The Phonology of floating quantifier placement

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Recently many phenomena that have long been analyzed as syntactic are being re-examined from a prosodic perspective. Floating quantifiers (FQ) have been subjected to in depth syntactic analysis since the 1970s in order to determine how the FQ comes to occupy its final position (Sportiche 1988, Merchant 1996, Bobaljik 1995, Bošković 2004). What is left unexplored by this research is the motivation and determination of the FQ’s final position- the question of why and not how. It is here that we find phonology playing a crucial role. I will show that phonological constraints play a significant role in the determination of the final position of FQs.

1. Introduction

Floating quantifiers are elements that can occupy any one of several different possible locations without a change in meaning.

1. a. The carpets have been cleaned.
   b. The carpets have been all cleaned.
   c. The carpets have all been cleaned.
   d. The carpets all have been cleaned.

There are two theories of FQ placement; the stranding approach and the adverb approach. The stranding approach takes the FQ and the DP to be base generated together in Spec, VP. As the DP moves cyclically to Spec, TP the FQ can accompany the DP, remain in the base position or be stranded in any intermediate. The adverb approach, on the other hand, takes the FQ to be an adverb attached to the left edge of an XP. FQ are claimed to pattern like sentential/modal adverbs. These approaches each succeed to variable degrees in explaining how the FQ comes to occupy its final position. Neither approach though seeks to explain why the FQ appears in a specific floated position as opposed to another floated position.

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In simple sentences the question of why the FQ occurs in one position instead of another may seem to be a superfluous question. In (2) if the quantifier floats there is only one possible floated position for the FQ to occupy.

2. a. All the children saw the movie.
   b. The children all saw the movie.

In (2)b the FQ occupies the only possible floated position. The same cannot be said for (3) where there are several possible positions that the FQ could occur in.

3. a. All the children might have seen the movie.
   b. The children might have all seen the movie.
   c. The children might all have seen the movie
   d. The children all might have seen the movie

In (3)b-d the quantifier is floated and can felicitously occur in any of the three positions. The main theories of q-float focus on explaining how the quantifier can occur in the different positions but not why it will occupy one position over another.\(^2\) In this paper I will investigate the role of phonology in determining the why the FQ occurs in the final position that it does in a given sentence.

2. Why Phonology?

An obvious question at this point is why is there an expectation that phonology is involved in the placement of floating quantifiers? Phonological constraints affect word order. It has been shown in many languages that word order is affected by phonological constraints, even closer to home phonology has been shown to affect the placement of FQs in one dialect of English.

In West Ulster English (WUE) FQ placement is highly influenced by prosodic constraints in the dialect. McCloskey (2000) examined q-float in West Ulster English, which is the only dialect of English which allows wh-quantifier float.

\(^2\) Even if one wanted to argue for scope differences with the quantifier and modal, it would be quite difficult to argue for that in 23 b.c.
4. a. What all did he say (that) he wanted t?
   b. What did he say (that) he wanted all?
   c. What did he say all (that) he wanted t?

5. Where do you think all they’ll want to visit t?

6. Who did Frank tell you all that they were after t?

Syntax alone cannot fully explain FQ placement in WUE. McCloskey, a proponent of the stranding approach, takes the FQ and DP to be base generated together and move cyclically to Spec, CP. The FQ can be stranded in any position the wh-FQ occupied as it cyclically raises. This explains how the FQ can come to occupy its position but it does not explain why the FQ will occupy one position as opposed to another. In order to explain this, the prosody of the utterance must be investigated. McCloskey claims that there are prosodic requirements in addition to the syntactic ones. The FQ must be in a position where it can prosodically incorporate with the lexical verb

7. a. What all did you put in the drawer last night?
   b. What did you put all in the drawer last night?
   c. ?What did you put in the drawer all last night?
   d. *What did you put in the drawer last night all?

The syntactic and prosodic requirements are met in (7)a,b. In (7)c the syntactic requirement is fulfilled but the prosodic requirement is not while in (d) neither requirement is satisfied. As illustrated by (7)c even when all is in a syntactically possible location, a position the DP and FQ unit passed through, if the FQ can not be prosodically incorporated into the verb the sentence is degraded but not unacceptable. McCloskey argues for overt object shift.

What McCloskey found was that the syntax provides the possible location for the FQ to occur in and then prosodic requirements determine which of the possible
position the FQ will occupy. This data strongly implicates prosody as playing a significant role in determining FQ placements.

3. Phonology and prosody

3.1 Overview

I propose that it is phonological and prosodic constraint that I determine where the FQ will occur in sentences like (8).

8. The children (all) have (all) greeted the teacher.

Most informants have clear consistent judgments on where they favor all in (8) in an out-of-the-blue context. The preferred position for all is right adjacent to weak auxiliary verbs.

9. The children have all greeted the teacher.

When there is no option for all to occur right adjacent to a weak auxiliary verb then adjacent to modal verbs is the preferred choice.

10. The children can all greet the teacher.

In all cases the least favored position is for all to occur right adjacent to a full DP.

11. The Siberian Huskies all have been de-wormed.

When the subject is a pronoun then the FQ is still favored adjacent to the auxiliary verb but is not considered degraded if it occurs adjacent to the pronoun.

12. You all have greeted the teacher.
Additionally if there is a non-pitch accented monosyllabic DP, as in (13), the FQ is not favored right adjacent to it, but it is not considered highly degraded when it occurs in this position.4

13. The men all greeted the teacher.

Informants favor all adjacent to weak function words but accept all, as degraded but possible, right adjacent to pronouns and in some cases unstressed DP. In short all favors being adjacent to phonologically weak words.

3.2 Prosodic Incorporation

Having established that all is favored occurring right adjacent to phonologically weak words, the question now is why. In order to understand why, we need to look at the phonological aspects of these utterances. There are several phonological aspects at play here which will be shown to determine all’s placement.

All is a monosyllabic onsetless function word.5 These three factors play a role in all’s placement within the linear string. The fact that all is onsetless is significant because it is well known that in many languages words with out onsets will resyllabify in order to gain an onset. Universally syllables with onsets are favored. Words without onsets seek acquire an onset. One could surmise that in the phonology all will be favored in a position that will allow it to acquire an onset. The second factor, all’s being a function word, could be affecting all’s placement because function words are weaker than lexical/content words. What is problematic is that all is not a prosodically weak word. It is generally pitch accented and not reduced. Auxiliaries, modals and pronouns are all weak elements that are know to prosodically incorporate with stronger hosts. They frequently reduce and attach onto stronger hosts:

14. a. saw ’em
   b. Ben ‘n Sara’ve

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4 Some informants considered this sentence marked when they heard it in comparison to (i)
   (i) All the men greeted the teacher.
   but when uttered on its own with no possible comparison informants did not perceive it as marked.
5 Quantifiers are frequently considered function words although this is by no means fully accepted.
*All* is not weak like pronouns or auxiliaries yet still exhibits some traits of weakness—a need to prosodically incorporate. *All* is favored in positions where it can gain an onset and prosodically combine with a weak element. The element that the FQ occurs with must be weak since two strong elements cannot incorporate. The definition of prosodic incorporation that I am using is in (15). This definition is based upon my own analysis of 20 word, phrase and sentence junctures in English which took as a foundation prior research on boundaries by Cho 1999,2001, Turk and White 1999, Carlson, Granström et al. 2002, Dilley, Shattuck-Hufnagel et al. 1996 among others.

15. Prosodic Incorporation in English

Two words highly co-articulated without final lengthening of the first constituent. No initial glottalization of the second constituent. There is a possibility for a reduced vowel in the weaker of the two constituents. Only one constituent of the newly formed prosodic unit can be pitch accented. Additionally the two words are auditorally perceived as one word (corresponding to a break index of 0 within the ToBI framework)

In English the elements that can PI with *all* are intrinsically weak elements which include auxiliary verbs, modals, pronouns and although not intrinsically weak in a few rare cases unstressed monosyllabic NPs.

The prosodic incorporation constraint on *all*’s placement is not absolute. When FQs occur in positions where the FQ cannot PI the result is a degraded felicitous utterance. Sentences of this sort seldom occur in free speech. Corpora searches turned up very few utterances with this word order. Moreover, in my own experiments informants who were given an utterance to memorize and recite consistently changed the word order. They unconsciously produced the favored word order. When given the utterances in (16) informants consistently and unknowingly produced the utterances in (17).

16. a. The children all have seen the movie.
   b. The children all should have seen the movie.
   c. The children should all have seen the movie.

17. a. The children have all seen the movie.
b. The children should have all seen the movie.
c. The children should have all seen the movie.

In (16)a,b the FQ is not favored right adjacent to the subject DP because in this position the FQ will not be able to PI. What is unexpected is that (16c) is not the favored word order. Survey and corpora findings confirm that (16)c is not the preferred word order and instead that modal+aux+all is the preferred word order. This is unexpected since one is lead to expect that all weak function words should be favored left adjacent to all. Evidently this is not the case. It appears that main stress is not favored medially.

Figure 1

![Figure 1](image1.png)

Figure 2

![Figure 2](image2.png)

There is obvious glottalization of the initial vowel of all in figure 2 that is not present in figure 1. The glottalization in figure 2 is indicative of a prosodic boundary (Dilley et al. 1996). This glottalization is somewhat surprising since in the sequence might have (without all) there is flapping of the /t/ which is indicative that the two constituents are contained within the same phonological phrase. When all is added the stress pattern changes since all is stressed and pitch accented. By placing an
intermediate boundary after would then all and have can PI and the stress pattern is not disrupted. Evidently the presence of all triggers rephrasing of the utterance.

In light of the fact that all is generally stressed and frequently pitch accented one would be hard pressed to consider it a weak word. What all does seem to have is a phonological constraint on its placement that it will be favored in positions where it can acquire an onset through prosodic incorporation with a weak element. That is why all is favored adjacent to the weak pronoun, auxiliary and modal.

3.3 Further complications

The findings stated thus far indicate that (18) and (19) should illustrate the preferred word order, or at least represent a non disfavored word order.

18. ??The shirts have been all ironed.

19. ??The dogs have been all bathed.

In these sentences all is right adjacent to an auxiliary verb. This word order is not favored contrary to what is predicted, judgments on (18) and (19) range from bad to unacceptable. FQs modifying the subject, in most cases, cannot felicitously occur between been and the lexical verb. This seems to argue against the phonological explanation since it presents a counter example. But semantically we can see there is more happening here. This word order is acceptable under the adverbial reading of all.

20. a. The carpets have been all cleaned.
   = the carpets have been completely cleaned
   b. The carpet has been all cleaned
   = the carpet has been completely cleaned

In (20) it is the verb that is being modified. This is illustrated by (b) which allows a singular subject, when the FQ is modifying the subject a plural subject is required as illustrated in (21).

6 There are some speakers who consistently accept this construction.
21. a. *The carpet has all been cleaned.
   b. The carpets have all been cleaned.

In light of the fact that the FQ is modifying the verb and not the subject one is inclined to say that in fact *all* is not an FQ in this position but a completive adverb (see Bobaljik 1995 for more on *all* as a completive adverb).

### 3.4 Sentence final *all*

Much debate has surrounded the syntactic explanation for why FQs can not occur sentence finally. FQs inability to occur sentence finally has been one of the strongest arguments against the stranding approach. The explanation for why FQ cannot occur sentence finally in English can again be found in the phonology. First the data:

22. *The magicians disappeared all.

23. *The children have cried all.

24. *The vases were broken all.

But note the acceptability of:

25. The magicians disappeared all at the same time.

26. The children cried all at once.

27. The vases were broken all at once.

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7 The stranding approach incorrectly predicts that in passives and unaccusative sentences where the subject is taken to be base generated postverablly the FQ should be able to occupy the sentence final position which the subject originated in (see Sportiche 1988).
FQs are not acceptable sentence finally. FQs require other material to follow them. In terms of prosody, sentence final position is a crucial position. In English there are two tones sentence finally: the boundary tone and the phrase tone (Pierrehumbert 1980). The boundary tone occurs at the end of the utterance and the phonological phrase tone spans from the nuclear accent until the boundary tone. As discussed in section 3.2 all appears to display the properties of both a weak and a strong word. It seems that all is not strong enough to carry the sentence final tone.

When all becomes stronger due to PI then it is acceptable sentence finally. All is not the only element that undergoes PI sentence finally. PI in sentence final position is well attested to in English. Object pronouns can appear in a weak form sentence finally. In these cases the pronunciation will be of the verb plus the object pronoun. Rhythmically the weak pronoun will be the same as an unstressed final syllable (Selkirk 1995).

28. need him ~ Needham [nid m]

29. see you ~ Mia [mija]

30. give me ~Jimmy [dʒim] (Selkirk 1995 p.205)

Examples (28)-(30) show how the verb plus pronoun are pronounced like words with a final unstressed syllable. Object pronouns are a special case in that in many languages they are realized only as morphosyntactic clitics, Selkirk proposes that this optional realization might also be available for English pronouns. The case of sentence final all is a bit more convoluted than that of sentence final object pronouns. When there is a sequence pronoun+all sentence finally the object can still attach to the verb but all comes along too giving:

31. She [sawŋal]

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8 The adverb approach has a syntactic account of this. If can attach to XPs then the inability of FQ to occur sentence finally follows from the fact that there is no XP sentence finally. When there is an adverbial phrase then the FQ can attach onto that phrase. The prosodic phrasing of these types of sentences supports this theory since the FQ is phrased with the PP but other adverbs of the class that FQ supposedly belong to cannot occur in this position significantly weakening the validity of the adverb approaches account for this data (see Bobaljik 1995 for more on the adverb approach and see Bošković 2004 for critique of the adverb approach)
In English verbs are generally not pitch accented. If *all* is pitch accented PI is still possible since there is not other pitch accented element in the unit. Placing a prosodic boundary after the verb or after the object pronoun renders the sentence infelicitous. *All* can occur sentence finally only when it can prosodically combine with another element and thereby become stronger.

32. I saw them all.
33. I wrote up them all.

There are indicators that there is also a syntactic reason that FQ cannot appear sentence finally (see Bobaljik 1995 for a discussion on the syntactic impossibility of sentence final *all*). The importance of the prosodic constraints against intonational phrase final *all* plays a prominent role in placement of *all* in double object construction which is beyond the scope of this paper.

4. Conclusion

Previous approaches to floating quantifiers have left a gap in explaining why the FQ occurs in one position as opposed to another. This research set out to answer this question. By approaching the phenomena from this perspective the role that phonology plays has become clear. Phonology is a determining force in FQ placement. This research has focused on understanding the placement of *all*, in English there are two other floating quantifiers- each and both. In order to understand their placement they need to be analyzed in depth in terms of their phonological traits and behavior. In doing so some of the subtle differences in the placement of the different FQs might be illuminated. Furthermore in order to understand FQ placement cross-linguistically a phonological analysis needs to accompany any syntactic analysis.
References


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