

Floating Quantifiers and Partitives*

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Abstract

This paper discusses the mechanism of quantifier floating. Following the stranding analysis, I maintain that a floating quantifier forms an underlying constituent together with the DP it modifies in its base position, i.e. [Spec, VP]. However, I claim that the underlying structure is a partitive construction such as [Q-of-DP], not [Q-DP]. Although numeral/existential quantifiers can also be found in partitive constructions, these quantifiers cannot float. This behavioral difference between universal quantifiers and numeral/existential quantifiers is attributed to their structural differences: a universal quantifier is the head of the partitive structure while the preposition of projects maximally in the partitive construction with numeral/existential quantifiers.

Keywords: floating quantifier, partitive construction, of-deletion, feature checking, resumptive pronoun

1. Introduction

A considerable number of studies have been made on the internal structure of noun phrases from various angles. Among these studies, floating quantifiers have been the focus of substantial inquiry. The basic phenomenon of floating quantifiers is illustrated in the following examples.¹

- (1) a. *All* the children have seen this movie.
b. The children have *all* seen this movie.
- (2) a. *Both* of the children have been feeling sick.
b. The children have *both* been feeling sick.
- (3) a. *Each* of the students has read a different book.
b. The students have *each* read a different book.

* This article is a simplified version of my MA thesis.

¹ In this paper, I deal with only the cases in which floating quantifiers modify the subject DPs. There are also some cases in which quantifiers which modify the object DPs can float as follows.

(i) a. I like them *all/both*.

b. The children bought three books *each*.

I consider these sentences are derived by movement of the object DPs, not of quantifiers: that is, the phenomenon found above is rather a kind of object shift than quantifier floating. Therefore, I won't take up these cases here.

Quantifiers are considered to be a “special” kind of modifiers of nouns which are used to denote quantity. Other types of modifiers, such as determiners and adjectives, usually appear as premodifiers of a head nouns. As in (1)-(3), universal quantifiers, such as *all*, *both* and *each*, can not only appear in DP-initial positions, but can also float rightwards, away from the DPs they modify. The meanings of the (a)- and (b)-sentences in each example are quite similar and they seem to involve the same collection of words. What is the relationship between the two sentences? In this paper, I will discuss why and how universal quantifiers can float. The internal structure of noun phrases will be brought light to by the investigation of floating quantifiers.

First, I review the two major accounts to floating quantifiers which have been suggested so far in the following section. In section 3, I develop the stranding analysis in order to resolve remaining problems for this account. In section 4, I examine partitive construction with numeral/existential quantifiers. I also observe the phenomenon of phrasal quantifier floating in section 5. The last section is a brief summary.

2. The Problem

There are a variety of different approaches to the phenomenon of floating quantifiers, the most salient of which are the stranding account (Sportiche (1988), Giusti (1990), Shlonsky (1991)) and the adverbial account (Dowty and Brodie (1984), Kayne (1984), Doetjes (1992), Bobaljik (1995)). In this section, I review these two accounts and clarify problems for each analysis.

The stranding analysis treats floating quantifiers as part of a nominal phrase: a quantifier functions as a head of QP, taking the DP as its complement. Assuming the VP-internal subject hypothesis, this projection is base-generated in the canonical DP position, which for subject is [Spec, VP]. The floating quantifier is stranded by movement of the DP. On this account, sentence (1a) is analyzed as in (4).

(4) [DP the children]_i [VP have [QP t_i all t_i] seen this movie]

The DP passes through [Spec, QP] before moving to [Spec, IP]. In many languages, such as French and Hebrew, a floating quantifier agrees with the DP which it modifies for Case, number and gender. The DP being in [Spec, QP], the agreement of the quantifier with it is realized for Spec-head relation. Although there is no overt agreement of quantifiers with nouns in English, it is assumed that the DP passes through [Spec, QP] and at covert agreement of the floating quantifier takes place in this position.

The stranding analysis can explain several important properties of floating quantifiers. The most remarkable point is that it can capture the fact that a floating quantifier and a

DP-initial quantifier modify the DP in the same way because they have the same underlying structure.

However, this account has some problems. On this account, it is suggested that the underlying form that a floating quantifier and the DP constitute in the base position is [Q-DP]. There are some cases in which this does not form a grammatical constituent together: a DP-initial quantifier requires the preposition *of* (French, *de*) before the DP, while a floating quantifier does not.

- (5) a. These children have *each* read a different book.
b. *Each* *(of) these children has read a different book.
- (6) a. Ces enfants ont *chacun* lu un livre différent.
these children have each read a book different
'These children have each read a different book.'
b. *Chacun* *(de) ces enfants a lu un livre différent.
each of these children has read a book different
'Each of these children has read a different book.' (Doetjes (1997: 201))

On the stranding account, the subject DP in the (a)-sentences must be base-generated as a complement of the quantifier head. But in the (b)-sentences, the quantifier *each/chacun* cannot directly precede this DP. If, as the stranding account assumes, the base structure of the floating quantifier and the DP is [Q-DP], it is necessary to postulate some process of inserting (or deleting) the preposition.

The same observation applies to the phenomenon of phrasal quantifier floating. Not only a quantifier head, but also a more complicated structure can float.

- (7) a. The candidates have *all three* expressed indignation.
b. The candidates have *all three of them* expressed indignation.
c. The candidates have *all three of the dirty bastards* expressed indignation.
(Morzycki (2000: 254-55))

As in (7), pronouns and full DPs containing epithets may float along with the quantifier *all*.² Although a floating quantifier phrase in each example modifies the subject DP as a floating head quantifier, it is not possible to consider the DP to form a constituent together with the

² Some native speakers do not consider the phenomenon of phrasal quantifier floating to be grammatical. Morzycki (2000) also indicates that floating structures containing epithets, as in (7c), are observed only in a dialect of English. However, some speakers consider that only those cases are acceptable in which the head of QP is the quantifier *all* (but not another quantifier like *both* or *each*) and a numeral quantifier is contained. In this paper, following Morzycki, I take such sentences as in (7) to be grammatical.

quantifier phrase, because the sentences in (8) are ungrammatical.

- (8) a. **All three the candidates* have expressed indignation.
b. **All three of them the candidates* have expressed indignation.
c. **All three of the dirty bastards the candidates* have expressed indignation.

Next, let us consider the other account. The adverbial account assimilates floating quantifiers as adverbs: floating quantifiers occupy canonical positions of adverbs, specifically to the left of verbs and verbal elements.

- (9) a. The candidates have *all* expressed indignation.
b. The candidates have {*merely/simply/just*} expressed indignation.

That is, under this analysis, a floating quantifier does not form a constituent together with a DP in the underlying structure: rather, it is base-generated as an adverb in the adjoined position of VP. So the structure of (9a) is illustrated as in (10).

- (10) The candidates have [_{AdvP} all] [_{VP} expressed indignation]

The adverbial analysis can resolve the problems for the stranding analysis. Although, on the stranding analysis, a floating quantifier is assumed to form [Q-DP] together with the DP in the base position, the underlying constituent is not always grammatical. On the adverbial account, however, floating quantifiers are base-generated separately from the DP, and so these problems will not arise.

There are also some problems for the adverbial account. First, this account cannot explain the agreement system of floating quantifiers. As I pointed out above, agreement of quantifiers with nouns (typically for Case, number and gender) can be observed in many languages. Those languages which have this kind of agreement also have nominal agreement with modifiers, such as determiners and adjectives. However, they do not have the agreement of adverbs with nouns. If floating quantifiers are considered to be adverbs, it would be necessary to devise some explanation for their agreement with DP.

Another problem is the status of floating quantifiers as adverbs. According to Jackendoff (1972), adverbs are classified into three semantic types: speaker-oriented (such as *probably*, *certainly*, *thankfully*), subject-oriented (such as *willingly*, *intentionally*, *cleverly*), and manner adverbs (such as *quickly*, *carelessly*, *quietly*). From the modification and distribution of floating quantifiers, it might be plausible to consider them to be subject-oriented adverbs.

However, there is an example that shows a clear difference between floating quantifiers and subject-oriented adverbs.

- (11) a. These children_i have *willingly*_{i,j} been instructed by their parents_j.
 b. These children_i have *all*_{i*,j} been instructed by their parents_j. (Déprez (1989: 27))

Sentence (11a) is ambiguous: the adverb *willingly* can modify either the subject DP *the children* or the oblique agent *their parents*. On the other hand, the quantifier *all* in (11b) can modify only the subject, not the underlying agent DP. Therefore, it is unclear which class floating quantifiers can be assimilated into.

3. The Revised Stranding Analysis

I have discussed the two major accounts of quantifier floating in the previous section. Although both accounts have problems, I take the stranding analysis to be on the right track: problems for the adverbial account seem to be more crucial. Moreover, the stranding account gives more natural explanation of the modification of floating quantifiers: it is clear that a floating quantifier modifies the DP in the same way as a DP-initial quantifier does.

However, taking the stranding analysis to be generally correct, there are some problems to be clarified. In this section, I develop the stranding analysis with an aim to resolving these problems.

At first, let us consider the nature of universal quantifiers. As Sportiche (1989) has pointed out, a DP-initial quantifier can be used in two ways as in (12).

- (12) a. *Each* man left.
 b. *Each* of the men left.

In (12a), the quantifier *each* precedes the DP directly, while the preposition *of* intervenes between the quantifier and the DP in (12b). Borrowing the terminology from Sportiche, I call the former type a determiner quantifier and the latter type a partitive quantifier.

The difference between a determiner quantifier and a partitive quantifier is shown more clearly in French. The determiner quantifier 'each' has a different form from the partitive quantifier 'each'.

- (13) a. *Chaque* homme est parti.
 each man has left
 b. *Chacun* des homes est parti.
 each of-the men has left

In French, the determiner quantifier 'each' is *chaque* as in (13a) and the partitive quantifier

'each' is *chacun* as in (13b).³

The determiner quantifier *chaque* and the partitive quantifier *chacun* behave differently. The determiner quantifier cannot float as in (14a), while the partitive quantifier can float as we have seen in (6).

(14) a. *Homme est *chaque* parti.

b. Les hommes sont *chacun* partis.

From the observation of (14), Sportiche suggests that only the partitive quantifier corresponds to the floating construction. Although the determiner quantifier and the partitive quantifier have the same form in English, I assume that the floating construction such as *The men each left* has the same underlying structure as (12b).

Nevertheless, the stranding account suggested so far assumes that the underlying constituent is [Q-DP], not [Q-of-DP]. I claim that the underlying form is [Q-of-DP], not [Q-DP]. On the stranding analysis, it is thought that a floating quantifier modifies the DP in the same way as a determiner quantifier does. Does a partitive quantifier modify the DP in the same way as a floating quantifier? Consider the following examples.

(15) a. *All* (the) students came.

b. *All* of the students came.

There is no semantic difference between the two sentences in (15). That is, a determiner quantifier and a partitive quantifier have the same modification of the DP. If so, it does not matter if we take a floating construction to have the same underlying structure as a partitive construction. We can also remark that the preposition *of* in (15a) is semantically vacuous. Thus, the generalization is given as in (16).

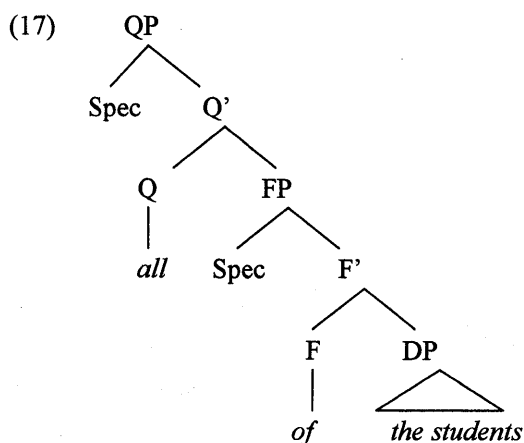
(16) The quantifier floating construction has the same underlying structure as the partitive construction.

If this generalization is correct, one problem of the traditional stranding analysis can be resolved. Since the traditional account suggests that the underlying structure is [Q-DP], there are some cases in which a floating quantifier and the DP cannot form a grammatical constituent together without postulating some process of inserting (or deleting) the

³ The partitive quantifier *chacun* is supposed to consist of the determiner quantifier *chaque* and the indefinite pronoun *un*. Therefore, these two quantifiers are classified into different categories: the quantifier *chacun* is a noun, while the quantifier *chaque* is a determiner. I assume that this fact is related to pronominalization. I will not discuss this point in this paper.

preposition *of* before the DP. Assuming the underlying structure is a partitive, this question does not arise.

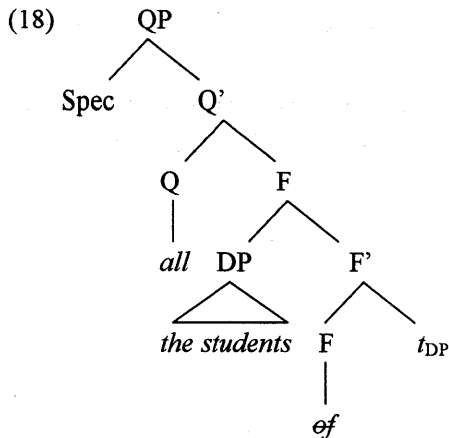
Let us consider the mechanism of quantifier floating. Take the sentence *The students have all read this book*, for example. The subject DP *the students* and the quantifier *all* are base-generated together in [Spec, VP] as in (17).⁴



The status of the preposition *of* is unclear. I tentatively assume that it is the head of a Functional Projection (FP), and that DP is its complement.

The subject DP is moved to [Spec, IP] in order to check the EPP feature of I. At the same time, the nominative Case feature that the DP has is checked in this position. If the DP has an accusative Case feature, the derivation would be crashed because the feature cannot be checked there. At first, the DP moves to [Spec, FP]. Let us postulate that this movement causes the deletion of the preposition *of*. It has been considered that the preposition *of* is phonological spelling out of Case: it is inserted to provide a Case assigner for a lexical NP (Chomsky (1986)). However, the DP does not have any feature (i.e. an accusative Case feature) to be checked with the preposition *of*. I suggest that the preposition be once inserted whether the NP which follows it has an accusative Case feature to be checked or not. When the NP does not need a Case assigner, the preposition must be deleted by movement of the DP to [Spec, FP], as in (18). Since, as I mentioned above, the preposition *of* is semantically vacuous, the deletion of it does not affect the interpretation.

⁴ As in note 2, a determiner quantifier and a partitive quantifier are in distinct categories. But in this paper I take both types as a head of quantifier phrase (QP).



Next, the DP moves to [Spec, QP] in order to enter the Spec-head relation with the quantifier. As mentioned in the previous section, many languages show agreement of floating quantifiers with the DPs. Although a quantifier in English does not agree with the DP overtly, it has ϕ -features to be checked by the DP and must pass through this position. After this checking, the DP moves further to [Spec, IP].

Last, let us consider the derivation of the sentence such as *All of the students have read this book*. In this case, it is the head quantifier, not the DP, that has a nominative Case feature. In order to check this feature, the whole structure heading the quantifier moves to [Spec, IP]. The DP has an accusative Case feature, which can be checked in its base position, the complement position of the preposition *of*. Therefore, the DP cannot move out of the QP.

4. Numeral/Existential Quantifiers in Partitive Constructions

Let us consider numeral and existential quantifiers in this section. These quantifiers can appear in partitive constructions as in (19).

- (19) a. *Three* of the children have seen this movie.
 b. *Some* of the students have read the book.

If the partitive phrases with numeral/existential quantifiers have the same structure, these quantifiers should also be able to float. But these quantifiers cannot float as in (20).

- (20) a. *The children have *three* seen this movie.
 b. *The students have *some* read the book.

These observations show that the structure of the partitive phrases with numeral/existential

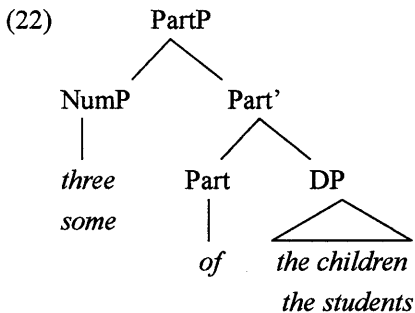
quantifiers must be different from the structure of the partitive constructions with universal quantifiers⁵.

Before turning to a closer examination of the partitive structure of numeral/existential quantifiers, consider the following examples.

- (21) a. *Three* children have seen this movie.
 b. *Some* students have read the book.

As in (21), numeral and existential quantifiers can precede the DPs directly as determiner universal quantifiers. However, a determiner numeral/existential quantifier does not modify the DP in the same ways as a partitive numeral/existential quantifier does. In (19a), more than three children is presupposed and three of them have seen this movie. That is, the partitive phrase means “a part of the presupposed set” literally. On the other hand, the number of children presupposed in (21a) is just three and all of them have seen this movie. Therefore, the preposition in the partitive constructions with numeral/existential quantifiers has some semantic meaning. I call the preposition in this case a head of Partitive Phrase (PartP).

Let us look closely at the structure of the partitive construction with numeral/existential quantifiers. I suggest the structure illustrated in (22). To distinguish numeral/existential quantifiers from universal quantifiers, I refer to their projection as Number Phrase (NumP).



As suggested in the previous section, the DP passes through the specifier position of the projection of the preposition *of*. If this position is occupied, the DP cannot pass there to move further. To bar the movement of the DP, I suppose that the projection of the numeral/existential quantifier, the NumP, occupies the specifier position of PartP. Therefore, I suppose further that the DP always has an accusative Case feature in this case. If so, the accusative Case feature of the DP is checked with the preposition *of* and the DP cannot move

⁵ The permissibility of quantifier floating cannot be always shown by the distinction between universal and existential/numeral quantifiers. For example, some universal quantifiers, such as *most* and *every*, cannot float. On the other hand, the phrase *all but two* is not universal but can float.

further.

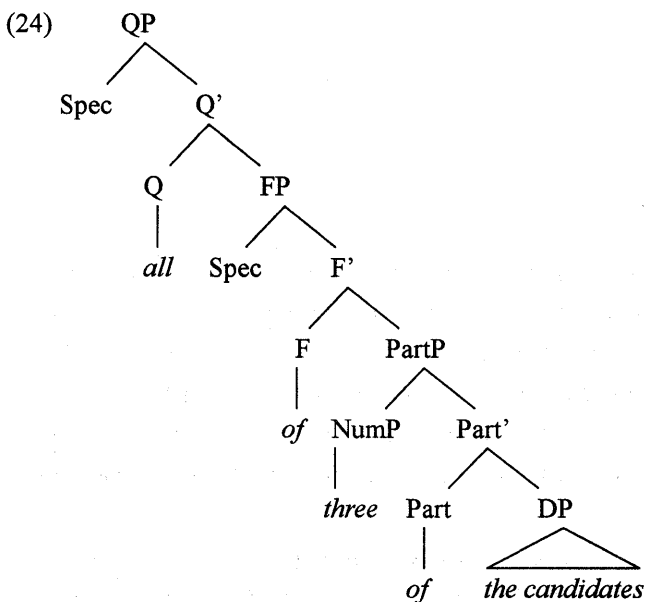
To sum up, a floating quantifier is base-generated to form a partitive structure QP together with the DP it modifies. In this case, the DP has a nominative Case feature and must move to [Spec, IP] in order to check the EPP feature of I. On the other hand, the partitive structure with numeral/existential quantifiers is a PartP, not a QP. Since it is not the DP but the QP that has a nominative Case feature, the only option is the movement of the whole structure to [Spec, IP].

5. Phrasal Quantifier Floating

In this section, let us consider the phenomenon of phrasal floating quantifiers. The sentences in (7) are repeated again in (23).

- (23) a. The candidates have *all three* expressed indignation.
 b. The candidates have *all three of them* expressed indignation.
 c. The candidates have *all three of the dirty bastards* expressed indignation.

As I mentioned in section 2, the subject DP and the phrasal floating quantifier must also constitute a partitive construction, QP. It should be noted that each floating phrase contains not only the head of QP, but also a numeral quantifier: a PartP is contained in the QP. At first, let us consider (23b). The underlying structure that the phrasal floating quantifier and the DP form in this sentence is illustrated in (24).

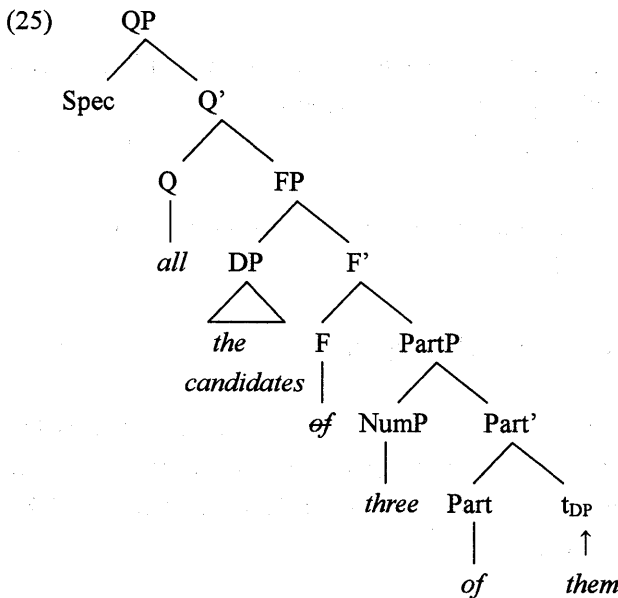


As we have seen in section 3, the preposition *of*, the head of FP, takes the DP as its complement when only the head quantifier floats. On the other hand, in the case of phrasal quantifier floating, it takes PartP as its complement, as shown in (24).

For the DP to move to [Spec, IP], it is necessary to assume that the DP has a nominative Case feature. However, I have mentioned in the previous section that the DP cannot have a nominative Case feature in PartP. Now I suggest that only when PartP is the complement of the head F, which is semantically vacuous, can the DP in PartP also have a nominative Case feature.

Here I will examine the deletion of the preposition again. It was suggested that the preposition is deleted by the movement of DP to [Spec, FP]. It would be better to say that the deletion of the preposition takes place when the DP moves to the specifier of the projection of the preposition.

Let us return the derivation of (23b). The DP directly moves to [Spec, FP], and the higher preposition *of* (i.e. the head of FP) is deleted. But the lower preposition *of*, the head of PartP, cannot be deleted by this movement, because the DP does not pass through the specifier of PartP, which the lower preposition projects. However, the head of PartP needs an overt DP as its complement to check an accusative Case feature. To save this situation, let us assume that a resumptive pronoun is inserted in the trace position of the DP. In (23b), the pronoun *them* is inserted in this position. It is clear that the pronoun *them* has an accusative Case feature because the Case is lexically realized, and the preposition can check the feature of the pronoun. This can be illustrated in (25).



As in the case of the head quantifier floating, the DP moves to [Spec, QP] to check ϕ -features of the quantifier *all*, and moves to [Spec, IP] in order to check the EPP-feature of I.

The same is true of the derivation of (23c). Instead of the pronoun *them*, the epithet *the dirty bastards* is inserted in the DP trace position in this case.

How about (23a)? If this line is correct, we have to say that this is a special case. The underlying constituent that the floating phrasal quantifier and the subject DP form in this sentence is also *all of three of the candidates*, as in (24). However, unlike sentences (23b-c), an overt resumptive pronoun is not inserted in the trace position of the DP: in this case, I assume that a null resumptive pronoun is inserted in that position. As I mentioned above, the lower preposition, the head of PartP, cannot check an accusative Case feature with a null resumptive pronoun. Therefore, the preposition must be deleted without the movement of the DP in (23a).

6. Conclusion and Remaining Problem

In this paper, I have considered the phenomena of floating quantifiers under a revised stranding analysis. A floating quantifier (phrase) and the DP form together a partitive construction QP in the base position, i.e. [Spec, VP]. The head of QP takes the projection of the preposition *of* (FP) as its complement. The DP is base-generated as a complement of the FP. At first, the DP with a nominative Case feature moves to [Spec, FP] and this movement causes the deletion of the preposition, which is semantically vacuous. It further moves to [Spec, IP] in order to check the EPP feature of I, passing through [Spec, QP] for agreement with the quantifier.

On the other hand, the partitive construction with numeral/existential quantifiers is not a QP but a PartP whose head is a semantically non-vacuous preposition. The specifier of a PartP is occupied by a numeral/existential quantifier and the DP cannot pass through the position to move further to [Spec, IP].

However, there still remains one problem. Floating quantifiers can appear in intermediate positions which the DP passes through as in (26).

(26) The children (*all*) would (*all*) have (*all*) been (*all*) doing that.

To explain the grammaticality of (26), the DP is supposed to move out of the QP after the whole QP moves to an intermediate position. My analysis can give an account of the fact that floating quantifiers “can” appear in such positions, but it cannot explain why they “must” be able to. This point needs further consideration.

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