

RESEARCH

English partitives in Functional Discourse Grammar: types and constraints

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The aim of this paper is to provide a unified analysis of partitive constructions like *one/some of the boxes* which, unlike previous accounts, succeeds in accounting for (i) both their internal structure and the constraints on the embedded NP, and (ii) the relation between their internal structure and any such constraints. First, it is argued that four types of partitive can be distinguished, on the basis of two parameters: (1) the kind of entity denoted by the matrix NP (\pm set) and (2) the relation between the heads of the matrix and embedded NP (\pm co-denotational). Using authentic data, the paper subsequently shows that any constraints on the embedded NP apply to only two of these subtypes; it is further argued that these constraints follow directly from the specific properties of these partitives. This, in turn, is taken as evidence that partitives of this kind can be regarded simply as a subtype of the larger group of NPs with the structure N+PP. Finally, it is argued that Functional Discourse Grammar with its different levels and layers of analysis, allows us to capture all the relevant pragmatic, semantic and morphosyntactic properties of the different types of partitives in a systematic and insightful manner.

Keywords: English Partitives; Functional Discourse Grammar; constraints; internal structure; denotation

1 Introduction

Over the last fifty years, partitive constructions like *one of the boys* or *many of my friends* have been discussed in considerable detail and from different perspectives: although originally approached from a formal semantic and syntactic point of view, later studies have also taken the pragmatic and discourse-oriented properties of the construction into consideration. This large body of research has addressed many different aspects of the partitive construction, such as the form and status of the first element, the (syntactic, semantic and pragmatic) constraints on the second element, the status of the *of*-phrase (and the element *of*), and the discourse function of the construction as a whole. The present paper will contribute to this discussion by offering a unified account of the discourse-pragmatic, semantic and morphosyntactic properties of four different types of partitives based on natural language data and using the theory of Functional Discourse Grammar (henceforth FDG).

The discussion in this paper will centre around two major issues in the treatment of partitives: their internal structure and the constraints on the embedded NP. Previous accounts, as we will see, have tended to concentrate on one of these issues only. In this paper, however, it will be argued that for any analysis of partitives to be really satisfactory, these two issues not only need to be addressed together, but also need to be shown to be connected, in that any constraints found ought to follow from the specific properties of the partitive construction in question, as reflected in its internal structure.

The aim of this paper is to provide such an analysis. First, Section 2 will present a brief characterization of the kinds of partitive construction to be discussed in this paper, as well

as of the two major issues to be addressed. Next, Section 3 will provide an overview of some important previous accounts. First, an impression will be given of various attempts that have been made to capture the restrictions on the determiners contained in the embedded NP (Section 3.1). This will be followed by a discussion of some syntactic analyses of the construction that have been proposed (Section 3.2). Subsequently, Section 4 will take a fresh look at the conditions allowing for the use of a partitive construction. First, it will be argued that a distinction needs to be made between (at least) four types of partitive, on the basis of two parameters: (i) the kind of entity denoted by the matrix NP (\pm set) and (ii) the relation between the heads of the matrix and embedded NP (\pm co-denotational) (Section 4.1). On the basis of data from two corpora (the British National Corpus (BNC, Davies 2004) and the Corpus of Contemporary American English (COCA, Davies 2008)) and the Internet, it will be demonstrated that any constraints on the embedded NP apply to only two of these subtypes (those with the feature + co-denotational); moreover it will be shown that these constraints follow directly from the specific properties of these partitives (Section 4.2). Finally, in Section 5, it will be shown that FDG, with its different levels and layers of analysis, can capture all the relevant pragmatic, semantic and morphosyntactic properties of the various types of partitives in a systematic and insightful manner. Section 6 will present some conclusions.

2 Partitive constructions: two major issues

In a partitive construction, the overall referent of the construction is presented as a subset of the set referred to by another (embedded) noun phrase.¹ A prototypical example can be found in (1a), where reference is made to a subset of the superset referred to by the definite NP *the boxes*; this subset consists of a single, unidentifiable entity. In this example the first element takes the form of the numeral *one*. In other cases, however, the element *one* functions as pronoun; in that case *one* appears in the head position of the matrix NP, where it is preceded either by a quantifier (example (1b)), or a modifier (example (1c)). In all these cases the embedded NP contains a definite determiner.

- (1) a. one of the boxes
 b. any one of the many side streets
 c. the smartest one of the four

Some less prototypical, and more problematic, examples of partitives can be found in (2). What these examples show is that the embedded NP need not be definite (example (2a)), that the first noun may be left unexpressed in the presence of an adjective (example (2b)), that the first noun may be expressed lexically (instead of the second) (example (2c)), and that it is even possible to express both nouns lexically (example (2d)).

- (2) a. one of several problems
 b. the elder of the two brothers
 c. the older man of the two (COCA, spoken, ABC special)
 d. the larger bone of the two bones of the forearm (The Free Dictionary – online)

In example (3a) we find the non-count counterpart of the partitive in (1a); here the overall referent is an unidentifiable part of the substance (or mass) referred to by the NP *the cake*. Expressions like these have also been included in the category of partitives (e.g. Selkirk 1977; Ladusaw 1982; Hoeksema 1984; Reed 1991; Abbott 1996; De Hoop 1997;

¹ In this paper the term matrix NP will be used for the partitive as a whole, while the NP following the element *of* will be referred to as the embedded NP. Note that these terms merely serve as convenient, pre-theoretical labels, and are to be distinguished from the FDG use of the term Noun Phrase (abbreviated as Np; see Section 5).

2003), although some linguists regard them as a different kind of construction (Stockwell et al. 1973: 144–146; Keenan & Stavi 1986: 287–290). Even less clear is the status of the constructions in (3b), which have been dismissed as ungrammatical in some accounts (Reed 1991: 217; De Hoop 1997: 161), but which, as we will see, are in fact quite acceptable. This, however, raises the question of how exactly these constructions relate to the constructions in (1).

- (3) a. some/half of the cake
b. one/some of the couple/crowd/population

In order to come to a satisfactory analysis of all these constructions which can deal not only with the large variety displayed, but which can also account for the ungrammaticality or non-occurrence of certain combinations, a number of issues need to be resolved. The first of these concerns the constraints on the possible combinations of elements within the construction. Thus, the examples in (4) have often been used to illustrate that certain combinations of numerals, quantifiers or determiners are not allowed:

- (4) Selkirk (1977: 294–295)
a. *many of objections
b. *three of some men
c. *many of all women
d. *two of too many acquaintances
e. *several of twenty of his roses that were sick
f. *three of nine planets of the solar system
g. *few of many questions

In order to prevent the production of such unacceptable combinations, a Partitive Recursion Constraint was formulated which stated that the embedded NP must be definite (i.e. determined by the definite article, a demonstrative or a possessive), and cannot itself be a partitive (Selkirk 1977: 294–295; Jackendoff 1981; see also Barwise & Cooper 1981; Keenan & Stavi 1986: 287–290). As it turned out, however, this constraint was too strong (see, for instance, example (2a)). What followed was a series of revisions of this constraint (e.g. Ladusaw 1982; Reed 1991; 1996; Abbott 1996; De Hoop 1997; 2003). An examination of authentic data, however, shows that none of these constraints has succeeded in completely capturing and explaining the restrictions observed (see Section 3.1).

The second major issue which any treatment of partitives needs to address is that of their internal structure. One important question in this respect is that of which element functions as the head. Although most analyses regard the first (left-most) element as the head (e.g. Stockwell et al. 1973; Selkirk 1977; Jackendoff 1981; Reed 1991; 1996; Abbott 1996), alternative analyses have been proposed (e.g. Keenan & Stavi's 1986 right-headed account). A related, and perhaps even more important, question concerns the status of the element *one*, which has been analysed in different ways (as a numeral, a pronoun and a fused head). In what follows it will be argued that none of the analyses suggested thus far does justice to the functional and formal properties of the partitive construction (see Section 3.2).

3 Previous accounts

3.1 The Partitive Constraint

As mentioned in the introduction, many previous accounts of the partitive construction have been dedicated to formulating a constraint on the embedded NP in order to exclude partitives that were deemed ungrammatical or unacceptable. Discussions on the form

of this constraint reveal two main sources of disagreement: the nature of the constraint (semantic or discourse-pragmatic) and the question of which partitives are considered ungrammatical or unacceptable.

3.1.1 Semantic restrictions

As mentioned above, the original Partitive Constraint was soon found to be too restrictive. Ladusaw (1982), for instance, used the examples in (5) to show that the embedded NP could be indefinite, containing either a numeral or a quantifier (see also Stockwell 1973: 144):

- (5) a. that book could belong to **one of three people**.
 b. John was **one of several students who arrived late**.
 c. This is **one of a number of counterexamples to the Partitive Constraint**.

To account for the acceptability of these partitives, Ladusaw (1982: 71) suggested that rather than being definite, the embedded NP must have specific reference (see also Partee 1972; Stockwell et al. 1973: 92; Lyons 1977: 188):

The sentences in [5] are appropriately used only when the user has a particular group of individuals in mind. [5a] invites a continuation: “namely, John, Mary and Bill.”

As pointed out by Abbott (1996: 35–37), however, this new constraint is still too restrictive, since in the following examples (adapted by Abbott from Ladusaw), the indefinite embedded NPs need not refer to a specific set of referents in the mind of the speaker:

- (6) a. John was apparently **one of several students who arrived late** – I have no idea how many, or who the others were.
 b. Mary thinks that this is **only one of a number of counterexamples to the Partitive Constraint**.

As the following attested examples show, non-specific embedded NPs are indeed perfectly acceptable:

- (7) a. The persona fit the crowd – he was **one of only a few middle-class, let alone black, students** in a campus population that was mostly wealthy, white and Asian. (COCA, newspaper)
 b. Vision may be good or there may be total blindness or **one of any gradations** in between. (BYU-BNC, academic)
 c. The Green Movement offers **one of any possible environmental ethics**. (COCA, magazine)

Another problem that Ladusaw (1982) addressed was that of the unacceptability of the quantifier *both* in the embedded NP of a partitive. Ladusaw’s own specificity requirement failed to exclude the use of *both* (which, in Barwise & Cooper’s (1981) classification, is a definite NP) in the embedded NP; yet, unlike *the two*, use of *both* results in an ungrammatical construction:

- (8) a. *one of both books
 b. one of the two books

This led to the introduction of a further restriction, namely that the embedded NP must denote either a group level individual (as in *some of the books*) or an entity level

individual (e.g. *some of the book*), but cannot denote a distributive set (see also Hoeksema 1984: 30–31).

3.1.2 Pragmatic restrictions

As shown by the examples in (6) and (7), Ladusaw's extension of the Partitive Constraint could not account for all occurrences of an indefinite embedded NP. In a number of subsequent proposals, this failure to identify the constraint on the embedded NP was attributed to the fact that so far it had always been assumed to be a semantic constraint. Reed (1988; 1991; 1996), however, argues that the restriction on the use of partitives can only be formulated in pragmatic terms. She therefore starts by looking at the specific discourse function of partitives, which, according to Reed, is "to evoke new discourse entities by linking them to existing discourse groups" (1996: 147; see also Reed 1991: 214). For the embedded NP to be acceptable, Reed argues, it must therefore "access a previously evoked discourse group" (Reed 1996: 147). Since definite NPs always access a previously evoked discourse group, they can always occur as embedded NPs. In addition, however, indefinite NPs are acceptable, as long as their discourse reference is made (more) accessible either explicitly through modification or implicitly by the discourse context.

By way of illustration, Reed (1991: 218) provides the following examples:

- (9) a. The dog was stoned by **two of some boys playing in that field**.
 b. Only **one of many people who saw the accident** would testify.

In these examples the use of an indefinite embedded NP is allowed since the NP contains additional material (in the form of a modifying clause), which links it to a particular discourse situation. The following variation on (9a), however, would be much less acceptable, since the information provided in the modifying clause is "less salient in the discourse" (Reed 1991: 218):

- (10) *The dog was stoned by **two of some boys who can play baseball**.

The required link to the discourse situation need not, however, be provided explicitly. Thus, indefinite embedded NPs may also be acceptable if the discourse-relevant information is determinable through context, as in example (11), where "the full discourse group is determined by the context of the job-seeking process" (Reed 1991: 219):

- (11) **Only one of many applicants** passed the test.

It will be clear that the pragmatic constraint proposed by Reed can explain such examples as given in (5): in (5a) we can assume there to be an implicit link to the discourse context (e.g. late for some previously evoked event), while in (5b) the prepositional phrase *to the Partitive Constraint* explicitly links the referent set of the embedded NP to the discourse situation.

Some problems, however, remain. First of all, Reed (1991: 219) still accepts Ladusaw's specificity constraint. This means that examples like (6) and (7) are difficult to account for, since the embedded NP in these examples need not be used to refer to existing discourse groups (see also Abbott 1996: 38). Secondly, Reed's account makes a number of wrong predictions. Thus, according to Reed, embedded NPs with the universal quantifier *all* are unacceptable, because they evoke new discourse groups and as such cannot access previously evoked ones. Such partitives do, however, occur, as can be seen from the examples in (12):

- (12) a. The users need to navigate over **many of all customer folders** very often. (Internet)
 b. Filtered by the constitutive rules associated to the institution, **only few of all real facts** determine an institutional fact. (Internet, academic writing)
 c. **Half of all animal extinctions** have occurred this century and it is believed that another one million species could be lost by the year 2000, which works out at over 270 extinctions every day for the next ten years. (BYU-BNC, non-academic, natural sciences)

Also problematic is Reed's (1991: 217) rejection of (count) partitives with definite collectives, i.e. with embedded NPs headed by such nouns as *crowd* or *couple* (see also De Hoop 1997; 2003). According to Reed, the construction in (13a), for instance, is ungrammatical because the embedded NP (*the crowd*) evokes a discourse group, but does not access it; it is only after a discourse group has been evoked that it can be accessed by a partitive (example 13b)):

- (13) a. ***One of the crowd** died.
 b. A crowd gathered but **most of them** were quiet.

As shown by the examples in (14), however, plenty of counterexamples can be found (note that in (14c) the plural forms of the verbs, as well as the subsequent use of the plural pronoun *they*, suggest that this partitive has indeed a count reading; see also Section 4 below):

- (14) a. **One of the crew** climbed down it and then jumped to the tarmac. (COCA, spoken, PBS-Newshour)
 b. Significantly, in the 36 developing countries for which the data were obtained, if only **one of the couple** was literate, the child's chances of surviving to age 5 were greatest if it was the mother rather than the father who could read and write. (BYU-BNC, institute doc)
 c. **Some of the crowd** were pleased when they heard this, but most of them watched me in silence. (BYU-BNC, fiction, prose)

Another claim by Reed that is not borne out by the data concerns the unacceptability of recursion in partitives. According to Reed (1991: 219), the approach she proposes helps to explain the unacceptability of recursive partitives (see Westerstahl 1984; Keenan & Stavi 1986), since in such cases the embedded NP, itself a partitive, does not access a discourse group (Reed 1991: 219–220):

- (15) a. ***Only one of (the) three of the eligible students** was turned down.
 b. ***Only one of some of his students** told the truth.

As the following examples show, however, recursive partitives are not excluded:

- (16) a. the reason he was ousted was that he was **one of the few of the parliamentary candidates with an official link to a political party** (COCA, newspaper)
 b. **The shortest of some of the early fish-eye lenses** not only produced barrel distortion but also produced what is called a "circular image" in the form of a circle 23mm diameter in the center of the full 35mm frame. (COCA, academic writing)
 c. **Some of those few of you not in a coma by now** may be wondering "Why further jeopardize the already historically weak dollar in order to inject liquidity into companies and banking systems overseas?" (Internet)

Abbott (1996) agrees with Reed that the acceptability of indefinite embedded NPs (or any embedded NP for that matter) in partitives is determined by pragmatics rather than semantics; she rejects, however, Reed's requirement that the embedded NP must access an evoked discourse group as too strict (Abbott 1996: 38–39). Instead, Abbott argues, we can do without a partitive constraint altogether; acceptability is simply determined by the general principle that “prohibits mentioning entities unless there is some reason for mentioning them” (Abbott 1996: 40). In other words, there is no restriction on the embedded NP:

“[a]ll that is needed is that some reason must be provided for the mentioning of the outer group. All that is needed is sufficient propositional or contextual material to explain the relevance of the embedded NP.” (Abbott 1996: 41).

Thus, according to Abbott, partitives that have been considered ungrammatical in the literature are in fact semantically and syntactically well-formed; all that is missing is an appropriate context.

Although Abbott's account solves many of the problems existing in previous proposals, it also introduces new problems. First of all, the pragmatic principle suggested is simply too general. Thus, Abbott's proposal does not explain why some embedded NPs (definite ones) are usually acceptable, whereas indefinite embedded NPs require a special context; nor does it really explain why some embedded NPs are apparently not acceptable in any context (e.g. **one of both books (I bought yesterday)*, **some of most books (I have on Dutch painters)* or **one of books (I have on Dutch painters)*). It is, in other words, not quite clear what qualifies as “sufficient propositional or contextual material to explain the relevance of the embedded NP”. Without a further specification of what constitutes sufficient reason for mentioning the embedded NP, Abbott's view cannot be disproved and runs the risk of being circular: whenever we feel there is something odd about a partitive in a particular context, we have to conclude that there is no sufficient reason for mentioning the referent set of the embedded NP.

3.1.3 Back to semantics

Some of the objections to Abbott's proposal mentioned above are also raised by De Hoop (1997; 2003), who argues in favour of a semantic explanation, while at the same time acknowledging the role of pragmatics. Thus, unlike Abbott and Reed, De Hoop believes that there are clear restrictions on the form of the embedded NP and that these are semantic in nature. De Hoop's primary objective is to explain the pattern observed in the following sets of examples (slightly adapted from De Hoop 1997: 156–165; 2003: 182):

- (17) a. one of the linguists
 b. **one of all linguists*
 c. **one of the population*
 d. **one of Jane and Jacky*
- (18) a. **one of a cookie*
 b. half of a cookie
- (19) a. **one of the water*
 b. half of the water
- (20) a. half of the linguists
 b. half of all linguists
 c. half of the population
 d. half of Jane and Jacky²

² As in *Only about half of Jane and Jacky was visible for the sniper* (Hoeksema 1996: 11).

To make sense of these restrictions, De Hoop (1997; 2003) proposes a distinction between set partitives and entity partitives. Set partitives are characterized by the fact that both the construction as a whole and the embedded NP are set-denoting. It is only in these partitives that the determiner *one* can be used in the matrix NP (example (17a)). Entity partitives, on the other hand, are only acceptable if the embedded NP denotes an entity (either a mass (e.g. *water*) or a singular object (e.g. *a cookie*)); they do not allow the determiner *one* (e.g. examples (18a) and (19a)), but do accept the determiner *half* (examples (18b) and (19b)). The difference in acceptability between (17b–d) and (20b–d) can be explained by assuming that the embedded NPs in these examples (*all linguists*, *the population*, *Jane and Jacky*) are not sets, but complex entities; as such they can only appear in entity partitives. Some NPs can denote either a set or an entity and are thus allowed in both types of partitive (e.g. *the linguists* in (17a) and (20a)). This leads to the following semantic constraint on partitives (De Hoop 1997: 164; cf. 2003: 186):

(21) Partitive Constraint:

Only NPs that can denote entities are allowed in entity-denoting partitives; only NPs that can denote sets of entities are allowed in set partitives.

However, as acknowledged by De Hoop (1997: 169–170), this new Partitive Constraint cannot account for all occurrences of embedded NPs with indefinite determiners. It cannot, for instance, explain why in (22) and (23) the a-examples are much better than the b-examples:

- (22) a. John was **one of several students who arrived late**.
b. ?John was **one of several students**.

- (23) a. The dog was stoned by **two of some boys who were playing in that field**.
b. ?The dog was stoned by **two of some boys**.

In order to account for this difference, De Hoop (1997: 170) concludes, we need to resort to pragmatics. Nevertheless, De Hoop does not adopt the purely pragmatic explanations offered by Reed and Abbot, as these fail to account for the fact that it is typically partitives with indefinite embedded NPs (or rather, with what Milsark (1977) refers to as weak determiners)³ that seem to violate any version of the Partitive Constraint (De Hoop 1997: 167, 168). This, according to De Hoop, is not a coincidence, and therefore needs to be accounted for. This means that a further restriction is required on indefinite embedded NPs, namely “that they need to be ‘restricted’ in a way similar to definites” (De Hoop 1997: 169). Thus, although unlike definite NPs, indefinite NPs are not inherently

³ In formal semantic discussions of the constraints on the kinds of NPs allowed in existential sentences and partitives, a distinction is often made between weak and strong determiners (e.g. Milsark 1977; Barwise & Cooper 1981). Weak determiners, such as *a*, *one*, *some*, (*a*) *few*, *several*, *many*, *no* and numerals, allow both a cardinal and a quantificational reading, i.e. either assert or presuppose the existence of their referent set. Strong determiners, such as *the*, *all*, *each*, *every*, *most*, as well as possessives and demonstratives, on the other hand, are necessarily quantificational (and as such incompatible with the existential force of a *there*-existential). Syntactic analyses of the NP, however, tend to use a different kind of classification, depending on the possible combinations of different determiners within a single NP and the relative order in which they occur. These classifications, which cut through the weak-strong distinction, generally distinguish the following groups of determiners: pre-determiners (*all*, *both*, *half*), determiners (the definite and indefinite article, demonstratives, possessives), quantifiers (*many*, *most*, *any*, *every*, *several*, etc.) and numerals (*one*, *two*, *three*) (whereby quantifiers and numerals are sometimes combined into the category post-determiner). In my discussion of previous proposals, I will adhere to the classifications and terminology used in those proposals. For my own proposal and analyses, I will make use of the terminology commonly found in syntactic studies.

restricted, they can still be used to denote a restricted set, for instance when they are used specifically or when they are syntactically restricted by NP-internal modifying phrases or clauses. This would explain why definite embedded NPs are always allowed, whereas indefinite embedded NPs need to fulfill the additional requirement of being (contextually or syntactically) restricted (De Hoop 1997: 170–172).

Although De Hoop addresses a number of important issues, the solutions offered are not always entirely convincing. It will be clear that the distinction between set and entity partitives is certainly a useful one; it will also be clear, however, that this distinction only helps to explain some of the restrictions observed in previous accounts. Moreover, as we have seen before, combinations of the determiner *one* with a collective NP (e.g. example (17c)), are actually fully acceptable. This in itself need not invalidate De Hoop's Partitive Constraint, since we may simply conclude that collective NPs like *the population* can denote sets after all (in which case they will trigger plural agreement with the finite verb). However, if this is correct (which I think it is), it means that we will have to distinguish two different types of set partitives, since partitives with embedded NPs headed by collective nouns differ crucially from those with regular plural embedded NPs. Thus, whereas the overall denotation of the partitive in (24a) is a linguist, the denotation of the partitive in (24b) is not a crowd, but a single member of the crowd:

- (24) a. one of the linguists
b. one of the crowd

This difference also seems to affect the acceptability of the use of *both* in the embedded NP: whereas, as we have seen, *both* is not allowed in examples like (25a), the constructions in (25b–c) are fully acceptable:

- (25) a. *one of both linguists (no hits in Google)
b. Aside from the obvious exception of Duke, Mattingly was **the only one of both crews** who didn't have rubella as a child. (Internet)
c. What I like about the picture is that **every single one of both crews** is laughing fit to bust. (Internet)

A similar kind of distinction needs to be made for entities. The most likely reading of (26a), for instance, is one in which both the embedded NP and the partitive as a whole denote a mass (a quantity of water). In the entity partitive in (26b), on the other hand, the embedded NP denotes a countable entity (or individual), while the partitive as a whole denotes part of that entity. As such, the partitive as a whole has a different kind of denotation from that of the embedded NP, as shown by the difference in acceptability between (27a) and (27b).⁴

- (26) a. some of the water
b. some of the door
- (27) a. He painted **some of the door**.
b. *?He opened **some of the door**.

⁴ In Rijkhoff's (2002) terms, the noun *water* denotes a homogeneous entity, i.e. an entity that is agglomerative (if we add some water to a tank of water, the result will still be water), whereas a noun like *door* denotes a non-homogeneous entity; [+Homogeneous] nouns denote entities that have portions; [Homogeneous] nouns denote entities that have components.

A second problem concerns De Hoop's requirement that indefinite embedded NPs must denote a restricted set. Although not explicitly mentioned, it may be assumed that this requirement also applies to entity partitives. After all, it is this requirement that excludes the use of bare NPs in partitives, a restriction that applies to both set and mass partitives:

- (28) a. *one of linguists
b. *some of gold

Nevertheless, as De Hoop's own examples in (20) already show, the embedded NP in an entity partitive need not be (contextually, semantically or syntactically) restricted:

- (29) a. **More than half of all animals and plants** live in the rainforest. (Internet)
b. **More than half of all communication** is non-verbal. (Internet)

Furthermore, the assumption that indefinite embedded NPs are acceptable as long as they are restricted also raises some questions. Why is it, for instance, that some restricted sets are less constrained than others? Thus, whereas in example (30) the indefinite NP *many problems* is perfectly acceptable without a modifying phrase or clause (as long as it is clear from the context what the domain of quantification is), embedded NPs with the quantifier *some* always seem to require some kind of modification:

- (30) a. **Only one of many applicants** passed the test. (= (11))
b. **Only one of some applicants** ??(who took the test) passed.

Finally, De Hoop's claim that embedded NPs with the quantifier *all* cannot denote sets turns out to be too restrictive. As shown in example (31), for instance, such NPs can occur freely in partitive NPs in the presence of a superlative in the matrix NP (see also Hoeksema 1984: 26):

- (31) a. Quentin's section of "The Sound and the Fury," perhaps **the greatest of all American novels** (or, for that matter, of all novels), begins with an almost identical passage. (COCA, newspaper)
b. It was easier going for Hugh who was now in great pain, but Marian and Allen became more watchful and uneasy because **the most uncertain and dangerous of all possible enemies**, man, was near. (BYU-BNC, fiction, prose)

Even without a superlative, however, *all* can appear in set-denoting embedded NPs, as can be seen from the examples in (32). In such cases, *all* is typically, but not necessarily, followed by the adjective *possible*:

- (32) a. As a consequence, **only some of all possible patterns of dependence and independence** can be expressed in the received first-order logic. (Internet)
b. Any possible division of payments among all players is called an imputation, but **only some of all possible imputations** will be contained in a solution. (Internet)
c. Note that **only some of all quadrature rules** are valid choices. (Internet)

These examples show that, like all the previous attempts to account for the constraints on partitive constructions, De Hoop's account leaves a number of issues unresolved.

3.1.4 Summary and preview

All the proposals looked at in this section have clearly contributed to the discussion of (the constraints on the use of) the partitive construction, in the sense that each proposal can account for a number of partitives that proved to be problematic for other proposals. None, however, succeeds in providing a unified explanation for all partitives, specifying the exact circumstances in which they can occur, and explaining the systematic differences in acceptability between partitives with different kinds of embedded NPs. Moreover, most of these proposals have concentrated on certain types of partitives only – mainly set partitives with plural embedded NPs and in some cases some mass partitives – ignoring (or rejecting) other constructions, such as *one of the crowd* or *some of the door*.

In Sections 4 and 5 it will be argued that in order to come to a more comprehensive and satisfying treatment of partitives, a broader approach is needed. Thus, we need to reconsider (i) the discourse function of partitives, and in particular the role of the embedded NP, and (ii) the role of the denotation of the partitive as a whole and the embedded NP. In addition, the analysis to be proposed will show that there is a relation between the pragmatic and semantic features of partitives and their syntactic structure. The following section will therefore present some previous proposals for the internal structure of partitive constructions.

3.2 Internal structure

Proposals suggested for the internal structure of partitives can broadly be divided into those that are semantically based and those that are mainly inspired by syntactic considerations. The major issues involved are (i) which element functions as the head of a partitive construction, (ii) what is the status of the determiner in the matrix NP and (iii) what is the status of the preposition and the embedded NP.

3.2.1 Semantically oriented proposals

In their semantically based discussion of generalized quantifiers, Barwise & Cooper (1981) also discuss the relation between generalized quantifiers and syntax. Using the theory of generative grammar prevalent at the time, they assume the following phrase structure rule for NPs (Barwise & Cooper 1981: 162, 172):

(33) NP → Det N

Interpreting this as meaning that every unit that follows the determiner is a noun, and assuming that partitive constructions have the form [Det *of* NP], Barwise & Cooper (1981: 206–207) propose the following internal structure of partitives:

(34) [_{NP} Det [_N *of* NP]]

From a syntactic point of view, however, such an analysis is problematic. Thus it is unclear how the combination [*of* NP] can be a noun, i.e. the head of the matrix NP; nor is it clear what the status is of the element *of* (if not a preposition, then what is it?). What is clear is that in this analysis there is no relation at all between partitives and other NPs containing the sequence [*of* NP] (e.g. *the author of the book* or *the front of the house*) (see also Hoeksema 1984: 7). Moreover, this structure can only account for partitives like *one of the linguists*; partitives with a pronoun (*each one of the linguists*, *the older one of the two linguists*) cannot be accommodated (Hoeksema 1984: 11).

Whereas Barwise & Cooper analysed everything that followed the determiner as a noun, Keenan & Stavi (1986: 287), in their semantic characterization of English determiners, regard

everything that precedes the noun as a determiner (see (35)). Thus, in examples (36a–b), the italicized sequences are analysed as complex determiners of the general (simplified) form [Det of the Num] or [Det of Poss Num], followed by a plural noun (*delegates, cats*):

(35) [NP [Det of the/Poss Num] N]

- (36) a. *At least two of the ten delegates* voted for Smith.
 b. *Not one of John's twenty cats* is inoculated.

Again this analysis runs into problems on closer inspection. First of all, partitives are analysed as right-headed simplex NPs, headed by a plural noun; consequently, the partitive as a whole must be plural. However, as is clear from (36b), the number of the partitive is not determined by the plural noun. Furthermore, in Keenan & Stavi's analysis the sequence [of NP] does not form a constituent. As the following examples show, however, this sequence can be preposed, which clearly suggests that it is a constituent:

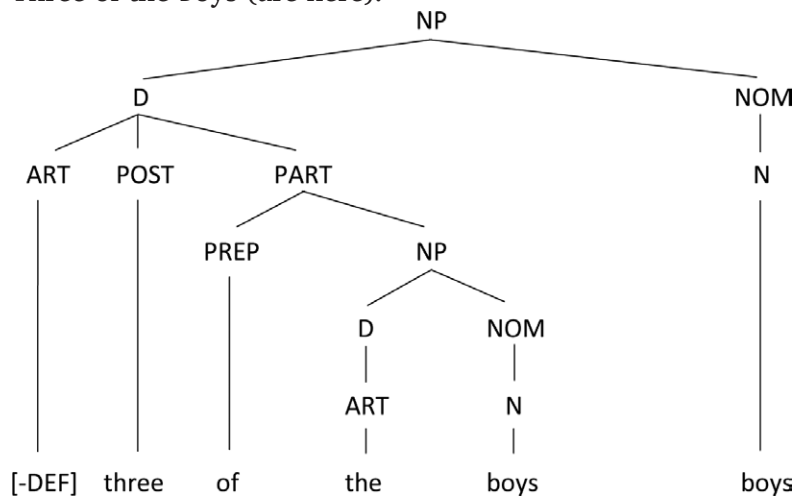
- (37) a. *Of the ten delegates*, at least two voted for Smith.
 b. *Of John's twenty cats*, not one is inoculated.

Moreover, as in the proposal by Barwise & Cooper, there is no room for the pronoun *one*; nor can Keenan & Stavi's proposal account for partitives like *two of them*, where it is clear that the determiner and the second noun must be one constituent (cf. Hoeksema 1984: 10–11).⁵

3.2.2 Syntactically oriented proposals

One of the first syntactically oriented analyses of partitive constructions is that of Stockwell et al. (1973: 114–121; 144–146). Their analysis is based on the assumption that the noun following the (post)determiner has been deleted. Moreover, partitives are given their own, specific analysis, which also involves movement of the *of*-PP:

- (38) a. Three of the boys (are here).
 b.



⁵ Other complex determiners include such comparative elements as [more Adj₁ than Adj₂] (e.g. *more male than female students passed the exam*) and adjectival sets [det AP] (e.g. *Most liberal and all conservative delegates voted for that bill*) (Keenan & Stavi 1986: 282/284). Keenan & Stavi are, however, aware of the controversial nature of their proposal, and explicitly state that a rejection of this part of their proposal does not affect the main issue of their paper (the validity of the Conservativity Theorem) (Keenan & Stavi 1986: 259).

In order to get from the underlying structure in (38b) to the surface structure in (38a), the following transformations take place:

- (39) a. three [of the boys] boys →
 b. three boys [of the boys] →
 c. three ones of the boys →
 d. three of the boys

It is clear that this analysis can account for the syntactic behaviour of partitives: it recognizes both the sequence [*of* NP] and the embedded NP as constituents, and the matrix NP has a head agreeing in number with the determiner and the finite verb. It can thus straightforwardly account for constructions with a (plural) pronoun following the (post-)determiner (and/or adjective) (example (40a)), even when the (post)determiner is a numeral (example (40b)),⁶ as well as for those cases where the first noun is not deleted (example (40c)):

- (40) a. So, when you take a look at that huge district that takes up nine western states, for instance, you've got Republican senators in many of those states, **the smaller ones of the nine**. (COCA, spoken)
 b. Note: The password in the picture above is just for example. You are recommended to make it longer than 8 chars, which contain **three ones of the following four items**: special symbols, numbers, uppercase letters and lowercase letters. (Internet)
 c. "Lefty, you get over to first base," he said, pointing to **the taller girl of the two**. (COCA, fiction)

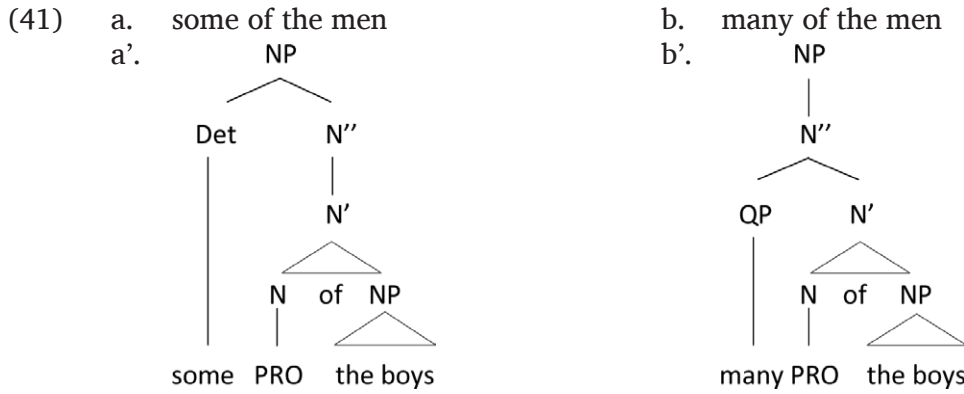
However, the analysis also has a number of disadvantages, such as the introduction of a special kind of phrase (PART), which looks exactly like a regular PP, and the need for both movement and deletion.

Within the framework of X-bar theory, Jackendoff (1981: 106–119) also assumes partitives to contain an empty head. He does not, however, distinguish a separate Partitive Phrase; instead the embedded NP is represented as the sister of an empty head (PRO), while *of* simply functions as a linking element (not the head of a PP). Moreover, Jackendoff assumes two different internal structures for partitives with determiners (*all*, *some*, *these*; example (41a)) and quantifiers (*many*, *several*; example (41b)): whereas the former allows the insertion of a modifier before PRO (*the oldest of the men*), the latter does not (**many oldest of the men*).⁷

⁶ The combination of a numeral with the pronoun *ones* (e.g. *five ones*) is often regarded as ungrammatical (e.g. Stirling & Huddleston 2002: 1512). According to Payne et al. (2013: 814), however, this combination, although infrequent, is not ungrammatical; a web search, they claim, "readily turns up perfectly natural-sounding examples".

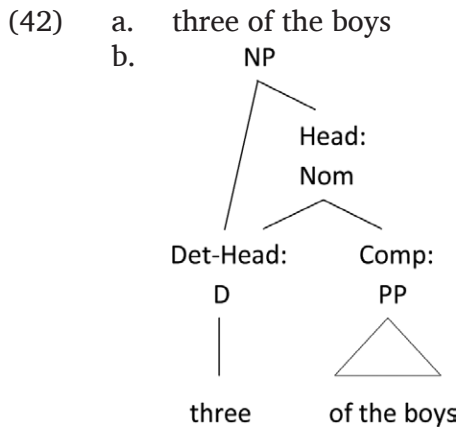
⁷ Note, however, that even in (41a) modification is constrained. Thus, although *the oldest/older of the men* is acceptable, **the old of the men* is not. Note, however, that this is not only a restriction on the partitive construction, but on the use of (phoric) elliptic NPs in general, as shown by the unacceptability of **all/some/these old*. What the two analyses provided by Jackendoff illustrate is that, even when the comparative/superlative form of the adjective is used, there is still a difference in acceptability between constructions with a determiner and a quantifier.

These examples clearly show that there are strong parallels between partitives and noun-partitive elliptic NPs; in fact, many (phoric) elliptic NPs can be seen as implicit partitives (e.g. *all three*, *the oldest*). It is therefore not surprising that for these NPs, too, an empty head (or empty noun) analysis has also been proposed. For detailed discussions, see Lobeck (1995), Günther (2013) and, for French, Sleeman (1996).



Again it is the analysis of the string [of NP] that is problematic here, as it does not form a constituent; nor is it clear what exactly the status is of the element *of*. In addition, any constraints on the embedded NP are simply stipulated, not explained.

Payne & Huddleston (2002), finally, reject the idea of an empty head. They propose the analysis in (42b), where, in the absence of a noun or pronoun to fill the head position of the matrix NP, this position fuses with that of the determiner. The fused Det-Head position is then filled by the determiner. The sequence [of NP] is analysed as a regular PP, functioning as a complement (Payne & Huddleston 2002: 412).



Payne & Huddleston’s main reason for not adopting an empty head analysis is that the head position cannot always be filled, as for instance in *many of us* or *two of the windows* (Payne & Huddleston 2002: 420–421). An advantage of their analysis is that it can also be applied to other constructions where an empty head has been suggested (e.g. to a construction like *the rich*, where the adjective fills the fused modifier-head position).

Although elegant, this solution is nevertheless not entirely satisfactory. It may, for instance, be objected that it is not clear why the construction in (42b) is an NP, since it lacks a nominal head. Moreover, in the absence of a nominal head, it may be difficult to justify the complement status of the PP: complements, unlike modifiers, are units whose presence is required by the head. In the fused head analysis in (42b), it is not quite clear what the PP functions as a complement of.

3.2.3 Summary and preview

What will have transpired from the preceding discussion is that, despite the sometimes considerable differences between the various proposals, they all have in common that they do not analyse partitives as having a regular “N + PP” internal structure. Instead, they all treat partitives in a special way: by the introduction of a partitive phrase,

followed by movement; by analysing *of* as a linking element rather than a preposition; or by the fusion of determiner and head. None of these attempts, it has been argued, can be regarded as entirely successful.

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One important difference between these previous accounts and the FDG analysis to be proposed is that the latter makes use of different, interacting levels of analysis. It is this distinctive feature of the theory of FDG that makes it possible to account for many of the pragmatic, semantic and syntactic features of partitives in one unified analysis. Thus, it will be argued that, semantically speaking, it is useful to assume the presence of an empty head in those partitives where a property (e.g. ‘boy’) is predicated to the referent of the partitive as a whole (e.g. *one of the boys*). This can be achieved by linking the empty head of the matrix NP to the head of the embedded NP, which, in addition, neatly captures the specific (partitive) relation between two NPs. On the syntactic level, the empty head may trigger the use of a pronoun, which may be required (e.g. *every one of the boys*) or optional (*each (one) of the boys*). In such an analysis, partitive constructions are in fact very similar to other NPs containing an *of*-PP, the only special features being the special (semantic) relation between the matrix NP and the embedded NP (e.g. subset-set) and the fact that the head is typically left unexpressed.

4 English partitives: types and conditions

4.1 Four types of partitive

Before going into the details of the FDG analysis (Section 5.2.2), we will first return to the constraints on the partitive construction. It will be clear that a comprehensive account of the partitive construction will have to be able to deal with all different types of partitive in a principled manner. In this section four types of partitive will be described; this will be followed by a specification of the conditions under which each of these types can felicitously be used.

The four types of partitive in question have in common that the head of the matrix NP is not (or need not be) expressed, either because the property it denotes can be retrieved from the embedded NP (*one of the boys*) or because no such property is denoted (*one of the crowd*). This means that, for reasons of space, other constructions expressing partitivity, such as *the majority of the students* or *a quarter of the students* will not be included in the discussion here.

The four types of partitive to be discussed in this section can be distinguished on the basis of two parameters:

1. The kind of entity denoted by the matrix NP (i.e. by the partitive as a whole): set or mass where sets are defined as consisting of one or more separate, countable entities, and masses as homogeneous, uncountable entities.
2. The relation between the head of the matrix NP and the head of the embedded NP: co-denotational or not co-denotational where co-denotational is defined as predicating the same property (to the referent(s) of the matrix NP and the referent(s) of the embedded NP).

This gives us the four types of partitive in Table 1:

	+set matrix NP (set partitive)	–set matrix NP (mass partitive)
+co-denotational (co-indexed heads)	subset – set (Type 1)	submass – mass (Type 2)
–co-denotational (non-phoric head)	member – collection (Type 3)	portion – entity (Type 4)

Table 1: Four types of partitive construction.

4.1.1 Type 1: subset-set

In partitives of this kind, such as *one/some of the boys*, both NPs refer to a set, with the matrix NP denoting a subset of the embedded NP (whereby the subset may be identical to the set, as in *all of the boys*). The matrix NP may refer to a plural set or a singleton set; the embedded NP must refer to a plural set. The matrix NP will be assumed to have an empty head denoting the same property as the head of the embedded NP; thus, by using the partitive *one of the boys*, the property ‘boy’ is predicated both of the (members of the) referent set of the embedded NP and of the referent of the matrix NP.

Evidence for the presence of an empty head – apart from the denotational aspect – can be found in the fact that, as we have seen, this position can (and sometimes must, as in the case of *every one of the boys*) be filled either by the pronoun *one(s)* or by a full noun. Consider in this respect once more the examples in (40) (repeated here for convenience):

- (40) a. So, when you take a look at that huge district that takes up nine western states, for instance, you’ve got Republican senators in many of those states, **the smaller ones of the nine**. (COCA, spoken)
- b. Note: The password in the picture above is just for example. You are recommended to make it longer than 8 chars, which contain **three ones of the following four items**: special symbols, numbers, uppercase letters and lowercase letters. (Internet)
- c. “Lefty, you get over to first base,” he said, pointing to **the taller girl of the two**. (COCA, fiction)

In (40b), the pronoun *ones* is used cataphorically: its denotation is provided by the head of the embedded NP. Note that this is true even if both NPs lack an explicit head, as in (40a): the hearer first has to retrieve the implicit property denoted by the head of the embedded NP (i.e. the property ‘state’), before assigning the same property to the referent of the matrix NP. One might therefore conclude that there is no (semantic) need to fill the head of the matrix NP, since the property denoted should always be supplied by or retrievable from the embedded NP. This means that the partitive *the taller girl of the two* in (40c), would, semantically speaking, be identical to *the taller (one) of the two*. The fact that in some cases speakers do use a full noun in the matrix NP may have to be attributed to pragmatic (interactional) factors, e.g. Givón’s Principle of Task Urgency (attend to the most urgent task first; Givón 1988: 275–276; 1990: 972).

Finally, as can be seen from the example in (43), both nouns can sometimes be used. In this case, however, what may be regarded as redundancy (using a full noun twice, where a single mention would have sufficed), may be explained by the fact that, this being a definition, a higher degree of explicitness is called for.

- (43) ul·na (ül'nə)
n. pl. ul·nas or ul·nae (-nē)
 The larger bone of the two bones of the forearm, extending from elbow to wrist on the side opposite the thumb. Also called *cubitus*, *elbow bone*. (The Free Dictionary – online)

What these examples show is that the head position is available, both semantically and syntactically. The fact that the first noun is typically left unexpressed (or is filled by a pronoun) is simply a matter of efficiency – if needed, mention of the full noun is possible.

4.1.2 Type 2: submass-mass

This type of partitive is the mass counterpart of Type 1: the matrix NP refers to a submass of the mass referred to by the embedded NP. Here, too, the two NPs have the same denotation: *some of the water* refers to (a quantity of) water (i.e. to a portion of the mass referred to by the embedded NP). As in the case of subset-set partitives, these partitives will be assumed to have an empty head following the determiner (typically *some*, *most*, *any* or *all*). Syntactic evidence of the presence of an empty head is, however, more difficult to find, due to the fact that English does not have a pronoun that can fill the position of a mass-denoting head (here indicated by ?? in (44b)):

- (44) a. a clean cup and a dirty **one**
 b. some clean water and some dirty ??

This means that, unlike in set partitives, where a modifier can be followed by a pronoun (e.g. (40a)), this is not possible in mass partitives, where the head position will simply remain unfilled:

- (45) The water will be captured in the first tank to allow for sedimentation to occur and **the clearest of the water** will overflow into the second tank for additional sedimentation to take place [...]. (Internet)

As demonstrated in (46), however, the head position of the matrix NP may be filled by a full noun (although the result may be regarded as questionable):

- (46) a. If I went to a food show, Indian food would be **the best food of all the food**. (Internet)
 b. To start, remove **some water of the water** from the toilet bowl until it is about half full. (Internet)
 c. Harbin reported that rice from a region just to the south of Harbin was **the best quality rice of all northeast rice**. (Internet)

On the basis of these examples, it will be assumed that mass partitives like *some of the water* have an empty head whose denotation is determined by the denotation of the embedded NP.

4.1.3 Type 3: member-collection

This type differs from the previous two types in that the matrix NP and the embedded NP do not refer to the same type of entity; i.e. the heads of the two NPs are not co-denotational. Thus, in a partitive like *one of the crowd*, the entity referred to by the matrix NP is not a crowd, but a member of the collective set referred to by the embedded NP. As a matter of fact, no property is assigned to the overall referent at all: all we can infer from the

partitives in (14) (repeated here for convenience) is that the overall referent is a human being. In other cases, however, the overall referent will be interpreted as being animate, as in examples (47a–b), or non-animate, as in example (47c).

- (14) a. **One of the crew** climbed down it and then jumped to the tarmac. (COCA, spoken, PBS- Newshour)
 b. Significantly, in the 36 developing countries for which the data were obtained, if **only one of the couple** was literate, the child's chances of surviving to age 5 were greatest if it was the mother rather than the father who could read and write. (BYU-BNC, institute doc)
 c. **Some of the crowd** were pleased when they heard this, but most of them watched me in silence. (BYU-BNC, fiction, prose)
- (47) a. Keeping them dose (sic) meant that the crew didn't have to mount an extra guard detail downstream where they'd planned to corral the stolen herd. Nylund wanted to slaughter **one of the cattle** to supplement their ever-thinning ship's rations [...]. (COCA, fiction)
 b. Even the boundaries of ANWR were largely determined by the range of the Porcupine River herd. # **Some of the herd**, which numbered 123,000 when last counted in 2001, migrate nearly 3,000 miles each year (COCA, magazine)
 c. Note the bronze by Adrian de Vries. This is in fact a copy of the one stolen by the Swedes in 1648 and now gracing the gardens at Drottningholm Castle. The original was dated 1545 and was **one of the series Vredeman de Vries created for the great garden of Wallenstein** (BYU-BNC, miscellaneous)

We may therefore conclude that the (linguistically relevant) features [\pm human] and [\pm animate] must be compatible with the denotation of the embedded NP (e.g. *herd/cattle* vs. *series*). In the analysis to be proposed in Section 4.2, it will be assumed that partitives like these have an abstract head, i.e. a head which consists of features only, without denoting any lexical property.

What is interesting is that even though no property is assigned to the overall referent of the partitive construction, the pronoun *one* can occur in the head position. In that case, however, we are dealing with a case of non-phoric *one*, which can also be found outside partitives (e.g. Keizer 2012: 409, 411), as shown in (48):

- (48) a. The Djeli is a good negotiator, a man of impossible missions. He is the **one** who can resolve very difficult problems. (COCA, academic writing)
 b. You really need to put them in the hands of working people of those who take most of their paycheck and spend it right away. They are the **ones** who are hurt first and deepest when there's a recession. (COCA, spoken)

Some examples of this non-phoric use of the pronoun *one* in a partitive construction are given in (49):

- (49) a. Again in 2268, Uhura, after attending Kirk's memorial service, was **the first one of the crew to see the ghost-like image of Kirk in a mirror in her quarters**. (Internet)
 b. **Each one of the cattle** had their own personality and individual characteristics that Marla knew in great detail. (Internet)

Summing up, Type-3 partitives are also assumed to have an empty head; unlike partitives of Type 1 and 2, however, this head consists of abstract features only and does not denote a property. This means that the head of the matrix NP is non-phoric and is not co-denotational with the head of the embedded NP.

4.1.4 Type 4: portion-entity

This type of partitive has in common with the previous type that the heads of the matrix NP and embedded NP are not co-denotational: in a partitive like *some of the door*, the matrix NP does not refer to a door, but to an unspecified portion of a door (see example (27)). This means that whereas the embedded NP refers to a single, countable entity, the matrix noun refers to a mass. Moreover, as in the case of member-set partitives, no property is assigned to the referent of the matrix NP. The head of the matrix NP will therefore be analysed as simply containing the abstract feature [-animate].

Now consider the examples in (50), all of which contain a partitive with the collective embedded NP *the crowd*. In (50a), the matrix NP refers to some members of this collective set. This is clear from the use of the plural form of the finite verb, as well as from the use of the anaphoric pronoun *they* and the subsequent partitive *most of them*. This means that we are dealing with a member-set partitive (Type 3). In (50b), on the other hand, the embedded NP is interpreted as an entity, with the matrix NP referring to a portion of this entity, rather than to individual members of a set. In this case, the partitive as a whole refers to a mass, as is clear from the use of the singular form of the verb.⁸ Not surprisingly, ambiguities may occur, as shown in (50c), which could either be taken to mean that the mounted troops pursued some individual (possibly dispersing) members of the crowd (Type 3 reading) or a portion of the crowd (though not itself necessarily a crowd; Type 4 reading):

- (50) a. **Some of the crowd** *were* pleased when **they** heard this, but *most of them* watched me in silence. (BYU-BNC, fiction, prose)
 b. **Some of the crowd** *starts* to form a bucket line to the well. (COCA, fiction)
 c. Mounted troops pursued **some of the crowd** through Christian Street and the women threw from the windows all they could lay hands on. (BYU-BNC, non-academic humanities-arts)

Another unambiguous example of a Type 4 partitive with a collective embedded NP is provided in (51), where the use of *much* clearly indicates that overall reference is to a mass:

- (51) In this very poor country, private school fees are beyond the means of **much of the population**. (BYU-BNC, academic writing)

4.2 Conditions of use

Let us now return to the question of how best to formulate the constraints on the use of the (various types of) partitive construction. As will have become clear in the classification presented in the previous section, De Hoop's (1997; 2003) Partitive Constraint, which states that entity-denoting partitives require an entity-denoting embedded NP and sets denoting NPs only allow set-denoting embedded NPs, applies to two of the four types of partitive distinguished here (the co-denotational ones). This constraint cannot, however,

⁸ As shown in the following examples, this is, of course, a general feature of collective nouns, not restricted to their use in a partitive construction (e.g. Quirk et al. 1985: 316; Payne & Huddleston 2002: 495–496; 501–504; for an FDG treatment of such nouns (based on Dutch), see Honselaar & Keizer 2009):

- (i) a. **The crew** *was* already there, readying the Black Hawk for flight. (COCA, fiction)
 b. **The crew** *weren't* exactly eager to return the guns. (COCA, fiction)

be seen as applying to the partitive construction in general. Nor, as de Hoop already acknowledged, can this constraint account for other restrictions on the embedded NP in a partitive construction.

In what follows, it will be argued that there are in fact no real constraints on the partitive construction *in general*, apart from the requirement that the embedded NP is referential (or rather that there is an embedded NP). This, of course, is what distinguishes partitives from pseudo-partitives, which do not involve embedding, and where the second NP forms the head of the construction (e.g. Selkirk 1977; Hoeksema 1984: 27–30; De Hoop 2003: 191–193; see also Keizer 2007: 69, Ch. 6). As a group, partitives behave like any other NP with an embedded *of*-PP. It is true, however, that some types of partitive are more restricted than others. We will therefore discuss each type separately, starting once more with the type that has been given most attention in the literature: the subset-set partitive.

In order to get a better understanding of the restrictions on the *subset-set partitive*, let us consider its discourse function; in other words, let us start by asking ourselves why speakers would prefer an explicit partitive like *one of the linguists* over the more efficient *one linguist*; why say *many of the problems* instead of simply saying *many problems*? Reed's answer to this question is, as we have seen, that the specific discourse function of partitives is “to evoke new discourse entities by linking them to existing discourse groups” (1996: 147; see also Reed 1991: 214). This means that any embedded NP that can perform this function will be allowed in any partitive. In this respect, partitives are thus no different from other NPs with embedded NPs linking the referent of the matrix NP to some other, more identifiable discourse entity: the embedded NP in a post-nominal possessive like *a picture of my sister* or *one symptom of this problem* has exactly the same function (see e.g. Taylor 1996; Keizer 2007).⁹ Embedded NPs fulfilling this function are typically definite, referring to a textually evoked or inferrable entity (examples (52a) and (52b), respectively), or to an entity that may be assumed to be part of the addressee's long-term knowledge (example (52c)) (e.g. Hawkins 1978; Prince 1981):

- (52) a. The government had also noted the proliferation of schismatic religious movements over the previous few years. When Tikhon was placed under house arrest in June 1922, **one of these movements**, the Living Church, was given numerous concessions by the regime, [...]. (BYU-BNC, academic writing)
- b. As a change from wet feet and sightseeing I was smuggled into an English-language class where we drank home-made slivovitz and **one of the students**, a lugubrious-looking individual called Miroslav [...]. (BYU-BNC, miscellaneous)
- c. Truman flew out from Los Angeles and MacArthur flew out from Korea and they met in **one of the Pacific islands**, I forget which one. (BYU-BNC, spoken, lecture)

Now, as we have seen in the previous section, the embedded NP in a set partitive can also be indefinite, in which case the set of which the referent of the matrix NP forms a subset is itself being introduced in the partitive construction. Also in this respect, partitives seem to be no different from other types of NP, which can also contain an indefinite embed-

⁹ The fact that the entire class of partitives are no different from other NPs with embedded *of*-PPs (or any other NPs for that matter) is, of course, fully in line with Abbott's (1996: 40) claim that any restrictions on the embedded NP can be explained in terms of the general pragmatic principle that entities should only be mentioned if there is sufficient reason to mention them. At the same time, however, this general principle fails to explain the very specific restrictions that apply to some types of partitive only (in particular to the subset-set partitive).

ded NP (e.g. *a picture of a little girl*, *a symptom of a serious problem*). What distinguishes set partitives from other NPs, however, is that the use of an embedded NP introducing a completely new, unmodified set of entities seems to be avoided. Thus, whereas it is perfectly normal to say *a picture of some little girls*, a partitive like *one of some little girls* is generally thought to be unacceptable.

This difference can, however, easily be explained if we consider the distinctive features of set partitives, namely the fact that the matrix NP denotes a subset of the embedded NP and that the heads of the two NPs denote the same property. This means that an indefinite embedded NP which simply denotes the entire set of entities of which the referent of the matrix NP forms a subset (as in *one of (all) linguists*) does not have any added value. If reference is made to one linguist, we can infer the existence of a set of linguists, and therefore, logically, also a set of all linguists, a set of some linguists and a set of most linguists. None of these NPs therefore provide any new, unpredictable information, which makes them unacceptable as embedded NPs in a subset-set partitive. This is why there is an extra restriction on the use of this type of partitive, namely the restriction that an indefinite embedded NP must introduce more than just its general denotation set. More specifically, the embedded NP must provide non-predictable information; this information may relate to the size of the set, to its composition (i.e. the specific properties shared by its members), or to both.

As mentioned in all previous accounts, set partitives do not accept embedded NPs with the pre-determiner *both*. Note that this, too, follows from the nature of the set partitive. As pointed out by Ladusaw (1982: 67–70), NPs with *both* do not denote plural sets (i.e. group level individuals), but rather distributive sets, consisting of two separate individuals which share a predicated property. This difference is illustrated in the following example (Ladusaw 1982: 68):

- (53) a. The two students are a happy couple.
b. *Both students are a happy couple.

In (53a), the NP *the two students* denotes a plural set with the property “a happy couple”. In (53b), however, the NP *both students* denote a distributive set, consisting of two separate individuals; since these individuals cannot each have the property “a happy couple”, the sentence is unacceptable. It will be clear that the fact that NPs with *both* do not denote plural sets disqualifies them for use in the embedded NP of a set partitive.¹⁰

Note finally that embedded NPs consisting of singular coordinated NPs are also excluded from set partitives because (i) the individual NPs do not denote sets, and (ii) the heads of these two NPs denote different properties. In (54a), for instance, the empty head of the matrix NP cannot be co-denotational with either of the two heads (*boy* and *girl*) and as such fails to denote any property. Note that the coordinated proper nouns in (54b) are also excluded from use in a subset-set partitive, since they fail to denote any property.

- (54) a. ***One of the boy and the girl** must have written this (Reed 1991: 218)
b. *one of Jane and Jacky (De Hoop 1997: 156)

¹⁰ Note that counterexamples, although rare, can be found, due to the fact that some speakers do not make the distinction between *both* and *the two*

- (i) a. Connective tissue of the mitral valve proliferates leading to an increased size of 1 or both leaflets of the mitral valve. **One of both of the leaflets** then billows backwards into the left atrium during systole. (COCA, academic writing)
b. Team members must wear shirts of the same colour. When two teams play in the same colour, **one of both teams** will be asked to put on shirts of a different colour. (Internet)

On the basis of the preceding discussion, it seems justified to conclude that (i) there is no significant difference between partitives and other NPs with embedded *of*-PPs when it comes to the function and form of the NP embedded in the PP, and (ii) that any restrictions on the embedded NP in subset-set partitives follow logically from the distinctive properties of this type of partitive.

Let us now look at some examples to illustrate how the restrictions suggested can account for the differences in acceptability between different subset-set partitives. First of all, it will be clear that these restrictions can straightforwardly account for the acceptability of subset-set partitives with definite embedded NPs (provided that these NPs do indeed refer to previously evoked or inferrable sets; see example (52)). In addition, it can account for the acceptability of indefinite embedded NPs with modifying phrases or clauses, as in (55), where the embedded NP introduces a new set characterized by a specific property; note that in examples (55b&c) also the size of the set constitutes new information:

- (55) a. Maintaining a healthy weight and keeping your blood pressure in a good range are **just two of some things that you can do to help lower your risk**. (Internet)
- b. Interest in retro ARs is growing steadily. Due in part to the wealth of knowledge shared by retro guys like Ekie, Captrichardson, scottryan, etc. (please note that those are **just three of too many to list here**). (Internet)
- c. Solar System position. Mars and Earth are **two of nine planets in our Solar System**. Outward bound from the Sun, Mercury is first, Venus is second, Earth is third and Mars is fourth. The four are known as the terrestrial planets. Mars is 1.5 times farther from the Sun than Earth while it is only about half as large as Earth. (Internet) (= example (5a))

As shown by the examples in (56), specifying the (unknown) size of an otherwise predictable set is enough to make the indefinite embedded NP acceptable. Note that in these cases, focal stress (indicated by small caps) is always expressed on the numeral or quantifier of the embedded NP:

- (56) a. “We must all suffer **one of two things**: the pain of discipline or the pain of regret or disappointment.” (Internet)
- b. Reached on his cell phone, he said it’s **the latest of many setbacks**. (COCA, spoken)

Specificity of the embedded NP is, however, not required, as shown by the examples in (6) and (7) above. In (7b), for instance, there is no need for the speaker to have a specific set of gradations in mind, as long as the members of the set share a newly introduced property (in this case that of being in between good vision and total blindness):

- (7) b. Vision may be good or there may be total blindness or **one of any gradations in between**. (BYU-BNC, academic)

The unexpected feature of the embedded NP may also be expressed by the quantifier itself. Thus, quantifiers like *several* and (*only*) *few* do not only indicate quantity but in addition indicate a deviation from the expected value (a higher quantity than expected in the case of *several*, a lower quantity in the case of *few*). This unexpected feature is enough to license the use of an unmodified embedded NP, as shown in (57):

- (57) a. Delivery may be achieved in **one of several ways**. (BYU-BNC, academic writing)
 b. We are **one of only few USA authorized Ford-Dealers**. (Internet)

It will also be clear that there is nothing to stop recursion in subset-set partitives, as long as each of the embedded NPs fulfils the requirements, as in the examples in (16) above. Thus it is even possible for recursive partitives to contain an indefinite embedded NP, as in the following examples, where the indefinite embedded NP is itself a partitive with an embedded NP referring to a previously evoked discourse set (see also (16c)). If anything, the use of a recursive partitive seems to favour an indefinite first embedded NP, possibly because such NPs typically contain further modification or complementation:

- (58) a. Making the sprawling university the first of its size to go climate neutral (tentatively scheduled for 2060) is **only one of many of the committee's goals**. (COCA, magazine)
 b. Catroux is **one of several of Saint Laurent's closest friends who are coming to San Francisco for an invitation-only gala on Thursday**. (COCA, newspaper)

In addition, the conditions of use specified above allow for embedded NPs with the qualifier *all* in those cases where they occur. Thus, as demonstrated in examples (59) and (60), *all* frequently occurs in partitives containing a superlative:

- (59) a. Quentin's section of "The Sound and the Fury," perhaps **the greatest of all American novels** (or, for that matter, of all novels), begins with an almost identical passage. (COCA, newspaper) (= (31a))
 b. However, fear-driven policymaking now could lead to **the worst of all outcomes**: a mountain of nuclear waste under a burgeoning sky full of carbon dioxide and coal soot. (COCA, academic)
- (60) a. It was easier going for Hugh who was now in great pain, but Marian and Allen became more watchful and uneasy because **the most uncertain and dangerous of all possible enemies**, man, was near. (BYU-BNC, fiction, prose) (= (31b))
 b. Take one bite of that and tell me it isn't **the best of all possible pies**. (COCA, fiction)

Closer examination shows that all these examples have something in common, namely that the embedded *all*-NP serves to emphasize the unique status of the subset. Thus the difference between the explicit partitive *the greatest of all American novels* (example (59a)) and the implicit partitive *the greatest American novel* is a pragmatic difference: the presence of *all* in the embedded NP suggests a large set, thus lending even more importance to the already unique qualification provided by the superlative *greatest*. This emphatic function is formally reflected in the fact that *all* in these constructions tends to be given prosodic prominence. As illustrated in example (60), the effect of *all* can be strengthened even further by the addition of the adjective *possible*, resulting in what has become a formulaic emphasizing expression.

As can be seen from the examples in (61), it is not only superlatives, but also the modifier *only* that can trigger the use of an embedded NP with the pre-determiner *all*. Once again, it is the emphatic nature of the pre-determiner *all* (in this case reinforced by the use of *only*) that licenses the use of an embedded NP.

- (61) a. This is **the only one of all Anguilla restaurants** that's REALLY out on a ledge! A picturesque view with world-class meals! (Internet)
 b. This article contains **only three of all possible characteristics** to show the method in selection of architecture. (Internet, Google books)

Finally, as pointed out in the literature (in particular De Hoop 1997; 2003), it is possible to have an unmodified embedded NP introduced by *all* in constructions with *half*:

- (62) a. **Half of all animal extinctions** have occurred this century and it is believed that another one million species could be lost by the year 2000, which works out at over 270 extinctions every day for the next ten years. (BYU-BNC, non-academic, natural sciences) (= (12c))
 b. MOST hard-up Britons can not afford a holiday this year. **Less than half of all adults** are going abroad. The rest are taking cheap day trips, says a Gallup poll for the Visa Delta credit card group. (BYU-BNC, newspaper)

The question, however, is whether in these examples *half* functions as a pre-determiner/quantifier (see also Janssen 2014). Note, for instance, that it is not possible to use a full noun as the head of the matrix NP (**half adults*); *half* thus behaves differently from other (full) quantifiers (e.g. *some* and *most*) or pre-determiners (*all*, *both*). Note moreover that *half* can also function as a noun, not only in regular NPs (*two halves of the human brain*) but also in partitives (as in *And I guess that a player like me is loved by one half of the fans and hated by the other half*. (BYU-BNC, newspaper)). Nor does the fact that *half* in (61) is used without an article disqualify it as a noun (or nounlike element), since in this respect *half* seems to pattern with the noun *part* (*part/half of the house*). It can thus be argued that in *half of all linguists*, the element *half* does not function as a pre-determiner or quantifier but as a (non-prototypical) relational noun, requiring the presence of an *of*-PP. In that case, we are not dealing with a subset-set partitive; consequently, there are no restrictions on the embedded NP.

Turning now briefly to the other three types of partitive, we find that *submass-mass partitives* (Type 2) are restricted in much the same way as subset-set partitives. In the majority of cases, the embedded NP refers to a previously evoked (example (63a)) or inferrable (example (63b)) discourse entity (a specific, identifiable mass), and as such contains a definite determiner:

- (63) a. The observed uniformity of dust on the near side of the Moon is to be expected if **most of this dust** fell from space. (BYU-BNC, academic writing)
 b. It is felt that **much of the progress students make whilst in college** will be lost if they are not able to go on to meet fresh demands in new situations. (BYU-BNC, academic writing)

The use of indefinite embedded NPs is restricted, but not impossible. Of the quantifiers that can generally be used with mass denoting NPs (*some*, *any*, *much*, *most*), *most* is excluded for the same reason it is excluded from subset-set partitives; the same is true of embedded NPs consisting of a bare noun. No examples could be found of embedded NPs with *much*; *any*, however, does occur (examples (64a–b)). Embedded NPs with *some* could only be found in recursive partitives (example (64c)). Note that in all these cases, the embedded NP contains new, unpredictable information.

- (64) a. Furthermore, **much of any knowledge they have gained** passes from their minds not long after the final exam. (COCA, academic writing)

- b. This means that **at least some of any water on the surface of the planet and in its atmosphere** will be in liquid form rather than ice or vapor. (Internet)
- c. I also ate **too much of some of the best food ever to slide down my gullet**, and left wishing I had another month to explore Cyprus. (Internet)

Embedded NPs with the pre-determiner *all* can occasionally be found, but only in the presence of a superlative:

- (65) a. A mother supplies her baby with **the purest of all food**, i.e. her breast milk. (BYU-BNC, written, religion)
- b. Talk of sex and baseball was **the best of all possible talk**. (COCA, fiction)

Although the evidence is less compelling, it seems justified to conclude that, as in the case of subset-set partitives, the restrictions on submass-mass partitives follow logically from their distinctive features: the fact that the matrix NP denotes a submass of the embedded NP and the fact that the two NPs denote the same property (i.e. are co-denotational).

In *member-collection partitives* (Type 3), on the other hand, the two NPs are not co-denotational. Instead, the matrix NP denotes a member of the collection denoted by the embedded NP. Apart from the fact that the embedded NP must be able to refer to a collective set, there are no specific restrictions on this type of partitive. Thus, as shown in (66), unmodified indefinite embedded NPs are freely allowed:

- (66) a. If **one of a couple** is disabled or older than the other, the couple will qualify for the higher amount. (BYU-BNC, non-academic, social sciences)
- b. Disappointing performances I can live with: **some of any team** will underperform, for one reason or another. (Internet)

Note that using a plural embedded NP typically results in a subset-set reading, as in example (66), where overall reference is to a team and a crowd, respectively (i.e. a subset of the embedded NP):

- (67) a. Unfortunately for us, we're **one of the teams that doesn't have a new stadium**. (COCA, newspaper)
- b. In **one of the crowds on the road**, the FADH soldier recognizes a former comrade (COCA, magazine)

Nevertheless, it is possible to obtain a member-collection reading with plural embedded NPs with the pre-determiners *all* and *both*, as shown in example (68), where the different sets referred to in the embedded NP are interpreted as yet another collection, rather than a plural set:

- (68) a. Not surprisingly, I was **the last one of all the teams** to finish, but I didn't really care. (Internet)
- b. Aside from the obvious exception of Duke, Mattingly was the only **one of both crews** who didn't have rubella as a child. (Internet) (= (25b))

Finally, *portion-entity partitives* (Type 4) behave very much like member-collection partitives. Although definite embedded NPs are clearly preferred (example (69a)), indefinite embedded NPs are allowed, whether specific or non-specific, modified or unmodified (examples (69b–d)):

- (69) a. Sense relations are of two fundamental types: paradigmatic and syntagmatic. **Most of this book** is devoted to paradigmatic sense relations [...]. (BYU-BNC, academic writing)
- b. You've been beside me for **most of a block** now. (COCA, fiction)
- c. Bill had already written **most of a novel**, the first chapter of which we'd published in *Troubadour*. (COCA, fiction)
- d. We have no idea how well or **how much of any curriculum** is actually delivered. (COCA, magazine)

Note that indefinite plural embedded NPs are also allowed; in that case a distributive reading is triggered (i.e. reference is made to a portion of each of the entities referred to by the embedded NP):

- (70) a. **Too much of some vitamins** (notably A and D) can prove toxic. (BYU-BNC, non-academic medicine)
- b. Egwene was not sure which feelings she shared, anger or fear or worry. **Some of all three**, she thought. (COCA, fiction)

Given this possibility, it is not surprising that use of *both* is also allowed:

- (71) a. You get **some of both worlds** here. (COCA, newspaper)
- b. The chemist needs to mix **some of both solutions** to make 50 liters of a solution that is 62% acid. (Internet)

Finally, example (72) shows that also in this kind of partitive recursion is possible; note that both these examples combine two types of partitive: Type 4 (partitive as a whole) and Type 1 (embedded partitive)

- (72) a. I have read **all of some of his opinions**, and bits of others. (COCA, newspaper)
- b. There may not be **much of some of these gasses** in our atmosphere, but they can have a big impact. (Internet)

4.3 Summary

In this section a number of important claims have been made concerning the restrictions on different types of partitives (in particular on the form of the embedded NP). The first general claim is that partitive constructions are a subclass of the larger class of NPs with the (surface) form "N + *of*-PP"; in principle, they behave like other member of this class, which means that there are no specific (syntactic or semantic) restrictions on the NP embedded in the PP.

Within the class of partitives, however, several subtypes can be distinguished, four of which have been discussed here (Section 4.1). These four types, all characterized by the absence of a lexically expressed head in the matrix NP, have been distinguished on the basis of two parameters: the kind of entity denoted by the matrix NP (set or mass) and the relation between the head of the Matrix NP and the head of the embedded NP (co-denotational or not co-denotational). These types of partitive differ with regard to the constraints placed on the form of the embedded NP, whereby any restrictions on the embedded NP follow logically from the distinctive properties of the particular type of partitive. In Section 4.2 this hypothesis was tested on a large number of partitives that have been regarded as problematic in one or more of the previous accounts of partitives. It was

concluded that the present approach can indeed provide a more satisfactory account of the partitive constructions discussed.

As will have become clear from the description of the four types in Section 4.1, the approach taken is based on certain assumptions concerning the internal structure of partitive constructions, in particular the presence of an empty or abstract head in the matrix NP. In the next section an FDG analysis of partitives will be proposed which will reflect the specific formal and functional features of the partitive construction, as well as the differences and similarities between the four different types.

5. English partitives in Functional Discourse Grammar

As will be clear from the preceding sections, a complete account of partitives will have to deal with a number of different interacting semantic, pragmatic and syntactic aspects. The aim of this section is to show that FDG, as a comprehensive grammar model with a multi-level organization, is particularly well-equipped for the analysis of partitive constructions.¹¹ In order to prepare for such an analysis, Section 5.1 will first present a brief introduction to FDG, describing the overall organization of the model (Section 5.1.1); this will be followed by a brief sketch of how noun phrases are analysed in FDG (Section 5.1.2). Subsequently, Section 5.2 will demonstrate how the types of partitives discussed in this paper can be dealt with in FDG.

5.1 A brief introduction to FDG

5.1.1 General characterization and organization of the model

Functional Discourse Grammar is a typologically-based model of language use characterized by what Hengeveld & Mackenzie (2008: 39) describe as a form-oriented ‘function-to-form’ approach to grammar. It is ‘function-to-form’ in that it adheres to the basic principle that linguistic form – directly or indirectly – reflects communicative function. It is, however, at the same time form-oriented in that it is primarily an account of linguistic facts, concerned only with those linguistic phenomena that are encoded in the grammar of a language.

FDG’s function-to-form approach is clearly reflected in its architecture (see Figure 1). Thus, the model has a top-down organization, starting with a speaker’s intentions and then working its way down to articulation (Hengeveld & Mackenzie 2008: 1–12). More specifically, it is assumed that every linguistic communication starts with some communicative intention and its corresponding mental representation at the prelinguistic conceptual level (the Conceptual Component). This mental representation subsequently feeds into the Grammatical Component, where it triggers the operation of formulation, which translates the speaker’s communicative intentions into two levels of representation. At the top we find the Interpersonal Level, which “deals with all the formal aspects of a linguistic unit that reflect its role in the interaction between the Speaker and the Addressee” (Hengeveld & Mackenzie 2008: 46). The next level is the Representational Level, which deals with the semantic aspects of an expression, i.e. “with the ways in which language relates to the extra-linguistic world it describes” (Hengeveld & Mackenzie 2008: 128). The Interpersonal and Representational Levels thus complement each other: where units at the Interpersonal Level are speaker-bound, reflecting a speaker’s intention to *evoke* referents and properties, representational units are non-speaker-bound and are used to *designate* entities. Together these two levels contain all the pragmatic and semantic aspects of a linguistic expression for which the grammar of the language in question provides a systematic way of encoding.

¹¹ No analysis of partitives has, so far, been proposed in FDG. For a set-based analysis of partitives in FDG’s predecessor, Dik’s (1978) Functional Grammar, see Brown (1985).

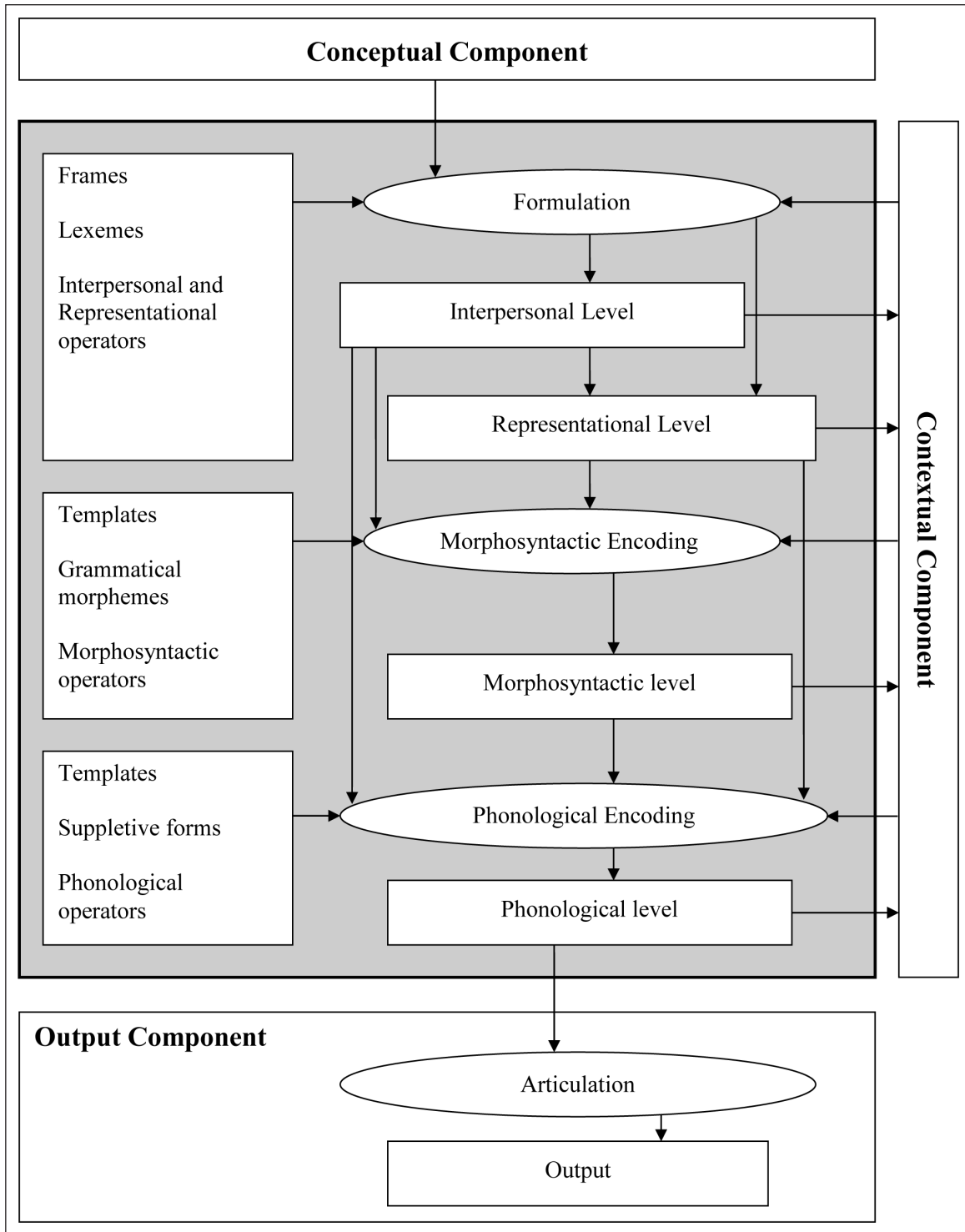


Figure 1: General layout of FDG (Hengeveld and Mackenzie 2008: 13).

The operation of encoding transforms the interpersonal and representational material into a morphosyntactic and a phonological representation. At the Morphosyntactic Level, the input from the higher two is merged into a single structural unit; it is here that all the linear properties of a linguistic unit are accounted for. The output of this level is then fed into the Phonological Level, which serves to generate the final phonemic form of an utterance. This, in turn, forms the input for the Output Component, which converts this information into acoustic, orthographic or signed form. Finally, during all these stages

the Grammatical Component interacts with a Contextual Component, which contains all linguistically relevant information about the immediate discourse context.

At each level, the construction of a linguistic expression begins with the selection of a number of language-specific primitives. These primitives come in three kinds. First, there are the structuring primitives, which define the possible combinations of elements at each level (frames or templates). Next, there are the relevant linguistic elements at each level (lexemes, free morphemes and phonemic forms). Finally, each level has its own set of operators for the expression of grammatical information.

5.1.2 The noun phrase in FDG

In FDG the term Noun Phrase, as a technical term, is used only at the Morphosyntactic Level (ML), where it is defined as a phrase with a Nominal Word as its head. In the default case, a Noun Phrase corresponds to a Reference Act at the Interpersonal Level (IL), an Individual at the Representational Level (RL) and a Phonological Phrase at the Phonological Level (PL). An example is given in (73), which provides (somewhat simplified) representations of the phrase *a red bike* at each of the levels of analysis:

- (73) a red bike
- a. IL: $(-id + s R_1: [(T_1) (T_2)] (R_1))$
 - b. RL: $(1 x_1: (f_1: \text{bike} (f_1)) (x_1): (f_2: \text{red} (f_2)) (x_1))$
 - c. ML: $(Np_1: [(Gw_1: a (Gw_1)) (Ap_1: (Aw_1: \text{red} (Aw_1)) (Ap_1)) (Nw_1: \text{bike} (Nw_1)) (Np_1)])$
 - d. PL: $(PP_1: [(PW_1: / \text{ə} / (PW_1)) (PW_2: / \text{red} / (PW_2)) (PW_3: / \text{baɪk} / (PW_3))] (PP_1))$

The Interpersonal Level, as we have seen, is meant to capture all the linguistically coded aspects of an utterance that relate to the interaction between a speaker and an addressee. It is a strategic level, specifying the actions performed by the speaker in building up a linguistic utterance. These actions include the Acts of Reference and Ascription, which together form the contents of the message the speaker wishes to convey. Referential Acts (R) involve the evocation of an entity, i.e. the speaker's action of singling out a particular entity which will play a role in the message she wants to communicate. The head of a Referential Act typically consists of one or more Ascriptive Acts (T), which reflect the speaker's attempt to evoke a property. In (73a), for instance, the phrase *a red bike* as a whole is represented as a Referential Act (R_1) containing two Ascriptive Acts (T_1 and T_2): one evoking the property 'bike', and one evoking the property 'red'.

The Interpersonal Level is also the level at which pragmatic functions are assigned. Thus, in example (74b), the element R_2 , corresponding to the phrase *a red bike*, is assigned the pragmatic function Focus, as it provides the new, most salient information of the utterance. The Referential Act R_1 , corresponding to the pronoun *she*, is assigned the pragmatic function of Topic, as this element serves to signal how the content of the message relates to the previous discourse, as represented in the Contextual Component (Hengeveld & Mackenzie 2008: 92). It will not come as a surprise that Referential Acts with Topic function typically do not contain any Ascriptive Acts; it is indeed this feature that triggers the use of a pronoun.

- (74) a. A: What did Sue buy?
 B: **She** bought **a red bike**.
- b. $(R_1)_{\text{Top}}$ $(-id + s R_2: [(T_1) (T_2)] (R_2))_{\text{Foc}}$

In the case of the pronoun *one*, however, an Ascriptive Act is assumed to be present, since in a phrase like *that one* the property ‘bike’ is still evoked:¹²

- (75) a. Sue wants **this bike**, but her brother wants **that one**.
 b. (+ id + s R₁: (T₁) (R₁))_{Contr} (+ id + s R₂: (T₂) (R₂))_{Contr}

Operators applying at the layer of the Referential Act are primarily concerned with the identifiability and specificity of the referent. In (75b), for instance, the operator +id reflects the fact that the speaker expects the addressee to be able to pick out the referent evoked by R₁, while the operator +s reflects the fact that the speaker has a particular entity in mind.

At the Representational Level, the input received from the Interpersonal Level is filled in with semantic content, i.e. with descriptions of entities as they occur in some non-linguistic world. The units at this level differ with regard to the type (or ‘order’, cf. Lyons 1977: 442–447) of entity they designate. Cross-linguistically, four major semantic categories can be distinguished; using FDG terminology these are Propositional Contents (p), States-of-affairs (e), Individuals (x) and Properties (f). Although each of these semantic categories can have a nominal head, and can thus be realized as a Noun Phrase, this is typically the case for Individuals: in (73b), for instance, the Individual x₁ has a nominal head (‘bike’, f₁) and is further modified by the Property ‘red’ (f₂).

In example (74b), the anaphoric definite pronoun *she* is analysed as a headless Referential Act at the Interpersonal Level. At the Representational Level this element corresponds to a headless Individual (x₁ in (76b)). In (76b), however, the Individual designated by the phrase *that one* does have a head (the Property f₁ (‘bike’), corresponding to an Ascriptive Act at the Interpersonal Level). In this case, it is this Property that is headless, its contents being retrievable from the previously mentioned phrase *this bike* (as indicated by the co-indexation of the two Properties). As can be seen in (76b) and (77b), it is at this level that units are specified for number (1) and distance (prox/rem). Finally, it is at this level that semantic functions (e.g. Actor and Undergoer) are assigned.

- (76) a. A: What did Sue buy?
 B: **She** bought **a red bike**.
 b. (1 x₁)_A (1 x₂: (f₁: bike (f₁)) (x₂): (f₂: red (f₂)) (x₂))_U
- (77) a. Sue likes **this bike**, but her brother likes **that one**.
 b. (1 prox x₁: (f₁: bike (f₁)) (x₁))_U (1 rem x₂: (f₁) (x₂))_U

When we reach the Morphosyntactic Level, we move from the operation of formulation to the operation of encoding. The set of primitives used at this level includes, first of all, templates specifying the basic ordering patterns of a language at each of the relevant layers (e.g. clause, phrase and word). The representation in (73c), for instance, is based on the prototypical Noun Phrase template, with slots for a determiner, an adjective (heading an Adjectival Phrase) and a noun (heading a Noun Phrase). Operators at this level take the form of ‘placeholders’, triggering the use of bound morphemes expressing, for instance, number ‘1’ in example (73b).

The Phonological Level, finally, receives its input from the other three levels. The first set of primitives relevant at the Phonological Level consists of phonological templates, which organize the phonological information coming in from higher levels into coherent

¹² Note that although in (75) both Ascriptive Acts (T₁) and (T₂) evoke the same property (‘bike’), they are not co-indexed, since we are dealing with two separate actions (taking place at different moments in time). The co-denotational relation between the two occurrences of the same property is represented at the Representational Level (see (77b) below).

blocks. The second set of primitives consists of suppletive forms (irregular forms of verbs, nouns or adjectives) expressing grammatical information triggered by operators at the higher levels of organization (e.g. tense, number or comparative). The third set of primitives that is relevant at this level consists of tertiary operators, which will have their ultimate effect (e.g. rising or falling intonation) in the Output Component. The default form for Noun Phrases at this level is the Phonological Phrase (see (73d)).

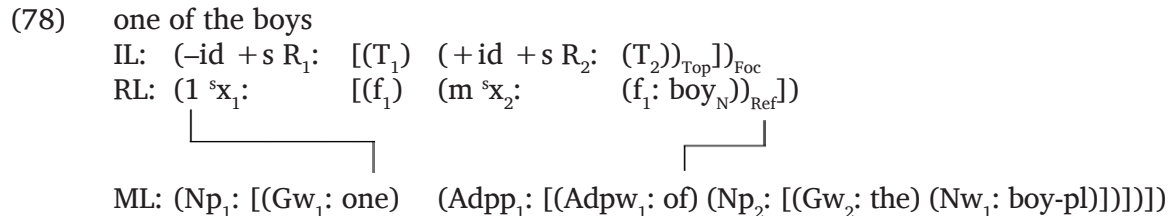
5.2 Analysis

The preceding sections have shown that a comprehensive analysis of partitive constructions will need to capture a wide range of features, divided over three different levels:

- the presence of the two referent sets, their pragmatic status and identifiability (IL)
- the kind of partitive relation (subset-set, submass-mass, member-set or portion-entity); the presence of co-denotational relation between the head of the matrix NP and the head of the embedded NP; the status of the embedded PP and the element *of* (RL)
- the actual form of the construction (ML)

In this section it will be argued that an FDG analysis of partitives can indeed reflect all these properties, as well as the interaction between them.

Let us once again start with subset-set partitives (Type 1) a typical example of which is given in (78), together with its interpersonal, representational and morphosyntactic representations:¹³



At the IL, we find two Referential Subacts (R₁ and R₂), one unidentifiable and specific (-id, +s) (corresponding to the indefinite matrix NP) and one identifiable and specific (+id, +s) (corresponding to the definite embedded NP *the boys*).¹⁴ Both these Referential Subacts are restricted by an Ascriptive Subact, reflecting the fact that both referents (or referent sets) are assigned a Property. The Referential Act corresponding to the embedded NP is given the pragmatic function Topic, as it refers to a previously introduced referent set, while the Referential Subact corresponding to the matrix NP is assigned the pragmatic function Focus, as it introduces a new referent (set) into the discourse.

At the RL, the construction as a whole is analysed as an Individual (x₁) designating a singleton set (indicated by the operator '1' and the superscript 's' on the x-variable). This Individual has a configurational head consisting of a headless Property (f₁) and its argument (x₂) (with the semantic function Reference). The argument designates another Individual: the plural set (m ^sx), corresponding to the embedded NP. The headless Property f₁ corresponds to (is co-indexed with) the lexical head of the x₂ (*boy*), thus accounting for

¹³ For the sake of readability, the closing arguments will from now on be omitted from the representations.

¹⁴ Note that the IL representation may vary: the embedded NP (as we have seen) can be unidentifiable and non-specific, while the matrix NP can be identifiable (as in example (61a)).

the fact that the Property ‘boy’ is predicated of both sets, despite the fact that x_1 lacks a lexical head.¹⁵

Note that, unlike other NPs with *of*-arguments (e.g. *the father of my friends*, *the roof of the house*), the argument is not required by the semantics of the (relational or relationally used) head, but rather by the construction as a whole: in order to have a subset-set partitive, there must be two sets.¹⁶ In other words, English partitives are formed on the basis of a Subset-set Partitive Predication Frame (a representational primitive), which can be represented as follows (\diamond represents a lexeme):

(79) Subset-set Partitive Frame:

$(\pi \text{ } ^s x_1: [(f_1) (\pi \text{ } ^s x_2: (f_1: \diamond))_{\text{Ref}}])$

where the set symbolized by x_1 may be a singleton set or a plural set and the set symbolized by x_2 must be a plural set
the set symbolized by x_1 must contain fewer entities than (or an equal number of entities as) the set symbolized by x_2

It will be clear that this Frame prevents the production of constructions like *one of both boys*, since in those cases the embedded NP is not a plural set ($^s x$), but a distributive one:

(80) a. both boys
b. $(2 \text{ } ^{\text{distr}} x_1: (f_1: \text{boy}_N))$

At the ML, the partitive construction is represented as a Noun Phrase (Np_1 , corresponding to R_1 and x_1) with an embedded Adpositional Phrase (Adpp_1), which itself contains a second Noun Phrase (Np_2 , corresponding to R_2 and x_2). Since x_1 and x_2 both denote Individuals and since both these Individuals are a Property designated by a nominal word (*boy*), both these Individuals are expressed as Nps at the ML. However, whereas x_2 corresponds to a regular Np (with a Nominal Word, Nw_1 , as its head), x_1 , which contains a headless Property (f_1), does not contain a nominal head. It does, however, have the usual slot for determiners (numerals) to accommodate any operators, in this case the numeral *one*.¹⁷ Finally, the presence of the semantic function Ref triggers the presence of the preposition *of*, heading the Adpositional Phrase.

As we know the headless Property can (and occasionally must) be expressed by the pronoun *one*. This leads to a slightly different representation at the ML:

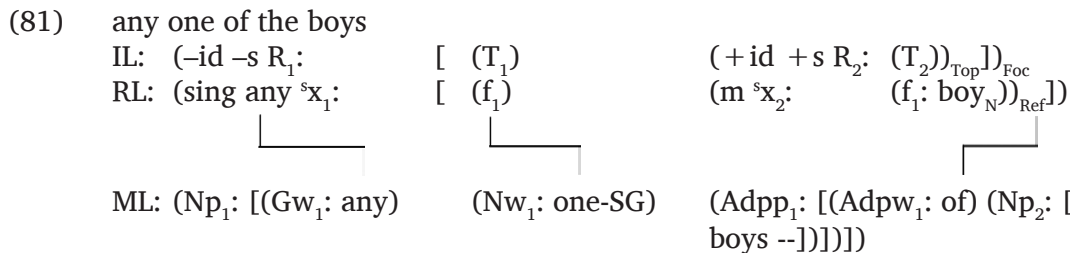
¹⁵ This may seem to create a problem for partitives with coordinated plural embedded NPs, such as those given in (i), where it is not immediately clear which Property (or Properties) is (are) predicated of the referent(s) of the matrix NP:

- (i) a. Pollution will make **some of the fruits and other foods we grow in cities** toxic. (COCA, academic)
b. Here are **some of the books and novels** you should study (COCA, academic writing)

In fact, it turns out that the analysis proposed here can deal with such cases quite elegantly. A detailed analysis of such examples is, however, beyond the scope of the present paper and will be provided elsewhere (Keizer, in prep.)

¹⁶ FDG makes a distinction between the semantic functions Ref(erence) and Ass(ociative). The former is assigned to arguments of non-verbal (non-derived) predicates, i.e. to arguments of basic relational nouns, adjectives and prepositions. What these arguments have in common is that, unlike arguments of verbal predicates, they cannot be expressed as NPs, but require a linking element (typically, but not necessarily *of*). The semantic function Associative, also expressed as *of*, indicates possession (in a broad sense) and is assigned to modifiers. It might be argued that yet another semantic function is needed to trigger partitive-*of*, since it codes a different semantic relation (cf. Barker’s 1998 distinction between a genitival and partitive use of *of*). For the moment, however, I have chosen to use the semantic function Reference to indicate the argument status of the embedded element; since the exact semantic relation is an intrinsic feature of the partitive frame, there is no need for a new semantic function to code this relation.

¹⁷ Note that this particular kind of alignment is not restricted to partitive constructions: the same mechanism can be found at work in any Np with an empty head (e.g. *The squashed beetle, perhaps the smallest in the world, is only just over eight feet long* (BYU-BNC, written, scripted news)).



Given, however, that we can also have the construction in (81), this raises the question of when to analyse the element *one* as a determiner (expressing an operator) and when as a pronoun (corresponding to the empty head of the Individual):

(82) any one (two, three) of the boys

The differences between the two uses of *one* can be summarized as in Table 2 (cf. Payne et al. 2013).

This means that in most cases it is not difficult to decide which form we are dealing with: in (83) we find instances of pronoun *one*, in (84) we are clearly dealing with the determiner *one*. In (85), we find both forms of *one* in one partitive:

- (83) a. Today’s students are presented with so many course choices that it’s not surprising they sometimes have difficulties trying to decide **which ones of the many electives** to choose. (Internet)
- b. **The smaller one of the two rooms** should be approximately 20 square meters. (COCA, academic writing)
- c. All atoms are tetrahedrally coordinated with one atom of the same kind and **three ones of the other kind** [48A]. (Internet, academic writing) (see also (40b))

(84) She opened **one (some/two) of the cupboards**. (BYU-BNC, fiction; adapted)

(85) That is **one other one of many new options present in iOS 8**. (Internet)

In the case of example (82) only one feature determines the difference, namely the presence of stress on the element *one*: if it is (or can be) stressed, it will be analysed as a numeral, if unstressed (i.e. with stress on *any*), it will be analysed as a pronoun.

These examples further show that it may be useful to distinguish at the RL between the numeral *one* and singularity (from now on represented by the operators ‘1’ and ‘sing’, respectively). Where the former leads to use of the numeral *one*, ‘sing’ triggers the appropriate form of the indefinite article (/ə/, /ən/ or /eɪ/):

	Pronoun one	Determiner (numeral/quantifier) one
number agreement	plural form: <i>ones</i>	plural form: <i>some</i> or another numeral
position	follows all determiners (articles, quantifiers, numerals) and adjectives	precedes post-determiners and adjectives
stress	cannot be stressed (see Schütze 2001)	can be stressed
mass counterpart	-- (see example (44b))	<i>some</i>

Table 2: Pronoun vs. determiner *one*.

- (86) a. one box
 (1 x_1 : (f_1 : box_N))
 b. a box
 (sing x_1 : (f_1 : box_N))

It will not come as a surprise that partitives of Type 2 are analysed in much the same way as those of Type 1, the only difference being the kind of entity designated by the two units representing the matrix and the embedded NP at the RL. The predication frame on the basis of which these partitives are formed thus takes the following form:

- (87) Submass-mass Partitive Frame:
 (π $^m x_1$: [(f_1) (π $^m x_2$: (f_1 : \diamond))_{Ref}])
 where the mass symbolized by x_1 must be smaller in size than (or of the same size as) the mass symbolized by x_2

A partitive like the one in (89) will thus be given the following representations at the IL, RL and ML:

- (88) some of the water
 IL: (-id + s R_1 : [(T_1) (+id + s R_2 : (T_2))_{Top}])_{Foc}
 RL: ($^m x_1$: [(f_1) ($^m x_2$: (f_1 : water_N))_{Ref}])
 ML: (Np₁: [(Gw₁: some) (Adpp₁: [(Adpw₁: of) (Np₂: [(Gw₂: the) (Nw₁: water)])])])])

Here, too, we have two Referential Subacts at the IL, one corresponding to the matrix NP and one to the embedded NP. Both Referential Subacts are restricted by an Ascriptive Subact, representing the ascription of the Property ‘water’ to both referents. At the RL, the two Referential Subacts correspond to two Individuals, $^m x_1$ and $^m x_2$. The first of these again has an empty head, which now, unlike in the case of subset-set partitives, cannot be expressed as a pronoun. At the ML we thus find an Np consisting of only a determiner and an Adpositional Phrase (corresponding to the embedded NP).

Partitives of Types 3 and 4, however, differ from those of Types 1 and 2 in a number of respects. Let us first consider the member-collection partitive, an example of which is given in (89):

- (89) one of the crowd
 IL: (-id + s R_1 : (+id + s R_2 : (T_1))_{Top})_{Foc}
 RL: (1 $^s x_1$: [[+ Anim] (sing $^{coll} x_2$: (f_1 : crowd_N))_{Ref}])
 ML: (Np₁: [(Gw₁: one) (Adpp₁: [(Adpw₁: of) (Np₂: [-- the crowd --])])])])

As we can see from (89), these partitives also involve two Referential Subacts at the IL, only one of which (R_2), however, contains an Ascriptive Subact (T_1), thus reflecting the fact that the property in question (‘crowd’) is assigned only once, to the referent of the embedded NP. This is also captured at the RL, where x_1 is not restricted by a headless Property, but by an abstract head (consisting of the feature [+ Anim], necessary to trigger the correct form of of, for instance, a relative pronoun). This means that, unlike in partitives of Type 1 and Type 2, the two heads are not co-denotational: the referent of the matrix NP is not assigned the Property ‘crowd’. However, not only do the two Individuals x_1 and x_2 not share the same Property, in addition they designate different types of Individuals: where x_1 designates a singleton set, x_2 designates a collective set.

This means that, at the Representational Level, member-collection partitives are based on the following predication frame for partitives of Type 3:

- (90) Member-collection Partitive Frame:
 $(\pi \text{ } ^s\text{x}_1: [[\pm \text{Anim}] (\pi \text{ } ^{\text{coll}}\text{x}_2: (f_1: \blacklozenge))_{\text{Ref}}])$
 where the set symbolized by x_1 may be a singleton or a plural set and the set symbolized by x_2 must be a collective set
 the set symbolized by x_1 must contain fewer (or an equal number of) entities than the set symbolized by x_2

Type 4 partitives are the mass counterpart of Type 3 partitives and are based on the predication frame in (91); some examples are given in (92) and (93).

- (91) PORTION-ENTITY PARTITIVE FRAME:
 $(\pi \text{ } ^m\text{x}_1: [[-\text{Anim}] (\pi \text{ } ^{s/\text{distr}}\text{x}_2: (f_1: \blacklozenge))_{\text{Ref}}])$
 where x_1 symbolizes a mass and x_2 a singleton, plural or distributive set¹⁸
 the set symbolized by x_1 must be a portion of each of the entities contained in the set symbolized by x_2
- (92) some of the house
 IL: $(-id +s R_1 \quad (+id +s R_2: (T_1)_{\text{Top}})_{\text{Foc}})$
 RL: $(\exists \text{ } ^m\text{x}_1: [[-\text{Anim}] (\text{sing } ^s\text{x}_2: (f_1: \text{house}_N)_{\text{Ref}})])$
 ML: $(\text{Np}_1: [(Gw_1: \text{some}) (\text{Adpp}_1: [(\text{Adpw}_1: \text{of}) (\text{Np}_2: [(Gw_2: \text{the}) (\text{Nw}_1: \text{house})])])])])$
- (93) most of both cookies
 IL: $(-id -s R_1 \quad (+id +s R_2: (T_1)_{\text{Top}})_{\text{Foc}})$
 RL: $(\text{most } ^m\text{x}_1: [[-\text{Anim}] (2 \text{ } ^{\text{distr}}\text{x}_2: (f_1: \text{cookie}_N)_{\text{Ref}})])$
 ML: $(\text{Np}_1: [(Gw_1: \text{most}) (\text{Adpp}_1: [(\text{Adpw}_1: \text{of}) (\text{Np}_2: [(Gw_2: \text{both}) (\text{Nw}_1: \text{cookies})])])])])$

Since the distinction between an empty head (headless Property) and an abstract head (consisting of a feature) plays such an important role in the analysis of partitives proposed here, it may be important to point out that this distinction is not just an ad-hoc addition to the theory useful for the representation of partitives. Thus, abstract heads also occur at the Interpersonal Level in the representation of deictically used pronouns, which are analysed as Referential Subacts with an abstract head consisting of the features $[\pm S, \pm A]$. In Keizer (2011; 2012) it is argued that abstract heads would also be useful at the RL in the analysis of non-phoric pronouns. By providing the Individuals in (94b) and (95b) with an abstract head (consisting of the features $[+ \text{Hum}]$, $[+ \text{M}]$ or $[+ \text{F}]$), we can account for the fact that these pronouns can be modified. At the same time, the information provided in the abstract head triggers the correct form of the pronoun:

- (94) a. The Djeli is a good negotiator, a man of impossible missions. He is **the one who can resolve very difficult problems**. (COCA, academic writing) (= (48a)).
 b. $(\text{sing } x_i: [+ \text{Hum}]: (\text{Pres } ep_i: \text{-- who can resolve very difficult problems}))$
- (95) a. **he who increaseth knowledge** increaseth sorrow (see Keizer 2012: 417)
 b. $(\text{sing } x_i: [+ \text{M}]: (\text{Pres } ep_i: \text{-- who increaseth sorrow}))$

¹⁸ Note that the use of a plural embedded NP triggers a distributive reading, due to the fact that it is placed in the portion-entity frame; since this is a matter of interpretation, however, the distributivity is not coded on the NP (which is represented as a set: ^sx). In NPs with *both*, on the other hand, the distributive denotation is coded explicitly (and as such indicated in underlying structure: $^{\text{distr}}\text{x}$).

In addition, the abstract head can be used for the representation of the impersonal (again non-phoric) pronoun *one*, as exemplified in (96), as well as for the representation of (and distinction between) the indefinite pronouns *anyone* and *anything* (as well as *someone/something* and *no one/nothing*), as shown in (97):¹⁹

- (96) a. But **one** must wait until **one** knows the ground before he can be supported.
(BYU-BNC, newspaper)
b. (sing x_1 : [+Hum])
- (97) a. anyone/anybody
a'. (any x : [+Hum])
b. anything
b'. (any x : [-Anim])

The representations in (97) also allow us to make a distinction between the indefinite pronoun *anyone* and the combination of quantifier and pronoun *any one* (e.g. in *any one of the boys/books*), which will be analysed as an Individual (not necessarily human) with an empty head (see example (81)):

- (98) a. any one of the boys
b. (sing any $^s x_1$: [(f_1) (m $^s x_2$: (f_1 : boy_N))_{Ref}])²⁰

Finally, the abstract head is also useful in the analysis of partitives with a pronominal embedded NP. Recall that such partitives as *many of us* could be considered problematic for the empty head analysis, since the head position could never be filled (**many girls of us*; see Section 3.2.2). It will be clear, however, that the reason why the head noun cannot be reinstated is that there is no head noun to be reinstated. Whereas in a subset-set partitive the empty head of the subset is co-denotational with the head of the embedded NP, in partitives like *many of us*, the embedded NP *us* does not have a lexical head: the function of the pronoun is simply to instruct the reader to retrieve the intended referent from the context; it does not assign a Property to this referent. This means that, in a partitive like *many of us*, no Property is assigned to the referent of the matrix NP either, since there is no Property to be shared. This is particularly useful in examples like (99a & b), where it is clear that the referents of the embedded NP do not share a retrievable Property:

- (99) a. if somebody for instance er say you've got *a husband and wife* living together, **one of them** suddenly becomes handicapped in a particular way (BYU-BNC, meeting)
b. I felt sorry for Wales, but why the hell did they let Bodin take the penalty. Whats wrong with *Saunders/Rush/Giggs*? If **one of them** took it it would have been a goal for certain. (BYU-BNC, email)

These partitives will therefore also be analysed as containing an abstract head:

- (100) a. many of us
b. (many $^s x_1$: [[+Anim] (sing $^s x_2$)_{Ref}])

¹⁹ The pronoun *everywhere* is represented by means of a location variable ('every l_1 ').

²⁰ This also provides us with a way of distinguishing *no-one* (impersonal pronoun, [+Hum]), *none* (fusion of quantifier and pronoun, [\pm Hum/Anim]) and *not one* (Negation operator and numeral, [\pm Hum/Anim]).

6. Conclusion

The aim of this paper has been to provide a unified treatment of partitive constructions that can account for both their internal structure and the constraints on the embedded NP. As for the internal structure, it has been argued that partitive constructions are not significantly different from other NPs with the (surface) form “N + *of*-PP”, the only difference being that partitives are characterized by a specific relation between the head of the matrix NP and the embedded NP. It was further argued that, in order to account for the discourse-pragmatic, semantic and syntactic constraints on partitive constructions, different types of partitives need to be distinguished. On the basis of two parameters (\pm set and \pm co-denotational), four types of partitive were defined, each characterized by a different relation between matrix NP and embedded NP: subset-set, submass-mass, member-collection and portion-entity.

On the basis of authentic data, it was subsequently demonstrated that any constraints on the embedded NP apply to only two of these subtypes: subset-set and submass-mass partitives. Moreover, these constraints were shown to follow directly from the specific properties of these partitives, in particular the fact that in these partitives the head of the matrix NP and the head of the embedded NP are co-denotational. Finally, an analysis of all four types of partitive was provided using the framework of FDG. It was shown that FDG, with its different levels of analysis, allowing for the ascription of properties in the absence of a lexical head, makes it possible to capture all the relevant pragmatic, semantic and morpho-syntactic properties of the various types of partitives in a systematic and insightful manner.

Abbreviations

T_1 = Ascriptive Act; R_1 = Referential Act; x_1 = individual; f_1 = Lexical Property; Np_1 = Nominal Phrase; Ap_1 = Adjectival Phrase; Adp_1 = Adpositional Phrase; Nw_1 = Nominal Word; Aw_1 = Adjectival Word; $Adpw_1$ = Adpositional Word; PP_1 = Phonological Phrase; PW_1 = Phonological Word; $\pm id$ = identifiability operator; $\pm s$ = specificity operator; 1-n = numeral operator; sing = singularity operator; m = plurality operator; prox = proximity operator; rem = remoteness operator; \exists = existential quantifying operator, any/most/many = quantifying operators; Foc = pragmatic function Focus; Top = pragmatic function Topic; Contr = pragmatic function Contrast; A = semantic function Actor; U = semantic function Undergoer; Ref = semantic function Reference; SG = singularity placeholder, PL = plurality placeholder.

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Competing Interests

The author has no competing interests to declare.

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