English and German is similar, the same basic principle of distribution determining where they can appear. The differences that do exist across the two languages are explained by overarching principles of word order, i.e. SV vs. V2 word order and left vs. right branching VPs.

8 Enigmatic behavior

The two principles just produced are necessary conditions on the distribution of floating quantifiers, but they are not sufficient ones. There are a couple of outstanding issues that can now be addressed, however briefly. The first concerns the special behavior of *all*. As noted a couple of times above, the distribution of *all* seems to be determined in part by prosodic factors; it prefers to attach as a postdependent, rather than a predependent, to a prosodically unstressed element. Other quantifiers are more flexible, e.g.

- (33) a. They will all solve the problem.
 b. *They will solve the problem all.
 c. They will solve the problem all before noon.
- (34) a. They will both solve the problem.
 b. ?They will solve the problem both.
 c. They will solve the problem both before noon.

The contrast in acceptability across the b-sentences must be due to prosodic factors, the weak quantifier *all*, which lacks an onset, seems to be prosodically reliant on some other word in context; it cannot appear in the prosodically prominent spot at the end of sentence. The quantifier *both*, in contrast, which has an onset, can appear in sentence final position, although its appearance there is also not so good. When something follows the quantifier as in the c-sentences, acceptability improves markedly in both cases. Thus these data demonstrate that prosodic considerations are an additional factor influencing the distribution of floating quantifiers.

Perhaps the most enigmatic trait of floating quantifiers in English is their reluctance to ap-

pear as a postdependent of a nonfinite form of the auxiliary *BE*, e.g.

- (35) a. The guests will each be fed.
 b. ??The guests will be each fed.
- (36) a. They will all be trying hard.
 b. ??They will be all trying hard.
- (37) a. The two will have both been sneaky.
 b. ??The two will have been both sneaky.

There is a significant decrease in acceptability moving from the a- to the b-sentences. The source of this decrease is unclear, though, since the quantifier can easily attach as a postdependent to a form of *HAVE*, which is also an auxiliary like *BE*, as example (37a) demonstrates.⁶

While it is unclear at this point why a nonfinite form of the auxiliary *BE* does not readily accept a floating quantifier as a postdependent, one should note that the problem is not restricted to quantifiers. Modal adverbs are also reluctant to appear immediately after a nonfinite form of *BE*, e.g.

- (37) a. They will probably be helpful.
 b. ??They will be probably helpful.
- (38) a. She has certainly been doing the work.
 b. ?She has been certainly doing the work.

What these examples show is that the unwillingness of floating quantifiers to attach to nonfinite forms of *BE* is not restricted to them, but rather it is an aspect of the distribution of certain adverbial elements in general. These elements dislike the position between nonfinite *BE* and a full verb or other part of the predicate.

9 Conclusion

To conclude, the four highlights of the DG account of floating quantifiers presented above are repeated here:

⁶ One possible explanation might have to do with the fact that nonfinite *have* cliticizes to other words, whereas nonfinite *be*, *been*, and *being* never do, e.g.

- (i) We would've done it.
 (ii) *We would'e happy.
 (iii) *We would have'n happy.

This observation suggests that nonfinite forms *HAVE* may in fact be prosodically weaker than nonfinite forms of *BE*.

Floating quantifier

A quantifier is floating if, for whatever reason, it cannot be construed as a dependent of the nominal it quantifies over.

Principle of floating quantification

A floating quantifier can quantify only over an argument of the predicate to which it attaches.

Distribution of floating quantifiers in English

Floating quantifiers in English can attach as a pre- or postdependent to the root word of a clause predicate, or as a postdependent to a nonfinite verb below the root.

Distribution of floating quantifiers in German

Floating quantifiers in German can attach as a pre- or postdependent to the root word of a clause predicate, or as a predependent to a nonfinite verb below the root.

And to restate these highlights in other words, a quantifier is floating if it cannot be construed as a dependent of the nominal over which it quantifies. Floating quantifiers attach to predicates and quantify over an argument of these predicates. Their category status is that of a nominal, which means they distribute like nominals. In English, they tend to appear as postdependents of nonfinite verbs just like other nominals, and in German, they tend to appear as predependents of nonfinite verbs just like other nominals. When they attach to the root of a predicate catena, they can be a predependent or a postdependent, whereby prosodic factors can influence which is preferred.

A final comment considers the DG approach to floating quantifiers presented above in comparison to previous accounts, all of which are, to the best of my knowledge, constituency-based. While notions such as *catena*, *head*, *dependent*, *predicate*, *predependent*, and *postdependent* can be defined over constituency-based structures, doing so is more laborious, since the phrasal nodes complicate matters. In this respect, the DG approach presented here can claim superiority by virtue of its minimalism.

References

- Robert Cirillo. 2009. *The syntax of floating quantifiers: Stranding revisited*. Doctoral dissertation, University of Amsterdam. Utrecht: LOT.
- David Dowty and Belinda Brodie. 1984. A semantic analysis of floated quantifiers in transformational grammar. *Proceedings of the West Coast Conference on formal linguistics 3*. Stanford: Stanford Linguistics Association, Stanford University.
- Denys Duchier and Ralph Debusmann. 2001. Topology dependency trees: A constraint based account of linear precedence. *Proceedings from the 39th annual meeting of the Association Computational Linguistics (ACL) 2001*, Toulouse, France, 180-187.
- Gerdes, K. and S. Kahane. 2001. Word order in German: A formal dependency grammar using a topology model. *Proceedings from the 39th annual meeting of the Association Computational Linguistics (ACL) 2001*, Toulouse, France, 220-227.
- Thomas Groß and Timothy Osborne. 2009. Toward a practical dependency grammar theory of discontinuities. *SKY Journal of Linguistics 22*: 43-90.
- Jack Hoeksema. 2012. Floating quantifiers, partitives and distributivity. Freely downloadable from ebooks (March 2013).
- Timothy Osborne, Michael Putnam, and Thomas Groß. 2012. Catenae: Introducing a novel unit of syntactic analysis. *Syntax 15*(4): 354-396.
- Andrew Radford. 2004. *English Syntax: An Introduction*. Cambridge, UK: Cambridge University Press.
- Dominique Sportiche. 1988. A theory of floating quantifiers in transformational grammar. *Linguistic Inquiry 19*: 425-449.
- Jonathan Bobaljik. 2003. Floating quantifiers: Handle with care. In Lisa Cheng and Rint Sybesma (eds.), *The Second GLOT International State-of-the-Art Book*. Mouton de Gruyter. Freely downloadal from ebooks (March 2013)