Chapter 11

The Compositional Nature of (In)definiteness
Franciska de Jong

Traditionally most discussions on the distinction between definiteness and indefiniteness have in some sense a narrow scope: either the set of expressions under consideration is limited, or the set of contexts regarded as sensitive to the distinction. The rather extensive literature on (in)definiteness appears to lack a clear-cut definition of the categories involved. In part, this can be ascribed to the often rather coarse selection of data. A comparison of the distributional restrictions in two contexts that are assumed to be sensitive to (in)definiteness can clarify this diagnosis. The contexts are (a) sentences with initial there and (b) partitive NP-constructions. The following restrictions, presented here as filters, have been proposed.

(1) a. *there be [+def] N XP (see Milsark 1977)

With respect to a, the, and some, the reference to the feature [±def] in both (1a) and (1b) seems to reflect a correct generalization. The indefinite articles a and some can occur within the grammatical subject of (1a), whereas they cannot occupy the embedded determiner position in partitives. The definite article the shows the reverse possibilities: it cannot occur in the crucial position of (1a), whereas it can occupy the relevant position in (1b). However, if in the analysis of these two contexts one wishes to deal with the distributional peculiarities of other determiners as well, there appears to be a classificatory problem. This is illustrated by the observations in (2) and (3), which incorporate the distribution of most, all, the, and numerals like three and twenty. Like the and unlike numerals, most and all are blocked in there-sentences. But like numerals and unlike the and all, most is blocked in the crucial position of partitives as well.¹
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(2) There are \{ *the, *all, *most \} boys in the garden

(3) a. Some of \{ the, *most \} boys are red-haired

b. Half of \{ all, *most \} boys are red-haired

This problem can be solved in several ways. First, since there is no independently motivated criterion for (in)definiteness, there is no need to think of the distinction between definites and indefinites as a dichotomy. If definiteness and indefiniteness are taken to be the two extreme values on a sliding scale, a third category of determiners, neither definite nor indefinite, is conceivable. If *most is classified as a member of this third category, the problem that is posed by (2) and (3) in view of (1a) and (1b) need not arise.

This solution seems to be descriptively adequate, but its drawback is obvious. Not only does it explain very little, it also replaces an analysis that enables one to regard the subcategories among determiners as natural classes with an analysis that does not. Obviously, some improvement might be gained by adopting more than just one dichotomy. A solution along these lines—though not presented as such—can be found in Barwise and Cooper 1981.

Barwise and Cooper distinguish between a weak-strong contrast among determiners and a definite-indefinite contrast among NPs. The first contrast is said to be reflected in *there*-sentences, whereas the latter is regarded as relevant in relation to the partitive construction. Note that Milisark introduces *weak* and *strong* as neutral terms discriminating between those determiners that can occur in (1a) and those that cannot, whereas Barwise and Cooper introduce two criteria pertaining to two different syntactic categories, both of which are relevant to a specific context. Consequently, the observations in (2) and (3) cannot be accounted for in a uniform way. Superficially, both (2) and (3) illustrate the same phenomenon, namely, that in certain contexts only a restricted set of determiners can be inserted. Hence, an account that does
not a priori exclude a generalization over contexts and categories is to be preferred. Such an alternative will be proposed here.

The classification of determiners to be proposed will be based on a system incorporating two features, provisionally referred to as \([ \pm F_1] \) and \([ \pm F_2] \). Each feature covers a true dichotomy. The four values involved contribute to the characterization of various natural classes among the set of determiners, by combining \(F_1\)-values with \(F_2\)-values. Empirical evidence for this proposal will be derived from the analysis of several other restrictive contexts. Because space is limited, the discussion will be restricted to simple determiners, but there are indications that the proposal to be developed can deal with the distribution of complex determiners as well. The features will be given model-theoretic definitions that contribute to a more explanatory account of the restrictions showing up in (2) and (3).

### 11.1 Extension of the Data

The data reviewed so far can be summarized as follows. The class of determiners blocked in *there*-sentences, *all*, *the*, and *most*, does not correspond to the class permitted in partitives. Just like numerals, *most* is not contained in the latter class. Within this restricted set of data one might question the importance of the contradictory distribution of *most* in view of the generally adopted filters in (1). However, even if we restrict attention to simple determiners, the need for at least a third class is strengthened by the distribution of *neither* and a comparison of the data for English in (2) and (3) with Dutch data.

The determiner *neither* shares its distributional properties with *most*: it is blocked in both (1a) and (1b). Dutch has no determiners that can be regarded as the counterparts of *most* and *neither*. (The meaning of *most* is expressed by the complex *de meeste.*) But it does have a determiner with identical distributional properties: *sommige* 'some of the' is also blocked in both contexts.

Just like the data for *most*, the distribution of *neither* and *sommige* motivates a revision of the traditional interpretation of \([ \pm \text{def}] \) as corresponding to a division among determiners in two subclasses. My proposal will be based on two features instead of one, and, as noted, both contexts in (1) will be taken as sensitive to just one of them. Though the features still have no exact definitions, a summary of the data under consideration is given in matrix (4), where \([ \pm F_1] \) corresponds to the
distributional alternatives "± blocked in there/er-sentences" and [+F₂] to "± permitted in partitives."

(4)

<table>
<thead>
<tr>
<th>The/de</th>
<th>F₁</th>
<th>F₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>all/alle</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>(the two)/beide</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>(some of the)/sommige</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>most/(de meeste)</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>neither</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>one, two, three . . .</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>some/enkele</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>many/vele</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>few/weinige</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>no/geen</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note that every and both are not subsumed under (4), in spite of their clear distribution: not permitted in either context. An analysis of the distribution of both and every would require the introduction of a third distinction, based on an idea of Ladusaw, that would bring about a subdivision in the set [+F₂]-determiners. As pointed out by Ladusaw (1982), determiners permitted in the embedded position of partitives should allow a group reading. Since my concern is to analyze the notion of (in)definiteness, I will not discuss this third distinction. Unlike both, Dutch beide is not exclusively distributive; hence, it can occur in partitives. Note also that no [-F₁, +F₂]-determiner shows up. For an explanation of this, see section 11.2.

Before turning to the interpretation of these features, I will present extra evidence for a classificatory system allowing the classes defined by the various feature combinations in (4) to be distinguished. This evidence is derived from the fact that the elements of the subclasses appear to behave homogeneously within other contexts as well.

The prenominal structure of NPs is a most convincing context. I assume that the syntactic structure preceding the head noun of an NP consists of a Det position, optionally followed by one or more adjectival positions. There is no need for a separate QP position, since the Det position is accessible to all determiners mentioned thus far, including numerals like three and twenty. See De Jong 1983 for arguments supporting these claims.

Given that attention is restricted to simple determiners, the following distributional alternatives can be observed.
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(5) i. a. Not accepted in adjectival position [+F₁]
    b. Accepted in adjectival position [−F₁]
   ii. a. Possibly followed by a numeral [+F₂]
        b. Never followed by a numeral* [−F₂]

As illustrated in (6), the alternatives in (i) correspond to the feature [±F₁], whereas the alternatives in (ii) correspond to [±F₂]. Property (iia) or its equivalent, “no preceding determiner allowed,” holds for all, the, and most, which are all [+F₁], whereas three, twenty, and many, all [−F₁], permit a preceding determiner. On the other hand, the alternatives in (ii) correspond to [±F₂], since (iia) holds for the [+F₂]-determiners, whereas (iib) holds for those that are [−F₂], as shown in (7).

(6) a. *three all candidates 
    b. *the most candidates 
    c. all twenty candidates 
    d. the many candidates 

(7) a. all twenty participants 
    b. the two participants 
    c. *most three participants 
    d. *twenty many participants 

As (6) and (7) illustrate, the distributional restrictions in prenominal structure reflect the systematic role of the determiner classification implicit in (4). Once again the behavior of most conforms to pattern (4); also, the specifier structure of Dutch NPs reflects the correspondence of (5) to (4), evidenced in sommige, which like most is [+F₁, −F₂]. Compare de drie/*sommige drie boeken (books) and de drie/*de sommige boeken.

The other restrictive contexts involve only one feature at a time. As they need very little explanation, I will present them as filters. The filters (8a–f) and (8h) have Dutch equivalents; (8g) has no equivalent in English.

(8) a. *[+F₁] years ago; *[+F₁] meetings later; *[+F₁] summers ago; 
    *[+F₁] streets ahead 
    b. *The path is [+F₁] meters long; *This box weighs [+F₁] ton 
    c. *It took [+F₁] seconds (years, summers, meetings, etc.) 
    d. *I have [+F₁] brothers; *He has [+F₁] warts 
    e. *a house with [+F₁] windows;* a girl with [+F₁] brothers/warts
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f. *[+ F₁] questions came into his mind; *She draws [+F₁] conclusions

    g. *Ik zie er [+F₁] (lit: I see there Det)
    h. *[−F₂] following books are sold out: . . .

Anticipating a general account of the data in (6), (7), and (8), we can draw some conclusions already. Whatever has been called (in)definiteness in connection with the contexts in (1) seems to be related to a more general phenomenon: the existence of various contexts restrictive to various subclasses of determiners. If one wishes to deal with (in)definiteness as part of this more general phenomenon, it should be reanalyzed as a notion covering more than one opposition. Definiteness should not be regarded as a monolithic concept. It can be decomposed into at least two factors.

Some of the [+F₁]-blocking noun phrases in (8) obviously have a syntactic status different from that of the noun phrases in (1a). Hence, any account of (1a) that crucially depends on the syntactic analysis usually assigned to there-sentences (that is, with VP dominating the noun phrase) will not be able to account for the observations in (8a–g) and must be regarded as inadequate from the explanatory point of view.

Apart from this, the preceding discussion shows that the distribution of most, neither, and sommige sheds an interesting light on the nature of the feature system for natural language determiners. Any theory of determiners that ignores these cases must therefore be regarded as biased.

Finally, note that contrary to what has often been claimed for other contexts, the determiner all (and where singular expressions are allowed, also every and each) appears to behave virtually identically to the in the contexts under discussion.

11.2 A Model-Theoretic Definition

In the preceding sections I argued for the necessity of distinguishing more than just two subclasses of determiners on a mere descriptive level. The following sections will be concerned with the possibility of providing a uniform explanation for the entire set of observations. It appears that a partial explanation might be obtained from the model-theoretical definitions that are assigned to determiners within the framework of generalized quantifiers. Following Barwise and Cooper
(1981) and Zwarts (1983), a sentence [[Det N] VP] is interpreted as $D_xAB$, where the determiner denotation $D_x$ is a relation in $E$ between two sets: the noun denotation $A$ and the VP denotation $B$.

The first distinction to deal with—the one corresponding to $[\pm F_1]$—corresponds only indirectly to one of the oppositions in Barwise and Cooper 1981. The class of NPs that have a $[+F_1]$-determiner corresponds (one to one) to the class of strong NPs. However, strength is not a property that is defined in a uniform way. It appears in two forms, called positive strength and negative strength. As most examples of $[+F_1]$-determiners yield monotone increasing quantifiers, a case might be made to take $[\pm F_1]$ as “±positive strong.” However, I wish to deal with the distinct behavior of the negative strong neither and the weak no as well. Consequently, a different opposition not unrelated to the weak-strong distinction will be taken to define $[\pm F_1]$ model-theoretically. My claim is that $[+F_1]$ characterizes the class of determiners that have a partial interpretation. These determiners have a denotation only in a model in which the noun-interpretation is not the empty set. For example, as $\|beide\| \ AB$ is defined only when the cardinality of $A$ equals 2, beide belongs to the class of determiners that invoke a partial interpretation of the quantifier. With this criterion, we are able to generalize over both positive and negative strong NPs. The counterparts of the partially interpreted NPs, those that have a denotation in every model, all have a $[-F_1]$-determiner.

My proposal differs from that of Barwise and Cooper (1981) in its interpretation for most, all, and every, which is only defined when the presupposition $A \neq \emptyset$ is met. Several arguments favor a partial interpretation of these determiners (De Jong and Verkuyl 1985), arguments of both a theoretical and an empirical nature. A total interpretation for all and every seems to be based upon the marked usage of these determiners in sentences expressing a generic statement, for example, All ravens are black used as equivalent to Ravens are black. Assignment of a partial interpretation captures the presuppositional aspect of all occurring in nongeneric extensional statements. The all N VP-type sentences can always be interpreted as extensional statements, but a generic interpretation does not always make sense. For example, in All seats are taken or All flowers are yellow the determiner all cannot be deleted salva veritate. Hence, the extensional interpretation of all N VP-sentences should be regarded as unmarked, and it is therefore preferred as a basis for the interpretation of all, at least within a classificatory framework. Consequently, $\|all\|$ should be defined par-
tially. For a more elaborate discussion of the arguments favoring a partial definition of \(|all| AB\), see De Jong and Verkuyl 1985.\(^6\)

If this point of view is correct, then \([\pm F_1]\) can be defined as follows.

**Definition 1**

A determiner \(D\) is

\[
\begin{cases}
\{+F_1\} \text{ iff the definition of } D_{\pm} AB \text{ presupposes} \\
\{-F_1\} \text{ otherwise}
\end{cases}
\]

The second feature is easier to capture model-theoretically. All the \([+F_2]\)-determiners, each regarded as a two-place function with \(A\) and \(B\) as its arguments, establish a relation that is antisymmetric (in the sense used in Zwarts 1983), whereas none of the \([-F_2]\)-determiners does. To see the implications of this claim, expressed in Definition 2, consider Definition 3 and the definitions in (9). \(OU\) stands for otherwise undefined; \(E\) is the domain of discourse.

**Definition 2**

A determiner \(D\) is

\[
\begin{cases}
\{+F_2\} \text{ iff } D \text{ is antisymmetric} \\
\{-F_2\} \text{ otherwise}
\end{cases}
\]

**Definition 3**

A determiner \(D\) is antisymmetric iff for every model in which \(D_{\pm} AB\) & \(D_{\pm} BA\) is true, \(A = B\) is true as well.

(9)

\[
\begin{align*}
\text{a. } the_{\pm} AB & \quad \text{iff } A \subseteq B; |A| \neq 0, \text{ OU} \\
\text{b. } all_{\pm} AB & \quad \text{iff } A \subseteq B; |A| \neq 0, \text{ OU} \\
\text{c. } beide_{\pm} AB & \quad \text{iff } A \subseteq B; |A| = 2, \text{ OU} \\
\text{d. } most_{\pm} AB & \quad \text{iff } |A \cap B| > 1/2 |A|; |A| \neq 0, \text{ OU} \\
\text{e. } sommige_{\pm} AB & \quad \text{iff } |A \cap B| \geq 2; |A| \geq 2, \text{ OU} \\
\text{f. } three_{\pm} AB & \quad \text{iff } |A \cap B| \geq 3 \\
\text{g. } neither_{\pm} AB & \quad \text{iff } |A \cap B| = 0; |A| = 2, \text{ OU} \\
\text{h. } no_{\pm} AB & \quad \text{iff } |A \cap B| = 0
\end{align*}
\]

The three that are marked as \([+F_2]\) in (4) involve a requirement on the inclusion relation between \(A\) and \(B\). As the inclusion relation is symmetric for identical arguments only, \(the\), \(all\), and \(beide\) are antisymmetric. An explanation for this correspondence between antisymmetry and the inclusion relation can be found in Zwarts 1983, where it is shown that antisymmetric determiners \(D\) are characterized by the fact that \(D_{\pm} AB\) implies \(A \subseteq B\). Alternatively, we might therefore call the antisymmetric determiners inclusion determiners. For the \([-F_1]\)-deter-
The definition of \([+F_2]\) also offers some insight into the reason for the fact that no \([-F_1,+F_2]\)-determiners show up. All \([+F_2]\)-determiners impose the same truth-conditions on \(D_kAB\) as are imposed by \(all\) and, as already argued, \(all\) should be treated as presuppositional. Hence, its behavior as a \([+F_1]\)-determiner is explained. Moreover, since for inclusion determiners the cardinality of \(A \cap B\) is of no importance, only the assumption that they each impose a specific presupposition on the size of \(A\) can account for the intuition that, for example, \(the\) and \(beide\) are clearly distinct in meaning. So the uniformity of the truth-conditional part of the interpretation of antisymmetric determiners enforces their presuppositional nature and consequently their being \([+F_1]\).

As Definition 2 appears to bring about a distinction between inclusion determiners and what I will call \(cardinality\ \text{determiners}\) and as the notion of cardinality is quite often said to be relevant for the characterization of (in)definiteness, I will also make reference to the following definitions.

**Definition 4**

A determiner is \([\{-F_3\} \text{ iff it is a cardinality expression}\]

\([\{+F_2\} \text{ otherwise}\]

**Definition 5**

A determiner \(D\) is a cardinality expression iff \(D_kAB\) can be true in a model, while \(A \subseteq B\) is false.

This notion of cardinality, defined ex negativo, is here favored over other model-theoretic notions that are proposed in the literature to account for the restriction on partitives.\(^8\) One reason for preferring this notion is that it should contribute to the explanation of the restriction on partitives as well as to the explanation of the restrictions on nonpartitive NPs mentioned below (5ii) (see section 11.3).

Until now I have restricted attention to simple determiners. But the distribution of complex determiners such as \(almost\ all\) and \(all\ but\ one\) appears to confirm the presumed correspondence of distributional and denotational properties. Obviously, the presuppositional nature of \(all\) is inherited by the complex determiners that contain \(all\). According to Definition 1, they are to be considered as \([+F_1]\). On the other hand, \(almost\ all\) and \(all\ but\ one\) certainly do not denote the inclusion relation: according to Definitions 3 and 5, they classify as \([-F_3]\)-determiners.
Semantically, then, these determiners belong to the class of *most* and *sommige*. Hence, the present proposal would predict that they can occur neither in (1a) nor in (1b). The following examples show that this prediction is borne out.

(10) a. *There are almost all boys in the garden
b. *There is all but one boy in the garden
(11) a. *Half of almost all boys are red-haired
b. *Half of all but one boy is red-haired

Since cardinality is a notion often related to (in)definiteness, it is worthwhile to reconsider the most well-known elaboration of this idea, that of Milsark (1977) in the light of Definitions 4 and 5. Milsark distinguishes between determiners expressing universal quantification (blocked in (1a)) and expressions of cardinality (permitted in (1a)). Since *most* (and also *sommige*) is not universally quantifying, it should be classified as a cardinality expression, in spite of its distribution. In order to prevent this, Milsark rejects the distinction between universal and nonuniversal quantification and he takes the quantificational nature of *most* to be a sufficient explanation of its being strong. For *sommige*, his proposal would incorrectly predict ambiguity. Just like *some*, it would receive a strong interpretation in addition to a primary cardinality interpretation. But the distribution of *sommige*, unlike that of *some*, parallels the distribution of the strong determiners in all relevant aspects. If Milsark’s notion of cardinality is somehow to be related to antisymmetry or cardinality as defined here, distinguishing between [+F₂]-determiners and [-F₂]-determiners, then the observations on partitives would confirm the status of Milsark’s distinction as a true opposition. However, since it is shown here that [+F₂] is not the opposition that is relevant to (1a), [+F₂] cannot be identified with the weak-strong distinction. Hence, Milsark seems correct in assigning a realistic status to the distinction between quantifying words and cardinality expressions, but he is not correct in regarding it as responsible for the restrictions in *there*-sentences.

11.3 The Explanatory Force of Model-Theory

The compositional nature of what is traditionally called (in)definiteness appears to be rather easy to define model-theoretically. Here I will relate the definitions given in the previous section to a more explanatory
account of the restrictions to which the various subclasses are subject. I will begin by considering the contexts in (8) in more detail.

All the examples in (8a–c) contain some kind of measure phrase. As is clear from the examples with summers, streets, and so forth, it is not the noun itself that triggers the restrictive nature of (8a–c) but instead the occurrence of these nouns as the complement of certain verbs or adverbs. When a noun is modified by, for example, an adjective or a PP with predicational content, it loses the ability to function as a measuring unit: *many years of her life ago, *three narrow streets ahead. Apparently the use of these nouns is parameterized. The context of use imposes restrictions on which parameters can be selected. Now regardless of how the rules of grammar interfere with this selection, it seems evident that the contexts in (8a–c) do not trigger the interpretation of nouns as sets of individual entities. In (8a–c) the nouns can only be interpreted as measure units. (I will ignore the question of whether and how measure units can be related to the set of individuals E.)

The claim that certain uses of a noun affect the nature of its interpretation and hence the possibility of its being preceded by certain determiners is relevant for the account of (8d–e) as well. To see this, note that the objects denoted by the nouns in (8d–e) have a rather complicated ontology. Things such as holes, warts, windows, and noses are inherently related to other objects. Their existence depends on the existence of the objects of which they are, metaphorically speaking, a part. In a way, then, the set denotation commonly assigned to count nouns is anomalous here, since it ignores this dependency. It presumes that, for instance, hole and wart are expressions denoting a function, whereas a relational interpretation would do more justice to the ontological complications. However, within certain contexts a functional interpretation is most natural. Consider, for example, *I can see (the) three holes in the roof and *This picture shows the ten warts that I want to have removed. These sentences involve quantification over sets of holes and warts, respectively.

A similar example of context-dependent typeshifting can be observed for the interpretation of nouns like brother and colleague. An individual referred to by these nouns is concurrently related to the individual that he or she is a brother or a colleague of. Only in case this relation is already established in the context is it possible to quantify over sets of brothers or colleagues. In (8d–e) the occurrence of have and with triggers the relational parameter.
This idea of parameterized noun interpretation suggests an account of the restriction on [+F₁]-determiners in (8): since none of the examples discussed thus far involves a set interpretation, the nonempty-set requirement associated with [+F₁]-determiners turns out to be trivial here. But although this generalization seems promising, it is bound to fail with respect to (8f–g): the contexts in (8f) do not resist a set interpretation of questions and conclusions, and the anaphoric nature of er in (8g) seems to be incompatible with the idea that blocking of [+F₁]-determiners is due to the failure of the nonempty-set requirement. To preserve the possibility of an overall account of the restriction on [+F₁]-determiners, I will reanalyze the data from a slightly different perspective, a perspective that bears on the distinction between predicational and presentational sentences already hinted at in Milsark 1977 and elaborated more formally in Heim 1982.

This distinction presumes a dynamic view of the process of semantic interpretation, since the domain of interpretation is not taken as static. Presentational sentences are distinguished from predicational sentences because of their function. They are supposed to accomplish a change or an extension of the domain, rather than to describe it, by asserting or denying the presence or coming into presence of (sets of) individual entities. From this perspective the analysis of (8f) would run as follows.

Unlike [. . .] questions are written down carefully, (8f) is not a predicational sentence but a sentence expressing that the subject denotation came into existence by the process referred to by the VP. Therefore, the occurrence of a presuppositional determiner forces the sentence to assert what is presupposed. This tautological result explains the intuition that inserting a [+F₁]-determiner in (8f) is blocked. In context (8f) questions does not refer to a set of objects that is present independently of what is predicated. Things change when a phrase like just before he fell asleep is added to the context. In that case a predicational interpretation and insertion of [+F₁]-determiners are no longer blocked.

There-sentences are presentational as well. They introduce or deny the presence of a certain set in the domain of discourse or, in case XP in (1a) is a locative adverbial phrase, in a context-relevant subdomain. Again, insertion of a presuppositional determiner would make the sentence assert or deny what is presupposed and hence yield a tautology or a contradiction (the latter in case neither is inserted). Barwise and Cooper (1981) also ascribe the ill-formedness of there-sentences with strong determiners to their tautological or contradictory nature. How-
ever, they presume in a rather ad hoc way that $|be \ NP|$ is identical to $|\NP|$ and that $E$ is the denotation of *these*.

The dynamic approach also gives some insight into (8g). Regardless of *er*, there is no noun in (8g) to which the determiner is attached; hence, there is nothing within the sentence to fulfill the nonempty-set requirement that would be introduced by $[+F_1]$-determiners. But whatever is accomplished by this conclusion, it does not solve the problem of what *er* does denote. Obviously, *er* is anaphoric in nature: the interpretation of *er* is determined by the context. In addition, I claim that *er* never refers to a specific subset of $E$, but rather to what Carlson (1977a) has called a *kind*. Actually, I claim that to know what *er* is referring to is to know the kind of objects that a certain piece of discourse is concerned with. The effect of using a sentence like (8g) is that a set corresponding to the kind that *er* is referring to becomes present in the (sub)domain of discourse. (In case *geen* ‘no’ is inserted in the context this set will be empty, whereas the kind might still be part of the context.) As a consequence of these assumptions, insertion of a $[+F_1]$-determiner is predicted to yield a tautological or contradictory, and hence ill-formed, result.

Thus far the dynamic approach enables us to generalize over the restrictions in three different kinds of presentational sentences. Now I will indicate how it also applies to the account of (8a–e). The previous discussion of (8d–e) was based upon the observation that in these specific contexts *brother*, *wart*, and so forth, do not denote a set. But these statements can as well be taken as introducing the set corresponding to (for example) $|brother \ of \ NP|$ or $|wart \ of \ NP|$, where NP is meant as a variable that ranges over the subjects of *have*, for instance. This position is favored by the observation that the utterance of a sentence like *She has three brothers* can be followed by a sentence that presumes the presence of a set of brothers—for example, *One of the brothers is red-haired*, which involves quantification. Presuming that the derived set interpretation of nouns can be generated compositionally, this analysis allows us to regard (8d–e) as presentational and to treat them on a par with (8f–g) and (1a). That is, the restriction on $[+F_1]$-determiners can be taken as a consequence of the fact that they make the sentence assert or deny what is presupposed.

Something similar can be said with respect to (8a–c). The fact that these phrases do not admit a $[+F_1]$-determiner indicates that somehow a set interpretation is impossible. But the use of a measure phrase causes a change in the domain to the effect that a set of, for instance,
weeks or streets becomes available. The following two sequences illustrate this: You will find John's house five streets ahead; be careful and don't overlook the narrow streets. Within three weeks this manuscript must be finished and there is no time to work on it at present, so it will all depend on the third week. Thus, sentences containing the measure phrases occurring in (8a–c) appear to be presentational as well. Hence, the account proposed for (8d,g) and (1a) applies to (8a–c) as well, and it can be concluded that the dynamic approach appears to offer a general explanation for all the restrictions on [+F₂]-determiners.

This leaves us with the contexts sensitive to [F₂]: those involving an NP-internal aspect (namely, pronominal structure and partitive NPs) and one sensitive to [F₂] only in relation to the context of the NP as a whole. Let us begin with the NP-internal restrictions. Unlike Barwise and Cooper (1981), I do not analyze numerals as part of the determiner. Stated in formal syntactic terms, numerals are [+Det] as well as [+A], whereas the other [+Det]-elements are [−A]. The correspondence of (5) to (4) supports this point of view. Now suppose the phrase structure rules specify the string [Det₁ of Det₂ N'] for partitives and the string [Det A ... N] for nonpartitives, where N' is a projection of N that possibly dominates [A N], for example, red-haired boys or twenty boys. Furthermore, both contexts turn out to be ill formed if in more than one of the available positions preceding N a [−F₂]-element is inserted. As multiple numerical information is either redundant or contradictory, the interpretation assigned to [F₂] contributes to an account of the NP-internal [F₂]-restrictions that generalizes over both NP types involved. Since in (8h) only one position is involved and since apart from the NP-internal cases it is until now the only context that I have found that is sensitive to the [±F₂] distinction, any account would be ad hoc. Therefore, I will not try to explain this case here.

11.4 Concluding Remarks

I have argued here for the incorporation of the features [±F₁] and [±F₂] in the lexical specification of determiners. Though both features have been given a model-theoretic definition based upon the definitions in (9), my claim is not that the interpretations defined in (9) are relevant to every occurrence of a certain determiner. What I actually claim is that (a) the different interpretations of determiners in Det N VP-sentences reflect the existence of several determiner subclasses and (b) this subclassification plays a systematic role within the distribution of deter-
miners. In view of this lexicalist approach to the model-theoretic notions involved, the one-to-one correspondence between the distributional and the semantic properties of determiners sheds some intriguing light on the role of the lexicon in relation to the learnability issue.

Notes
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1. There seem to be some subtle differences among partitive contexts with respect to the possibility of inserting all. Most speakers of English regard the occurrence of all in some of all boys or in three of all boys as ill formed. However, a comparison of these examples with those in (i) shows that it would be too strong a conclusion if all were to be regarded as excluded from the embedded position in partitives.
   (i) a. At least ten of all children got lost
       b. Half of all participants failed to pass the exams
       c. Only three of all students succeeded
       d. Not more than four of all teachers were present

In these examples all fits perfectly well, whereas the insertion of most and numerals would lead to ill-formed results in all of the cases. Therefore, I propose to count all in the class of determiners that can occur in the embedded position of partitives.

2. In itself, definiteness is defined as property of a certain subset of the set of determiners. However, the restriction to partitive NPs is stated under reference to (a subset of) the set of definite NPs. See Barwise and Cooper 1981:184.

3. As a consequence of this restriction, the property associated with $[\leq F_{3}]$ in section 11.2 should be taken as a necessary rather than a sufficient condition for occurrence in partitives.

4. The exceptional distribution of no in this respect must be ascribed to the fact that no functions as a sentence operator.

5. This example is due to Irene Heim. See chapter 2, example (9).

6. Note that a partial definition of all and/or every makes it necessary to adopt the alternative formulation of truth-conditions proposed by Strawson (1952) in order to preserve the possibility of accounting for the property of antipersistence that intuitively is valid for $||all||$.

7. It might be argued that because $|A \cap B| = 0 \leftrightarrow A \cap B = \emptyset$, neither and no do not necessarily involve a condition on $A \cap B$. However, as $A \cap B = \emptyset$ cannot be stated by means of $A \subseteq B$ or its denial, I take the distinction between cardinality determiners and inclusion determiners to be a true opposition.
8. That nonantisymmetric determiners by necessity depend on the cardinality of $A \cap B$ will be argued more extensively elsewhere.

9. Not all the peculiarities of the nouns in (8a–c) are to be taken as a result of the assumed presentational status of the sentences they occur in. For example, the fact that they do not allow modification is independent of this status.