

# On the Structure of English Partitive NPs and Agreement

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## **Abstract**

Syntactic and semantic complexities of English partitive constructions have given us many troubles in understanding English NP structures. The paper begins with the classification of partitive NPs into two types based on agreement factors and claims that enriched information on lexical entries can provide feasible generalizations for such constructions while capturing their syntactic and semantic properties in a systematic way. Rather than resorting to ad-hoc syntactic operations such as movement, the paper tries to show that the present lexicalist analysis can provide a much simpler grammar of the constructions in question.

## 1 Introduction

It is well-known that the grammar of English noun phrases, in particular, that of partitive noun phrases typically consisting of a count noun phrase followed by *of*-NP, is one of the most challenging areas for generative grammars but has been often neglected. Examples like (1) and (2) are some sample sentences the reason of whose ungrammaticality this paper tries to explain.

- (1) Agreement:
- a. \*Most of the people appreciates the complications of the situation.
  - b. \*If no one at this time answer the door, just move along.
  - c. \*At least half of the participants considers the lectures very informative.
  - d. \*All of the soda were drunk by the little children.
  - e. \*Neither of the teams have won any prizes yet.
  - f. \*Despite our best efforts, most of the work still need to be done.
- (2) Structure of partitive NPs:
- a. \*One of students came to see me last night.
  - b. \*Some of wire has been stolen last night.
  - c. \*Some of many problems have been solved by the students, but not all.
  - d. \*The teacher could recognize neither of students.
  - e. \*The team examined each of the suggestion thoroughly.

The number in the parenthesis after each example indicates the percentage of the students who gave incorrect answers or didn't recognize the grammatical problems. These high numbers of incorrectness prove the difficulties nonnative speakers in learning the structures of partitive NP constructions. The goal of this paper is to present a grammar of English partitive NP constructions that can straightforwardly account for the complex properties of these constructions.

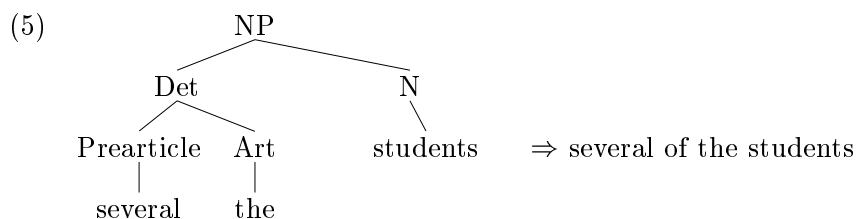
## 2 Two Types of NPs

In English there are two main types of NPs: simple NPs and partitive NPs given in (3) and (4).

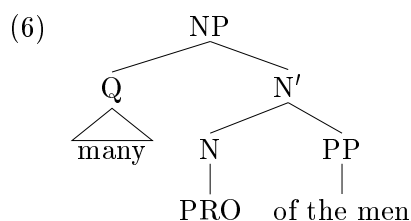
- (3) a. **some** objections  
b. **most** students

- c. **all** students
  - d. **much** worry
  - e. **many** students
  - f. **neither** cars
- (4) a. **some** of the objections
- b. **most** of the students
  - c. **all** of the students
  - d. **much** of her worry
  - e. **many** of the students
  - f. **neither** of the cars

As in (4), the partitive phrases have the quantifiers followed by *of* NP phrase, designating a set out of which certain individuals are selected. In terms of semantics, these partitive NPs aren't different from simple NPs in (3). This semantic reason led traditional grammarians (cf. Jackendoff 1968, Selkirk 1970, Chomsky 1970, Bresnan 1973) to link the two constructions by transformation operations. For example, the accepted assumption within transformation analyses was that the noun following *of* is the head of the construction, and the quantifier occupies the prearticle position as illustrated in (5). The preposition *of* is then obligatorily inserted if the article is definite:



In a similar spirit, an analysis such as that of Jackendoff (1977) posits a null PRO to explain why nothing (e.g. adjectives) can precede quantifiers. His assumed structure is given in (6):



As we can observe, these syntax-based approaches posit otherwise unmotivated abstract elements and structures. But they appear to generalizations

we discuss in what follows. This paper tries to provide proper syntactic structures of English partitive NPs that adopt no such Procrustean-style transformational tools. I will also try to provide a simple analysis of agreement in partitive NP constructions that is based upon the lexical properties of quantifiers in the constructions.

### 3 Base-Generation or Transformation?

Let us first discuss issues in deriving partitive phrases from simple NPs through transformation mechanisms. As noted by Selkirk (1970), such an approach misses clear contrasts between the two constructions.

First, the lower NP in partitive phrases must be definite and also in the *of*-phrase no quantification NP is allowed as in (7):

- (7) a. Each student vs. \*Each of students
- b. Some problems vs. \*some of many problems/\*all of some men

Second, not all determiner with a quantificational force can appear in partitive constructions. As illustrated in (8), determiners such as *the*, *every* and *no* cannot occupy the first position:

- (8) a. \*the of the students vs. the students
- b. \*every of his ideas vs. every idea
- c. \*no of your book vs. no book

Third, the simple NPs and partitive NPs have different restrictions on the semantic head. Observe the contrast between (9) and (10):

- (9) a. She doesn't believe **much of that story**.
- b. We listened to as **little of his speech** as possible.
- c. How **much of the frescoes** did the flood damage?
- d. I read **some of the book**.
- (10) a. \*She doesn't believe **much story**.
- b. \*We listened to as **little speech** as possible.
- c. \*How **much frescoes** did the flood damage?
- d. \*I read **some book**.

The partitive constructions in (9) allow a mass, noun-count, quantifier such as *much*, *little* and *some* to cooccur with a lower *of*-NP containing a singular count noun. But as shown in (10), the same elements serving as determiners cannot precede such nouns.

Another issue concerns lexical idiosyncrasies.

- (11) a. One of the people was dying of thirst.  
 b. Many of the people were dying of thirst.
- (12) a. \*One people was dying of thirst.  
 b. Many people were dying of thirst.

The partitives can be headed by quantifiers *one* and *many* as shown in (11) and (12) but unlike *many*, *one* cannot serve as a determiner when the head noun is collective as in (12)a.

Extraposition also shows another difference between simple NP and partitive NPs. Again observe the contrast in (13) and (14):

- (13) a. How many of the answers [to this classical mechanical problem] have been found?  
 b. \*How many of the answers have been found [to this classical mechanical problem]?
- (14) a. How many answers [to this classical mechanical problem] have been found?  
 b. How many answers have been found [to this classical mechanical problem]?

In both partitive and simple constructions, the PP *to this classical mechanical problem* serves as the complement of *answers*. But the partitive construction does not allow this PP complement to be extraposed as can be observed from (13).

What the observations we have seen so far tell us is that we cannot simply derive partitive constructions from simple noun phrases. The two constructions induce quite different lexical and syntactic properties that no independently motivated transformation mechanisms can capture.

## 4 The Structure of Partitive NPs with Quantity words

The starting point of my analysis is to classify partitive NPs into two types based on agreement facts: Type I and Type II.

In Type I, the number value of the partitive phrase is always singular (cf. Celce-Murcia and Larsen-Freeman 2000).

- (15) a. **Each** of the suggestions is acceptable.  
 b. **Neither** of the cars has air conditioning.  
 c. **None** of these men wants to be president.

In Type II, the number value depends on the head noun in the *of*-NP phrase.

- (16) a. **Most** of the fruit is rotten.  
 b. **Most** of the children are here.  
 c. **Some** of the soup needs more salt.  
 d. **Some** of the diners need menus.  
 e. **All** of the land belongs to the government.  
 f. **All** of these cars belong to me.

As shown in (16), when the NP following the preposition *of* is singular or uncountable, the main verb is singular. When the NP is plural, the verb is also plural. In terms of a semantic perspective indefinite pronouns such as *some*, *half*, *most* and *all* may take either singular or plural verbs, depending upon the meaning of the *of*-NP phrase. If these phrases tell how much of something is meant, the verb is singular; but if they tell how many of something is meant, the verb is plural. Expressions in (17) also exhibit similar behavior in terms of agreement.

- (17) half of, part of, the majority of, the rest of, two-thirds of, a number of (but not *the number of*)

I claim that one most effective way of capturing both the similarities and differences between Type I and Type II constructions is to resort to the lexical properties of quantifiers. I claim that the quantifiers in Type I and Type II are pronouns serving as the head of the constructions and they select an *of*-NP[definite] phrase as seen from the contrast in (18):

- (18) a. \*neither of students, neither of the two linguists  
 b. \*some of water, some of the water

This basic lexical information can be represented in a systematic feature system as given in (19):

- (19) a. Type I:  $\left[ \begin{array}{l} \langle \text{neither} \rangle \\ \text{HEAD pronoun} \\ \text{COMPLEMENTS } \langle \text{PP}[\text{of, definite}] \rangle \end{array} \right]$   
 b. Type II:  $\left[ \begin{array}{l} \langle \text{some} \rangle \\ \text{HEAD pronoun} \\ \text{COMPLEMENTS } \langle \text{PP}[\text{of, definite}] \rangle \end{array} \right]$

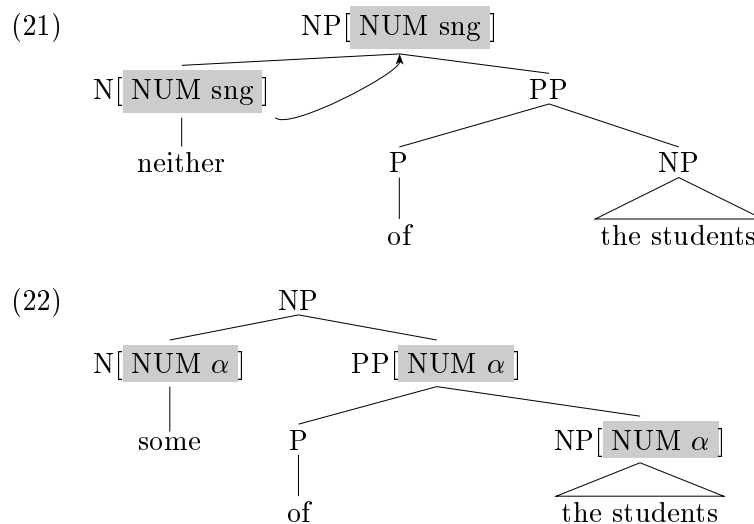
As represented in (19), both Type I *neither* and Type II *some* are lexically specified to require a PP whose semantic value is definite.

However, the two types are different in terms of agreement: Type I pronouns are lexically specified to be singular whereas the number value of Type II pronouns is identical to that of the selected PP.<sup>1</sup> Within our system, this difference can be lexically encoded in a simple manner:

- (20) a. Type I:  $\left[ \begin{array}{l} \langle \text{neither} \rangle \\ \text{HEAD pronoun} [\text{NUMBER } \text{sing}] \\ \text{COMPS} \langle \text{PP}[\text{of, definite}] \rangle \end{array} \right]$
- b. Type II:  $\left[ \begin{array}{l} \langle \text{some} \rangle \\ \text{HEAD pronoun} [\text{NUMBER } \alpha] \\ \text{COMPS} \langle \text{PP}[\text{of, definite, } \alpha] \rangle \end{array} \right]$

The only thing we added is the number value to the head value of the pronoun. The difference between the two types is then just a matter of the NUMBER value.

If we represent this difference in terms of syntactic structures, it would be something like those given in (21) and (22):



<sup>1</sup>There are two types of prepositions: those that function as predicates and those that serve as argument markers. As for the PPs headed by these markers, as in the partitive construction, their semantic features are identical with the prepositional object NP.

The present system makes the grammar much clean and bring us several welcoming consequences.

First, the system enables us to provide a straightforward account for the contrast in (23).

- (23) a. many of the/those/her apples  
 b. \*many of some/all/no/ apples

(23) is simply out since *many* requires an of-PP phrase whose definiteness is positive.

Second, the lexicalist system also can capture the fact that the quantifier pronouns affect the number value as well as the countability of the *of*-NP phrase. One difference between Type I and Type II is that Type I selects a plural *of*-NP phrase whereas Type II has no such a restriction. This is illustrated in (24) and (25).

- (24) Type I:  
 a. one of the suggestions/\*the suggestion  
 b. each of the suggestions/\*the suggestion  
 c. neither of the students/\*the student

- (25) Type II:  
 a. some of his advice/students  
 b. most of his advice/students  
 c. all of his advice/students

The only additional specification we need is the plural value on the PP complement of Type I, as shown in (26). As for Type II, no further specification is required.

- (26) a. Type I: 
$$\left[ \begin{array}{l} \langle \text{neither} \rangle \\ \text{HEAD pronoun}[\text{NUMBER sing}] \\ \text{COMPS} \langle \text{PP}[\text{of, definite, plural}] \rangle \end{array} \right]$$

Third, this line of approach can thus explain a clear contrast given in (27) and (28) (cf. Baker 1989):

- (27) a. Most of John's boat has been repainted.  
 b. Some of the record contains evidence of wrongdoing.  
 c. Much of that theory is unfounded.

- (28) a. \*Each of John's boat has been repainted.  
 b. \*Many of the record contained evidence of wrongdoing.  
 c. \*One of the story has appeared in your newspaper.

The contrast here tells that not all quantity words are acceptable with singular count-noun. This contrast falls out naturally within our Type I and Type II division resorting to enriched lexical information.

Fourth, the system proposed here also predicts the differences between simple NPs and partitive NPs<sup>2</sup>

- (29) a. much advice  
 b. much of the advice

- (30) a. \*much story  
 b. much of the story

- (31) a. \*many advice  
 b. \*many of the advice

The contrast observed here is easily expected, given the minimal difference in the lexical information:

- (32) *many* and *much* as pronouns:

a.	$\langle \text{many} \rangle$ HEAD pronoun COMPS $\langle \text{PP}[\text{def}, \text{plural}] \rangle$	b.	$\langle \text{much} \rangle$ HEAD pronoun COMPS $\langle \text{PP}[\text{def}, \text{nonplural}] \rangle$
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- (33) *many* and *much* as determiners:

a.	$\langle \text{many} \rangle$ HEAD det COUNTABLE +	b.	$\langle \text{much} \rangle$ HEAD det COUNTABLE -
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So far, we have seen that our lexical treatment provides us with an explicit grammar of two different types of partitive constructions. In particular, it accounts for their differences and similarities in a systematic way. The structures projected from the lexical information also leads to an adequate explanation of the constructions.<sup>3</sup>

<sup>2</sup>The noun agrees with the determiner in the value of NUMBER as well as COUNTABLE (e.g. *much furniture*, *\*many furniture*/*\*much students*, *many students*).

<sup>3</sup>The analysis also can capture extraposition facts, given the general assumption that

## 5 Parititive NPs with Measure nouns

### 5.1 Facts

In addition to the two types (Type I and Type II), there is another type of partitive constructions. These are partitive NP with measure nouns. There are several differences. First, partitive NPs with measure nouns, in addition to allowing *of*-phrases with a definite NP, can be followed by an *of*-NP phrase that contains a bare NP as illustrated in (35) (Quirk et al. 1985) .<sup>4</sup>

- (34) a. one pound of those beans  
b. three feet of that wire  
c. a quart of Bob's cider

- (35) a. one pound of beans  
b. three feet of wire  
c. a quart of cider

Also measure nouns cannot occur in simple noun phrases (unlike partitives with quantity words). They require an *of*-NP phrase obligatorily.

- (36) a. \*one pound beans (one pound of beans)  
b. \*three feet wire (three feet of wire)  
c. \*a quart cider (a quart of cider)

- (37) many beans, some wire, much cider, no yogurt, one strawberry

Further, unlike measure nouns, quantity words may not be preceded by numerals.

- (38) a. \*one many of the books, \*several much of the beer,  
b. one pound of beans, three feet of wire

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the complement of a lexical head can be extraposed but not the complement of the complement.

- (i) a. many of the answers [to this classical mechanical problem]...(cannot be extraposed)  
b. many answers [to this classical problem]... (can be extraposed)

See the contrast in (13) and (14).

<sup>4</sup>This is one main point in which measure nouns part company with quantity words: \*many of beans, \*some of wire, \*much of cider, \*none of yogurt, \*one of strawberries.

What makes these types more complicated is the existence of defective measure nouns:

- (39) a. \*a can tomatoes/a can of tomatoes/one can of tomatoes  
 b. a few suggestions/\*a few of suggestions/\*one few of suggestions  
 c. \*a lot suggestions/a lot of suggestions/\*one lot of suggestions

## 5.2 Analysis

In terms of agreement, these types are similar to Type I: The number of measure nouns rather than that of the *of*-NP phrase determines the number value of the main predicate.

- (40) a. A can of tomatoes is/\*are ....  
 b. Two cans of tomatoes are/\*is .....

In this respect, I claim the measure noun itself is the head of this construction and selects an *of*-NP as its complement. But unlike Type I, there is no definite restriction on the *of*-NP complement.

- (41) 
$$\left[ \begin{array}{l} \langle \text{pound} \rangle \\ \text{HEAD noun} \\ \text{SPECIFIER } \langle \text{Det} \rangle \\ \text{COMPS } \langle \text{PP}[\text{of}] \rangle \end{array} \right]$$

Notice that our system again resorts to lexical information.

There is a set of words whose behavior leave themselves somewhere between quantity words and measure nouns. These are words such as *dozen*, *hundred*, and *thousand*.

- (42) a. three hundred of your friends  
 b. \*three hundreds of your friends  
 c. \*three hundreds of friends  
 d. three hundred friends
- (43) a. several thousand of Bill's supporters  
 b. \*several thousands of Bill's supporters  
 c. \*several thousands of supporters  
 d. several thousand supporters

- (44) a. hundreds of friends/\*hundreds friends  
 b. dozens of roses/\*dozens roses  
 c. thousands of supports/\*thousands supports

The singular *hundred* when used as noun obligatorily requires PP[*of*] as well as a specifier whereas the plural *hundreds* requires no specifier though it selects an *of*-NP complement. This lexical information is represented in (45):

- (45) a. 
$$\left[ \begin{array}{l} \langle \text{hundreds} \rangle \\ \text{HEAD noun} \\ \text{SPR } \langle \quad \rangle \\ \text{COMPS } \langle \text{PP}[\text{of}] \rangle \end{array} \right]$$
 b. 
$$\left[ \begin{array}{l} \langle \text{hundred} \rangle \\ \text{HEAD noun} \\ \text{SPEC } \langle [ ] \rangle \\ \text{COMPS } \langle \text{PP}[\text{of}] \rangle \end{array} \right]$$

It is hard to attribute such peculiar properties to any syntactic process. If the grammar refers to the enriched lexical information that may be required independently, we would be expected to encounter such lexical idiosyncrasies.

## 6 Floating Quantifiers

The final point we would like to consider is so called floating quantifier constructions such as given in (46):

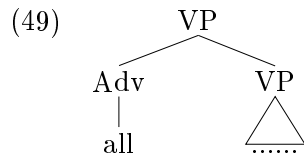
- (46) a. all four of your sons  
 b. all four lions  
 c. all of the senators  
 d. all the senators

- (47) a. both of the alligators  
 b. both the alligators  
 c. half of the money  
 d. half the money

The free distributional possibilities of quantifiers like *all* shown in (48) have led to assume the transformational approaches we have seen earlier.

- (48) (all) The students (all) have (all) been (all) being (all) kicked out.

Rather than adopting a movement process, following Kim and Sag (2001), we treat adverbs like *all* as a VP modifying adverb rather than a floating quantifier. The distributional possibilities in (48) can be simply captured by this as represented in (49):



Since *all* is lexically specified to be a VP modifying adverb, it can appear in any VP position.

(50) [The students *vp*[have *vp*[been *vp*[being *vp*[kicked out]]]]].

One remaining position that requires an explanation is the sentence initial position. Considering that only a handful number of quantifiers can appear in this position, we can simply assume that they select a definite NP.

This adverbial treatment also renders the grammar simple for adverb stranding in VP ellipsis constructions. The fact is that an adverb cannot precede a VP ellipsis position:

- (51) a. Kim has often visited grandmother, but Bill never has \_\_ .  
 b. \*Kim has often visited grandmother, but Bill has never \_\_ .

- (52) a. Only a few of the teachers have check out books, but the students all have \_\_ .  
 b. \*Only a few of the teachers have check out books, but the students have all \_\_ .

Though one could attribute the ungrammaticality to pragmatic factors such as focus, the present analysis can offer a simpler lexicalist analysis. Given the assumption that adverbs require elements that they modify as argued in Kim and Sag (in press), there is nothing for adverbs like *never* and *all* to modify in (51) and (52).

## 7 Conclusion

I hope to have shown that the complexities of partitive constructions cannot be simply captured by syntactic operations that link simple noun phrases

with partitive constructions. The constructions induce various lexical, idiosyncratic properties that cannot be derived from phrase structure rules or syntactic operations. The information of their peculiar properties is encoded in our mental dictionary, lexicon. In midst of these lexicon properties, grammar should provide generalizations for learners too. The system we have presented here can both draw generalizations as well as peculiarities.

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