

Definiteness Agreement with PP Modifiers

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Abstract

DP complements of prepositions in Modern Hebrew often bear morphosyntactic definiteness marking that is triggered by the definiteness value of the noun modified by the PP. Although reminiscent of definiteness agreement with attributive APs, the agreement observed with PPs is not always obligatory. This article argues that what distinguishes modifiers that display obligatory definiteness agreement is that they denote properties. I propose that the morphosyntactic definiteness feature of property-denoting modifiers is uninterpretable and therefore it must be checked by agreement. Checking is made possible by the fact that PPs in Hebrew have the structure of a construct state, where definiteness features ‘spread’ from an embedded DP to a higher projection.

1 Introduction

The existence of uninterpretable morphological realizations of grammatical distinctions that might be semantically motivated elsewhere is a central property of human language (Chomsky 1995). From a cross-linguistic perspective, person, number and gender marking on verbs or adjectives are probably the most common examples of this phenomenon. This article focuses on uninterpretable realizations of *definiteness* in Modern Hebrew, a language in which there is a surprisingly large number of constructions involving definiteness marking that does not lead to a definite interpretation on the head where the marking is found. In particular, I will show that definite articles inside PPs do not always trigger a definite interpretation of the marked noun.

Hebrew nouns are known to agree in definiteness with modifying APs (Borer 1999, Sichel 2002): when a definite noun is modified by one or more attributive adjectives, the definite article, *ha-*, must precede each adjective:

- (1) a. *ha-xulca *(ha-)aduma *(ha-)meluxlexet*
 the-shirt *(the-)red *(the-)dirty

- ‘the dirty red shirt’
- b. xulca (*ha-)aduma (*ha-)meluxlexet
 shirt (*the-)red (*the-)dirty
 ‘dirty red shirt’

A fact that so far has gone unnoticed is that superficially similar agreement patterns can often be found with PP modifiers. PPs that modify a noun phrase show a strong tendency for what might be viewed as definiteness agreement with the modified noun, as illustrated in the following example:

- (2) ha-iš im *(ha-)zakan hu ax-i.
 the-man with *(the-)beard is brother-1SG
 ‘The man with the beard is my brother.’

In this example, the PP that modifies a definite-marked noun must dominate a definite DP; as such, this is highly reminiscent of definiteness agreement between nouns and modifying APs.

This paper aims to provide a detailed characterization of definiteness agreement with PPs. Part of the challenge is to provide an analysis that can explain not only the existence of definiteness agreement with PPs, but also the fact that such agreement is often quite ‘weak’, in the sense that not *all* PP modifiers necessarily agree with the modified noun, and speakers’ judgments regarding the grammaticality of non-agreeing PPs are often not clear-cut. I will argue that the agreement requirement follows from the need to check an uninterpretable definiteness feature carried by property-denoting modifiers. I will then consider the way in which PPs in Hebrew get specified for a definiteness value, showing that they ‘inherit’ one in much the same way as heads of construct state nominals.

The majority of this paper is devoted to a discussion of definiteness agreement in simple noun phrases that do not denote events, as event nominals do not seem to display this kind of agreement. As alluded to in the title of the paper, the discussion will be restricted mostly to modifier PPs, even though some traces of definiteness agreement can also be seen with argument PPs (see §2.3.3).

2 The phenomenon

2.1 Definite–indefinite asymmetries

The example in (2) illustrates how PP modifiers, like AP modifiers, agree in definiteness with the noun they modify. I will use the term ‘definite PP’ to refer to a PP that directly dominates a definite DP; this will be justified in section 5.¹ It should also be stressed at this point that, unless otherwise

noted, the term *definite* in this paper refers to elements that are morphosyntactically marked as definite, regardless of their interpretation; see Danon (2001) for the distinction between syntactic and semantic definiteness in Hebrew.²

An interesting contrast in the definiteness agreement pattern appears once indefinites are considered. Unlike adjectives, which must agree in definiteness with the noun regardless of its definiteness value, definite PPs modifying indefinite nouns are often perfectly acceptable. The following examples illustrate this asymmetry:

- (3) a. ha-seret al *(ha-)milxama lo mat'im le-yeladim.
 the-movie about *(the-)war NEG suitable to-children
 'The movie about a/the war is not suitable for children.'
- b. seret al (ha-)milxama lo mat'im le-yeladim.
 movie about (the-)war NEG suitable to-children
 'A movie about a/the war is not suitable for children.'

In (3a), the definite noun must be modified by a definite PP; this contrasts with (3b), where an indefinite noun may be modified by either a definite or an indefinite PP.

Even with definite nouns, however, a certain amount of variability must be acknowledged. The judgments given above for (3a) represent the majority of Hebrew speakers, but there are also speakers who judge non-agreeing PP modifiers of definite nouns to be marginally acceptable in colloquial speech. To some extent, however, this might be due to an independent factor, namely, the fact that in colloquial Hebrew the definite article seems to be in the process of being reanalyzed as a phrasal clitic, rather than a bound morpheme (Siloni 2001). This can be seen, for instance, in the way definiteness is marked on construct state nominals.³ In standard Hebrew, the definite article may never precede a construct state nominal, and can attach only to the embedded genitive, as in (4a); in colloquial Hebrew, on the other hand, definite articles that precede the entire CSN, as in (4b), are very common. (4b) is often pronounced with a short intonation break between the definite article and the CSN, further supporting the analysis of the article as a phrasal clitic.

- (4) a. aremat ha-dapim ha-zot
 pile the-papers the-this
 'this pile of papers'
- b. ha-aremat dapim ha-zot
 the-pile papers the-this
 'this pile of papers'

Indeed, speakers who accept (4b) also tend to accept (5), in which a definite noun is modified by an indefinite PP; the same intonation break can be observed after the definite article in (5):

- (5) ha-iš im zakan ha-ze
 the-man with beard the-this
 ‘this man with a beard’

If indeed speakers who accept (5) use the definite article as a phrasal clitic, then this does not really constitute a counterexample to the claim that agreement with definite nouns is obligatory; the definite article, then, attaches to the entire NP *iš im zakan* (‘man with a beard’), in which neither the head noun nor the modifying PP is formally definite.

In what follows I will focus only on the more standard use of the definite article, thus eliminating one source of apparent counterexamples to the agreement requirement. As we will see later, however, even with this restriction, the descriptive generalization regarding definiteness agreement is more complex than what it seems at first.

2.2 Non-uniqueness

At this point it is important to address an immediate objection that could be raised. One apparent explanation that comes to mind is that definiteness agreement with PPs is not really a grammatical process, but just a by-product of the semantics of modification. For instance, consider sentence (2), repeated below as (6):

- (6) ha-iš im *(ha-)zakan hu ax-i.
 the-man with *(the-)beard is brother-1SG
 ‘The man with the beard is my brother.’

In this case, for the sentence to be felicitous, there has to be exactly one man who has a beard; assuming that a man can have at most one beard, and that only men have beards, one might argue that uniqueness of the entire DP would imply the existence of a unique beard in the context. Thus, uniqueness in this case could be argued to be the source of the definiteness marking on the noun *zakan*; if so, then no special explanation is necessary, and ‘definiteness agreement’ would seem like the wrong terminological choice.

This account, however, must be rejected, as it is not too difficult to come up with examples where this reasoning does not go through. One clear counterexample involves PPs headed by the preposition *bli* (‘without’). Such PPs display the same agreement pattern as in the previous examples, despite the lack of a semantic basis for definiteness in examples such as the following:

- (7) ha-iš bli *(ha-)xulca hu ax-i.
 the-man without the-shirt is brother-1SG
 ‘The man without a shirt is my brother.’

This sentence could be uttered in a context in which there are several men wearing shirts; in such a context, there is no uniqueness associated with the DP *ha-xulca* (‘the shirt’). This is further supported by the fact that paraphrasing the DP as a relative clause would involve using an indefinite DP in the RC:⁴

- (8) ha-iš še holex bli (??ha-)xulca hu ax-i.
 the-man that walks without (??the-)shirt is brother-1SG
 ‘The man walking around without a shirt is my brother.’

It is therefore clear that the only kind of uniqueness in (7) is of having the property of being a man without a shirt, i.e., only at the level of the entire subject DP. We must conclude that there is no semantic reason for the PP-internal definite article.

The conclusion that a definite article inside a PP may be a reflex of agreement also follows from the interpretation of PPs that dominate a generic DP. Plural indefinites in Hebrew, unlike plural definites, may receive a generic reading, as illustrated in the following examples:

- (9) a. nemerim ohavim gezer.
 tigers love carrot
 ‘Tigers (generic) love carrot.’
 b. ha-nemerim ohavim gezer.
 the-tigers love carrot
 ‘The tigers (non-generic) love carrot.’

However, in definiteness-agreement contexts, when the noun in a PP is plural and marked with the definite article, as in (10a), a generic interpretation of this noun *is* possible (in addition to the non-generic interpretation, which is also possible). This contrasts with non-agreeing contexts, as in (10b), where no generic interpretation is available:

- (10) a. ha-seret al ha-nemerim lo mat‘im le-yeladim.
 the-movie about the-tigers NEG suitable to-children
 ‘The movie about tigers is not suitable for children.’
 b. seret al ha-nemerim lo mat‘im le-yeladim.
 movie about the-tigers NEG suitable to-children
 ‘A movie about the tigers is not suitable for children.’

The generic reading in (10a) is the same as the interpretation usually associated with bare (indefinite) plurals, as in (9a). The interpretation of the DP dominated by PP therefore seems to be tightly related to whether or not it agrees in definiteness with the head noun: a definite article may be either semantically motivated, as in (10b), or a reflex of agreement, as in (10a); in the latter case, it makes no contribution to the semantic composition of the DP.

Thus, we conclude that no trivial *semantic* account for this kind of definiteness agreement is possible: the PP-internal definite article does not necessarily contribute to the semantics of the noun phrase. An independent explanation is therefore needed for the presence of the article in this position.

2.3 Factors affecting acceptability of non-agreeing PPs

Despite the fact that speakers' judgments regarding definiteness agreement in the examples given above are quite robust, one cannot overlook the fact that not all N-PP combinations lead to equally clear judgments. In fact, it is likely that this kind of agreement has not been described in the literature until now exactly because of the fact that the data often seems to be quite inconsistent. This section surveys some of the major factors affecting the acceptability of non-agreeing PPs; the analysis that I will later propose will show that these seemingly unrelated patterns can all be traced back to one common source.

2.3.1 Heaviness of the PP

As illustrated above, an indefinite PP is usually ungrammatical as a modifier of a definite noun. However, one notable exception to this generalization is that using a 'heavy' indefinite PP makes such non-agreeing constructions significantly better:

- (11) a. ha-iš im *(ha-)xulca hu ax-i.
the-man with *(the-)shirt is brother-1SG
'The man with the shirt is my brother.'
- b. ha-iš im ?(ha-)xulca kmo šeli hu ax-i.
the-man with ?(the-)shirt like mine is brother-1SG
'The man with the shirt that is like mine is my brother.'

The question is thus whether definiteness agreement is a phenomenon involving only bare nouns in the PP. Apparently, not only bare nouns are sensitive to the agreement requirement; if the noun in the PP is modified by an adjective, for instance, definiteness agreement is still necessary:

- (12) ha-iš im *(ha-)xulca *(ha-)aduma hu ax-i.
 the-man with *(the-)shirt *(the-)red is brother-1SG
 ‘The man with the red shirt is my brother.’

It is thus probably not a simple syntactic distinction between bare and non-bare nouns that matters here, but a more subtle preference or tendency.

2.3.2 Quantifiers and numerals

The only determiner considered in the examples given until now was the definite article. In contrast to unquantified nouns, when a PP dominates a DP containing a numeral or a quantifier, there is no obligatory definiteness agreement. This is illustrated in the following examples:

- (13) a. ha-morim mi kama kfarim šovtim.
 the-teachers from several villages striking
 ‘The teachers from several villages are striking.’
 b. ??/* ha-morim mi kfarim šovtim.
 the-teachers from villages striking
- (14) a. ha-deše leyad šney ecim lo come‘ax tov.
 the-grass near two trees NEG growing well
 ‘The grass near two trees isn’t growing well.’
 b. ??/* ha-deše leyad ec lo come‘ax tov.
 the-grass near tree NEG growing well

For many speakers, definiteness agreement is optional in the presence of a numeral:⁵

- (15) ha-iš im šney (ha-)zkanim nixnas la-xeder.
 the-man with two (the-)beards entered to-the-room
 ‘The man with two beards entered the room.’

The question is thus why unquantified DPs trigger ‘stronger’ definiteness agreement than quantified ones. If it is indeed true that definiteness agreement is systematically dependent on a semantic factor like the quantificational status of the DP, this would suggest that definiteness agreement is a phenomenon involving the syntax-semantics interface, rather than syntax alone.

2.3.3 Argument PPs versus modifier PPs

With argument PPs, non-agreeing forms seem to be quite acceptable in most cases. The following examples are judged as grammatical by most speakers:⁶

- (16) a. ha-pgiša im tošavim zo‘amim nidxata be- šavu‘a.
 the-meeting with residents furious postponed in- week

- ‘The meeting with furious residents was postponed for a week.’
- b. ha-brixa mi- arye acbany hayta si ha- tiyul.
 the-fleeing from- lion angry was peak the- trip
 ‘The fleeing from an angry lion was the peak of the trip.’

Still, some trace of definiteness agreement can be found with argumental PPs. The examples above would be only marginally acceptable if the PP-internal adjective is dropped, leaving only a bare noun; this, in turn, would be significantly improved if an agreeing argument is used.

3 Agreeing modifiers: semantic generalizations

Despite all the variability discussed in the previous section, there are still some clear regularities that should be accounted for. First, various factors allow definiteness agreement to be violated — heaviness, the presence of quantifiers and numerals, and argumenthood; these ‘exceptions’ seem, in fact, to be quite systematic. Furthermore, if we focus on those modifiers that do display definiteness agreement effects and put aside for the moment ‘heavy’ and quantified PPs, the overwhelming generalization is that definiteness agreement is obligatory with a definite noun, whereas agreement with an indefinite is not obligatory. This contrasts with the agreement pattern of adjectival modifiers, which must always agree in definiteness with the head noun. The puzzle is to explain these two asymmetries — between PPs and APs, and between PPs modifying definite and indefinite nouns — and also to explain why the agreement requirement is sensitive to the PP-internal factors listed above.

One pattern that stands out is that modifiers containing a referential DP (which, for simplicity, I will refer to as ‘referential modifiers’) tend to escape definiteness agreement much more easily than non-referential modifiers. Consider, for instance, the ungrammaticality of the non-agreeing bare indefinite modifier in (17a); the nominal *rakdan* (‘dancer’) in this example cannot get a referential interpretation. This contrasts with the similar referential indefinite in (17b), which is felicitous despite the lack of agreement:⁷

- (17) a. * ha-sratim al rakdan me‘anyenim oti.
 the-movies about dancer interest me
 ‘The movies about a dancer interest me.’
- b. ha-sratim al rakdan mesuyam me‘anyenim oti.
 the-movies about dancer certain interest me
 ‘The movies about a certain dancer interest me.’

Referentiality thus seems to be one semantic factor that plays a role in definiteness agreement. A formal characterization of referentiality is beyond the scope of this paper; roughly, what I call *nonreferential* is a nominal that does not pick out a discourse entity and that cannot receive wide scope. One way to formalize this notion is by identifying nonreferential noun phrases as *property-denoting*, in the sense of Zimmermann (1993) and van Geenhoven and McNally (2005). Under this view, it is expected that quantified DPs would pattern with referential ones, as quantified DPs do not denote properties. Indeed, as shown in section 2.3.2, PPs containing a numeral or a quantifier are not subject to obligatory definiteness agreement. Thus, (18) below, unlike (17a), is fully grammatical:

- (18) ha-sratim al šney rakdanim me‘anyenim oti.
 the-movies about two dancers interest me
 ‘The movies about two dancers interest me.’

Based on these observations, we might hypothesize that obligatory definiteness agreement is a phenomenon involving property-denoting modifiers, as formulated below:

- (19) **Definiteness agreement generalization:** A property-denoting DP complement of a PP modifier must enter into a definiteness agreement relation with the modified head.⁸

One immediate consequence of this hypothesis is that adjectival modifiers should always agree with the modified head, since APs denote properties.⁹ Thus, the strong agreement pattern with adjectival modifiers is easily accounted for.

Consider, next, how the hypothesis in (19) would account for examples such as (2) and (7), repeated below as (20a–b):

- (20) a. ha-iš im *(ha-)zakan hu ax-i.
 the-man with *(the-)beard is brother-1SG
 ‘The man with the beard is my brother.’
 b. ha-iš bli *(ha-)xulca hu ax-i.
 the-man without the-shirt is brother-1SG
 ‘The man without a shirt is my brother.’

The fact that the modifiers in these examples contain non-referential DPs is witnessed, first of all, by their similarity to adjectival modifiers: the PP in (20a) can be paraphrased using the adjective *mezukan* (‘bearded’); and the one in (20b) corresponds to the English adjectival form *shirtless*.

Further support for the nonreferential nature of these modifiers comes from the fact that a pronoun cannot be used to refer to the DPs that they govern:

- (21) a. ha-iš im ha-zakan hu ax-i. #hu mamaš arox.
 the-man with the-beard is brother-1SG it(MS) really long
 ‘The man with the beard is my brother. It is really long.’
- b. ha-iš bli ha-xulca hu ax-i. #hi ba-
 the-man without the-shirt is brother-1SG it(FM) in.the-
 kvisa.
 laundry
 ‘The man without a shirt is my brother. It’s in the laundry.’

This does not follow from a general constraint on referring to a DP in this particular syntactic position; this can be seen from the following example, in which the subject-internal PP dominates a referential DP that can be referred to by a pronoun:

- (22) ha-zoxe ba- taxarut hu ax-i. hi hayta
 the-winner in.the- contest is brother-1SG. it(FM) was
 metiša.
 exhausting.
 ‘The winner in the contest is my brother. It was exhausting.’

Thus, we conclude that the modifiers in (21) dominate nonreferential DPs, and therefore the obligatory agreement in these cases follows from the hypothesis in (19).

On the other hand, consider the examples in (13a)–(14a), repeated below as (23a–b), which involve a non-agreeing quantified PP:

- (23) a. ha-morim mi kama kfarim šovtim.
 the-teachers from several villages striking
 ‘The teachers from several villages are striking.’
- b. ha-deše leyad šney ecim lo come‘ax tov.
 the-grass near two trees NEG growing well
 ‘The grass near two trees isn’t growing well.’

Unlike the previous examples, these PPs dominate DPs that denote generalized quantifiers and not properties. Unlike property denoting nominals, these DPs can have wider scope than the entire modified noun phrase: in (23a), the DP *kama arim* (‘several cities’) takes scope over *morim* (‘teachers’), such that the interpretation is that there are several villages where the teachers are striking (and not that those teachers who teach in more than one village

are striking); similarly, in (23b), the DP *šney ecim* ('two trees') may take scope over *deše* ('grass'), leading to the interpretation that there are two trees next to which the grass doesn't grow well. Assuming that property-denoting nominals never receive wide scope, this provides clear evidence that the examples in (23) involve modifiers in which the DP does not denote a property. Thus, the lack of obligatory agreement in (23) matches the generalization proposed in (19): a modifier that does not agree is not interpreted as denoting a property.

The picture that emerges at this point is that nominals that denote a property are more restricted in their use than other DPs, as the obligatory definiteness agreement requirement applies only to the former. The question, at this point, is what prevents property-denoting nominals from being type-shifted into the denotation of a generalized quantifier (GQ), along the lines of Partee (1986), and hence to escape the effect of the generalization in (19). Below I argue that the class of nominals that display the strongest cases of definiteness agreement are exactly those for which this kind of type shifting may not be available.

In Hebrew, there is no indefinite article; a simple singular indefinite may be either a bare noun, or a noun followed by the numeral *exad* ('one'):

- (24) kelev (exad) našax oti.
 dog (one) bit me
 'A dog bit me.'

Even though both options are grammatical, in neutral contexts most speakers prefer to avoid using a bare indefinite subject in sentences like (24). When embedded under a verb like *xašav* ('think'), it becomes clear that the choice between the two options correlates with a difference in referentiality. Consider the following examples:¹⁰

- (25) a. dan xošev še- kelev našax oti.
 dan thinks that dog bit me
 'Dan thinks that I was bitten by a dog.'
 b. dan xošev še- kelev exad našax oti.
 dan thinks that dog one bit me
 'Dan thinks that a particular dog bit me.'

The embedded subject in (25a), which is a bare noun, receives only a narrow scope (non-specific) reading; in contrast, the embedded subject in (25b), which is not a bare noun, can easily receive a wide scope interpretation: there is a dog that Dan thinks bit me.

Similarly, when used as objects of opaque verbs (Zimmermann 1993, van Geenhoven and McNally 2005), bare nouns in Hebrew lead only to a non-

referential, property-denoting interpretation, as shown in (26a); this contrasts with non-bare indefinites, as in (26b), which get an existential reading:

- (26) a. dan mexapes iša.
 Dan seeks woman
 ‘Dan is seeking a woman/wife.’
- b. dan mexapes iša axat.
 Dan seeks woman one
 ‘Dan is looking for a (particular) woman.’

With these observations, we may propose that, at least in some syntactic environments, type-shifting from a property denotation to the type of a generalized quantifier is not possible for bare nouns.¹¹ Going back to the issue of definiteness agreement, as noted above, the clearest cases of PPs displaying obligatory definiteness agreement indeed involve bare nouns (or, more precisely, what would be a bare noun if not preceded by the definite article that acts as a reflex of agreement), or bare N+A combinations. We thus have the following pattern:

- Bare (singular) nouns are interpreted as denoting properties.
- Noun phrases containing numerals or quantifiers denote GQs.
- Definiteness agreement is obligatory for a PP dominating a noun phrase that denotes a property.

Thus, the fact that not all PPs are subject to obligatory definiteness agreement can be traced back to the different kinds of interpretations that are available to noun phrases.

At this point, we can also explain why non-agreeing ‘heavy’ DPs are more acceptable than non-agreeing bare nouns. It is well known that heaviness often affects semantic properties such as referentiality and specificity (Fodor and Sag 1982): the heavier a noun phrase is, the easier it is to assign a referential interpretation to it. Regardless of the formal operations underlying this descriptive generalization, it is clear that it has an immediate consequence in the context of the proposed characterization of obligatory definiteness agreement. Thus, if referential nominals are not property denoting, the observation that heavy DPs don’t necessarily agree follows.

The difference between argument and modifier PPs also follows from the semantic distinction discussed above. As noted in section 2.3.3, non-agreeing argument PPs are quite common. Since arguments, unlike modifiers, are usually referential or quantificational, our analysis predicts arguments not to be subject to the agreement requirement in most cases.

If the generalization in (19) is correct, we should distinguish between true agreement and ‘fake’ agreement. The latter is just a coincidental occurrence of the same feature on the head and on the PP, as in the case of a definite noun modified by a referential definite PP:

- (27) ha-bikur ecel ha-šaxen hifti‘a oto.
 the-visit at the-neighbor surprised him
 ‘The visit to the neighbor surprised him.’

This, in my analysis, is not really agreement, as the PP dominates a referential DP. Since the entailment in (19) is in one direction only, it does not predict that *only* property-denoting nominals in PPs will have the same definiteness value as the modified noun. Examples such as this are therefore simply irrelevant to our discussion.

Finally, let us consider what happens when the modified noun is indefinite, and it is modified by a non-agreeing PP – i.e., a definite PP. The definite article, in this case, is not a reflex of agreement, and therefore it must be interpreted. Assuming that a definite article is interpreted as a function from sets of individuals to GQs, such a definite modifier would have a denotation that is not of the type of properties. The hypothesis in (19) therefore predicts that non-agreement should not pose a problem in this case. This prediction is borne out, as discussed in section 2.1. We thus have an explanation for the strong asymmetry between definite and indefinite modified nouns, whereby obligatory definiteness agreement is attested only when the modified noun is definite.

4 Agreement and the interpretation of $[\pm def]$

In the previous section, I have argued for a relationship between definiteness agreement and the kind of interpretation that a modifier receives, based on the hypothesis in (19), repeated below as (28).

- (28) **Definiteness agreement generalization:** A property-denoting DP complement of a PP modifier must enter into a definiteness agreement relation with the modified head.

In this section I will try to address the question of why definiteness agreement and the semantics of the modifier should be related in this way. As we have seen, referential and quantificational modifiers are not subject to an obligatory agreement requirement, and hence the question is why agreement is necessary in order to make a property-denoting interpretation possible.

My proposal in this section will focus on the interpretation of morpho-syntactic definiteness features and their compatibility with different semantic

classes of DPs. Consider, first, the semantics of definiteness. In some approaches, the definite-indefinite distinction is seen as a distinction between two classes of *referential* DPs. This is particularly true in theories such as Kamp (1981) and Heim (1982), where the difference between definites and indefinites is in whether a new entity is added to the discourse representation or an existing one is accessed. Quantified nominals also introduce a discourse referent, in a slightly different way. In this respect, property-denoting noun phrases form a class of their own, as no discourse entity is associated with them. This is despite the fact that in their surface appearance, property-denoting nominals are usually similar to indefinites.

Similarly, within the literature on generalized quantifiers (Barwise and Cooper 1981 and most subsequent work), determiners are seen as functions from sets of individuals to generalized quantifiers. Thus, where a $[\pm def]$ feature is interpreted as a determiner, the resulting noun phrase, as opposed to its head noun alone, does not denote a property. Hence, in this approach as well, property-denoting DPs are different from both definites and indefinites.¹²

Let us assume, then, that a property-denoting DP is semantically neither definite nor indefinite. What does this imply for the fact that such DPs may carry a morphosyntactic $[\pm def]$ feature? Following Chomsky (1995, 2000), features may be classified as either interpretable or uninterpretable. Uninterpretable features must be eliminated by the computational system, which makes them invisible at the LF interface. This is achieved by a process of FEATURE CHECKING, which leads to deletion of uninterpretable features.

The exact details of the checking mechanism have undergone several revisions since the early stages of the Minimalist Program. One idea that has survived through all these revisions, though, is that a checking relation involves two features: an uninterpretable feature, which has to be checked, and a matching interpretable one. Let us abstract away from some of the difficulties posed by DP-internal agreement in general, such as the fact that DP-internal agreement seems to involve a single interpretable feature that may check any number of uninterpretable features (as opposed, for instance, to subject-verb agreement, which is a one-to-one relation).¹³ What matters is simply that agreement is the morphological realization of feature checking. In what follows, I will assume the operation Agree of Chomsky (2000).

Within this framework, a simple and natural explanation emerges for the generalization in (28): if the $[\pm def]$ feature on the modifier is uninterpretable (as is the case when the modifier is property-denoting), it must be checked by the interpretable $[\pm def]$ feature on the nominal head, giving rise to overt agreement. If, on the other hand, the modifier is referential or quantificational, the $[\pm def]$ feature it carries is interpretable, and therefore does not

need to be checked. Thus, assuming that agreement is a reflection of feature checking, no special syntactic machinery needs to be stipulated in order to account for the correlation between denoting a property and obligatory definiteness agreement.¹⁴

Note that this account essentially relies on the assumption that definiteness in Hebrew is a grammatical feature that is visible to the computational system, and not simply a semantic notion. This assumption is not new; see for instance Borer (1999) and Danon (2001, 2002), where it is claimed that definiteness in Hebrew is a feature that is base-generated on nouns, rather than the realization of heads belonging to the category D. This allows ‘redundant’ marking of definiteness to be systematically eliminated by the syntax such that it is not visible to the semantic component. The same process is not possible in languages like English, where definiteness is simply a semantic notion, not grammaticalized in the same way that features such as person and number are; hence, definiteness agreement in such languages is not available to eliminate uninterpretable occurrences of definite articles. The syntax of such languages may still require ‘expletive’ articles as heads of certain classes of DPs where an article is not interpreted, as in the English counterparts of example (7):

(29) The man without a shirt is my brother.

The indefinite article on *a shirt* does not give rise to an existential reading, and it might be required simply because English disallows bare singulars with no article. Unlike the situation in Hebrew, the choice of article in such cases is not dependent on the definiteness value of any other DP, and the (lack of) interpretation of the article is determined at the syntax-semantics interface.

5 Definiteness spreading

One technical problem raised by the analysis proposed in the previous section has to do with the structural relation between the PP-internal DP and the N head. In the system proposed in Chomsky (2000), the operation Agree involves a *probe* bearing an uninterpretable feature, and a *goal* bearing a matching interpretable feature.¹⁵ Crucially, for the Agree operation to be possible, the probe must c-command the goal. Note, now, that in the case of definiteness agreement with PPs, the DP bearing the uninterpretable feature does not c-command the noun. The problem is that the PP blocks the required c-command relation, regardless of the position of the modifier as a whole relative to the noun.¹⁶

This problem would not arise, however, if definiteness marking internal to the PP somehow ‘percolated’ up to the PP level; in that case, it could be argued that the PP, rather than the DP, is the probe. In this section, I will

show that this is indeed the case. The main empirical motivation for such definiteness ‘percolation’, or spreading, is that PPs in Hebrew show a striking similarity to Construct-State Nominals (CSNs), a genitival construction in which definiteness spreading is a widely attested phenomenon.

5.1 PPs and the construct state

Construct-State Nominals consist of a head noun followed by an obligatory genitive DP. The head of the CSNs is morpho-phonologically distinct from the free form of the noun, and may never appear in isolation. Example (30a) illustrates a simple CSN, contrasted with the free nominal in (30b):

- (30) a. galgaley *(ha-mexonit)
wheels the-car
‘the wheels of the car’
b. galgalim (šel ha-mexonit)
wheels of the-car
‘wheels (of the car)’

A well-known property of Semitic CSNs is often referred to as DEFINITENESS SPREADING (DS): the definiteness value of the entire nominal is determined by the definiteness value of the embedded genitive.¹⁷ DS is reflected not only in the interpretation of the CSN, but also in the definiteness value of adjectives modifying the head of the CSN.¹⁸ Furthermore, definiteness can also be identified by the presence of the object marker *et*, which is obligatory in front of definite objects and banned otherwise.

Using these two tests, it is clear that in CSNs, the definiteness value of the embedded genitive DP determines the definiteness value of the embedding DP as well. For instance, the indefinite genitive *tmunot* (‘pictures’) in (31a) renders the entire CSN indefinite, whereas in (31b), definiteness marking in *ha-tmunot* spreads to the entire object, forcing the use of a definite adjective and the object marker *et*:

- (31) a. maca‘ti albom tmunot yašan.
found.1SG album(SG.MS) pictures(PL.FM) old(SG.MS)
‘I found an old picture album.’
b. maca‘ti et albom ha-tmunot
found.1SG OM album(SG.MS) the-pictures(PL.FM)
ha-yašan.
the-old(SG.MS)
‘I found the old picture album.’

The construct state has often been noted to be a cross-categorial construction. For instance, as discussed in Borer (1999), Fassi Fehri (1999), Hazout (2000) and Siloni (2002), Hebrew and other Semitic languages also have an *adjectival* construct state, where the head of the CS is an adjective rather than a noun. In addition to the morphophonological similarities it bears to nominal CS, the adjectival CS also displays definiteness spreading. This can be seen, for instance, by looking at adjectival CSs that get a superlative interpretation, as in (32). As noted by Fassi Fehri (1999), superlative constructs have the same distribution as noun phrases; in particular, they may serve as arguments, and thus, we may test for definiteness of such constructs by placing them in the direct object position. As (32) shows, the object marker *et* is required in front of an adjectival CS that has an embedded definite DP. This shows that the adjectival construct shares the definiteness value of its embedded DP.

- (32) dan makir *(et) gdol-ey ha-mumxim.
 Dan knows OM big-PL.CS the-experts
 ‘Dan knows the greatest experts.’

Similarly, various numerals and quantifiers may serve as heads of a CS, and DS is observed here as well (see Danon 2001 and references cited there):

- (33) ha-mištara acra *(et) šlošet/kol ha-xašudim.
 the-police arrested OM three/all the-suspects
 ‘The police arrested the three suspects/all the suspects.’

In light of these facts, it is clear that DS is not a characteristic of CS *nominals*, but of CS in general, regardless of the category of the head. Thus, if Semitic PPs can be shown to be CSs, DS could be the key to solving the c-command problem: the PP shares the same $[\pm def]$ specification as the DP that it dominates, and it is this feature on the PP that serves as the probe for the interpretable feature on N.¹⁹ Indeed, it has been noted by various authors that PPs in Semitic languages bear a significant morphosyntactic resemblance to CSNs. Siloni (2002) notes that in Standard Arabic, the nominal complement of a preposition bears the same genitive case morphology as the embedded nominal in a CSN. Furthermore, she notes that prepositions in Semitic allow pronominal complements only in the form of suffixal clitics, just like heads of nominal constructs. Danon (2001, 2002) further shows that morphologically, the clitics on prepositions are indistinguishable from those on nominal heads of constructs. These facts strongly support an analysis of PPs in Semitic languages as another instance of the cross-categorial CS (see also Botwinik-Rotem and Terzi 2008).^{20 21}

The definiteness agreement facts involving PPs can now be seen as further evidence for the construct-state nature of Hebrew PPs. As in nominal and adjectival constructs, definiteness marked on the nominal embedded in a PP ‘spreads’ to the embedding phrase.²² In the remainder of this section, I discuss some issues related to the exact mechanism involved in DS.

5.2 DS and the interpretability of $[\pm def]$

In the previous section I proposed that the PP-dominated DP agrees in definiteness with the modified head only indirectly — namely, that it is the PP itself which serves as the probe in the Agree operation. But in order for this analysis to work, we must assume that checking the $[\pm def]$ feature on the PP eliminates the same feature from the DP as well. The question is what is the exact nature of DS that makes this possible.

Many previous analyses of DS are based on some sort of agreement mechanism. For instance, Siloni (1997) proposes that the head of the CS and the embedded genitive enter into an agreement relation in a spec-head configuration, thus checking genitive case and definiteness features; a similar analysis is also proposed by Longobardi (1996). However, one obvious problem for this approach involves the interpretability of the definiteness feature. At least one of the features involved in a checking relation (via Agree) should be uninterpretable; in DS, on the other hand, it has often been claimed that definiteness marking in the embedded DP determines the interpretation of both the embedded and the embedding DPs. If so, it seems that checking cannot be the mechanism involved here.

However, the facts regarding the interpretation of the $[\pm def]$ feature in a CS are actually not as simple as they are often assumed to be. As discussed in detail in Danon (2001) and Fassi Fehri (1999), a CS with a definite embedded DP is *not* always interpreted as definite.²³ In the following example, for instance, the definite-marked CS may be used as a predicate without entailing uniqueness:

- (34) dan hu yelid ha-ir.
 Dan is native the-city
 ‘Dan is a native of the city.’

Perhaps more surprising is the fact that even the embedded DP in a definite-marked CS (i.e., the DP carrying the definite article) is not always interpreted as definite. This is illustrated in the following examples:

- (35) a. ha-mas ha-ze yifga be-roxšey ha-diroṭ
 the-tax the-this hurt.FUT in buyers the-apartments
 ha-yešanot.
 the-old

- ‘This tax will hurt the buyers of old apartments.’
- b. megadley ha-agvanyot šovtim.
growers the-tomatoes striking
‘The tomato growers are striking.’

Similarly, as noted in Winter (2005), the adjectival CS also displays instances of definite articles that are not interpreted on the noun they attach to. This is evident with constructs involving inalienable possession (see Siloni 2002), as illustrated in the following examples:²⁴

- (36) a. pagašti et ha-iš adom ha-panim.
met.1SG OM the-man red the-face
‘I met the red-faced man.’
- b. ani sone et ha-anašim xasrey ha-buša ha-ele.
I hate OM the-people lacking the-shame the-these
‘I hate these shameless people.’

In the adjectival CS in (36a) (from Winter 2005), the definite article on *panim* is not motivated semantically, as the sentence is felicitous in a context where there are many faces; the article here is triggered only by agreement with the noun *iš* (Borer 1999). Similarly, in (36b), the embedded noun *buša* carries the definite article, yet the interpretation is that there is no shame; thus, it is not shame that is interpreted as definite (which would entail its existence), but rather the entire DP for which the adjectival CS is a modifier. In other words, in these examples the definiteness feature is not interpreted within the CS at all.

Given this, the conclusion is that in a [+*def*] CS, where, due to definiteness spreading, both the embedded DP and the CS as a whole are syntactically definite, there is no simple generalization regarding how the [+*def*] feature is interpreted. In some cases, the definiteness feature is interpreted only on the embedded DP; sometimes, on the embedding CS; sometimes, on both; and sometimes, on neither. The factors affecting the choice among these options seem to involve aspects of the lexical semantics of the head of the CS and the relation expressed by the CS, which is known to allow a great degree of flexibility (Heller 2002, Dobrovie-Sorin 2003).²⁵ This poses a serious problem for any attempt to derive DS via some sort of feature checking mechanism that makes use of the Agree operation of Chomsky (2000), as this operation requires the probe to bear an uninterpretable feature and to c-command the goal.

I will not try to propose a fully developed alternative mechanism for DS. Let us assume, however, that ‘definiteness spreading’ is, in some sense, definiteness *sharing*: the [$\pm def$] feature marked on the embedded DP of a

CS not only *determines* the $[\pm def]$ value of the entire CS, but is the *same* grammatical entity. By this I mean that checking an uninterpretable $[\pm def]$ feature of the entire CS deletes this feature from both levels of the CS, thus making even the feature on the embedded DP invisible at the LF interface.

If this is true, we have the following two options for definiteness in a CS:

Uninterpretable $[\pm def]$ feature: An uninterpretable feature is obligatorily checked, and is not interpreted on any level of the CS. This is the case in property-denoting PP modifiers, as well as in adjectival CS modifiers of the kind shown in (36).

Interpretable $[\pm def]$ feature: An interpretable feature does not need to be checked, and is interpreted on some level of the CS; the exact manner of interpretation is determined by factors related to the lexical semantics of the heads involved and the particular relation expressed by the genitive structure.

This contrasts with an agreement-based analysis of DS, in which there are two $[\pm def]$ features in the CS, at least one of which is uninterpretable (in order to allow for CS-internal Agree to take place).

If this analysis is correct, we now have a solution to the structural puzzle presented at the beginning of this section. Since a PP, which I now assume to be a CS, is subject to DS, it shares a single $[\pm def]$ feature with its embedded DP. The definiteness feature marked on the DP can therefore be checked, despite the fact that the DP itself does not c-command the noun that serves as the goal in the Agree operation, because the probe of the Agree relation is not the DP but the PP, which could indeed c-command the modified noun.

6 Conclusion

I have shown that PP modifiers display partial definiteness agreement with the modified noun, where the need for agreement correlates with the kind of interpretation that the DP complement of P receives. This gives rise to some surprising patterns, such as obligatory definiteness marking on property-denoting noun phrases (in case the modified noun is definite). I have proposed an account based on the Minimalist assumption that uninterpretable features must enter an agreement relation, combined with the hypothesis that the definiteness feature on a property-denoting phrase is uninterpretable.

Definiteness marking within a PP modifier has been shown to behave syntactically as if marked higher than its surface position. The key to explaining this phenomenon is the similarity between PPs and construct state nominals, a construction known to give rise to a process of definiteness spreading. I have argued that definiteness spreading should be analyzed as involving a

single feature with syntactic realizations on two distinct projections, rather than as an agreement phenomenon involving two distinct syntactic entities. The exact mechanism of such feature spreading, as well as its applicability to other constructions, remain open questions at this point.

Notes

¹At this point, and throughout most of this paper, I will abstract away from the exact details of the internal structure of Hebrew PPs, and refer informally to the traditional analysis in which P selects a nominal complement. As the discussion in section 5 will show, however, there is reason to suspect that the situation is more complex than this simplistic view might suggest.

²In particular, I will consider only definiteness marking by means of the definite article.

³The construct state is discussed in detail in section 5.

⁴A definite would of course be felicitous in (8) in a context where it is used to refer to a unique contextually salient shirt.

⁵In DPs containing both a numeral and a definite article, the order in Hebrew is: numeral–article–N. This is usually analyzed as involving a construct state headed by the numeral; see §5.

⁶The classification of the PPs in (16) as arguments is based mostly on their head-dependence, i.e. on the fact that they are lexically licensed by a limited class of nouns. Providing a systematic distinction between arguments and modifiers in the nominal domain is a notoriously problematic issue (Partee and Borschev 2003). For the purposes of the present discussion, a rather informal classification would suffice; the analysis to be proposed below does not make any crucial assumptions regarding the argument-modifier distinction.

⁷An apparent complication, pointed out to me by Irena Botwinik-Rotem, is that examples similar to (17a) but with a bare *plural* are significantly better:

- (37) a. ? ha-sratim al rakdanim me‘anyenim oti.
the-movies about dancers interest me
‘The movies about dancers interest me.’
b. ? ha-bdixot al blondiniyot lo hayu macxikot.
the-jokes about blondes NEG were funny
‘The jokes about blondes weren’t funny.’

Since bare plurals can be used to refer to kinds (Chierchia 1998), the examples above could be argued to involve referential PPs. As such, the fact that they are significantly better than comparable examples in which the PP dominates a bare singular, which may not be used to name a kind, falls under the generalization to be developed in this section.

⁸Since the clearest instances of property-denoting nominals are bare nouns, it might be the case that the semantic generalization are reducible to a syntactic one. For instance, it might be postulated that property-denoting nominals are not full DPs, along the lines suggested in Danon (2006) or Winter (2005). This possibility will not be pursued in this paper.

⁹See Fassi Fehri (1999) for a similar analysis of definiteness on APs in Arabic.

¹⁰For most speakers, a postverbal subject would be much more acceptable than a preverbal one for the embedded clause in (25a). As word order often correlates with information structure and referentiality, this is expected under the approach developed here.

¹¹There might be some variability here, both between speakers and between registers. The use of the postnominal *exad* ('one') as a kind of indefinite article/specificity marker is often considered to belong to an informal register, and is not always used in high register Hebrew. It is thus expected that some speakers would accept bare singulars even in referential uses. This is one factor that contributes to the variability in judgments on whether definiteness agreement with PPs is an obligatory operation or an optional one.

¹²In languages like English, property-denoting noun phrases (such as complements of opaque verbs) contain an indefinite article. This should probably be seen as an 'expletive article' (Longobardi 1994) that is not interpreted as a semantic determiner.

¹³Some authors use the term CONCORD rather than agreement for DP-internal feature matching; see, for instance, Carstens (2000) for a detailed analysis of the properties of this process.

¹⁴One stipulation that must be made is that *every* nominal is specified for a morphosyntactic $[\pm def]$ value, as proposed in Borer (1999); otherwise, the analysis proposed above would predict the possibility of property-denoting nominals that do not carry a $[\pm def]$ feature, and therefore do not need to enter an agreement relation. An alternative that might be considered is that property-denoting nominals may *optionally* carry an uninterpretable $[+def]$ feature, which would then be deleted by agreement; this would predict that all definiteness agreement with PPs should be optional – as, indeed, the judgments of some native speakers seem to suggest. Given the variability in judgments, I leave the choice between these two options open.

¹⁵Furthermore, it is often assumed that the probe has to be a functional head; this does not seem to be the case here, where the probe is apparently a noun phrase. Given that the theory in Chomsky (2000) is focused on a relatively small set of agreement relations at the clause level, it is not clear whether this is indeed a general constraint on feature checking that applies to DP-internal concord as well.

¹⁶It has often been noted that certain PPs seem to be 'transparent' with respect to binding, in the sense that a DP complement of P behaves as if it c-commands any XP c-commanded by the PP (see for instance Botwinik-Rotem 2004: 126). The problem discussed in this paper, however, seems to apply even to prepositions that are not transparent with respect to binding; furthermore, in section 5.2 I will show that the same is true for certain adjectival constructions, and therefore I believe that a different account is in place for these two cases of apparent violations of c-command requirements.

¹⁷This should not be confused with another use of the term 'Definiteness Spreading', as in Sichel (2002), where the term refers to the phenomenon that I refer to as definiteness agreement, or to similar phenomena in languages such as Greek, where multiple definite articles are used when a noun is modified by attributive adjectives.

¹⁸At this point I focus only on the *syntactic* manifestations of DS. The semantic aspects are discussed in section 5.2.

¹⁹Some technical difficulties with this analysis are addressed in section 5.2.

²⁰Note also that from a diachronic perspective, many prepositions in Hebrew are derived from nominal heads of CS. For instance, *lifney* ('before') is historically derived from *lepney* ('to face'); *pney* is the bound form of the noun *panim* ('face'), a form that can only be used as a head of CSNs (Botwinik-Rotem 2004: 23).

²¹An analysis of PPs as CSs raises a lot of questions about the internal structure of PPs, such as whether the same head movement analysis that is often assumed for nominal CS (Ritter 1991) applies to PPs as well. I will leave these questions open for the time being.

²²Some prepositions undergo a morpho-phonological merger with an adjacent definite article; for instance, *be + ha-* ('in' + 'the') becomes *ba*. In the context of definiteness

spreading, this might be seen as a phonological realization of definiteness at the PP level. Note, however, that the preposition undergoes this change only when it immediately precedes the definite article, and does not change when it precedes, for instance, proper names or other definite DPs that don't start with the article. Therefore, I believe that we should adopt the traditional view of this as a phonological process, rather than interpret it as direct evidence for definiteness spreading to the PP level.

²³This should not be confused with the fact that syntactically it is definite, thus triggering definiteness agreement with modifiers and the use of the object marker *et*; see Danon (2001).

²⁴Note that these examples also show that the problem of having an uninterpretable [$\pm def$] feature marked on a constituent that does not c-command the matching interpretable feature is not limited to PP modifiers. The adjectival CS modifiers illustrated here obligatorily agree in definiteness with the modified noun; yet it is clear that the embedded DP of the CS does not c-command the modified N. Thus, even if some alternative account can be found for definiteness agreement with PPs, it is empirically clear that the c-command problem is a general property of CS modifiers.

²⁵For instance, when a membership noun such as *xaver* ('member'), *tošav* ('resident'), *oved* ('employee') etc head a definite-marked CSN, the CSN is not necessarily interpreted as definite. In contrast, in a CSN expressing a material composition relation, definiteness is interpreted only at the CSN level: *argaz ha-karton* ('the cardboard box'), *sifley ha-xarsima* ('the china cups') etc.

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