

## PARTITIVES, DOUBLE GENITIVES, AND ANTI-UNIQUENESS\*

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This paper offers an explanation for a little-known but striking phenomenon first discussed by Jackendoff (1968b) that I will call ANTI-UNIQUENESS: partitives are incompatible with the definite determiner (\**I met the one of John's friends*), unless the partitive first receives additional modification (*I met the [one of John's friends] that he traveled with from Mexico*). I argue that an independently needed refinement of the semantic analyses of the partitive of Ladusaw (1982) and Hoeksema (1984) automatically predicts these anti-uniqueness facts. More specifically, I propose that partitivity is always proper partitivity. This will guarantee that any property denoted by a partitive will have at least two entities in its extension, and cannot uniquely identify an individual; thus partitives are anti-unique. In addition, this paper makes a new case for analyzing double genitives as partitives. A number of syntactic and semantic arguments will show that despite appearances, so-called double genitives (*a friend of John's*) have less in common with a superficially quite similar type of simple genitive (*a friend of John*) than with standard partitives (*one of John's friends*). If double genitives are indeed a type of partitive, this explains why they also exhibit anti-uniqueness effects: \**I met [the friend of John's]* is bad but *I met the [friend of John's] that he traveled with from Mexico* is perfectly fine.

## 0. INTRODUCTION

Jackendoff (1968b) observes that partitives exhibit a peculiar effect that I will call ANTI-UNIQUENESS:

- (1) a. \*I met the [one of John's friends].  
 b. I met the [one of John's friends] that you pointed out last night].
- (2) a. \*I met the [friend of John's].  
 b. I met the [friend of John's] that you pointed out last night].

Apparently, partitive nominals such as *one of John's friends* cannot be combined with the definite determiner, as shown in (1a), unless the partitive first receives

\*Thanks to Barbara Abbott, Matthew Chen, Peter Culicover, Marcel den Dikken, David Dowty, Svetlana Godlevac, Graham Katz, William A. Ladusaw, Peter Lasnik, Louise McNally, David Perlmutter, Eric Potsdam, Roberto Zamparelli, and my anonymous referees.

additional modification, as in (1b). Jackendoff also notes that the same thing happens for so-called double genitives such as *friend of John's*, as shown in (2a) and (2b).

Though Jackendoff does not propose an explanation for anti-uniqueness, he does remark briefly that it may be necessary to subcategorize nominals as definite or indefinite. A partitive would be inherently indefinite, but modification by a restrictive relative clause (or prepositional phrase or adjectival phrase) would produce a nominal that was definite, and therefore suitable for combination with the definite determiner.

More recently, Kayne (1993, 1994) develops a syntactic analysis of double-genitives in which he also attributes anti-uniqueness contrasts as in (2) to differences in the syntactic category of the complement of *the*, as discussed in section 3.1. However, it is difficult to see how to extend either Jackendoff's suggestion or Kayne's proposal to account for many of the examples presented below, especially the data in section 4.5. The full range of data suggests that anti-uniqueness is an essentially semantic phenomenon, and any purely syntactic approach is bound to be at best incomplete.

I propose to explain these cases of anti-uniqueness by arguing for a minimal but crucial refinement of the semantic treatment of partitivity presented in Ladusaw (1982) and Hoeksema (1984). More specifically, I will claim that partitive nominal phrases have in their extension only **proper** subparts of the entity denoted by the NP object of the partitive *of*. (Perhaps surprisingly, no adjustment is needed to account for partitives embedded under universal quantifiers like *all of them* or *both of John's friends*; see section 3.4.) As explained in section 4, proper partitivity guarantees that a nominal such as *one of John's friends* must have at least two entities in its extension, and this semantic property is what renders such phrases incompatible with the definite determiner without further modification.

Extending this explanation for the anti-uniqueness effects for partitives as in (1) to double genitives as in (2) depends on establishing that double genitives and partitives share some relevant property. I will argue that double genitives are in fact a type of partitive. This claim goes back at least to Sommerschein (1921, p. 51):

In sentences like *He is a friend of John's* there is a noun understood of *John's* means of John's friends, so that the sentence is equivalent to *He is one of John's friends*. Here *of* means *out of the number of*.

Abstracting away from Sommerschein's specific assumptions, let us call the general notion that double genitives are in fact partitives the PARTITIVE HYPOTHESIS. As far as I know, in the generative literature only Jackendoff (1968b; 1977, p. 116) defends a version of the Partitive Hypothesis, and a number of authors argue specifically against it, including Stockwell, Schachter and Partee (1973), Alenbergh (1982), Lyons (1986), Narita (1986), McCawley (1988), and Taylor (1996). I will develop and extend Jackendoff's arguments in favor of the Partitive

Hypothesis, present new arguments, and respond to each of the counterarguments I am aware of in the sections below.

The formal account developed below builds on the approach to the semantics of partitives developed independently by Ladusaw (1982) and Hoeksema (1984). Their work focussed on what is now known as the Partitive Constraint, building in turn on the analyses of Jaekendoff (1977) and Barwise and Cooper (1981).

- (3) a. one of the two men  
b. \*one of both men

The Partitive Constraint rules out (3b) on the basis of a distinction in the interpretation of *both men* compared to the interpretation of *the two men*: *the two men* corresponds (in a sense made more precise below) to a (non-atomic) entity, but *both men* is irreducibly quantificational. The Partitive Constraint and its critics (including Abbott (1996), Hoeksema (1996b, 1996c), and Reed (1996)) are discussed in more detail in section 2.

Section 1 presents and defends the Partitive Hypothesis. Section 2 discusses the Partitive Constraint. Section 3 gives a compositional analysis of the constructions under study, and in particular motivates and defends the assumption of proper partitivity. Section 4 is the semantic heart of the paper: it explains how assuming proper partitivity accounts for anti-uniqueness, both for standard partitives and for double genitives.

## 1. THE PARTITIVE HYPOTHESIS

In addition to evaluating the Partitive Hypothesis, this section presents some of the theoretical assumptions that frame the discussion to follow. It also explains for the first time (as far as I know) how the Partitive Hypothesis can answer an objection first raised by Jespersen (1927, p. 16): if *a friend of John's* were indeed a partitive with a head nominal missing after the possessive clitic, and if that missing nominal is anaphoric to the overt head noun *friend*, why then doesn't *a friend of John's* mean the same thing as *a friend of John's friends*? The answer, I will suggest, is because the putative paraphrases contain two different *of*'s: one is the genitive *of*, and the other is the partitive *of*.

### 1.1. Against the Notion of a Pleonastic Genitive

The main alternative to the Partitive Hypothesis is that the *of* in *a friend of John's* is a genitive *of*. Indeed, Sweet (1898, p. 54), followed by Poutsma (1914, p. 77), calls expressions such as *friend of John's* the 'pleonastic genitive', though this term seems to have fallen out of use; more recently it is called the 'double genitive' as in, e.g., Quirk et al. (1972, p. 203). As Poutsma (1914, p. 77) puts it, '[s]ometimes the meaning of the preposition *of* is expressed over again by the genitive inflection of the following noun'. The assumption is that either the *of* or the phrase-final possessive morpheme 's must be semantically redundant.

The obvious first task on this approach is identifying which element is semantically potent and which is superfluous. In the generative literature, each of the two logical possibilities has been proposed. In Smith (1964), for example, genitive *of*-phrases are produced from double genitives by optional deletion of the possessive marking, that is, *a friend of John's*  $\implies$  *a friend of John*. Naria (1986, p. 193) and Lyons (1986, p. 128) also assume that the *of* is the "real" genitive, optionally adding a pleonastic possessive clitic to the postnominal *of* phrase.

Alternatively, there is the notion that the possessive clitic conveys its normal possessive meaning and it is the *of* that is semantically redundant. For example, in the postposing analysis of Stockwell, Schachter and Partee (1973, p. 708), the possessive NP starts out in prenominal position, along with a determiner; the possessive NP postposes, so that *a John's book*  $\implies$  *a book John's*, and an *of* is inserted by a general rule of case marking, resulting in *a book of John's*. In McCawley's (1988, p. 390) variant, a 'semantically empty' *of* is added to the prenominal possessive first, and it is the presence of the preposition which triggers the postposing. Kayne (1993, 1994) also proposes a pleonastic insertion of *of*, though for him the possessor phrase stays put and the possessee phrase preposes.

With the exception of Kayne's analysis, which is discussed in section 3.1, these syntactic analyses of the double genitive are not compatible with recent theoretical frameworks. Rather than argue against these proposals in detail on theoretical grounds, I will instead argue on empirical grounds in favor of an analysis on which both the possessive morpheme 's and the preposition *of* are always syntactically and semantically potent (see also Langacker (1992)).

English does sometimes allow redundant marking of semantic distinctions, notably for plurality or negation. For example, the second instance of the plural in the sentence *Unicycles have wheels* is a so-called dependent plural, and does not entail that any unicycle has more than one wheel. Similarly, the doubly negated sentence *I don't want no milk* means the same thing in negative-concord dialects as the singly negated sentence *I don't want any milk* means in those dialects in which negative concord is not obligatory. However, if the arguments given here in favor of the Partitive Hypothesis are correct, they support the claim that there is no such thing in English as a pleonastic genitive.

### 1.2. Some Descriptive Terminology

This paper adopts the following terminology:

- (4) a. Prenominal Possessive: [John's] friend is nice.  
b. Bare Possessive: I'm going to [John's].  
c. Genitive *of*-phrase: I met a friend [of<sub>GEN</sub> John].  
d. Standard Partitive: I saw two [of<sub>PART</sub> the men].  
e. Possessive Partitive: I saw two [of<sub>PART</sub> John's friends].  
(a.k.a. the "Double Genitive") I met a [friend of John's].

The Partitive Hypothesis concerns the status of (4e): is this a genitive construction or a partitive? Since the term “possessive partitive” only makes sense if the Partitive Hypothesis turns out to be correct, it does not constitute a neutral descriptive term. Unfortunately, the term “double genitive” is no better, since if the Partitive Hypothesis is correct, the *of* involved is not in fact the genitive *of*. Rather than invent a third more neutral term, I will use “possessive partitive” and “double genitive” more or less interchangeably as a way of referring to the expression type exemplified in (4e).

### 1.3. *Co-occurrence with the prenominal possessive*

Co-occurrence with the prenominal possessive provides an argument in favor of the Partitive Hypothesis. In general, a genitive *of* phrase cannot occur along with a prenominal possessive.

#### (5) \*Mary’s child of John

This familiar fact presumably follows from some requirement amounting to the-matic uniqueness: a nominal can have only one syntactically specified possessor (where a coordinate possessor such as *John’s and Mary’s* is of course a single syntactic constituent). The problem with (5), then, is that *Mary* and *John* are syntactically independent possessors.<sup>1</sup> But if the Partitive Hypothesis is correct, the *of* in possessive partitive phrases is not the genitive *of*, and there is nothing to prevent it from occurring with a prenominal possessive. Surprisingly, this turns out to be the case:

- (6) a. my favorite story of yours  
b. Mary’s most recently purchased book of John’s

These facts clearly argue against considering the possessive partitive to be a post-posed prenominal possessive, as in Stockwell, Schachter and Partee (1973) and McCawley (1988). In general, these examples are highly problematic for any analysis that assumes that double genitives contain a genitive *of*, since they would constitute glaring counterexamples to the general thematic uniqueness constraint illustrated in (5).

### 1.4. *Compatibility with relational and non-relational nouns*

I am basing my analysis of possessive and genitive constructions on the account developed in Barker (1995). In particular, I assume that prenominal versus post-nominal possessives differ in the way they interact with relational head nouns.

<sup>1</sup>There is at least one possible exception: *Mary’s pictures of John*. But *of John* is almost certainly an internal argument here, as in *Mary’s love of John*; in support of this idea, note that *Mary’s pictures of John* can only refer to pictures representing John’s image, and cannot entail that John possesses the pictures. See also the discussion of (11) below.

In the prenominal possessive construction, it is well known (see, e.g., Williams (1982, p. 283)) that the relation between the possessor and the thing possessed can take on a wide range of possible values. For instance, a phrase such as *John’s silhouette* in the right context can refer to the outline of (a part of) John’s body, or else some cardboard shapes that he cut out in art class, or some other object of the appropriate type that John is associated with in some contextually specified manner.

In contrast, the possession relation expressed by a postnominal genitive *of*-phrase is more limited: it must express the relation named by the head noun. Thus *a silhouette of John* must refer to the outline of John’s body, and not to some cardboard shapes that John has cut out in art class.

The reason this assumption is relevant is that only some nouns have an easily accessible relational interpretation. For instance, consider the difference between a day and a birthday: the noun *day* denotes a non-relational predicate that is true of days of the year. The noun *birthday* also has for its extension entities that are days of the year; however, a day is a birthday only in virtue of there being a certain person whose birthday it is. Other non-relational/relational near-minimal pairs include *animal* versus *pet*, *man* versus *son*, *horse* versus *steed*, *soldier* versus *enemy*, and so on.

Thus if the possession relation expressed by a postnominal genitive *of* is always interpreted as the relation denoted by the head noun it modifies, postnominal genitive *of* phrases should only be compatible with a relational head noun.

- (7) a. Today is John’s birthday.  
b. Today is the birthday of John.

- (8) a. Today is John’s day.  
b. \*Today is the day of John.

As predicted, an obviously relational noun such as *birthday* is perfectly compatible with either a prenominal possessive or with a postnominal genitive *of* phrase, as shown in (7). In addition, the non-relational noun *day* is perfectly fine in construction with the prenominal possessive, even if the circumstance that makes today count as John’s day remains vague. In contrast, an attempt to combine a non-relational noun with a postnominal genitive *of* phrase as in (8b) is distinctly unnatural.

If the Partitive Hypothesis is correct, possessive partitive phrases should systematically be possible with non-relational nominals even though a postnominal genitive *of* phrase is not.

- (9) a. \*a stick of Mary  
b. a stick of Mary’s

- (10) a. \*a battalion of Mary  
b. a battalion of Mary's

If possessive partitives were genitives after all, however, the contrast in (9) and (10) would be mysterious. On the Partitive Hypothesis, of course, the crucial difference is that the *of* involved in (9b) and (10b) is a partitive *of* and not a genitive *of*, and therefore is under no restrictions with respect to whether the head noun is relational or not.

Furthermore, we should also expect that even when the head noun is relational, possessive partitive phrases will have interpretations not available to genitive *of*-phrases: because there is no genitive *of* present, there is no constraint that the possession relation must be identical to the relation named by the head noun. Thus possessive partitive phrases should be capable of expressing a context-controlled possession relation.

- (11) a. a picture of John  
b. a picture of John's

As noted separately by McCawley (1988, p. 389) and Taylor (1996, p. 328), and contra Lyons (1986), although the genitive *of*-phrase in (11a) can only be a picture whose subject is John, the possessive partitive phrase in (11b) can refer to a picture which John owns, or which he made, etc. (see section 3.3).

Thus despite superficial similarity, *friend of John* and *friend of John's* are clearly deeply different syntactically and semantically: only one is compatible with a prenominal possessive, and only one is compatible with a non-relational head noun.

### 1.5. A solution to Jespersen's puzzle

Distinguishing the genitive *of* from the *of* in possessive partitive phrases immediately leads to an explanation for one of the leading objections to the Partitive Hypothesis, an objection put forward by Jespersen (1927, p. 16), and repeated or reinvented by many others (including myself in Barker (1995, p. 26)). Jespersen dismisses the Partitive Hypothesis by giving the following argument: *a friend of John's* can't be a partitive in which the missing nominal in the bare possessive is anaphoric to the head noun, because if we substitute in for the missing nominal, we get *a friend of John's friends*, which means something quite different. To see that these expressions are not synonymous, note that someone can be a friend of John's friends without necessarily being a friend of John.

However, Jespersen's argument fails to go through once we recognize that there are two distinct uses of *of* involved.

- (12) a. a friend of<sub>PART</sub> John's (possessive partitive)  
b. a friend of<sub>GEN</sub> John's friends (postnominal genitive of phrase)

If (12a) contains a partitive *of* then it is no wonder that the two phrases in (12) mean different things. The semantic analysis presented below predicts that (12a) describes someone who is among the set of John's friends, and (12b) describes someone who stands in the friend-of relation to the set of John's friends (and who does not necessarily stand in the friend-of relation to John himself).

Note that Jespersen's key example involves the highly relational noun *friend*. The result is quite different if we substitute in a non-relational noun such as *telephone book*:

- (13) a. a telephone book of<sub>PART</sub> John's  
b. \*a telephone book of<sub>GEN</sub> John's telephone books

If the Partitive Hypothesis is correct, then the *of* in (13a) is a partitive *of* (as indicated), and is perfectly compatible with a non-relational head noun. In contrast, the impossibility of (13b) is exactly what we would expect on the assumption that the *of* is a genitive *of*, and therefore incompatible with a non-relational head noun.

The solution to Jespersen's puzzle, then, is to realize that *a friend of John's* and *a friend of John's friends* instantiate two distinct construction types.

### 1.6. A complication: context-controlled bare possessives

Sometimes the interpretation of a bare possessive can be controlled by context:

- (14) a. John's car is nicer than Mary's. (construed as *Mary's = Mary's car*)  
b. These tools are Mary's.

See Mandelbaum (1994) for an extensive discussion of these types of possessives, and especially the construction in (14b).

Since context-controlled bare possessives function as independent noun phrases, they can occur in any NP position—including object position of a genitive *of*:

- (15) a. The color of John's truck is darker than the [color of<sub>GEN</sub> Mary's].  
b. I want a [taste of<sub>GEN</sub> Mary's]!

This means that an expression can be ambiguous between a genitive *of* followed by a bare possessive versus a possessive partitive construction:

- (16) Papers of John's students tend to be longer than papers of Mary's.

On one reading the second *of* is a genitive *of* and the implicit nominal associated with *Mary's* is controlled by context. On this reading, the papers that John's students write are longer than the papers that Mary's students write. On the other reading, the second *of* is a partitive *of*, and we have an instance of the possessive partitive construction; on this reading, the papers of John's students are longer than the papers that Mary herself writes.

Because possessive partitives exhibit anti-uniqueness properties, (16) can be rendered unambiguous by inserting the definite determiner *the*:

- (17) Papers of John's students tend to be longer than the papers of Mary's.

The presence of the definite determiner is compatible only with a genitive interpretation on which the implicit possessee nominal is controlled by context.

Though potentially confusing, the existence of examples such as (15), (16) and (17) are not a problem for the Partitive Hypothesis. Because they require relatively heavy-handed contexts, we can safely ignore their existence for examples given in a neutral context. But even in contexts in which these alternative interpretations become prominent enough to be detected, they seem to behave exactly as expected with respect to our assumptions about genitive *of* phrases, and in particular with respect to anti-uniqueness.

### 1.7. Summary of section 1

The Partitive Hypothesis claims that (the dominant interpretation of) *a friend of his* (in a neutral context) contains the partitive *of*, i.e., that double genitives are in fact possessive partitives. Unlike genitive *of* phrases, possessive partitives are compatible with a pronominal possessive (*my favorite story of yours/\*you*, section 1.3) and with non-relational head nouns (*a telephone book of John's/\*John*, section 1.4). Once we recognize that genitive uses of *of* behave differently than partitive uses, Jespersen's puzzle disappears: the reason that *a friend of PART John's* doesn't mean the same thing as *a friend of GEN John's friends* is that the two expressions involve two different uses of *of* that have different meanings.

Most importantly for the purposes of this paper, anti-uniqueness effects appear exactly where the Partitive Hypothesis predicts there is a partitive use of *of*:

- (18) a. She married the son of<sub>GEN</sub> her lawyer.  
 b. \*She married the son of<sub>PART</sub> her lawyer's.  
 c. She married the son of<sub>PART</sub> her lawyer's who helped her win her case.

The genitive *of* in (18a) is compatible with the uniqueness implications of the definite determiner *the*. The addition of the possessive clitic in (18b) signals the presence of the possessive partitive construction, which is incompatible with the uniqueness implications in (18b) without further modification, as in (18c).

## 2. THE PARTITIVE CONSTRAINT

The semantic treatment in sections 3 and 4 is partly based on the analyses of the partitive in Ladusaw (1982) and Hoeksema (1984). (Although these analyses were developed independently, they embody essentially the same central idea, and I will treat them as roughly equivalent.)

Ladusaw and Hoeksema attempt to give a semantic characterization of what has come to be called the Partitive Constraint ever since Jackendoff (1977). However, semantic approaches to the Partitive Constraint have recently come under attack (e.g., Abbott (1996), Hoeksema (1996b, 1996c), and Reed (1996)). Hoeksema himself declares, somewhat at odds with his own earlier (unpublished) work, that the Partitive Constraint is "best thought of in pragmatic terms" (Hoeksema 1996b, p. 20).

If the pragmatists prevail, what are the consequences for the analysis of anti-uniqueness? On the empirical side, it is irrelevant whether Partitive Constraint effects are semantic or pragmatic, as long as double genitives and standard partitives behave the same way in the relevant contexts (since the Partitive Hypothesis predicts that they should). And indeed they do:

- (19) a. a friend of the two women's  
 b. \*a friend of both women's  
 c. a friend of both women

Replacing the individual-denoting possessor in (19a) with the quantificational possessor in (19b) markedly reduces acceptability in the possessive partitive construction; for comparison in (19c), a quantificational NP is perfectly fine as the object of the genitive *of*<sup>2</sup>.

On the theoretical side, I am confident that the spirit of the main explanation of anti-uniqueness in terms of proper partitivity can be reconstructed within any sufficiently detailed analysis of the partitive that gets the truth conditions right. Nevertheless, since the Ladusaw/Hoeksema hypothesis is built into my formal account at a fairly basic level, it is worthwhile defending this particular approach as viable. (Later sections can be read independently of this one.)

Jackendoff's (1977, p. 113) version of the Partitive Constraint sounds syntactic: he observed that NP object of partitive *of* must have "a demonstrative or genitive specifier." However, Jackendoff explicitly intended this generalization to be enforced in the semantic component, not in the syntax. Thus since the definite determiner *the* functions semantically like a demonstrative (according to Jackendoff's terminology), the prediction is that *few of the many men* is fine, but *\*few of many men* is ruled out on semantic grounds.

Many people take the Partitive Constraint to be a definiteness restriction, and requiring that the partitive NP be definite is a reasonable first approximation of

<sup>2</sup>We have to be somewhat cautious in attributing the deviance of (19b) to the Partitive Constraint, since it is not self-evident that the bare possessive *both women's* will ever fail to denote a (group) individual just because the NP *both women* does; however, Barker (1995) gives a detailed formal model for interpreting possessives containing quantificational possessors on which this follows. Regardless, examples like (19b) would only be a potential problem for either the Partitive Hypothesis or the Partitive Constraint if they were grammatical.

the facts. The issue of whether the Partitive Constraint is semantic or not then becomes an issue of whether definiteness is semantic. For instance, Barwise and Cooper (1981) treat the Partitive Constraint as a definiteness effect, and also give a detailed semantic characterization of which NPs are definite based on certain model-theoretic properties of determiner denotations.

Abbott (1996), however, makes a compelling case that there is no definiteness restriction on the partitive NP. She presents a large number of examples in which the embedded NP is clearly morphologically indefinite:

- (20) a. This is one of a number of counterexamples to the PC. (Ladusaw 1982)  
 b. Any of several options are open to us at this point.

In addition, Abbott draws attention to the traditional distinction between count partitives (*three of the apples*) versus mass partitives (*half the apple*), only to deny that they constitute distinct constructions. The reason this is relevant is that mass partitives certainly do not require their object to be definite:

- (21) a. Why settle for half of a loaf?  
 b. That sounds like too much of a good thing.

(We will return to mass partitives below.) I will assume, following Abbott (1996, p. 28), that there is no (semantic) definiteness constraint on the embedded NP in a partitive.

Even though Ladusaw presents his hypothesis as an extension of Barwise and Cooper's approach, we shall see that there is in fact no essential connection between Ladusaw's Partitive Constraint and definiteness:

- (22) Ladusaw (1982, p. 238): The Partitive Constraint can be stated ...  
 by requiring that the NP in a partitive phrase always denotes  
 an individual.

This is the form of the Partitive Constraint that will be built into the denotations proposed below in section 3.2. In the remainder of the current section I will explain the intuition behind (22), and then defend it against Abbott's (1996) vigorous critique.

In Ladusaw's technical vocabulary, the term "individual" explicitly includes non-atomic ("plural") entities (see section 4). For instance, in a certain context the NP *the two men* might denote the group individual consisting of Sam and Tom.

Ladusaw demonstrates that (22) is empirically superior to Barwise and Cooper's treatment. More specifically, the determiner *both* clearly satisfies Barwise and Cooper's definition of a definite determiner, and therefore ought to be perfectly fine in a partitive NP.

- (23) a. one of the two men  
 b. \*one of both men

The reason for the contrast in (23), according to Ladusaw, is that the NP *both men* is irreducibly quantificational, and cannot be identified with any single entity. To see why, note that if Sam and Tom cooperate in lifting a piano together, then the group entity consisting of Sam and Tom has the property of lifting a piano, hence the non-distributive reading of the sentence *The two men lifted a piano* is true. But in the same situation, the sentence *Both men lifted the piano* has only a distributive interpretation, and can only be true if each of the men lifted a piano by himself. This shows that the denotation of *both men* cannot be identified with the group consisting of Sam and Tom. Assuming that there is no other group individual that could reasonably serve as the denotation of *both men*, the Partitive Constraint as expressed in (22) is sufficient to predict the contrast in (23).

Reed (1996) proposes to replace the semantic version of the Partitive Constraint with a parallel constraint at the level of discourse representation. She assumes (1996, p. 149) that it follows from the discourse function of a partitive that the embedded NP (i.e., the object of partitive *of*) "must access a discourse group", and that this requirement is responsible for Partitive Constraint effects. Similarly, Abbott (1996, p. 41) also imposes a discourse requirement that "some reason must be provided for mentioning the outer group," i.e., the group associated with the embedded NP. But since a discourse group can always be associated with a group individual in the underlying ontology, we can hope that the spirit of the analysis below could be reconstructed at the level of discourse representation, if need be.

One of the attractions of a discourse-level treatment is that it provides a natural way to handle indefinite examples like those in (20), since one of the hallmarks of indefinites is that they can evoke discourse referents (see Reed (1996)). Along the same lines, Ladusaw (1982, p. 240), discussing (20a), suggests that indefinites work as partitive NPs only when they are "specific", whatever specificity turns out to be from a semantic point of view. Although specificity may be a sufficient condition to render a use of an NP compatible with the Partitive Constraint, Abbott (1996) argues that specificity is not a necessary condition. For instance, it does seem that a person can use (20a) without having any specific set of counterexamples in mind.

However, despite Ladusaw's cautious assessment, (20a) is not necessarily a counterexample to (22), depending on how we interpret the constraint. One possibility is that (22) says "an NP can occur in a partitive only if it always (in all models) denotes an individual". This seems to be the interpretation Ladusaw had in mind, and it is the interpretation most closely parallel to the Barwise and Cooper version of the Partitive Constraint that (22) was intended to replace. Alternatively, (22) can be taken as saying "whenever an NP occurs in a partitive, it must denote an individual in the context in which that partitive is used". This second interpretation gives (22) the extra flexibility it needs in order to cover some indefinite examples. In the right context, a morphologically indefinite NP can sometimes denote exactly the sort of object required by (22).

- (24) a. I found an even prime!  
 b. Fortunately, two truth values suffice for most purposes.

In contexts in which the number 2 is the only even prime, the indefinite NP *an even prime* accidentally denotes the same kind of model-theoretic object as a definite description. In the jargon of generalized quantifier theory, its extension is the set of all properties of the number 2, which makes it a proper principal ultrafiliter. Ladusaw shows that there is an isomorphism between such generalized quantifiers and the set of individuals.

Similarly for (24b): in a context in which true and false are the only (relevant) truth values, the indefinite NP *two truth values* accidentally denotes the same generalized quantifier as *the two truth values*.

- (25) Because each proposition denotes at most one of two truth values...

Therefore if we relativize (22) to contexts, we correctly predict that the partitive in (25) is good.

If this line of thinking is on the right track, it suggests that indefinite examples like those in (20) will be acceptable only in contexts in which the indefinite NPs have denotations that are accidentally (isomorphic to) group individuals. One prediction is that indefinites will be unacceptable in contexts that entail the existence of additional entities with the relevant properties (cf. Zamparelli (1997)):

- (26) a. \*This is one of several of 10 counterexamples to the PC.  
 b. \*I hurt two of half my fingers.

The reason that (26a) is out is because the semantics guarantees that there is no context in which *several of 10 counterexamples* will ever denote a proper principle ultrafiliter (i.e., a generalized quantifier corresponding to an individual).

Abbott (1996) shows that similar examples improve dramatically in contexts that guarantee that the denotation of the partitive NP exhausts all of the relevant entities:

- (27) He brought back several of twenty of his roses that were sick  
 to get a refund, but had to just throw out the rest, which  
 was about fifteen. (Abbott (1996, p. 41))

This context renders the indefinite *twenty of his roses that were sick* acceptable as a partitive NP only on the implicit assumption that the set of twenty roses exhausts the set of sick roses. If there were 24 roses in total, and 22 of them were sick, then (27) is out.

In further defense of maintaining (22) as a semantic constraint, it correctly predicts that some partitives will be impossible by virtue of what the embedded NP means, with no room for amelioration through manipulation of the surrounding context. For instance, it is a well-known theorem of statistics that if as few as 23 people are chosen at random, there is a better than even chance that at least two of them accidentally have the same birthday.

- (28) My dear fellow statisticians, I note that it would take at least  
 23 chairs to provide most people in this room with a seat.  
 \*Therefore it is likely that at least two of most people in this room  
 have the same birthday.

The partitive in *at least two of most people in this room* violates the Partitive Constraint, and is uninterpretable, despite the explicit contextual use of the concept expressed by *most people in this room*. What is lacking in the context is any reason to distinguish any of the many ways of choosing a set containing most of the people in the room from any other set. Therefore there is no excuse for coercing or construing the embedded NP as denoting a group individual, and hence no way for the sentence to escape from violating the Partitive Constraint.

There remains one final class of examples due to Abbott (1996) that at first glance appear to be strong counterexamples to (22) as a candidate for a semantic Partitive Constraint.

- (29) a. The Smithsonian donated most of both rare book exhibits.  
 b. One third of every book Chomsky writes is footnotes.

Since the Partitive Constraint predicts that NPs determined by *both* or *every* have denotations that are incompatible with occurring in a partitive, why are the examples in (29) so good?

The crux of the explanation is that the quantifiers in (29) get a wide-scope (distributive) reading, and this in turn forces the partitive to have a mass interpretation.

- (30) a. I already read half of the books.  
 b. I already read half of all the books.

The partitive in (30a) has at least two construals: either one out of every two of the books were read (count interpretation, with each book conceived of as an indivisible whole), or the speaker reads half of each book (mass interpretation, on which we have access to sub-portions of each book). But the addition of the quantifier *all* forces a mass interpretation, so that (30b) guarantees that each book was partially read.

In section 4.6 I show that given familiar assumptions for dealing with quantifier scoping, examples like those in (29) are perfectly consistent with the Partitive Constraint. In fact, it is the Partitive Constraint that forces the quantificational NP to scope out of the partitive, leaving behind an individual-denoting variable; the shift to the mass domain is then forced by proper partitivity.

In any case, I will assume for the remainder of the paper that whether or not the Partitive Constraint ultimately turns out to be semantic or pragmatic, at the very least the semantics of the partitive is consistent with the form of the Partitive Constraint stated in (22).

## 3. PROPER PARTITIVITY

This section lays out a compositional semantic analysis that embodies the Partitive Hypothesis. On this analysis the meaning of *of* in the possessive partitive construction is intimately related to the meaning of the *of* in the standard partitive. In order to be descriptively adequate, the analysis must explain why possessive partitives often (but not always!) seem to mean roughly the same thing as superficially similar genitives, i.e., why *a friend of John's* can mean essentially the same thing as *a friend of John*. On the analysis proposed here, one important difference in meaning boils down to the requirement that the partitive construction (in English at least) requires proper partitivity, an assumption motivated and defended in section 3.4.

## 3.1. Syntactic assumptions

It is not possible to explore the syntactic aspects of the Partitive Hypothesis in depth here. Nevertheless, some comments on the syntactic structure underlying standard partitives and possessive partitives are in order as a basis for the semantic analysis to follow.

A number of authors, notably Chomsky (1965, p. 107) and Keenan and Savi (1986), have analyzed the gross phrase structure of standard partitives as [[Det of Del[N] (e.g., [*some of the*] *boys*)]. The idea of such analyses is that syntactically complex noun phrases can be factored into a nominal predicate (here, *boys*) on the one hand and everything else (i.e., *some of the*) on the other hand, and the “everything else” part semantically can be construed as having the same semantic type as a lexical quantificational determiner meaning. Although the semantic motivation for this approach is impeccable, there are compelling syntactic arguments against this approach, including those given in Jackendoff (1968a), Stockwell, Schachter and Partee (1973, p. 122 ff.), Selkirk (1977), and Hoeksema (1984). To add just one more argument here, note this approach cannot easily account for phrases such as [*some [of them]*], in which there is no nominal property that can be factored out (in particular, *some of* certainly cannot be given a determiner meaning in this instance). Therefore I will assume that standard partitives have the structure [Det [of NP]] (e.g., [*some [of the boys]*]).

The syntax of the possessive partitive is more elusive. One intriguing question is how to guarantee the apparent identity between the matrix head noun and the missing possessee nominal. That is, in *two friends of John's*  $\emptyset$ , the missing possessee nominal is roughly understood to be *friends*. One possibility is to guarantee the equivalence through head movement:

- (31) a. two  $\emptyset$  of John's friends  
b. two friends<sub>i</sub> of John's  $\emptyset_i$

The basic idea is that (31b) is related to (31a) through head movement of the noun *friends*, as indicated by coindexation. This proposal is reminiscent of Baker's

(1988, p. 48; pp. 92–105) head movement analysis of Possessor Stranding in Mohawk.

One problem is that current theories of head movement prohibit movement past the closest governing head, upon pain of violating the ECP (see the theorem given in Baker (1988, pp. 51–63)). It is a puzzle, therefore, how a head movement analysis could raise the possessee head past the intervening preposition *of* (there are other complications as well).

One alternative is to raise a maximal projection instead of a head. Kayne (1993, p. 5; 1994, chapter 8) develops one version of this idea in some detail.

- (32) a. [ $\emptyset$  [ $D^0_{+DEF}$  [John [ $'s$  [two friends]]]]]  
b. [[two friends]<sub>i</sub> [ $D^0_{-DEF}$  of] [John [ $'s$   $e_i$ ]]]]

Building on an analysis of Hungarian due to Szabolcsi (e.g., Szabolcsi 1983), Kayne suggests that possessives such as *John's two friends* are always generated as the complement to a higher silent determiner  $D^0$ . In (32a), if the (silent)  $D^0$  is definite, it assigns case to the possessor *John*, and we get *John's two friends*. Indefinite  $D^0$ , by assumption, is unable to assign case; a pleonastic *of* is inserted in  $D^0$ , and the complement of the possessive  $'s$  raises to spec of  $D^0$  as shown in (32b) to yield *two friends of John's*. One virtue of the analysis is that it explains why *John's two friends* means roughly the same thing as *two friends of John's*, since they arise from structures that differ only in definiteness.

However, this approach has a number of difficulties. If a double genitive occurs with an initial determiner (e.g., *every in every friend of John's*), it is necessary for Kayne to generate the determiner in the lower position. This is because the pleonastic *of*, by hypothesis, occupies the matrix determiner position. Unfortunately, unlike the example in (32), some double genitives (e.g., *some friends of John's*) have no counterpart with the determiner in the lower position (\**John's some friends*); Kayne therefore stipulates that certain quantifiers, including *some*, *any*, and *at(n)*, can't surface in the lower position. Even more troublesome, there is at least one clear case in which a double genitive does have a counterpart with the determiner in the lower position, but with a distinctly different meaning: to adapt a famous minimal pair from Lakoff (1970), there is no reading of *few children of John's* that means the same thing as any construal of *John's few children* (only one entails that the number of John's children is small). Furthermore, as we saw in section 1.3, under the right circumstances double genitives can occur with possessive determiners, as in *my favorite stories of yours*, even though there is room for only one possessor in Kayne's structure.

Note that Kayne's proposal predicts that double genitives will necessarily be indefinite (since raising is triggered only by an indefinite empty  $D^0$ ). However, even setting aside for a moment examples involving the definite determiner *the*,

examples like *every friend of John's* and *my favorite stories of yours* are difficult to consider as indefinites.<sup>3</sup>

Like Kayne, Taylor (1996, p. 336) also comes to the conclusion that the gross phrase structure of double genitives is  $[a\ friend]\ of\ [John\ 's]$ , but for very different reasons. He suggests that the semantic relation between the matrix head noun and the *of* phrase is one of apposition. There are at least two immediate problems with this hypothesis. The first is that it incorrectly predicts that pronouns or proper names should be able to appear in the pre-*of* position. But this is impossible (consider *\*it of John's* and *\*John of Mary's*), despite the fact that one of the notable properties of appositives is that they are capable of modifying proper names (e.g., *John, who called yesterday...*). The second problem is that there is clear evidence that the modification relationship in a double genitive is often clearly restrictive rather than appositive: if the phrase structure of *my favorite cousin of Bill's* were  $[my\ favorite\ cousin]\ of\ Bill's$ , we should expect that no matter what the relationship with Bill, my favorite cousin of Bill's should at least be my favorite cousin; but in fact, my favorite cousin of Bill's need not necessarily be my favorite cousin, nor even my cousin. An appositional analysis may be more appropriate for the demonstrative double genitives discussed in section 5, however.

These facts all suggest that double genitives have a full-fledged determiner position to the left of the matrix head noun, and I will therefore adopt the following as the basic phrase structure for double genitives:

- (33) [Det [N' [of<sub>PART</sub> NP's]]] [every [good friend [of John's]]]

This structure leaves open the question of whether the matrix N' originates underneath the possessive 's and moves up through head movement, moves up through some other type of movement, is merely co-indexed with the lower position, or even turns out to have no syntactically-mediated connection with the lower position. Fortunately, as we will see, it is possible to construct a detailed semantic analysis that can easily adapt to any of these syntactic alternatives.

<sup>3</sup>Kayne is one of the few authors who attempts to explain an anti-uniqueness contrast. On his analysis, double genitives must at least be DPs (since they are headed by an indefinite D<sup>0</sup>). The definite determiner *the* naturally cannot take a DP as a complement, which explains the ungrammaticality of *\*the friends of John's*. However, Kayne (1994, p. 86) suggests that *the* can take a CP as a complement, which is why *the friends of John's that you introduced me to* is acceptable, given an analysis like Kayne's on which *friends of John's that you introduced me to* is a CP headed by *that*. However, we will see in section 4.5 that syntactically identical examples can give rise to an anti-uniqueness contrast depending on their specific entailments, so it is not clear how Kayne's analysis—or any syntactic analysis—could be extended to account for them.

### 3.2. The basic semantic analysis

Since the Partitive Hypothesis claims that possessive partitives are just a special kind of partitive, the obvious place to begin to construct a compositional account is with the analysis of standard partitives.

The formal accounts of Ladusaw (1982) and Hoeksema (1984) can be roughly approximated by giving the partitive *of* the translation in (34a):

- (34) a.  $[[of_{PART}]] \equiv \lambda x \lambda P \lambda y [P(y) \wedge y \leq x]$   
 b.  $[[of_{PART}]] \equiv \lambda x \lambda P \lambda y [P(y) \wedge y < x]$

I propose instead to use the translation in (34b). The only difference is the use of '<' instead of '≤'; this difference amounts to assuming proper partitivity, which will be explained and justified in section 3.4.

For the sake of exposition, let us assume that standard partitives contain a silent, semantically transparent nominal  $\emptyset_N$  (we'll reconsider this assumption below):

- (35)  $[[\emptyset_N]] \equiv \lambda x [x = x]$

This allows us to treat partitive *of* phrases as nominal modifiers, just like other types of prepositional phrases. Thus the denotation of the nominal  $[\emptyset_N\ of\ John's\ tools]$  (as in *two  $\emptyset_N\ of\ John's\ tools$* ) will be as follows:

- (36) a.  $[[of]]([\![John's\ tools]\!])([\![\emptyset_N]\!])$   
 b.  $= [[\lambda x \lambda P \lambda y [P(y) \wedge y < x]]([\![John's-tools]\!])([\![\emptyset_N]\!])]$   
 c.  $= [\lambda P \lambda y [P(y) \wedge y < \mathbf{John's-tools}]]([\![\emptyset_N]\!])$   
 d.  $= \lambda y [[\![\emptyset_N]\!](y) \wedge y < \mathbf{John's-tools}]$   
 e.  $= \lambda y [[\lambda x [x = x]](y) \wedge y < \mathbf{John's-tools}]$   
 f.  $= \lambda y [[y = y] \wedge y < \mathbf{John's-tools}]$

Since every entity is identical to itself, (36f) is equivalent to  $\lambda y [y < \mathbf{John's-tools}]$ .

This is the property that is true of all proper subsets of the set of John's tools.

The translations in (34) assume that the NP object of the preposition denotes an entity, i.e., the first argument to the function denoted by the preposition is an entity-level variable *x*, rather than, say, a generalized quantifier. In the representations in (36), I intend for the symbol **John's-tools** to denote a definite description that picks out the (maximal) entity *x* such that *x* corresponds to the collection of John's tools (see section 4 for more detailed discussions concerning the ontology I am assuming here). This assumption directly embodies the statement of the Partitive Constraint discussed above in (22).

One advantage of assuming this approach to the implementation of the Partitive Constraint is that it simplifies exposition. The reason is that it allows us to avoid dealing with the full machinery of generalized quantifiers. I will instead adopt the strategy of Partee (1987) and allow noun phrases to denote at the

lowest level of the semantic type hierarchy consistent with their basic meaning. This is possible as long as we also provide type-shifting rules for construing noun phrases at a different level when necessary. As Partee explains, this allows certain constructions to place restrictions on the semantic type of their argument. For instance, Partee argues that the predicative use of the copula requires a predicate-level argument, so that we have *John is a doctor* but not *\*John is every profession*.

It bears emphasizing that Partee’s type-shifting technique allows us to express the exact content of the Partitive Constraint merely by stipulating that the first argument to the partitive *of* must be an entity-denoting expression. As explained in section 2, assuming that the embedded NP denotation has the semantic type of an entity is tantamount to the Partitive Constraint. To the extent that (34b) gives the correct denotation for the partitive *of*, it is possible to claim that the Partitive Constraint does not need to be stated separately, but rather follows directly from the meaning of the partitive *of*. This is what Ladusaw (1982) calls reducing the Partitive Constraint to a “theorem of the semantics”.

The null nominal in (35), adopted for expository simplicity, is not an essential part of the analysis. Once again we can appeal to type-shifting strategy: if we assume that determiners uniformly denote the same function in their partitive and non-partitive uses, then we must shift the partitive *of* phrase from the semantic type of a nominal modifier to the semantic type of a nominal; or if we allow the denotation of the determiners to shift, instead of denoting functions from nominals to generalized quantifiers, they will denote functions from nominal modifiers to generalized quantifiers. Perhaps the simplest idea would be to allow the partitive *of* to have syntactic category N/NP (looking for a noun phrase to its right to form a nominal) and the denotation of the partitive *of* would be  $\lambda x \lambda y [y < x]$  (cf. (34b) above). In any case, the net effect will be as in (36).

We are now in a position to see how the denotation of the possessive partitive *of* can be viewed as distinct from but closely related to the standard partitive *of*. It would have the syntactic category  $(N \setminus N)/(NP \setminus N)$  (combines with a bare possessive to its right and a nominal to its left to form a nominal) with the following (extensional) denotation:

$$(37) \quad \begin{array}{ll} \text{a. } \llbracket of_{\text{PART}} \rrbracket & \equiv \lambda x \lambda P \lambda y [P(y) \wedge y < x] \\ \text{b. } \llbracket of_{\text{POSS-PART}} \rrbracket & \equiv \lambda D \lambda P \lambda y [P(y) \wedge y < \mathcal{D}(P)] \end{array} \quad (\text{copied from (34b)})$$

Here the semantic identity of the overt matrix head noun and the missing nominal in the bare possessive is guaranteed by stipulating that the property *P* which serves as the argument to the possessor phrase denotation  $\mathcal{D}$  is the same property *P* denoted by the nominal modified by the *of* phrase.

Here is a possessive partitive example parallel to (36) illustrating the use of (37b):

$$(38) \quad \begin{array}{ll} \text{a. } \llbracket tools\ of\ John\ 's \rrbracket & \\ \text{b. } = \llbracket of \rrbracket (\llbracket John\ 's \rrbracket) (\llbracket tools \rrbracket) & \\ \text{c. } = \llbracket \lambda D \lambda P \lambda y [P(y) \wedge y < \mathcal{D}(P)] (\llbracket John\ 's \rrbracket) (\llbracket tools \rrbracket) \rrbracket & \\ \text{d. } = \llbracket \lambda P \lambda y [P(y) \wedge y < \llbracket John\ 's \rrbracket] (\llbracket tools \rrbracket) \rrbracket & \\ \text{e. } = \lambda y (\llbracket tools \rrbracket (y) \wedge y < \llbracket John\ 's \rrbracket (\llbracket tools \rrbracket)) & \\ \text{f. } = \lambda y (\llbracket tools (y) \wedge y < \mathbf{John\ 's-tools} \rrbracket) & \end{array}$$

Comparison of (36f) and (38f) should make clear how on this analysis *two of* PART *John’s tools* is semantically equivalent to *two tools of* POSS-PART *John’s*: in both cases, the entities in the extension of the nominal predicate will be exactly those entities that correspond to proper subsets of the set of John’s tools.

Two technical details deserve mention, one involving relational nouns, and the other involving plural nouns. Recall in section 1.3 it was important to distinguish relational nouns from non-relational nouns. The derivation in (38) assumes that *tool* has a non-relational use, just like *day* or *potato*. If we wish to make the argument structure of relational nouns explicit in the truth-conditional semantics, this is not terribly difficult, but it does require a certain amount of bookkeeping. Adapting the formal treatment of relational nouns in Barker (1995) (but without presenting the full details here), we would have translations like that in (39):

$$(39) \quad \llbracket friend\ of\ John\ 's \rrbracket = \lambda y (\llbracket \exists x \text{friend-of}(y, x) \rrbracket \wedge y < \mathbf{John\ 's-friends} \rrbracket)$$

Here, **John’s-friends** corresponds to the set of entities that stand in the **friend-of** relation to John. Note that the first conjunct only requires that *y* be a friend of some arbitrary person; but since the second conjunct further restricts the property to contain only entities who are specifically John’s friends, the result is that the partitive nominal denotes all (proper) subsets of the set of John’s friends, which matches intuitions.

The second thing to note about (38) is that the head noun *tools* is morphologically plural. What if we have *tool of John’s* instead? Even though the overt head noun *tool* is morphologically singular, combining the possessive *John’s* with the property denoted by *tool* must denote the set of all of John’s tools, not just some unique maximally salient individual tool. I assume that the singular *tool* and the plural *tools* both denote the same property, namely, the property that is true of all entities that are tools possessed by John, and that implications of uniqueness are presuppositions calculated independently of the extensional denotation of the head noun.<sup>4</sup>

<sup>4</sup>Link (1983) suggests that singular nominals have only atomic individuals in their extensions, in which case instead of (37b) we must use  $\lambda \mathcal{D} \lambda P \lambda y [P(y) \wedge y < \mathcal{D}(P^*)]$ , where  $*$  is Link’s operator that yields the closure under joins: if  $\llbracket tool \rrbracket = P$  is the set of all atomic tool entities, then  $\llbracket tools \rrbracket = P^*$  is the set of all mereological sums of groups of tools. Note that under Link’s system,  $(P^*)^* = P^*$ , so that examples such as *tools of John’s*, in which the overt head noun happens to be already grammatically plural, would work out as equivalent to (36).

### 3.3. Explaining apparent synonymy

Although we saw in section 1.4 that it is a good thing not to predict uniform synonymy between genitives and possessive participles, we should be able to provide some explanation for why they so often have such similar meanings.

- (40) a. an enemy of John  
b. an enemy of John's

For the genitive in (40a), according to the assumptions outlined in section 1, the relation between John and the entity described by the noun phrase as a whole must be the **enemy-of** relation. For the possessive participle in (40b), the described entity must be a member of the collection of John's enemies. Although the relation between John and the set of John's enemies can be (almost) any relation provided by the context (given a rich enough context), it is by far the most natural for the relation to be the **enemy-of** relation (again, see Barker (1995) for details on the semantics of the prenominal possessive). If so, this is sufficient to guarantee that (40b) has an interpretation which is equivalent with (40a).

However, even if some postnominal genitive *of* constructions and some possessive participles have closely similar meanings, in general (as shown in section 1.4—see the discussion of (11)) there will be subtle but reliable differences in meaning as well.

- (41) a. a silhouette of Mary  
b. a silhouette of Mary's

Certainly there is an interpretation of (41b) which is equivalent to the genitive in (41a): this results when the possession relation expressed by the possessive morpheme turns out to be the lexical relation named by the relational noun *silhouette*, the relation between objects and their outlines (relative to a situation and point of view). But (41b) also clearly has an interpretation on which the silhouettes in question are other possessions of Mary's as determined by context, perhaps some paper cutouts that she has constructed in art class.

Thus the Partitive Hypothesis accounts for the possibility of synonymy between genitives and possessive participles, but also correctly predicts a wider range of interpretations for the possessive participle.

### 3.4. Proper partitivity

The part of the semantic analysis most crucial to the explanation of anti-uniqueness is the requirement that elements in the extension of the head nominal must all be proper subsets of the referent of the object NP, i.e., we have  $y < x$  rather than  $y \leq x$  in our semantic translations (see (34)). Thus if  $y$  is in the extension of the phrase *of the three books*,  $y$  must be a collection of at most two books (and in particular, it can't be the entire set of 3 books). This requirement expresses the intuition that it is only appropriate to use a partitive when there is

proper partitivity. As we will see in section 4, it follows that a use of *two of the books* presupposes the existence of at least three books, and *\*two of my parents* is deviant because proper partitivity is inconsistent with the fact that people have at most two parents.

Although standard partitives are often assumed to involve proper partitivity in informal discussions in the literature, I am not aware of any formal analysis of the semantics of the partitive which explicitly mentions proper partitivity. In particular, it is not built in explicitly in either Ladusaw's (1982) or Hoeksema's (1984) analyses. However, their analyses are compatible with the addition of a proper partitivity requirement, and I am not aware of any bad predictions that would be made. Quite the contrary; on Ladusaw's analysis, for example, it would no longer be a mystery why *\*one of the man* is ungrammatical.

An obvious apparent difficulty arising from the assumption of proper partitivity involves quantificational determiners such as *all* or *both*. A use of *all of the men* certainly does not imply the existence of any men in addition to those referred to by the NP *the men*. Does this mean that proper partitivity doesn't apply when universal quantification is involved?

It turns out that this is not a problem, however, and does not require any adjustment to the basic analysis whatsoever. For instance, assume for the sake of concreteness that *all* receives its standard Montagovian translation as in e.g. Barwise and Cooper (1981), in which case  $\llbracket all\ of\ the\ books \rrbracket = \lambda Q[\forall y]y = y \wedge y < \mathbf{the\ books} \rrbracket \rightarrow Q(y)$ . Even assuming proper partitivity, this denotation makes a perfectly satisfactory contribution to truth conditions: a property will be true of all the books just in case it is true of each book, and there is no implication that there are any books beyond those included in the denotation of *the books*. The situation is analogous for *both*, *each*, *most*, and so on: as long as these determiners quantify over atomic individuals (Roberts (1987)), there is no conflict with the requirement that the partitive *of* phrase has only proper subparts in its extension.

The status of proper partitivity for double genitives is more vexed. Sweet (1898, p. 54; p. 75), Poutsma (1914, p. 79), Jespersen (e.g., 1926, pp. 142–7), Altenberg (1982, p. 70), Narita (1986), Lyons (1986, p. 128) and McCawley (1988, p. 389) criticize the Partitive Hypothesis specifically on the grounds that it predicts inappropriate proper partitivity implications. Many of these authors cite examples such as *that nose of his*, the use of which is clearly consistent with a situation in which the person in question has at most one nose. Thus, they argue, double genitives cannot entail proper partitivity, at least not always. However, as noted by Poutsma (1914, p. 79), this type of counterexample occurs only in the presence of a demonstrative determiner (e.g. *\*the nose of his*, *\*one nose of his*, etc.). For this and other reasons, I consider demonstrative double genitives to be a separate construction from the general possessive partitive; this is the topic of Section 5.

However, even denying the relevance of demonstrative examples, there is still a case to be made that standard partitives and possessive participles behave differently with respect to proper partitivity implications.

(42) Let me tell you about a problem of mine. (McCawley's 16c)

For instance, McCawley (1988, p. 389) claims that (42) does not presuppose that the speaker has more than one problem in mind. In McCawley's judgment, double genitives are 'neutral' with respect to whether they involve proper partitivity or not. I find that intuitions vary dramatically: some of my informants report that examples like (42) clearly imply the existence of more than one problem, and some report that (42) just as clearly does not have such an implication. In any case, remarks closely similar to McCawley's are found in many of the papers cited here, beginning with Sweet (1898, p. 75), so I will proceed on the assumption that for some people at least the proper partitivity entailments for (42) seem to be reduced or obscure.

Clearly something is going on here—but not at the level of truth conditions or presuppositions. I claim that proper partitivity implications remain in full force, despite these authors' intuitions to the contrary. To demonstrate this, note that if a double genitive truly was neutral with respect to proper partitivity implications, it should be possible to use a double genitive in a situation which is logically inconsistent with proper partitivity. But this is never possible:

- (43) a. Let me tell you about \*a mother of mine.  
       b. \*the mother of mine.  
       c. \*two parents of mine.

Any use of a (non-demonstrative) double genitive is clearly infelicitous in any context which entails improper partitivity. Section 4 will explain in detail how the analysis in section 3 explains facts like those in (43).<sup>5</sup>

How can we reconcile the common intuition that (42) does not always seem to imply the existence of more than one problem with the pattern in (43)? There are two factors that potentially explain at least part of the discrepancy. The first is related to a difference in the discourse function of double genitives compared to standard partitives. Many authors have observed that standard partitives strongly prefer for the group entity denoted by the object of partitive *of* to be definite, or at least familiar, or at least explicitly enrolled in the discourse model (e.g., Reed (1996)). There does not seem to be a parallel requirement on possessive partitives (see Lyons (1986) for relevant discussion). Thus even if *a problem of mine* does implicate that the speaker has more than one problem, we are free to assume that

<sup>5</sup> A referee points out the relative acceptability of *I wouldn't want a mother of mine living in a neighborhood like this*. But note that this use depends crucially on the presence of counterfactual modality to allow consideration of all possible mothers, so that this sentence has as a close paraphrase *I wouldn't want any mother of mine living in a neighborhood like this*. This suggests that in this use the predicate *mother of mine* does indeed have more than one entity in its extension. Compare to the explicitly indicative *\*I want a mother of mine to live in a neighborhood like this*.

those other problems are irrelevant or ignoreable or not salient in the discourse model in a way that they are not if we use a standard partitive.

The second potentially relevant factor is that standard partitives typically occur embedded under strong determiners or numerals, and never with the simple indefinite article as in (42). This is either because of a morpho-phonological requirement on the standard partitive that the determiner position have a stressable (non-clitic) element in it, as suggested by Perlmutter (1970; 1973, p. 451), or because the standard partitive can only occur with determiners which are independently capable of serving as free noun phrases, as suggested by Hoeksema (1984). Thus the proper partitivity implications of (42) may seem reduced compared to those of the standard partitive in part because the typical examples of the standard partitive contain numerals.

- (44) a. Let me tell you about one problem of mine.  
       b. Let me tell you about one of my problems.

If we insert a numeral as in (44a), the truth conditions arguably do not change, but the proper partitivity implications become more prominent, to a degree that is entirely on a par with those of the standard partitive in (44b).

Whatever the explanation for McCawley and others' intuitions concerning (42), whenever a context is logically inconsistent with proper partitivity, possessive partitives are never acceptable. I conclude that possessive partitives do entail proper partitivity, and that proper partitivity is a desirable component of the correct analysis both of standard partitives and of possessive partitives.

#### 4. EXPLAINING ANTI-UNIQUENESS

The explanation for simple examples of anti-uniqueness such as *\*the one of John's friends* is fairly straightforward, once we assume that partitivity is always proper partitivity. Section 4.1 briefly covers some technical details, and section 4.2 presents the basic explanation. Extending the explanation to plural examples such as *\*the two of John's friends* is a little more complicated, but also straightforward, as shown in section 4.3. Section 4.4 discusses numeral determiners, and Section 4.5 shows that a semantic analysis of anti-uniqueness correctly predicts that there should be anti-uniqueness contrasts between syntactically identical examples. Section 4.6 explains why quantificational partitives receive mass interpretations.

##### 4.1. *Ontological assumptions*

Because of the proper partitivity requirement built into the denotation of the partitive *of*, we need a structured ontology that explicitly recognizes when one entity is a subpart of another entity. I will adopt a simplified version of the system developed in Link (1983); see also the treatments in Ladusaw (1982) or Hoeksema (1984).

More precisely, let the set  $E$  along with the join operator  $+$  form a complete join semilattice. Let  $C$  and  $M$  be two disjoint complete sublattices of  $E$  such that  $E$  is the closure of  $C \cup M$  under the join operator. Intuitively,  $C$  is the set of individuals in the count domain and  $M$  is the set of portions of matter in the mass domain. In addition, there is a function  $\mu$  mapping members of  $C$  into  $M$ . This function  $\mu$  gives the material making up an individual; it must be a homomorphism preserving the structure of the join operator, so that for all  $x$  and  $y$ ,  $\mu(x + y) = \mu(x) + \mu(y)$ . Thus if  $x$  is a wedding ring,  $\mu(x)$  is the quantity of gold that makes up the substance of  $x$ . The sublattice of count individuals  $C$  must be atomic, that is, there must be a set  $A$  of atomic individuals such that  $C$  is the closure of  $A$  under the join operator. The mass domain, however, must not contain any atoms at all; that is, I assume that as far as English is concerned, portions of matter are infinitely divisible. We can define a partial order  $\leq$  as follows:  $x \leq y \equiv [x + y = y]$ . This is the subpart relation. In the mass domain, if  $x \leq y$ , then  $x$  is a portion of the quantity of matter  $y$ ; in the count domain, if  $x \leq y$ , and  $y$  is (the join of) a number individuals, then  $x$  is the join of a subset of the individuals dominated by  $y$ . For instance, if  $\mathbf{a}$  is the individual named Alice, and  $\mathbf{b}$  is the individual named Bob, then  $\mathbf{a} \leq (\mathbf{a} + \mathbf{b})$ . As usual,  $x < y$  just in case  $x \leq y$  and  $x \neq y$ .

The  $\mu$  operator plays a crucial part in dealing with examples that require conversion from the count domain to the mass domain. In normal mass partitiones such as *half of the wine*, we can assume that the partitive NP *the wine* denotes a portion of matter  $w \in M$  directly. The partitive of phrase will denote all of the portions of matter that are proper parts of  $w$ ; because the mass domain contains no atoms, it is always possible to find proper parts of any entity in  $M$ , and we are fine.

However, if the partitive NP denotes an entity in the count domain, we must shift to the mass domain via the  $\mu$  operator. For instance, in the sentence *Half of John is underwater*, the partitive NP *John* denotes the atomic count entity  $j \in C$ . But the proper partitivity requirement of the partitive of requires that there be proper sub-parts of  $j$ . In this case, following Ladusaw (1982), I assume that the denotation of *of John* is  $\lambda y[\|y = j\] \wedge y < \mu(j)]$ . The important detail is that we have converted the denotation of *John* from the count domain to the mass domain. Since  $\mu$  maps  $j$  onto the portion of matter that constitutes John, we end up predicting that at least half of the sub-portions of the stuff that makes up John are below the surface of the water. (The  $\mu$  operator is used in section 4.6.)

#### 4.2. Anti-uniqueness for singular definites

To show how the analysis given in section 3 explains anti-uniqueness, consider the denotation of the phrase *John's friends* as in the standard partitive *one of John's friends*. By proper partitivity, the referent of *John's friends* must have proper parts. Since we are operating in the count domain, the denotation of *John's friends* must therefore correspond to a group individual consisting of at least two individuals.

Let us suppose that John's friends consist of the set containing Mary and Tom. By hypothesis, then, the denotation of the partitive nominal is  $\lambda y[\|y = j\] \wedge y < (\mathbf{m} + \mathbf{t})]$ . Clearly this predicate has more than one entity in its extension, since it is true of both Mary and Tom. This is sufficient to render the nominal *one of John's friends* incompatible with a uniqueness presupposition, and this explains the ungrammaticality of *\*the one of John's friends*.

As we have seen, further restriction of the partitive nominal may render the resulting property compatible with uniqueness. For instance, in *the [tallest] of John's friends*], even though John still has at least two friends (denotation of the embedded nominal), only one of those friends is the tallest (denotation of the larger nominal), and the definite determiner is perfectly felicitous.

A similar explanation will hold for possessive partitives. Recall that the analysis given above predicts that  $\llbracket \text{friend of John's} \rrbracket = \lambda y[\|\exists x \text{friend}(x, y)\] \wedge y < \mathbf{John's friends}]$ . By proper partitivity, once again John must have at least two friends, say, Mary and Tom. Then once again we are guaranteed that there are at least two entities in the extension of the predicate denoted by *friend of John's*, which is sufficient to explain the ungrammaticality of *\*the friend of John's* and why of *the tallest friend of John's* is good.

#### 4.3. Anti-uniqueness for plurals

The analysis just given goes through only when the partitive nominal is morphologically singular; one additional step is required to explain anti-uniqueness for plural predicates. That is, *one of John's friends* is morphologically singular. This subsection considers the case when the nominal is plural, e.g., *two of John's friends*, and explains why *\*the two of John's friends* is ungrammatical (without additional modification).

In the situation discussed immediately above, John has exactly two friends, Mary and Tom. In the absence of a proper partitivity requirement, we might expect noun phrases like *\*the two of John's friends* to be grammatical (and mean something equivalent to *John's two friends*). But as we just saw, in such a situation the only entities in the extension of the partitive of *John's friends* are Mary and Tom, and neither one has cardinality 2.

Things get just a little more complicated if we imagine that John has more than two friends: Mary, Tom and Bill. Here are the seven entities in the count domain  $C$  that involve only Mary, Tom and Bill:

$$(45) \quad (\mathbf{m} + \mathbf{t} + \mathbf{b})$$

$$(\mathbf{m} + \mathbf{t}) \quad (\mathbf{m} + \mathbf{b}) \quad (\mathbf{t} + \mathbf{b})$$

$$\mathbf{m} \quad \mathbf{t} \quad \mathbf{b}$$

The effect of assuming proper partitivity is that the predicate denoted by *of John's friends* will be true only of entities of cardinality two or less. In particular, the set

containing Mary, Tom and Bill is not in the extension of this predicate, since it is not a proper subset of the set of John's friends (i.e.,  $\langle \mathbf{m} + \mathbf{t} + \mathbf{b} \rangle \not\prec \mathbf{John's-friends}$ ). The result is that the predicate *two of John's friends* necessarily has more than one entity in its extension (in this case,  $\mathbf{m} + \mathbf{t}$ ,  $\mathbf{m} + \mathbf{b}$ , and  $\mathbf{t} + \mathbf{b}$ ). Because the definite determiner presupposes that its complement has at most one entity in its extension, we have explained why \**the two of John's friends* is bad.

Analogous arguments apply for plural double genitives: for the same reasoning given above for standard partitives, the nominal *friends of John's* has only proper subsets of John's friends in its extension, and so there will never be a unique such entity.

#### 4.4. Numerals as quantifiers

We have discussed examples in which *two* is arguably functioning as an adjectival modifier, as in *the two of John's friends that I met last night*. What about cases where the numeral seems to be functioning as a determiner?

(46) \*Let me tell you about two parents of mine. (same as (43c))

There are many quantificational treatments of *two* (e.g., Barwise and Cooper (1981, p. 169)) that turn out to be problematic for my account. For instance, we might have  $\llbracket two \rrbracket = \lambda P \lambda Q \exists x \exists y [x \neq y \wedge P(x) \wedge P(y) \wedge Q(x) \wedge Q(y)]$ . If this is the meaning of *two*, we have a problem, since this interpretation will interact with the semantics of the partitive in exactly the same way explained above in section 3.4 for *all* or *both*, and we incorrectly predict that (46) ought to be good.

But we would only be forced to use this sort of interpretation for *two* in a semantics (like Barwise and Cooper's) that failed to recognize group individuals. Given an ontology like the one proposed here, we can provide the determiner *two* with an interpretation parallel to its adjectival use:  $\llbracket two \rrbracket = \lambda P \lambda Q \exists x [P(x) \wedge Q(x) \wedge |x| \geq 2]$ . This translation says that the sentence *Two men sleep* will be true only if there is a group entity *x* of cardinality 2 or greater such that *x* is a pair of men and *x* sleeps.

One argument in favor of this translation is that it correctly predicts that the sentence *Two men lifted the piano* is true in a situation in which Sam and Tom lifted the piano together, but not separately, since there is a group individual ( $\langle \mathbf{s} + \mathbf{t} \rangle$ ) that consists of men and that lifted the piano. Barwise and Cooper's translation incorrectly predicts that this sentence will be true only if there are two men who each lifted a piano on their own.

If the group-individual approach gives the correct translation of *two*, the anti-uniqueness explanation goes through exactly as above: because of the proper partitivity requirement, *parents of mine* has in its extension only entities of cardinality less than 2, but the translation of *two* requires entities of cardinality greater than 2, hence the NP \**two parents of mine* is semantically anomalous (more precisely, is logically entailed to be true of no properties in any model).

This proposal for the meaning of determiner numerals is a variant on the analysis of numerals in Kadmon (1987), where issues such as how to derive various alleged ambiguities attributed to quantificational numerals are discussed in detail.

#### 4.5. Anti-uniqueness is semantic and not syntactic

The explanation for the anti-uniqueness effects given here does not depend on any special properties of the definite determiner; if the account given here is correct, anti-uniqueness should arise whenever there is an implication of uniqueness. For instance, if the nominal in the double genitive expression denotes a function rather than a non-functional relation, the result should be unacceptable, and this is indeed so:

- (47) a. \*I met the mother of John's.  
b. \*I met a mother of John's.

Both of these are out, whether the article is definite or indefinite, for the following reason: since John necessarily has only one (biological) mother, the proper partitivity requirement entails that the partitive of *John's* is empty. Thus syntactic accounts that crucially rely on distinguishing *the* from *a* will have a problem accounting for the examples in (47).

Nor can these examples be saved by the addition of a relative clause:

- (48) \*I met the/a mother of John's that you pointed out last night.

Unless we assume that John somehow has more than one mother, (48) is out. Thus any syntactic account that predicts that addition of a relative clause will ameliorate an anti-uniqueness effect will have trouble with (48).

Furthermore, there are examples in which the addition of a single modifier is not sufficient to eliminate an anti-uniqueness violation, but more than one modifier in combination can:

- (49) a. \*I hurt the one of my fingers.  
b. \*I hurt the one of my fingers on my left hand.  
c. \*I hurt the longest one of my fingers.  
d. I hurt the longest of the fingers on my left hand.

Assuming the left middle finger and the right middle finger are equally long, we only achieve uniqueness when we restrict the set of 10 fingers denoted by *one of my fingers* first to the left hand, then to the tallest finger on the left hand. These examples show that the syntactic presence of modifiers is not sufficient unless their semantic contribution is restrictive enough to achieve uniqueness.

Note that (49c) will be acceptable in a situation in which there is a unique longest finger, for instance if the speaker has lost one hand through accident. The fact that anti-uniqueness effects can be contingent on context further shows that it is not a syntactic phenomenon.

Finally, whether a modifier improves an anti-uniqueness effect can depend on the meaning of the head noun:

- (50) a. I met the (two) friends of John's who were here for graduation.  
 b. \*I met the (two) parents of John's who were here for graduation.

The sentence in (50a) is fine as long as John has at least three friends, exactly two of which came to see his graduation. But when the head noun of the double genitive entails that at most two individuals stand in the named relation to any particular individual (since people have at most two parents), the result is ungrammatical, as indicated in (50b). The explanation is that the numeral *two* (or, even in its absence, the plural marking on the head noun) entails the existence of at least two parents, and the partitive construction entails that these two must be a proper subset of a larger group. But the meaning of *parent* entails the existence of at most two parents, resulting in inconsistent implications.

The point of (50) is that both sentences contain definite determiners, and both contain identical relative clauses. Which one is good crucially depends on the implications due to the meaning of the head noun. Thus any account that depends on the syntactic properties of the definite determiner in the presence of a syntactic modifier, such as the analysis in Kayne (1993, 1996), will fail to predict the contrast in (50).

#### 4.6. Why *quantificational partitives are mass partitives*

As discussed in section 2, the NP object of a partitive *of* can in fact be quantificational, provided the partitive receives a mass interpretation.

- (51) Most of each pizza disappeared.

This fact can be viewed as a consequence of the Partitive Constraint.

There are many techniques for accounting for quantifier scope, and as far as I am aware, it doesn't matter which one we choose here. For the sake of familiarity, I will assume an optional rule of Quantifier Raising as in May (1985): NPs can adjoin to a c-commanding S, leaving behind a co-indexed individual-denoting variable.

Since *each pizza* is irreducibly quantificational (Ladusaw 1982), and therefore cannot be coerced into denoting an entity, Quantifier Raising is forced for *each pizza* upon pain of violating the Partitive Constraint. The structure for (51) after Quantifier Raising is shown in (52a):

- (52) a. [[each pizza]<sub>i</sub> [[most [ $\theta_N$  [of  $e_i$ ]]] disappeared]]  
 b. [[each pizza]<sub>i</sub> [[most<sub>i</sub> ([[of]<sub>i</sub> ( $x_i$ )) ( $\theta_N$ ))]] [disappeared]]]]

Using generalized quantifiers as in Barwise and Cooper (1981) and a simple semantics for quantifier raising, we have the translation in (52b). Note in particular

that the semantic argument to the partitive *of* is an entity-denoting variable, in accord with the Partitive Constraint. Substituting in the translation for the partitive *of* proposed in (34b), we have:

- (53) a.  $((\lambda P \forall x [\text{pizza}(x) \rightarrow P(x)]) (\lambda x_i [((\lambda P \lambda Q [\text{MOST}(P, Q)]) ((\lambda x \lambda P \lambda y [P(y) \wedge y < x_i]) (\lambda x [x = x]))] (\text{disappeared}))))))$   
 b.  $\forall x [\text{pizza}(x) \rightarrow [\text{MOST}((\lambda y [y < x]), \text{disappeared})]]$

Since the representation in (53a) is logically equivalent to the reduced form in (53b), the predicted truth conditions can be paraphrased as follows: for every pizza  $x$ , most of the proper parts of  $x$  disappeared.

Because the relation  $<$  embodies the proper partitivity requirement, the property that appears as the first argument to MOST (treating *most* as a relation between properties) contains only proper subparts of  $x$  in its extension. But because quantification in the count domain ranges only over atoms (Roberts (1987)), the variable  $x$  ranges only over atomic pizzas. As suggested by Ladusaw (1982), I assume that when the  $<$  relation is faced with an atomic individual on the right-hand side, we must resort to type-shifting from the count domain to the mass domain via the  $\mu$  operator (section 4.1). (Alternatively, we can posit a mass variant of the partitive *of*, with  $[[of]_{\text{MASS}}] = \lambda x \lambda P \lambda y [P(y) \wedge y < \mu(x)]$ .)

In sum, the Partitive Constraint forces Quantifier Raising in order to guarantee that the partitive *of* encounters an individual-denoting entity as its argument; the semantics of Quantifier Raising guarantees that the trace variable ranges only over atomic individuals; and the proper partitivity requirement triggers a shift to the mass domain. The result is that we automatically predict that irreducibly quantificational NPs like *both men* or *every pizza* can occur as the object of a partitive *of*, but only when the partitive is interpreted as a mass partitive.

#### 4.7. Summary of section 4

It is a theorem of the analysis given in section 3 that the predicate denoted by a partitive nominal will necessarily have at least two entities in its extension, and thus will be incompatible with a uniqueness implication (unless the partitive is further restricted through appropriate syntactic modification). This is true whether the predicates involved in the partitive are singular or plural, and it holds for standard partitives and double genitives alike. The crucial feature of the analysis that guarantees this theorem is the assumption of proper partitivity.

#### 5. *That NOSE of his!*

Many authors have noted (e.g., Sweet (1898, p. 54)) that anti-uniqueness fails for a certain narrow class of double genitives. For instance, even though each person has a unique mother, we can still say *That mother of his!*. The key to these

examples, as observed by Poutsma (1914, p. 79), is that this type of double genitive occurs exclusively with the four demonstratives *that, this, these, and those*. (Compare *\*The nose of his is really huge!*)

We can suspect that the *of* involved is not a genitive use, since the construction is possible with a non-relational head noun (*That telephone book of his sure is moldy*). However, there is a problem assuming that the *of* is the possessive participle of translated in (37b). If it were, then the extension of the property denoted by *mother of his* would be guaranteed to be empty, for the reasons explained in section 4.

One clue to what is going on comes from the special discourse requirements associated with these demonstrative expressions. Narita (1986) is largely concerned with the stylistic conditions for use of this construction, which he calls “rhetorical” double genitives (see also Lyons (1986) and Taylor (1996)). Basically, there must be something unusual or noteworthy about the referent of the collocation, or at least some aspect of the situation that has non-neutral affect for the speaker.

To develop this line of thought a little further, notice this construction strongly favors extra prominence on the head noun: *that NOSE of his!*. And in fact any attempt to give prominence to the bare possessive NP is highly questionable or impossible:

- (54) a. ?Those mothers of his and Bill’s!  
 b. \*That mother of the tall man’s!  
 c. \*That mother of the jack-ass’s!

Acceptability is severely degraded if the prepositional object is a coordinate structure, if it contains a definite description, or even if it is an epithet. These facts suggest that the construction in question requires that the head noun be in focus, so that only the head noun is capable of bearing extra prominence.

The semantics of focus is usually cast in terms of alternative sets (e.g., Rooth (1985)) or devices that can reproduce the truth conditions associated with alternative sets (e.g., Krika (1992)). If I say *I told you that I like MATH*, the implication is that there is some other subject that I don’t like, such as English or History. Alternative sets are calculated by replacing the focussed constituent with a variable of the appropriate type, and then identifying a set of contextually-relevant alternatives of the same semantic type as the focussed constituent.

By analogical reasoning, the implication associated with a use of *That NOSE of his is humongous!* is that there are other candidates for the *nose* property for which the assertion is not guaranteed to be true (or for which it is true to a lesser degree). If the nose of the man in question is humongous, perhaps the eyes or the teeth are less prominent. The result is that, just as for our standard anti-uniqueness implication, the presence of focus guarantees that the semantics will have to consider a number of possible referents in addition to the nose.

Unfortunately, it would take us too far afield to develop a reasonably detailed formal treatment of the semantics of focus for nominal expressions here. Therefore for the purposes of this paper, I will assume that the *of* in *That nose of his!* is a distinct use of *of* in addition to the genitive *of* and the partitive *of*’s we have studied so far. More specifically, the *of* in the demonstrative construction differs from the possessive partitive *of* precisely in that proper partitivity is suspended, so that instead of (37b) we have  $\lambda D \lambda P \lambda y [P(y) \wedge y \leq \mathcal{D}(P)]$

The fact that this construction has such a severely limited distribution—it requires a specific syntactic form (there must be a demonstrative determiner), specific discourse requirements (a use of the construction must have some rhetorical affect), and specific constraints on focus (the head noun must be in focus)—means that assuming that it also has idiosyncratic semantic properties is not as uncomfortable as it might otherwise be. Indeed, from a functional point of view, the existence of this construction provides a rather convenient mechanism for circumventing the anti-uniqueness implications normally associated with the possessive partitive construction.

Whatever the true status of *That nose of his!*, the fact remains that in the general case, whenever a double genitive occurs with a determiner other than a demonstrative, reliable anti-uniqueness effects appear that require an explanation.

## 6. CONCLUSION

Assuming that partitivity is always proper partitivity constitutes a simple and defensible refinement of the semantics of partitivity that provides a promising account of the previously unexplained phenomenon of anti-uniqueness. Additional support for proper partitivity comes from the analogous anti-uniqueness behavior of double genitives, under the independently motivated Partitive Hypothesis, which says that double genitives are in fact a type of partitive construction. If this account is on the right track, it offers new insights into the semantic nature of partitivity and double genitives.

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