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Motivating Floating Quantifiers

LISA ROCHMAN
Ben Gurion University

THE RELATIONSHIP BETWEEN information structure and prosody on the one hand, and the placement of “little words” on the other, is being explored in many languages in relationship to many different linguistic phenomena. In this chapter floating quantifiers (FQs) are shown to be a prime example of little words that are influenced by both prosody and information structure.¹ FQs in English are of particular interest because they are among a minority of elements that display some freedom in their placement in this fixed word-order language. This chapter investigates the relationship between FQs, information structure, and prosody and shows that FQs mark the focus and can be viewed as a type of focus marker whose placement is impacted by the prosody of the language.

Floating Quantifiers
There are three quantificational words in English that can appear in noncanonical positions, reportedly without a change in meaning: all, both, and each (Sportiche 1988).²

1. All the children have greeted the teacher.
2. The children (all) have (all) greeted the teacher.

In (1) the quantifier is in the canonical position for determiner quantifiers.³ In contrast, the positions in (2) can only be occupied by FQ, as other quantifiers are ruled out, for example, (3).

3. The children (*some/*many/*every) have (*some/*many/*every) greeted the teacher.

Although informants note no difference in sentences with an FQ as opposed to a non-floating quantifier, there are consistent patterns of usage in natural speech. The existence of these patterns indicates that the choice between the nonfloating and floating word order is not haphazard or stylistic. This chapter addressed the following two questions regarding FQs:⁴

4. a. What motivates the change in word order?
   b. What determines where the moved element occurs?
While a large body of work on FQ exists, its focus has been on syntactic accounts of how the FQ comes to occupy its noncanonical position. The following section addresses question (4a), the motivation for the use of the floated word order. It is shown that information structure is the motivating factor in quantifier floating (q-float); FQs precede foci. The subsequent section then investigates question (4b), the positions where the FQ can occur, and concludes that this is determined by prosody.

Floating Quantifiers as Focus Markers

Focus Structure and Meaning of all

Before investigating what motivates q-float, this section presents the model of information structure used. Some of its concepts play a crucial role in the meaning that the FQ contributes to the sentence, and an informal approach to the semantics of all, based on Bobaljik (1995) and Dowty and Brodie (1984), is presented here. It is shown that all forces the predicate to be maximal in relationship to the subject, and this “maximizing” interacts with focus structure in that it produces a contrastive focus that results in a sentence that has a reduced tolerance for alternatives.

Bobaljik (1995), based on Dowty and Brodie (1984), argues that the FQ all “causes the predicate to be maximal with respect to a group (or mass) argument” (Bobaljik 1995, 194). Bobaljik views this as a type of strengthening—reducing the predicate’s tolerance to weakening (1995, fn. 3, 201). Compare the following:

(5) The reporters harangued the candidate.

(6) The reporters all harangued the candidate.

(Babaljik 1995, 198, citing Dowty 1986)

Sentence (5) is true if the majority of reporters harangued the candidate; the sentence is not falsified by a few reporters who did not participate in the haranguing. On the other hand, (6) is argued to be falsified by even one reporter not participating in the haranguing. I propose an addition to Bobaljik’s claim: FQs also reduce the tolerance for alternatives. This will be shown to produce the equivalent of a contrastive focus within which the alternative member(s) of the set have been eliminated as possible answers. It is the interaction of the FQ and the focus that contributes this contrastive interpretation. Some information structure basics are in order at this point.

This chapter adopts Erteschik-Shir’s (1997) model of information structure termed focus structure (f-structure). Within this approach, every sentence contains both a main topic and a main focus and may contain subordinate (embedded) focus structure with further non–main topics and foci. Topic is defined as what the sentence is about, the pivot for assessment, while focus is what the speaker intends to direct the hearer’s attention to, the answer to a wh-question. Crucial for us is Erteschik-Shir’s restrictive and contrastive foci.

With contrastive foci, as in (7a), there is direct contrast between the members of the set, here Janet and Ann (underlining signals focus). And selection of one member results in the elimination of the other members (7b) of the set as a possible answer.

(7a) Janet and Ann

(7b) Janet

(Erteschik-Shir 1997)
(7) Q: Who wants to marry John, Janet or Ann?
   A: Janet wants to marry John.
   B: Janet wants to marry John. And I think Ann wants to also. (Erteschik-Shir 1997, 12)

Janet is selected from the set of \{Janet, Ann\}, and Ann is eliminated as a possible answer.

Restrictive foci require a specified contrast set to be available in the discourse, as in (8), but the contrast does not need to be direct, and the selection of a member of the set does not result in the elimination of other members as possible answers (8b).

(8) Q: Which one of John’s friends wants to marry John?
   A: Janet wants to marry John.
   B: Janet wants to marry John. And I think Ann wants to also. (Erteschik-Shir 1997, 12)

Janet is selected from a set of possible (female) friends of John’s, and the other members of the set remain as possible answers.

We turn now to see how f-structure influences q-float. The following examples show that FQs precede foci and the maximalizing function of all interacts with f-structure resulting in potential alternatives being eliminated. In this way, all delineates the focus but also eliminates the possibility for alternatives.

**Floating Quantifier Usage**

The proliferation of FQ in sentences with pronouns, but not with full DPs, serves as an initial indicator that there may be an association between FQ and f-structure. Pronouns, when not used deictically, necessarily refer to something already in the discourse and therefore are obligatorily topics. Results obtained from analysis of a corpus showed that the frequency of FQs floated from pronouns make up over 96 percent of the cases, while FQs floated from full DP encompass less than 3 percent of the cases of FQs found in my investigation of a natural speech corpus.

In the following examples we see the usage of floating and nonfloating quantifiers in conjunction with pronouns and full DPs. All examples are taken from natural speech corpora in order to ensure that the data obtained are representative of how speakers actually use FQ.

Example (9) is the quintessential example of an FQ and a pronoun; the quantifier floats from a pronoun and occurs before the predicate that is the focus.

(9) . . . and the brothers in that apartment, they were gonna go out and knock on all the doors, in their apartment, invite people to come to the worship service, cause no one could get out, they were all snowed in. (SBC file 20)

The focus of the sentence in (9) is snowed in: this implies “unable to leave.” All strengthens the predicate and eliminates any other possible meanings such as “leaving,” “leaving being difficult but possible,” “leaving being delayed but possible,” and
so on. Although there is no overt contrast set here, *all* eliminates the possibility of any alternatives to the focus.

Example (10) is another case of an FQ and a pronoun.

(10) He—but was such a wimpy
    Kim: physically . . . weak, uh person
    Evelyn: and they *all* had asthma (SBC 022)

In the discourse prior to this excerpt several family members were introduced. In (10) Kim states that the people under discussion were physically weak. This introduces a restrictive set of reasons for physical weakness, perhaps something such as {ill health, asthma, emotional influences, etc.}. *Asthma* is selected from this restrictive set. The FQ facilitates the elimination of the other members of the set.

We turn to a case with a nonfloated quantifier and a full-DP subject.

(11) a. it was not a clean broadcast system
    b. Like everything in the room,
    c. *all* the metal objects would be receiving it constantly. (SBC 017)

In (11) the *metal objects* is being specified; what has been contextually established is that there are things in the room (11b), and then the speaker specifies which of these things are under discussion (11c) and eliminates the other things in the room. Therefore in this sentence the DP *the metal objects* functions as a contrastive focus, and we note that the quantifier does not float.

In the previous examples we saw FQ floated from pronouns but not from full DPs and a correspondence between the information structure and the use of the floated or nonfloated word order. Here we explore those cases that defy the pattern of FQ floating from pronouns but not full DPs and look for an explanation that holds across the nonstandard cases. The explanation is found in the f-structure status of the constituent following the FQ.

In example (12), the subject, *my family*, is the topic of the sentence, and the object, the location *Indiana*, is the contrastive focus of the sentence.

(12) Lajuna: I won’t go to Indiana, see I don’t have any family in Wisconsin
    My family’s *all* in Indiana. (SBC 044)

In this case we have a contrastive focus with the set encompassing {Wisconsin, Indiana}. Note the degraded status of the following continuation:

(13) I won’t go to Indiana, see I don’t have any family in Wisconsin
    #My family’s *all* in Indiana except for a few relatives in Wisconsin.

The continuation in (13) is degraded because *all* forces the second member of the set, *Wisconsin*, to be eliminated upon focusing the alternative member of the contrast set, *Indiana*. While FQs in natural speech usually float from pronouns, this example shows that when a speaker wants to emphasize the focus and create a contrastive focus they may opt to use an FQ. In this sentence the contrastive focus was direct, but
what about cases where there is no overt contrast set specified before the focus? Such a case, taken from a natural speech corpus, is shown in (14).

(14) when you start pumping if your well has a large enough diameter, the water's all coming from the well, it's not coming from the aquifer.

The focus of this sentence is the place the water is coming from, *the well*. Because the speaker is contrasting water coming from the aquifer with water coming from the well, this is a case of contrastive focus. I would venture to say that *all* in this case alerts the listener that a contrastive focus follows and thus the contrast set occurring after the focus is not a problem.

In (15), like (14), we have a full DP and an FQ, and the restrictive set is specified after the selection of one member.

(15) . . . like the kids are *all* into pokemon right now and it uh they have these fads that go through (Pitt et al. 2006, 1702b)

The speaker is selecting *Pokémon* from a set of possible fads. In this sense there is contrast between *Pokémon* and other fads, and it is a contrastive focus. Note that the following continuation does not follow well.

(16) # . . . but like the kids are *all* into pokemon right now and into Barney as well.

This continuation is odd because the sentence seems to be saying that the current fad is *Pokémon* and not something else. The same sentence as (16) without the FQ is perceived as better. The subject, *the kids*, is the topic. What we have here is a topical subject with an FQ occurring before a contrastive focus. These examples show that it is not the presence of a pronoun (or absence of a full DP) that dictates q-float but instead the f-structure roles of the elements involved.

The opposite case also occurs: a quantifier not floating from a pronoun. In the following sentence the subject is a contrastive focus and the object is the topic.

(17) a. LORI: Who was at Howard's End at the end?
   b. I thought it was Helen and the little boy.
   c. Linda: No, . . . *all of em* were at Howard's End. (SBC 023)

In (17c) the contrastive focus of the sentence is *all of them*. It is the quantifier itself, which is the contrastive element. In the discourse already are the members of a particular family, and these members form a restrictive set. The first speaker selects two members, and the second speaker contrasts these selected members with the entire group. In (17c) the focus of the sentence is the subject, and a nonfloated quantifier is employed. Because the focus is not in the predicate, there is no motivation for q-float.

The behavior of quantifiers and pronouns occurring sentence finally is an interesting test case for the idea proposed here. We have already discussed the tendency for FQ to float from pronouns. When we find pronouns and quantifiers occurring at the ends of sentences, we frequently find the nonfloated quantifier, although the
floated order is perfectly acceptable. In (18) we have a pronoun and a nonfloating quantifier occurring sentence finally.

(18) JOANNE: how can you remember all of them. (SBC 015)

This tendency for nonfloated quantifiers occurring sentence finally is a reflex of the fact that FQs occur floated before foci. Sentence finally, there is no motivation for floating. If we take the FQ to occur in order to mark the following constituent as the focus, sentence finally q-float is not motivated.

Last, we look at one more set of data that illustrates that informants perceive what follows the FQ to be the focus, and in particular a contrastive focus. In order to ensure that informants do perceive the FQ as marking what comes after it as focal, informants were given sentences and asked to choose the question that they corresponded to. In view of the fact that the foci can be identified by a wh-question (as mentioned earlier), these results show the determination of the focus based on the presence of the FQ. Informants were presented with sentences similar to (19).

(19) The children put the dogs all in cages.

The possible questions were as follows:

(20) Who put the dogs in cages? (subject focus)
(21) Did the kids put the dogs in boxes? (contrastive indirect object focus)
(22) What did the kids put in cages? (direct object focus)
(23) Where did the kids put the dogs? (indirect object focus)
(24) What did the children do? (VP focus)

(21) and (23) were most frequently selected as the most likely possible questions corresponding to the answer in (19). In order to ensure that it is the FQ that creates this interpretation, informants were asked to correlate (25), without the FQ, to one of the previously mentioned questions.

(25) The children put the dogs in cages.

The majority of informants opted for (24), which asks for a VP focus. Evidently, the presence of the FQ ensures that the focus is on the indirect object (IO), while in the absence of the FQ there is no favoring toward IO focus (see Göbbel 2005).

Examples (9) through (18) are representative of the use of floating/nonfloating quantifiers in natural speech. The predominance of FQ with pronouns and corresponding lack of FQ with full DPs indicate minimally that there is a correlation between pronouns and quantifier floating and full DPs and nonfloating. Bošković (2004, 706) proposes that DP objects overtly shift in English and that pronouns undergo further movement (cliticisation) to a higher position. Q-float occurs when the pronoun raises higher, and this accounts for the lack of q-float with full-DPs. A puzzling issue here is that in natural speech we find weak pronouns and no q-float (all’v’em), particularly sentence finally. The weak pronoun is expected to raise. We also find q-float from nonweak pronouns, again unexpected in an approach of this type. An f-
structure approach predicts that FQ will be found more frequently with subject pro-
nouns because, if the subject is the topic, most likely the focus will occur in the pred-
icate, and FQs occur before foci. Examples (19) and (25) ensure that it is indeed f-structure that determines the use of the FQ. What we have seen is that there is a strong correlation between the f-structure of a sentence and the presence and absence of an FQ.

The FQ *all* in a sentence leads to the results in which the following constituent is interpreted as a contrastive focus. As such, the FQ can be viewed as a focus marker. F-structure, though, plays no role in determining the exact position of the FQ within the linear string. In the next section I explore the positions that FQs occur in and show that that is determined by the prosody.

**The Phonology of Quantifier Float**

In this section I turn to the second question posed at the outset of this paper: What determines where the FQ can occur? In the previous section I showed that the determination to use the floated or nonfloated order was based on the information structure of the sentence. The determination to use the floated order still leaves open the exact linear position in which the FQ occurs. I take the syntactically allowed positions as a starting point and show that the position of the FQ in the linear string is determined by the prosody of the language. For reasons of space, I limit the discussion to sentences with full-DP subjects and auxiliary verbs. The idea that prosody plays a determining role when the syntax allows more than one word order is not new (see Guasti and Nespor 1999, among others). Moreover, I show that the patterns of FQ placement in natural speech are a result of prosodic constraints in the language, and this in turn can explain the absence of certain word orders in natural speech.

The prosodic structure of English is crucial to understanding FQ placement, so first I present a very brief overview of it. Syntax-prosody mapping is often couched in Optimality Theoretic constraints, and here I briefly present a few mapping constraints: Align-XP/R and Wrap-XP (Selkirk 2000; Truckenbrodt 1995, 1999). The former states that for every XP there is a phonological phrase such that the right edge of the XP corresponds to the right edge of the phonological phrase. Wrap-XP states that every XP is contained in one phonological phrase. In addition to these constraints, there is the Align-Focus, R, a constraint requiring the alignment of the right edge of a focus constituent with the right edge of a prosodic phrase. Within each phonological phrase there must be, minimally, one accented syllable (Selkirk 2000, among many others). In English the default position for the phrase level accent is rightmost.

An additional constraint, outside the optimality theory (OT) framework, on English prosody is discussed by Speyer (2005), who notes a rule of English intonation that he termed the *Trochaic Requirement* (TR). This rule requires a weak element between two accents:

(26) (o) Ó o Ó o . . .

(Speyer 2005, 7)

Following Speyer, this weak element can be either a phonologically weak word or a pause.
Summarizing the effect of these constraints on English, thus far we know that we commonly find the following:

(27) a. The subject is in its own phonological phrase while the object can phrase with the verb
   b. There is a prosodic boundary to the right of the focus
   c. Every phrase must have an accent
   d. There cannot be two adjacent accents (TR)

What does this predict for sentences with an FQ? First, I note that the syntax allows the FQ to occur in several positions.\textsuperscript{13}

(28) The children (all) might (all) have (all) greeted the teacher.

Because none of these positions result in an ill-formed sentence, we expected to find instances of all these word orders in natural speech. But that is not the case. FQs only occur in the last position in natural speech. I explore the absence of FQ in the two nonutilized positions in turn.

Example (29) illustrates the first possible position that the FQ can occur in; the FQ occurs to the right of the DP.

(29) The children all have greeted the teacher.

We could logically conceive of two possible ways that this could be phrased, with the DP separate from the FQ (30) or with the DP phrased with the FQ (31).

(30) (The children) (all . . .)
(31) (The children all)

Brisson (1998), among others, has shown that the pronoun + FQ unit does not form a constituent. The same can be shown of DP + FQ—it does not form a constituent. Therefore there is no reason to assume that the DP + FQ must phrase together. The prosodic strength of FQ has been noted repeatedly (McCloskey 2000, among others). FQs are consistently pitch accented. Because FQs are not prosodically weak, they cannot be phrased with the DP, which is usually pitch accented, without violating TR. Welby (2003, citing Nakatani 1997) notes that the literature shows that even nonfocused DP subjects are frequently pitch accented and occur in their own phonological phrase (PPh). Thus, not surprisingly, we find informants use (30) and not (31).

This predicts that if there is an auxiliary verb the FQ will phrase with the weak auxiliary verb, as in (32), and thereby avoid any prosodic violations.

(32) (The children) (all have seen the movie).

Natural speech confirms that when there is an FQ and a full DP the quantifier occurs phrased with the auxiliary verb and not the full DP. But the word order we get is not the one in (32). Instead, the FQ occurs to the right of the auxiliary verb.\textsuperscript{14}

(33) (The children) (have all . . .)
(34) (The children’ve)(all . . .)
If there are several weak function words, the FQ occurs to the right of the final one, as in (35).15

(35) (The children) (might have all . . .)

This could stem from a preference to place heavier elements at edges (Selkirk 1995). For example, Guasti and Nespor (1999) discuss the preference in coordinated structures to place the heavier element second (to the right). Because informants find no meaning difference or grammatical problem with the FQ in any position in regards to the auxiliaries, the syntax and semantics must be neutral to the placement of the FQ, and it is the prosodic/phonological component determining the placement. The FQ occurs to the right of the auxiliaries because it is the heavier constituent of this group and heavy constituents are preferred rightmost—as close to the edge as possible.16 Because we frequently get a prosodic boundary following the FQ, this placement provides an added bonus that may not be haphazard—a boundary between the topic and focus is formed.

Conclusion

The relationship between FQ and information structure has been overlooked in the literature on quantifier float. This chapter has explored the motivation for q-float and showed that it is f-structure that provides this motivation. Quantifiers that occur in floated positions do so in order to mark a focus that follows them. The final placement of FQ has been shown to be determined by the prosody of the language. FQs are dependent on information structure for determining if their presence is warranted, syntax for determining their possible positions, and prosody for determining their final position. This forces us to assume that their position is fixed at the phonetic form (PF) interface.

NOTES

1. I would like to thank Nomi Erteschik-Shir for her help and support during this research. This work also benefited from the comments and feedback of the participants of GURT 2007.
2. It is argued that there are scope differences. See Bošković (2004) for a syntactic account of this and Rochman (unpublished manuscript) for an information structure account of the scope differences.
3. The status of all (determiner, quantifier, etc.) will not be dealt with here.
4. This chapter confines itself to all, for reasons of space.
5. For a survey of the work on FQs, see Bobaljik (2001). The questions of motivation and placement have been addressed for Korean, where it was shown that the hierarchical focal status of the quantifier in reference to other constituents determines its location (Han 1999). McCloskey (2000) discusses the role of prosody in q-float in West Ulster English. In exploring the semantics of all, floated and none, some researchers have dealt with meaning differences that could be interpreted as motivation for using an FQ.
6. See Brisson’s (1998) arguments that it is the sentence without all that can be subject to pragmatic weakening while the sentence with all is not vulnerable to this. (See also Bobaljik 1995, 199 fn 2.)
7. This in some ways is similar to the claim made for any by Kadmon and Landman (1993). But they propose that any differs from all in that only the former has the widening effect that causes the reduced tolerance for exceptions.
The interaction is presented informally; the formal semantics of this interaction need to be fleshed out.

This is based on a count in the Santa Barbara Corpus (Du Bois et al. 2000; Du Bois et al. 2003; Du Bois and Englebretson 2004). Some utterances were not included in the statistics. Due to space constraints, I refer the reader to Rochman (unpublished manuscript) for a full explanation of the criteria.

See Rochman (unpublished manuscript) for a breakdown of the behavior of sentence final pronouns/FQ in natural speech.

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Lasnik (1999) uses height test to show that object pronouns are higher than full DPs (Bošković 2004).

In English, Wrap-XP and Align-XP, R, are argued to be equally ranked (Selkirk 2000).

FQs that occur in positions that result in syntactic violations are completely ill formed and judged as impossible by informants (see McCloskey 2000).

Note that phrasing could be as in (a) as the addition of the weak auxiliary prevents any violations of TR. See Rochman (unpublished manuscript) for a discussion of this.

(a) (The children’ve all) (seen the movie).

With the exception of been.

For an account of how the FQ comes to occupy this position, see Rochman (unpublished manuscript).

REFERENCES


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