1

The definiteness feature at the syntax-semantics interface

GABI DANON

1.1 Introduction

Cross-linguistically, genitive constructions in which embedding does not make use of a prepositional element have often been noted to display some kind of sharing of definiteness value between the embedded nominal and the larger one within which it is embedded (Longobardi 1996). This is illustrated below with examples from English and Hebrew. In both examples, not only the embedded phrase, but also the DP as a whole is interpreted as definite, despite lacking its own independent definiteness marker:

(**1**) a. John's shirt is wet.

    b. xulcat ha-yeled retuva.
        shirt the-boy wet

        'The boy's shirt is wet.'

Despite the similarity in interpretation between genitives in these two languages in examples like (1), it has often been noted that there are also systematic differences between Semitic 'definiteness spreading' and the kind of phenomenon observed in English and many other languages (Borer 1999, Dobrovie-Sorin 2003, Alexiadou 2005). In section 1.4 I argue, following Alexiadou (2005), that the mechanism that gives rise to definiteness spreading in Hebrew is different from the one used in English and most other languages. Specifically, I argue that Hebrew definiteness spreading is a syntactic phenomenon involving sharing a morphosyntactic definiteness feature, while 'definiteness spreading' in other languages is merely a side-effect of the semantic composition of a noun phrase, which makes no reference to definiteness as a feature. Furthermore, I argue that a definiteness feature of the kind that makes the Hebrew derivation possible is not available in most languages. This will thus serve as an illustration of the methodological significance of properly characterizing the inventory of morphosyntactic features in a given language, as different feature inventories may give rise to very different syntactic and semantic derivations.

    Empirically, the main focus of this chapter is the range of interpretations found in Hebrew construct state nominals. Unlike what has often been claimed in the literature on Semitic construct state nominals, I show in section 1.3 that the

syntax of such nominals systematically allows several interpretation patterns for the same kind of structure. This, I claim, can easily be analysed as the result of a feature sharing operation, in which the syntactic representation is underspecified with respect to the exact locus of interpretation of a shared feature, which is determined at the syntax-semantics interface.

Following Danon (2001), the discussion in this chapter relies on making a clear distinction between a morphosyntactic definiteness feature and semantic definiteness; this distinction is introduced in section 1.2. One of the central goals of this chapter is to spell out more precisely the properties of the formal encoding of definiteness that allow the morphosyntactic definiteness feature to be properly interpreted at the syntax-semantics interface despite the fact that there is no one-to-one correspondence between nominals marked as [+def] and those that are semantically definite. Specifically, in section 1.5 I consider several asymmetries between definites and indefinites which favour an asymmetrical analysis of the [def] feature rather than the more traditional view of a symmetrical [±def] feature.

1.2   The morphosyntactic definiteness feature

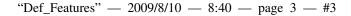### 1.2.1   *The definiteness feature in Hebrew*

Languages vary greatly in how they mark definiteness: among the mechanisms employed to distinguish definite noun phrases from indefinite ones are articles (both definite and indefinite, or only one of these contrasting with lack of an article), case marking, and word order.

In addition to semantically-motivated definiteness marking, some languages also employ morphological definiteness marking in places where it has no immediate semantic motivation. Like other semantically-motivated classifications, such as number and gender, grammaticalization of definiteness may give rise to occurrences of morphological realizations of definiteness that are triggered syntactically, via agreement. This is the case in Hebrew (as well as in Arabic), where attributive adjectives obligatorily agree in definiteness with the noun that they modify:[1]

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[1] An alternative view is that multiple realizations of definiteness within the same noun phrase are not determined by agreement with the noun, but are all realizations of the single syntactic or semantic assignment of definiteness to the noun phrase as a whole; see for instance Corbett (2006: 133–135) and Kibort (this volume). Note that under current Minimalist assumptions (and possibly under the assumptions of other grammatical frameworks), there is no formal distinction between these two views, which would both be analysed using the same formal device. Furthermore, even if we adopt the agreement approach, we should note that not in all languages where articles are doubled in the presence of adjectives is this an instance of agreement; see, for instance, Alexiadou (2005),

(**2**) a. ha-sefer   *(ha-)adom   ne'elam.
             the-book   the-red   disappeared

  'The red book disappeared.'

  b. sefer   (*ha-)adom   (exad)   ne'elam.
      book   (the-)red   (one)   disappeared

  'A red book disappeared.'

Following Borer (1999), Wintner (2000), Danon (2001), and Falk (2006), I assume therefore that nouns and adjectives in Hebrew carry a morphosyntactic [def] feature, such that the distribution of definite articles on adjectives illustrated in (2) follows from the same kind of agreement mechanism as the one behind the more familiar gender and number agreement; alternatively, if we adopt the view in Corbett (2006), the distribution of definite articles on adjectives follows from the same principles as those which determine multiple realizations of case within the same noun phrase in many languages (which, based on the theoretical framework assumed, might be different from the agreement found with gender and number features). Either way, the realization of definiteness on adjectives in Hebrew is determined by the syntactic structure, which is, by definition, the characteristic property of morphosyntactic features.[2]

As is the case with any other morphosyntactic feature, some of its occurrences – specifically, the ones triggered by agreement – are semantically vacuous. Under an architecture of grammar in which the semantic component interprets representations formed by the syntax, there might be at least two alternative strategies by which the semantic component would 'know' which occurrence of a definiteness feature should be interpreted:

1. Based on the lexical category of the marked node: definiteness on adjectives is not interpreted; definiteness on nouns is interpreted.

2. Based on independent syntactic encoding: definiteness on adjectives may be marked as interpretable or uninterpreteable by the syntax, and/or 'deleted' by the syntactic component prior to transfer to the semantic component.

The theoretical issue involved in choosing between these two approaches is to what extent the syntactic representation determines the interpretability of

who argues that article doubling in front of adjectives in Modern Greek is not an instance of agreement.

[2] Sichel (2002) argues against viewing definiteness on adjectives in Hebrew as agreement, on the basis of the fact that the article in complex APs is not necessarily located on the adjective itself, but rather could precede the entire AP. This is true only for colloquial Hebrew, which might suggest that the status of the article is currently undergoing some kind of reanalysis. In any case, I believe that the fact that there is an obligatory doubling of the definite article with adjectival modifiers can best be accounted for as agreement.

features. According to the first approach, the syntax is only responsible for 'spreading' features from node to node, but not directly for determining their interpretation; according to the second approach, which is essentially the mainstream view in current Minimalism (Chomsky 2000, 2001), the syntax also actively determines the locus of feature interpretation. We will return to this issue in section 1.4, where I will argue in favour of the former approach.

Assuming that Hebrew has a morphosyntactic definiteness feature, another important question is to what extent the distribution of this feature on noun phrases overlaps with the semantic notion of definiteness. This is not a trivial question, as even a quick comparison with other morphosyntactic features can suggest. For instance, it has long been noticed that morphosyntactic number marking does not always match semantic number. Some familiar examples are plural pronouns used to refer to singular individuals, as in French *vous* and English 'singular *they*' (see for instance Sauerland *et al.* 2005, Corbett 2006, and references cited there); or the cross-linguistically common use of singular nouns with plural numerals, illustrated below for Hungarian (from Ortmann 2000):

(**3**) (Az) öt nagynéni sört isz-ik /*isz-nak.
(the) five aunt beer drink-3SG /drink-3PL

'(The) five aunts are drinking beer.'

As noted by Danon (2001), similar mismatches can be found between morphosyntactic and semantic definiteness in Hebrew. For instance, demonstrative adjectives, like other adjectives, may be used with or without a definite article; in the latter case, the noun phrase is semantically definite but morphosyntactically indefinite, as witnessed by the lack of definiteness marking on additional adjectives in the same noun phrase:[3]

(**4**) sefer (*ha-)xašuv ze pursam be 1875.
book (the-)important this published in 1875
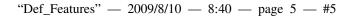
'This important book was published in 1875.'

Similarly, semantically definite determiners such as *oto/ota* ('that', 'the same') do not trigger definiteness agreement, and hence do not give rise to morphosyntactically definite noun phrases (see Siloni 2003 and Alexiadou 2005, who discuss similar examples without distinguishing the two notions of definiteness):

(**5**) ota tmuna (*ha-)mefursemet
same picture (the-)famous

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[3] An additional test often used to diagnose formal definiteness in Hebrew is the use of the object marker *et*, which is allowed only in front of formally definite objects. Since one of the claims of this chapter is that morphosyntactic features should be identified based on their relevance to indisputable agreement phenomena, I will not rely on the distribution of *et*; it should be noted, however, that with very few and highly restricted exceptions, the use of *et* overlaps with definiteness agreement on adjectives.

'the same famous picture'

Overall, the generalization for Hebrew is that only the following kinds of noun phrase trigger a definite inflection on adjectives (see Danon 2001):

- noun phrases where the noun is marked by the definite article *ha-*
- noun phrases where the noun carries a pronominal possessive suffix
- proper names
- construct state nominals in which the embedded nominal is morphosyntactically definite; this will be discussed in detail in section 1.3

Clearly, this differs from semantic characterizations of definiteness, which would take into account a broader range of determiners and not merely the definite article. To avoid confusion, I will restrict the use of the notation [±def] to *morphosyntactic* definiteness in the sense defined above.

One way to address this mismatch between formal definiteness marking and semantic interpretation is to assume that morphosyntactic definiteness is only one of the factors used by the semantic component in determining the (semantic) definiteness of a noun phrase; other factors, such as the lexical semantics of other elements in the noun phrase, may override the morphosyntactic encoding. In section 1.5 we will see that with a careful choice of values for the [def] feature we can avoid the need to assume that the formal encoding and the lexical semantics can provide contradictory information; instead, it is possible to show that these two sources of information complement each other.

In what follows, I will therefore make the following assumptions:

- Hebrew has a morphosyntactic definiteness feature which is part of the syntactic representation.
- Although this morphosyntactic feature plays a central role in constraining the semantic definiteness value of a noun phrase, the two notions of definiteness are distinct.

The question is then how exactly morphosyntactic definiteness is handled by the syntax-semantic interface. In the rest of this chapter I attempt to provide a partial answer to this question. I focus on two issues in particular:

1. definiteness spreading in genitival constructions

2. definite/indefinite asymmetries and the formal representation of the definiteness feature

But before proceeding to introduce the relevant data, I would like to briefly discuss the issue of parametric variation in the availability of the [def] feature.

1.2.2   *A definiteness feature in other languages?*

While there is clear evidence, in the form of agreement, for the presence of a definiteness feature in the *syntax* of Hebrew, in many other languages no such evidence can be found. Taking English as an example, we should note that while this language has definite and indefinite articles, there are no definiteness agreement phenomena, nor any other indisputable *syntactic* phenomena involving definiteness; various familiar 'definiteness effects' might in fact be semantic phenomena, or they may involve only an indirect relation to the formal encoding of definiteness. The question is thus whether we should assume a [±def] feature in the syntax for such a language.

In essence, this boils down to the question of what is meant by the term 'feature'. Under the broader use of this term, a feature is simply a formal way of partitioning a syntactic category (such as NP) into sub-categories; the information leading to this partitioning may be of different kinds, and the partitioning itself may be motivated by requirements of any component of language, as well as by extra-linguistic systems of use, such as computational applications. Under this broader view, there is obviously no reason not to assume that English noun phrases carry a definiteness feature, whose value is determined (in most cases) by the choice of determiner.

A more restricted notion of feature is that of a *morphosyntactic* feature, which is a partitioning of a syntactic category into subclasses that are marked (at least partially) morphologically and that are relevant to syntax, most notably by being involved in agreement operations; see for instance Corbett (2006), Zeijlstra (2008), and Kibort (this volume). For many languages, this covers features such as number, person and gender, which are all involved in overt agreement. Under a slightly broader view, tense and aspect also belong to this class of features; even though most languages do not show overt tense/aspect agreement, it is usually assumed within the Minimalist framework (Chomsky 1995, 2000) that abstract agreement does apply to these features.

Restricting the discussion to morphosyntactic features, there seems to be no reason to assume that a language like English has morphosyntactic definiteness, at least not in the stricter sense that gives rise to overt agreement. In what follows, I will assume that the availability of a morphosyntactic definiteness feature is a parameter that distinguishes Hebrew and Arabic on the one hand, from most of the other languages that have definiteness marking on the other hand. I will argue that this distinction gives rise to different patterns of definiteness spreading in complex nominals.

1.3   Definiteness spreading in Hebrew

As noted by numerous authors and illustrated in (1b), the definiteness value of a Hebrew construct state nominal (CSN) is dependent on the definiteness value of its embedded genitive.[4] In this section I will elaborate on the claim made in Danon (2001) that this phenomenon, which I refer to as DEFINITENESS SPREAD-ING (DS), is spreading of *morphosyntactic* definiteness; I will discuss data that shows that this syntactic process gives rise to several different semantic patterns in Hebrew CSNs.

1.3.1   *Background: Semitic construct state nominals*

Semitic construct state nominals (CSNs) have been the focus of a large body of research over the last 20 years, with various authors addressing, among other things, issues of word order, hierarchical structure, the nature of nominalizations, the syntax-prosody interface, and the syntax of definiteness and articles. In this section I briefly review the properties of CSNs that are relevant to the discussion that follows.

A CSN is a complex nominal consisting of, at least, a phonologically reduced head noun immediately followed by an embedded genitive phrase, as illustrated in (6) below:[5]

(**6**) [$_{DP1}$ tmunat *([$_{DP2}$ ha-nasi   ])]
          picture   the-president

     'the picture of the president'

For simplicity, I will refer in the discussion below to the two levels of a CSN as DP1 and DP2, as in (6).[6]

Hebrew has a prefixal definite article, *ha-*, and no indefinite article. Unlike other nominals, a CSN may not have an article attached to its nominal head; attaching the definite article to the head of a CSN leads to ungrammaticality, as in (7a). Free nominals containing the prepositional element *šel*, in contrast, do allow direct attachment of an article to their head, as in (7b):

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[4] The genitive can be a possessor, or may stand in a wide variety of other semantic relations with the head of the CSN.

[5] The head noun of a CSN is derived from the base form of the noun by a process of morphophonological reduction; the output of this process is not always distinguishable from the free form of the noun, but even when it is not, identifying a nominal as a CSN is still possible due to the construct state's unique syntactic characteristics.

[6] Throughout the discussion I refer to both levels of the CSN as DPs, keeping in mind that it might be the case that at least in some CSNs, the DP layer could be missing from one or both levels; see for instance Borer (1999, 2009), Dobrovie-Sorin (2003), and Danon (2006, 2008).

(**7**) a. *ha-tmunat   ha-nasi
     the-picture   the-president

     'the picture of the-president'

   b. ha-tmuna   šel   ha-nasi
     the-picture   of   the-president

     'the picture of the president'

The only way of specifying the definiteness of a CSN is via definiteness spreading (DS): the definiteness value of the CSN (DP1) is determined by the definiteness value of the embedded phrase (DP2). One of the central issues in previous research has been trying to derive the special properties of the CSN that have to do with definiteness from other properties of the CSN (see for instance Siloni 2003), or vice versa (Borer 1999); for a detailed overview of the literature on DS, see Danon (2008). In this chapter, I am not interested in relating DS to the other properties of the CSN, but focus instead on providing a thorough description of the more intricate and less familiar aspects of DS and their implications for the notion of 'definiteness feature', which has often been used in a somewhat vague sense that should be more clearly defined.

1.3.2 *Establishing morphosyntactic feature spreading*

The first thing that should be established is that definiteness spreading in Hebrew indeed involves the morphosyntactic definiteness feature and is not merely a semantic issue. In other words, regardless of the semantics of CSNs, we should verify that adjective agreement supports the claim that both levels of a CSN have the same definiteness value.

    This has long been known to be the case. As illustrated in the following examples, in a CSN with an embedded definite, an attributive adjective modifying any of the two levels must be definite, as in (8a); and similarly, only indefinite adjectives can modify a CSN with an embedded indefinite, as in (8b):

(**8**) a. tmunat   ha-yeled   *(ha-)gavoha   *(ha-)memusgeret
     picture(F)   the-boy(M)   (the-)tall.M   (the-)framed.F

     'the framed picture of the tall boy'

   b. tmunat   yeled   (*ha-)gavoha   (*ha-)memusgeret
     picture(F)   boy(M)   (the-)tall.M   (the-)framed.F

     'a framed picture of a tall boy'

As was shown in (5) for simple nominals, adding a semantically-definite determiner to a CSN with an embedded indefinite is irrelevant with respect to definiteness agreement – only an indefinite adjective is allowed, despite semantic definiteness:

(**9**) ota   tmunat   praxim   (*ha-)mefursemet
          same.F.SG   picture(F).SG   flowers(M).PL   (the-)famous.F.SG

      'the same famous picture of flowers'

It is thus clear that DS involves, at least, 'spreading' of the morphosyntactic definiteness feature of the embedded nominal to the CSN as a whole. In the next section I show that this is not true of semantic definiteness, which does not always spread in a CSN.

1.3.3 *Definiteness spreading and interpretation*

Unlike what has often been claimed or implicitly assumed, a CSN whose embedded nominal is marked as definite is *not* always interpreted as definite. Furthermore, the embedded nominal itself, the one that carries the definiteness marking, is also not always interpreted as definite. In this section I show that there are four different interpretation patterns that can be found with definite-marked construct states.[7] These are:

1. both the embedded DP (DP2) and the CS as a whole (DP1) interpreted as definite

2. only the embedded DP (DP2) interpreted as definite

3. only the CS as a whole (DP1) interpreted as definite

4. [+def] not interpreted at all within the CS

1.3.3.1 Both the embedded DP and the CS as a whole interpreted as definite: In prototypical 'semantic DS', the morphosyntactic definiteness value matches semantic definiteness, such that both levels of a [+def] CSN are interpreted as definite. Thus, the CSN in (10a) could be paraphrased using the non-CSN in (10b), where both DPs are definite:

(**10**) a. **xulcat   ha-yeled**   nirteva.
          shirt   the-boy   got-wet

      'The boy's shirt got wet.'

     b. ha-xulca   šel   ha-yeled   nirteva.
          the-shirt   of   the-boy   got-wet

      'The boy's shirt got wet.'

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[7] More precisely, there are four possibilities for a non-recursive CSN, that is one whose embedded nominal is not itself a CSN. The discussion below makes the prediction that the number of interpretation patterns would grow exponentially with the depth of recursive embedding, a prediction which I believe to be correct, even though it is extremely difficult to elicit reliable semantic judgments in cases of multiple embeddings.

This semantic pattern has been taken as the typical case in the vast majority of the literature on Semitic CSNs. However, upon closer inspection it seems that this is only one of several patterns; it is not even clear whether this pattern is statistically the most common one.

1.3.3.2 **Only the embedded DP interpreted as definite:** As noted by several authors, most notably Fassi Fehri (1999), Engelhardt (2000), and Danon (2001, 2002), there are predictable cases where a CSN with a definite embedded DP is not interpreted as definite. In the following examples, there is no presupposition of uniqueness associated with the singular CSNs in (11); furthermore, the plural CSNs in (12) allow weak determiners (contra Siloni 2001), which are usually allowed only with plural *indefinites*:

(**11**) a. dan hu **yelid   ha-ir**.
          Dan is native the-city

      ‘Dan is a native of the city.’

      b. lifney švuʻayim neʻecar   **saxkan ha-kvuca**.
         before two weeks arrested player   the-team

         ‘A player of the team was arrested two weeks ago.’

(**12**) šney/ kama   **yelidey ha-ir/   bogrey   ha-xug   le-balšanut**
        two/   several natives the-city/ graduates the-department to-linguistics

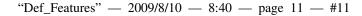   ‘two/several natives of the city/graduates of the linguistics department’

This semantic pattern is systematically found with [+def] CSNs headed by what we may refer to as ‘group nouns’ – nouns that denote members in a group or collective. This means that the lexical semantics of the head noun of a CSN is relevant for the kind of reading (definite or indefinite) assigned to the CSN, which suggests that the interpretability of the definiteness feature on each level of the CSN is not determined by narrow syntax, which has no access to lexical semantic distinctions between classes of nouns.[8]

As noted by Engelhardt (2000), similar facts occur with ‘non-definite’ event-denoting CSNs, which are allowed in environments that disallow definites. This is shown in (13), taken from Engelhardt (2000); (13a) illustrates one environment that is sensitive to definiteness; (13b), then, shows that [+def] event-denoting

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[8] As pointed out to me by Greville Corbett, by the same reasoning we might conclude that agreement is also outside narrow syntax, as agreement is known sometimes to distinguish between group nouns and other nouns, etc. (see for instance Corbett this volume). I believe that this might be true for *some* instances of agreement (so-called ‘semantic agreement’), but not for agreement in general.

CSNs are nevertheless allowed in this environment, unlike simple definite event nominals:[9]

(**13**) a. ruti mevala et   zman-a   be-/*ba-   ktiva.
           ruti spends OM   time-POSS.3SG.F in-/*in.the- writing

           'Ruti spends her time writing.'

       b. ruti mevala et   zman-a   be- **ktivat** **ha-sefer**.
           ruti spends OM   time-POSS.3SG.F in- writing the-book

           'Ruti spends her time writing the book.'

The conclusion at this point is that whether or not a [+def] CSN gets a definite reading depends, among other things, on lexical properties of the head noun. This goes in line with the claim made by Heller (2002) and Dobrovie-Sorin (2003) that semantic definiteness spreading follows from the head noun being interpreted as a function from individuals to individuals; nouns for which this kind of interpretation is not readily available are thus expected to show other semantic patterns.

1.3.3.3 **Only the CS as a whole interpreted as definite:** As observed by Dobrovie-Sorin (2000), even the embedded nominal in a definite-marked CSN, which is the nominal carrying the definite article, is not always interpreted as definite. This is illustrated in (14):

(**14**) a. ha-mas ha-ze   yifga   be- **roxšey** **ha-dirot**.
            the-tax the-this hurt.FUT in   buyers the-apartments

           'This tax will hurt the buyers of apartments.'

       b. **asfan**   **ha-atikot**   **ha-ze**   hu poše'a.
           collector the-antiques the-this is   criminal

           'This antique collector is a criminal.'

       c. **ugat** **ha-tapuxim** hayta me'ula.
           cake the-apples   was   excellent

           'The apple cake was excellent.'

This pattern systematically appears when the embedded nominal is a nonreferential modifier, as in (14c) (see Borer 2009). In many other cases, only pragmatic factors distinguish between this kind of interpretation and the 'double definiteness' reading. Consider for instance the contrast between the following two examples:

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[9] The preposition *be-* ('in') in (13) changes to *ba-* in front of the definite article: *be+ha* ⇒ *ba*. This does not happen in (13b), where the definite article is on the embedded nominal.

(**15**) a. **tmunat   ha-nasi   še- al ha-kir**   hudpesa be- hodu.
           picture   the-president that on the-wall printed in- India

'The president's picture on the wall was printed in India.'

    b. **tmunat   ha-nazir še- al ha-kir**   hudpesa be- hodu.
        picture   the-monk that on the-wall printed in- India

'The monk's picture/the picture of a monk on the wall was printed in India.'

The only difference between (15a) and (15b) is the choice of embedded noun, which leads to a difference in the salience of the two possible readings. In (15a), world knowledge makes the double-definiteness reading the salient one, since most contexts presuppose a single president and hence an indefinite reading for the embedded phrase is quite unlikely. In (15b), on the other hand, no such presupposition exists in typical contexts, and the reading where the embedded nominal is indefinite becomes more salient. It is important to note that this is no more than a preference, and given the right context the opposite pattern could emerge. Once again, this seems to argue against an analysis in which feature interpretability is uniquely determined by the syntax, and favours an analysis in which the syntactic representation is compatible with multiple interpretations, some of which may be filtered out by pragmatic factors.

1.3.3.4   [+def] not interpreted at all within the CS: At first, the possibility of having a [+def] CS in which definiteness is not interpreted at all might seem highly implausible. But in fact, this case is indeed attested, when a construct state serves as a modifier that acquires its definiteness value via agreement with an external node. This is made possible by the fact that a construct state can be headed not only by a noun, but also by an adjective, in which case it has the distribution of an AP (see Borer 1999, Hazout 2000, Siloni 2002). This is illustrated in (16):

(**16**) dan makir et   ha-yalda **arukat   *(ha-)raglayim**.
        Dan knows OM   the-girl   long   the-legs

'Dan knows the girl with long legs.'

The definite article in the adjectival CS (ACS) is an agreement marker: adjectival CS modifiers must agree in definiteness with the modified noun, just like simple adjectival modifiers. The ACS *arukat ha-raglayim* in (16) agrees with the [+def] feature on *ha-yalda*, and hence the article in the adjectival CS is obligatory.

  Given this, it is not surprising that definiteness is not interpreted anywhere within the ACS. This is seen, first, by the fact that the ACS in (16) is semantically equivalent to the relative clause in (17a), in which the noun (*raglayim*) is indefinite.

(**17**) a. dan makir et   ha-yalda še   yeš   la   raglayim arukot.
            Dan knows OM   the-girl   that exists her legs   long

'Dan knows the girl who has long legs.'

b. dan makir et   ha-yalda **švurat *(ha-)regel**.
   Dan knows OM the-girl   broken   the-leg

'Dan knows the girl who has a broken leg.'

Furthermore, an ACS is perfectly acceptable even when the context rules out the possibility of a uniqueness presupposition being associated with the embedded nominal, as in (17b), where the definite-marked *ha-regel* is perfectly felicitous even in a standard context in which every girl has two legs. We thus conclude, following Winter (2005), that definite articles in adjectival CS modifiers may be semantically vacuous.

1.3.3.5 **Summary of the main descriptive generalizations:** We thus have the following generalizations regarding definiteness spreading:

- Morphosyntactic definiteness of the embedded nominal spreads to the entire CS.
- It is not the case that *both* levels in a [+def] CS are always interpreted as definite; a definiteness feature is always interpreted on at least one of the nodes to which it spreads via DS or adjectival agreement, but not necessarily on all these nodes.

At the same time, we should also note that, unless an additional determiner is present, morphosyntactic definiteness of the embedded nominal is a necessary condition for semantic definiteness of the entire CS; hence, we cannot simply dismiss DS as having nothing at all to do with semantics. The theoretical challenge for any analysis of DS is thus to account for the entire range of interpretations and not only for the simple 'double-definiteness' cases. For a detailed discussion of the shortcomings of the various approaches to DS proposed in the literature, see Danon (2008).

1.4 Definiteness spreading cross-linguistically

1.4.1 *Against a unified analysis*

As noted at the beginning of this chapter, phenomena that are superficially similar to Semitic DS can be found in many other languages, such as English (Hazout 1991, Dobrovie-Sorin 2003), Romanian (Dobrovie-Sorin 2003), and Welsh (Sadler 2000). More specifically, it has been noted by Longobardi (1996) that definiteness spreading is typical of preposition-less constructions. A central question is whether these are all instances of the same phenomenon, derived by a single mechanism. Some authors, such as Hazout (1991), Fassi Fehri (1993),

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Longobardi (1996), and Dobrovie-Sorin (2003), have argued for a unitary account of DS in all these languages, while others, most notably Alexiadou (2005), have claimed that DS in Hebrew differs significantly from DS in English and other languages. In this section I will provide additional evidence in favour of Alexiadou's claim, and will make an explicit distinction between two kinds of DS: one that is based on sharing the value of a morphosyntactic definiteness feature, and one in which the compositional semantics of a noun phrase makes no reference to such a feature.[10]

Alexiadou (2005) provides several arguments against attempting to unify Hebrew and English DS. Following Siloni (2003), she claims that there is no DS in Hebrew CSNs containing an embedded indefinite, unlike the case in English:

(**18**) a. ota   tmunat praxim
              that/same picture flowers

              'that picture of flowers'

         b. a man's dog

As the possibility of using a definite determiner like *ota* ('that/same') in (18a) shows, the CSN here can only be claimed to inherit the indefiniteness of its embedded nominal in a weak sense that can be overridden by an overt determiner. The English example in (18b), on the other hand, does not allow any definite determiner.[11]

Similarly, Dobrovie-Sorin (2003) argues that there is no *in*definiteness spread in Hebrew CSNs, which differ semantically from English nominals with indefinite possessors:

(**19**) a. bney melex
              sons king

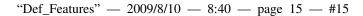   'sons of a king'

         b. a king's sons

While the English phrase in (19b) refers to the entire set of sons of a king (similar to a plural definite like *the sons of a king*), the Hebrew CSN in (19) is a regular indefinite, which is compatible, for instance, with weak determiners. Dobrovie-Sorin thus concludes that indefinite CSNs in Hebrew are substantially different

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[10] Alexiadou (2005) also suggests that what makes DS in Hebrew special is the fact that definiteness in Hebrew is involved in agreement processes. She does not, however, argue for a lack of a definiteness feature in languages other than Hebrew; on the contrary, she refers to a ±def feature that is checked by a determiner in Modern Greek, which is a language that, according to Alexiadou, does not have DS in preposition-less genitives (contra Longobardi's generalization). It is therefore not entirely clear, under her approach, what makes the definiteness feature of Hebrew different from that of other languages.

[11] But see Woisetschlaeger (1983), who argues that phrases like (18) are in fact definite.

from English noun phrases with an indefinite possessor; as to definites, on the other hand, she does argue for a unified analysis.

Turning to complex nominals with an embedded *definite* phrase, we can see that the kind of variable interpretation discussed in section 1.3.3 is not observed in English possessive constructions. First, in the case of group/membership nouns for which lexical semantics makes a uniqueness presupposition quite unlikely, English singular prenominal possessives are pragmatically odd, as in (20a) and (21a); this contrasts with plural possessives, which do not presuppose uniqueness:

(**20**) a. #The team's player was arrested yesterday.

  b. The team's players were arrested yesterday.

(**21**) a. #The committee's member will submit a report next week.

  b. The committee's members will submit a report next week.

What this contrast shows is that the entire possessive DP in these examples is interpreted as definite; since definite singulars, but not definite plurals, presuppose uniqueness, the judgments above are expected if these possessive DPs must indeed be interpreted as definite. Thus, unlike Hebrew CSNs, English possessives with an embedded definite show obligatory semantic definiteness for this class of nouns.

As discussed in section 1.3.3, Hebrew CSNs with embedded definite-marked nominals do not always have the embedded nominal itself interpreted as definite, as in the example in (14). Not all these CSNs have a grammatical English counterpart in the form of a prenominal genitive, due to the fact that English prenominal possessives are more restricted than Hebrew CSNs in the kinds of semantic relations that they can encode (Borer 1999). Specifically, Borer claims that a depicted entity in a 'picture NP' is not allowed in [spec,DP]:

(**22**) *the sunflower's picture

However, I believe that this is not entirely accurate, as an *animate* depicted entity does seem to be allowed in this position; for instance, *The president* in (23) can easily be interpreted as being depicted in the picture, rather than as its possessor:

(**23**) The president's picture appeared on the front cover.

With this in mind, we can see that the embedded nominal in such cases is invariably interpreted as definite, even for nouns that do not carry an inherent uniqueness presupposition based on world knowledge:

(**24**) The monk's picture on the wall was printed in India.

Thus, *The monk* in (24) seems to have only the following two interpretations:

1. definite possessor

2. definite depicted

What it lacks is the reading associated with the parallel Hebrew CSN in (15b): the indefinite/nonreferential depicted reading.

We thus conclude that there are significant differences in interpretation between Hebrew CSNs and English possessive constructions: in addition to the differences previously noted in the interpretation when the embedded nominal is indefinite, English also shows no variability in interpretation with embedded definites of the kind shown in section 1.3.3 to exist in Hebrew CSNs; these differences are summarized in Table 1.1. I thus conclude, like Alexiadou (2005), that the Hebrew and English constructions should not receive a unified analysis.

TABLE 1.1 Hebrew versus English preposition-less genitives

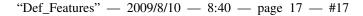|		Hebrew	English
Indefinite DP2	Definite determiner allowed for DP1	yes	no
	Maximality entailed for DP1	no	yes
Definite-marked DP2	Indefinite reading of DP1 possible	yes	no
	Indefinite reading of DP2 possible	yes	no

1.4.2   *Two kinds of definiteness spreading*

The question at this point is what makes Hebrew CSNs different from preposition-less complex nominals in most other languages. As pointed out in section 1.2, one thing that distinguishes Hebrew from most other languages is the availability of a morphosyntactic definiteness feature. I propose that this is indeed the source of the difference in interpretation of complex nominals.

If a language has a morphosyntactic definiteness feature, syntactic operations may impose restrictions on the value of this feature across different nodes. I will refer to the notion of FEATURE SHARING, which can be implemented in different ways under all major theoretical frameworks: in LFG and HPSG, feature sharing is simply unification; in Minimalism, feature sharing has been proposed by Frampton and Gutmann (2006) as well as Pesetsky and Torrego (2007) as an alternative to the operation Agree of Chomsky (2000, 2001). Abstracting away from differences between these frameworks, what characterizes feature sharing is the fact that it leads to a situation where, in the syntactic representation, a single feature is 'linked' to two or more nodes.

Let us assume that the process of forming a CSN leads to sharing the definiteness feature of the main and embedded nominal. Following Brody (1997) and Pesetsky and Torrego (2007), I assume the following principle:

Thesis of Radical Interpretability (Brody 1997): Each feature must receive a semantic interpretation in some syntactic location.

Crucially, this does not require the syntax to determine the exact locus of interpretation of a given feature; as long as the syntax ensures that every feature is found on at least one head that is compatible with the feature's meaning, interpretability can be determined at the syntax-semantics interface, where non-syntactic information can also be taken into account. This differs from the mainstream approach in Minimalism, where feature interpretability is established deterministically in the syntactic component by deletion of those instances of a feature that get their value via agreement.

Thus, at the syntax-semantics interface, a CSN with a definite-marked embedded nominal has a single definiteness feature shared between its two levels. According to the Thesis of Radical Interpretability, this feature may be interpreted on either level. Furthermore, if the entire CSN shares its definiteness feature with an additional node, as is the case in adjectival constructs that serve as modifiers, such as (16), interpretation may take place outside the CS, such that neither level of the CS is interpreted as definite. We can thus derive all four interpretation patterns found with a [+def] CS under a feature-sharing approach with no additional stipulation.

For this kind of analysis to be possible, of course, a [+def] feature must be present in the syntax. Following the discussion in section 1.2.2, I assume that languages with no definiteness agreement phenomena do not have such a feature. This means that the interpretation of a complex nominal in a language such as English cannot make reference to a (shared) definiteness feature, and must be based entirely on 'direct' structure-based compositionality. Such an analysis has been proposed, for instance, by Dobrovie-Sorin (2003), who makes an explicit claim about the semantic relation between a noun and a nominal in its specifier position (namely, she proposes that the nominal in specifier position is interpreted as a function from individuals to individuals). This kind of analysis makes no direct use of a syntactically-encoded [±def] feature, while it does depend heavily on having the embedded nominal in a fixed structural position; whatever definiteness value is derived in this kind of analysis is only an indirect semantic property, rather than an independently-marked feature.

We thus have two alternative ways of deriving the definiteness value of a complex nominal: one that depends on sharing a morphosyntactic definiteness feature, and one that does not. It should be clear that of these two mechanisms, the feature-based one is expected to be typologically much less common, due to its dependence on the availability of a feature that is not found in many languages; the other strategy, on the other hand, should be available universally, since the

grammar should always have a way of determining the compositional semantics of any grammatical construction. The prediction is thus that only a language that shows definiteness agreement will have genitival constructions with the semantic properties of Hebrew CSNs.

1.5   The nature of morphosyntactic definiteness

Focusing now on the fact that the definiteness feature in Hebrew is visible to the syntax-semantics interface, we turn to address a question that the discussion so far has put aside: What is the exact nature of the definiteness feature, and specifically, what are the values that it can take. There are essentially two alternatives:

- [def] is a bivalent feature, with possible values [±def].
- [def] is a monovalent (privative) feature, where the alternation is between having a [+def] feature (or, simply, [def]) and lacking it.

In previous work (Danon 2001, 2006), I have argued that the second alternative has some conceptual advantages. While the focus of these works has been on differential case marking, which was argued to relate to presence versus absence of a [def] feature on direct objects in Hebrew, they also point out the fact that assuming a monovalent [def] feature avoids the problem of having a morphosyntactic definiteness value that contradicts the semantic definiteness value of a nominal. Specifically, this avoids having to posit a morphosyntactic [-def] feature in simple nominals that are morphosyntactically indefinite but get a definite interpretation, as with demonstratives that do not co-occur with a definite article:
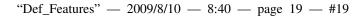
(**25**)   sefer   (*ha-)xašuv   ze
      book   (the-)important   this

    'this important book'

The fact that the adjective *xašuv* cannot be marked as definite shows that this noun phrase is morphosyntactically indefinite, which under the bivalent approach would have to be encoded as [-def]; nevertheless, this does not give rise to an indefinite reading.[12] We would thus have the undesirable situation of having a morphosyntactic feature with absolutely no semantic content. This problem does

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[12] Of course, the same issue comes up in the context of other features: singulars can often refer to more than a singleton, morphological present tense is not limited to the (semantic) present, etc. The two theoretical options are either to adopt an asymmetric, monolvalent, representation of such features, which would make the syntax-semantics interface relatively 'transparent'; or to assume bivalent/multivalent features, with somewhat more complex rules for determining their interpretation. While the present discussion argues in favour of the former approach, the more important point is simply that this issue has to be dealt with explicitly as part of any theory of features, and that a naive theory

not arise if nominals that are not morphosyntactically marked as definites simply lack a [def] feature, as would be the case under the monovalent approach. Lacking [def] is then not equivalent to being semantically indefinite.

Similar considerations apply to CSNs with an embedded indefinite. Consider again example (18a), repeated below as (26):

(**26**) ota   tmunat praxim
        that/same picture flowers

    'that picture of flowers'

According to Siloni (2003) and Alexiadou (2005), the fact that the CSN in this example is compatible with a semantically-definite determiner like *ota* ('that/same') shows that indefiniteness, unlike definiteness, does not spread from the embedded nominal. If true, this is quite surprising: there is no immediate reason why the two possible values of a [±def] feature would exhibit such a sharp asymmetry in their grammatical properties, which suggests that there is something that this formulation of the facts still misses.

The observation that lack of an article, as in (26), does not entail indefiniteness has, in fact, nothing to do with (in)definiteness spreading: the same determiner as in (26) is also compatible with the basic (non CSN) form of the noun, *tmuna* ('picture'), as shown in (5); this means that lack of a definite article is compatible with both definite and indefinite determiners.[13] Since an adjective modifying the CSN in (26) would obligatorily be indefinite, as shown in (9), it is clear that here the nominal is not [+def]. The monovalent approach, under which this nominal simply lacks a [def] feature, avoids the problem of assigning a morphosyntactic [-def] feature to a nominal that is semantically definite.

In light of this, I believe that although Siloni's and Alexiadou's conclusion that indefiniteness does not spread is true, this way of stating it is somewhat misleading. Spreading in Hebrew is an operation that applies to a morphosyntactic [def] feature, which, I claim, is not present on indefinites; therefore, [-def] does not spread simply because there is no [-def] feature to begin with. The interpretation of a nominal with no [def] feature in Hebrew is thus determined as in languages with no morphosyntactic [def], based on the choice of (semantic) determiner.

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under which all features are bivalent/multivalent and every feature value corresponds to one fixed interpretation is inadequate.

[13] Here I refer to 'determiner' in the semantic sense, as in Barwise and Cooper (1981), Keenan (1987), and many others; this is not the same as the syntactic category of articles. In section 1.2 it was noted that as far as morphosyntactic [+def] is concerned, only the presence of the definite article matters. For a more detailed discussion of the syntactic variability of determiners in Hebrew, see Danon (2006).

A similar conclusion arises from the consideration of another asymmetry observed in CSNs. As discussed above, a [+def] CSN can have any of its levels interpreted as definite, with the other level getting an indefinite reading; in an indefinite CSN, on the other hand, both levels must be interpreted as indefinite, unless an additional determiner is present, as in (26). In other words, definiteness in Hebrew must always be triggered by overt definiteness marking, while indefiniteness is the unmarked 'elsewhere' interpretation. This is best captured by a feature system that encodes definiteness and indefiniteness in an asymmetric way, rather than as the '+' and '-' values of a [def] feature. Under the monovalent approach, formal indefiniteness thus amounts to underspecification, which is compatible with all possible semantic interpretations. Note, furthermore, that viewing indefiniteness as underspecification also straightforwardly predicts the lack of any morphological marking of morphosyntactic indefiniteness in Hebrew, that is the fact that Hebrew has no indefinite article (as opposed to the prefixal definite article).

Adopting the monovalent approach is not without problems, though. One major issue is that if morphosyntactic indefiniteness is lack of a [def] feature, enforcing obligatory definiteness agreement with adjectives raises some nontrivial technical problems. Under constraint-based approaches to agreement, it is not immediately obvious that statements of equality of features would be valid in this case: when a noun lacks a [def] feature, care must be taken to ensure that constraining the adjective to have the same 'value' for the missing [def] is a coherent statement and that it does not lead to adding a [def] feature to the representation of every postnominal adjective.

More seriously, under the Minimalist approach to agreement, adjectives in Hebrew would probably be assumed to enter the derivation with an unvalued [def] feature, which has to be valued via agreement. This is straightforward under the bivalent approach to definiteness, but not under the monovalent approach, which relies on the possibility of no feature at all. Under the latter approach, we could assume that adjectives *optionally* enter the derivation with unvalued [def], and if they do, agreement must take place. But this does not rule out the possibility of attributive adjectives with no [def] feature modifying a definite noun, as in the following example:
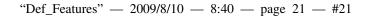
(**27**) *ha-sefer adom   ne'elam.
       the-book   red   disappeared

(intended) 'The red book disappeared.'

If the adjective is allowed to enter the derivation without a [def] feature, then in (27) there is no unvalued feature to value, and the structure is wrongly predicted to be well-formed. What is missing is some way of forcing agreement to be 'maximal': if a modifier *can* agree with the modified element, it *must* do so. This might be a general property of agreement or concord, not limited to definiteness agreement. In fact, the problem of enforcing the presence of agreement features on

modifiers is a general problem for any analysis that allows feature underspecification; the same problem would apply, for instance, to analyses of subject-verb agreement under approaches that take 3rd person to be lack of a person feature, as argued on various grounds by many authors. Evidently, what is required is a more fine-grained theory of agreement that takes into account feature underspecification, which is an issue that seems to be gaining increasing interest over the last few years; see for instance Harley and Ritter (2002), Béjar (2003), McGinnis (2005), and Adger and Harbour (2007).

1.6   Conclusion

In this chapter I have argued that definiteness spreading in the Hebrew construct state can best be accounted for by assuming a monovalent morphosyntactic [def] feature, which is shared by the two levels of the CSN and interpreted on at least one of the nodes that share it. Following previous work, most notably Alexiadou (2005), superficially similar spreading phenomena in other languages have been shown to have significantly different properties. Consequently, I argued that, crosslinguistically, there are two distinct mechanisms for definiteness spreading in complex nominals: one based on sharing a morphosyntactic definiteness feature, which is only possible in languages that have such a feature; and one that does not make any reference to definiteness as a morphosyntactic feature.

The definiteness feature in Hebrew has been shown to give rise to various definite-indefinite asymmetries, which, under a traditional approach assuming a symmetric [±def] feature, would pose various problems both to the syntactic analysis and to the compositional interpretation of this feature at the syntax-semantics interface. These problems do not arise under a feature-geometric approach that takes indefiniteness to be underspecification or lack of a formal definiteness feature. Combining the conclusions from the crosslinguistic comparison and from the language-internal analysis of Hebrew, we come to the following view of the relationship between morphosyntactic definiteness and semantic definiteness:

- Nouns (and noun phrases) may either have a [def] feature or lack it.
- Every instance of the [def] feature is interpreted as semantic definiteness on one of the nodes where it is present.
- The interpretation of a noun phrase with no [def] feature, or of a phrase that shares a [def] feature that is interpreted on some other node, is determined by the presence of other semantic determiners or by the compositional properties of the specific construction in which it appears; in the absence of any other factor that induces semantic definiteness, indefiniteness is the default interpretation.

Taking a broader perspective, this chapter has aimed to show that the use of features in linguistic analysis should be subject to careful consideration of the availability and content of each feature in the inventory of a given language. Different languages may have different inventories of morphosyntactic features, and the availability of a given feature could have important consequences in the kinds of grammatical operations that can apply in that language. I have tried to defend the view that not every semantic classification that has overt manifestations is encoded as a morphosyntactic feature, and only those that have clear morphosyntactic realizations should be analysed as features that the syntax can manipulate and that are visible to the syntax-semantics interface.

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