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ON THE SYNTACTIC CATEGORY OF PRONOUNS AND AGREEMENT*

This paper provides support for the claim that there are two functional projections in full noun phrases, Determiner Phrase (DP) and Number Phrase (NumP), based on an analysis of the dual marker in Modern Hebrew. The assumption of two nominal functional categories permits a structural account of differences in the distribution of elements that function as first/second person pronouns and those that function as third person pronouns. It is hypothesized that 1st/2nd person pronouns are DPs which contain only the head D and that this head is specified for person, number and gender. In contrast, 3rd person pronouns have a more complex structure, where D is specified for person and Num is specified for number and gender. Similarities between past tense agreement and 1st/2nd person pronouns on the one hand and between present tense agreement and 3rd person pronouns on the other suggest that the same nominal functional categories that act as pronouns also act as agreement. In other words, the difference between pronouns and agreement lies not in their category, but in their role in the syntax. Finally, this view of pronouns and agreement is applied to complex null subject phenomena in Modern Hebrew. In order to account for the fact that the distribution of null subjects varies across persons and across tenses, we propose a matching condition on both the category and content of the null pronoun and agreement.

1. Introduction

Abney's (1987) reanalysis of noun phrases as maximal projections of the functional category Determiner has led to new insights in long-standing issues in the grammar of nominal constituents. In fact, research in this area has led to the postulation of other nominal functional categories. For example, analyses of different languages have independently suggested that the number specification of a noun; that is, its singular or plural marking, be analysed as a functional syntactic category which heads an independent projection dominating NP (see, for example, Bernstein 1991, 1992, 1993; Cardinaletti and Giusti 1991; Carstens 1991; Delfitto and Schroten 1991; Picallo 1991; Ritter 1991; Tonoike 1991 and Valois 1991). In this paper, I demonstrate that the assumption of two nominal functional categories provides insights into both the pronominal and agreement systems of Modern Hebrew.

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Postal (1966) originally proposed that pronouns belong to the same syntactic category as determiners. Abney (1987) takes a similar position in his analysis of pronouns as DPs that contain only the functional head. In this paper, I suggest that both classes of nominal functional categories found in full noun phrases are also attested in the Hebrew pronominal system. It will be argued that the postulation of two distinct functional categories permits us to identify two structurally distinct classes of pronouns.

Like pronouns, agreement is considered a nominal functional category. It is a nominal category because it bears nominal features such as person, number and gender, and it is functional because it is a closed class item that lacks the independent semantic content that is associated with lexical categories. An analysis of the complex agreement system in Modern Hebrew suggests that the same nominal functional categories that act as pronouns also act as agreement. In other words, the difference between pronouns and agreement lies not in their category, but in their role in the syntax.

Finally, I explore the implications of this approach for *pro*-drop phenomena. It is generally assumed that pronouns that lack phonetic content are otherwise undistinguished from their overt counterparts. It follows then that *pro*, the phonetically null element that can function as the subject of a tensed sentence, belongs to the same class of syntactic categories as overt pronouns and agreement, i.e., the nominal functional categories D and number (Num). In Hebrew, the distribution of null subjects varies across tenses and across persons. It is demonstrated that null subjects are available when both the category and the feature specification of agreement match the category and feature specification of the phonetically null pronoun.

2. The Structure of Full Noun Phrases

Recent cross-linguistic investigations into the properties of noun phrases have suggested that these constituents contain one or more functional projections dominating the lexical category NP. The claim that noun phrases are technically DPs, maximal projections of the functional category Determiner, has been supported by evidence from a number of languages, including Hebrew (cf. Ritter 1988, 1991; Hazout 1990; and Siloni 1991). The original motivation for a DP analysis of Hebrew is based primarily on word order facts. Ritter (1988) shows that the strict noun-initial order in a genitive construction known as the construct state con-

struction can be derived by movement of the head noun within the noun phrase, as shown in (1).

(1)a. beyt$_i$ ha-mora t$_i$
house the-teacher
the teacher's house

b. ahavat$_i$ dan t$_i$ et acmo
love Dan ACC self
Dan's love of himself

Assuming the head movement constraint of Travis (1984), this analysis presupposes that the landing site of the head noun is also a head position. The category of this landing site is assumed to be D, the position normally occupied by a determiner. This is because the definite article *ha*, which normally occurs at the beginning of the noun phrase, is unavailable in the noun-initial construct state construction.[1]

Ritter (1991) extends this analysis to another genitive construction in Hebrew, known as the free genitive. As in the construct state construction, the head noun in a free genitive is realized in a position preceding the genitive case-marked noun phrase. However, in this case the definite article may occur in initial position, as shown in (2). Interpreting the presence of the definite article as evidence that the noun has raised to a to a position other than the head of DP in the free genitive construction

[1] While the definite article *ha* is clearly excluded from the construct state construction, numerals and quantifiers such as *kol* 'every/all' are not, as illustrated in (i) and (ii).

(i) *ha-talmidey tixon
the-students high school

(ii)a. kol talmid tixon
every student high school
every high school student

b. SloSa talmidey tixon
three students high school
three high school students

Ritter (1991) proposes an account of these facts which assumes that only the definite article belongs to the category D. These other items are assigned to the functional category which occupies the intermediate head position, i.e., Num. A non-unified treatment of the definite article and other 'determiners' has also been proposed for Hungarian by Szabolcsi (1987, 1992). It appears that in Hungarian, as in Hebrew, only the definite article belongs to the category D that heads the DP, the maximal projection of the noun phrase.

leads to the postulation of a second landing site for heads intermediate between D and N.

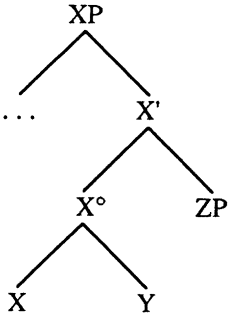
(2)a. ha-bayit$_i$ Sel ha-mora t_i
the-house of the-teacher
the teacher's house

b. ha-ahava$_i$ Sel dan t_i et acmo
the-love of Dan ACC himself
Dan's love of himself

This section is concerned with the content of this intermediate head position. I argue that the apparently complex behavior of Hebrew dual and plural affixes can be elegantly accounted for if one assumes that the number specification of the noun phrase heads its own maximal projection, NumP, and that NumP is intermediate between DP and NP.

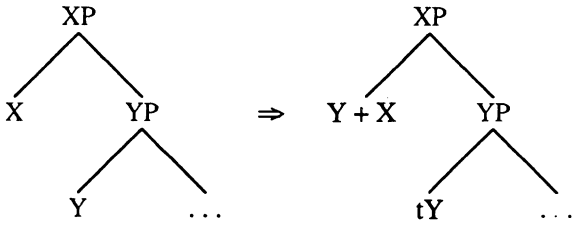
Before turning to the discussion of number affixes in Hebrew, a remark about the application of morphological processes is in order. I assume that affixation may take place either in the lexical component (prior to d-structure) or in the syntactic component.[2] This means that some affixes appear on the lexical stem at all levels of syntactic representation while others originate as heads of distinct syntactic projections. The latter attach as a consequence of syntactic movement, specifically head movement.

(3) Lexical Affixation



[2] This assumption is compatible with the theory of parallel morphology developed in Borer (1988, 1991).

(4) Syntactic Affixation



The evidence shows that, with respect to Hebrew nouns, affixes specified for number are syntactic affixes whereas affixes specified for gender are lexical affixes.[3] It is demonstrated that the number of a noun phrase is realized as the head of a distinct syntactic category and that the position of this category, Number Phrase, is intermediate between DP and NP. On the other hand, morphemes which bear the gender specification appear on the noun stem at all levels of representation. In the absence of a separate gendered affix, the noun stem itself determines the gender of the full noun phrase.[4]

2.1. *The Dual Marker: Evidence for NumP*

Let us now focus on the Modern Hebrew dual marker *-ayim*. This morpheme can be affixed only to nouns that belong to one of three distinct semantic classes: (a) periods of time, (b) paired body parts and items of clothing and (c) *pluralia tantum* (i.e., necessarily plural nouns such as *scissors*). The dual marker always triggers plural agreement on verbs and adjectives, so it must be grammatically plural, but as shown in (5), its interpretation and distribution varies across the three classes.

(5)a. *N-ayim = exactly two Ns*

	singular	*plural*	*two*
hour	Sa'a	Sa'ot	Sa'a**tayim**
week	Savua	Savuot	Svu'**ayim**
month	xodeS	xodaSim	xod**Sayim**
year	Sana	Sanim	Sna**tayim**

[3] There appears to be some cross linguistic variation in the base position of gender markers. For example, certain differences between Hebrew and various Romance languages may be accounted for if gender is specified on N in Hebrew, but on the functional head that bears the number specification in Spanish, Romanian and Walloon. Cf. Ritter (1993) for discussion.

[4] The same conclusion is reached in Ritter (1991), based on the analysis of Hebrew plural and feminine suffixes. However, some of the arguments developed in that work were based on artificially constructed nouns, raising some questions about the scope of the observed generalizations.

b. *N-ayim = Ns (usually in pairs)*

	singular	*plural*	*two*
leg	regel	ragl**ayim**	_____
arm	yad	yad**ayim**	_____
eye	ayn	eyn**ayim**	_____
boot	magaf	magaf**ayim**	_____
sock	gerev	garb**ayim**	_____
shoe	na'al	na'al**ayim**	_____

c. *N-ayim = two part N(s)*

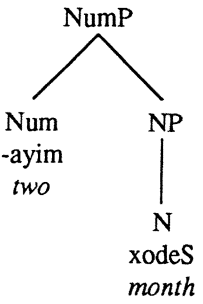
	singular	*plural*	*two*
glasses	miSkaf**ayim**	_____	_____
trousers	mixnas**ayim**	_____	_____
scissors	mispar**ayim**	_____	_____

In the remainder of this section I consider each semantic class in turn, developing an account in which the differences in interpretation and in distribution depend on whether a suffix is a lexical affix or a syntactic one. This analysis assumes that affixation through syntactic head movement derives a form whose semantic interpretation is predictable from the content of the base and the syntactic affix. Similarly, whenever the semantic interpretation of a noun and affix combination is opaque or non-compositional, the form is lexically listed.

2.1.1. *Exactly Two Ns*

Consider first the nouns denoting periods of time illustrated in (5a). Notice that each noun of this class has a plural form that is distinct from its dual form. Consequently, when the dual marker appears on a noun stem the interpretation is 'exactly two Ns'. For this data set the dual suffix is a member of the same category as the plural suffix because they are in complementary distribution, and because the meaning of the noun stem plus dual/plural marker is fully compositional. Let us suppose that these plural and dual suffixes belong to the functional category Number. If Number is a separate syntactic category, then the plural or dual suffix is base-generated as head of a syntactic projection, Number Phrase (NumP), and is added to the noun as a consequence of head movement. The structure I attribute to the dual noun *xodSayim* 'two months' is given in (6).

(6)



Hebrew is a language with grammatical gender, and an analysis of nouns denoting periods of time also indicates that gender is a feature of N, not Num. The fact is that the gender of all forms of nouns denoting periods of time is determined by the noun stem and not by the dual or plural suffix. For example, the noun *Sana* 'year' is feminine, and consequently, the dual and plural forms of this noun are also feminine, whereas the singular, dual and plural forms of the noun *xodeS* 'month' are all masculine because *xodeS* is a masculine noun. This difference between these two lexemes may be inferred from the fact that all forms of the noun meaning 'year' trigger feminine agreement on modifying adjectives, while all forms of 'month' trigger masculine agreement, as shown in (7) and (8), respectively.

(7)a. Sana aruk-a /*arox
*year(f.) long-f.sg./*long(m.sg.)*

b. San-im aruk-ot /*aruk-im
*year(f.)-pl. long-f.pl./*long-m.pl.*

c. Snat-ayim aruk-ot /*aruk-im
*year(f.)-dual long-f.pl./*long-m.pl.*

(8)a. xodeS arox /*aruk-a
*month(m.) long(m.sg.)/*long-f.sg.*

b. xodaS-im aruk-im /*aruk-ot
*month(m.)-pl. long-m.pl./*long-f.pl.*

c. xodS-ayim aruk-im /*aruk-ot
*month(m.)-dual long-m.pl./*long-f.pl.*

Notice that although *xodeS* 'month' is masculine and *Sana* 'year' feminine, both nouns select the same forms of the dual and plural suffixes (i.e.,

-ayim and *-im*). Actually, as the data in (5) show, the dual suffix always has the form *-ayim*, but the plural suffix has two allomorphs, *-ot* and *-im*.

The fact that there is only one dual marker is precisely what one would expect if dual suffixes are unspecified for gender. It is less obvious that the plural markers *-im* and *-ot* are similarly unspecified for gender because these plural suffixes are also used to mark plural agreement on adjectives and present tense verbs. As exemplified in (7b) and (7c), *-ot* is also used as the feminine plural agreement marker, and, as shown in (8b) and (8c), *-im* is its masculine counterpart. Even if *-im* and *-ot* are analysed as markers of both number and gender when they are affixed to verbs and adjectives, it must be assumed that their gender specification is somehow neutralized when they are affixed to nouns. This is because these suffixes are perfectly correlated with gender when they function as agreement markers, but not when they are markers of plural reference. For example, when *-im* is attached to a verb or adjective, it always signals agreement with a masculine non-singular DP, but when it is attached to a noun, it only signals plurality since it may be attached to either a masculine or feminine noun. Similarly, when *-ot* is affixed to verbs or adjectives, it manifests agreement with a feminine plural DP, but as a marker of plural reference, *-ot* may be attached to nouns of either gender. In short, these suffixes appear to be gendered when they function as plural agreement, but not when they function as plural reference. This difference can be accounted for by extending a lexical approach to the difference between strong and weak agreement by Rohrbacher (1992) and discussed in Speas (1993).

According to Rohrbacher, strong agreement morphemes have their own lexical entries but weak agreement morphemes do not. Instead, in languages with weak agreement, verbs are listed in the lexicon as paradigms. Let us suppose that the Hebrew plural morphemes, *-im* and *-ot*, are listed in the lexicon in both ways. That is, as weak agreement markers they are included in verb and adjective entries as part of the verbal and adjectival paradigms. Because the forms in the verbal and adjectival paradigms are inflected for number and gender, the agreement affixes are assigned a specification for both features paradigmatically. As plural reference morphemes, *-im* and *-ot* have independent lexical entries, but these lexical entries are specified for number only. Gender is specified in the lexical entry for the noun stem (which presumably also includes information as to the form of the plural marker, *-im*, *-ot* or an irregular allomorph).

2.1.2. *Paired Ns*

Consider next the nouns denoting body parts and items of clothing in (5b), reproduced here as (9). These nouns refer to things that come in pairs, and the dual marker in this context is in fact an irregular plural. Notice that nouns of this class have no plural form distinct from the dual form.

(9)

	singular	*plural*	*two*
leg	regel	ragl**ayim**	_____
arm	yad	yad**ayim**	_____
eye	ayn	eyn**ayim**	_____
boot	magaf	magaf**ayim**	_____
sock	gerev	garb**ayim**	_____
shoe	na'al	na'al**ayim**	_____

Further evidence for the claim that the dual is a plural suffix for this class of nouns comes from the contrasts in (10). Example (10a) shows that the numeral meaning 'two' and the dual marker are in complementary distribution in noun phrases referring to periods of time. In this context the dual marker means 'exactly two', so the numeral is redundant. On the other hand, in noun phrases referring to paired items, the numeral two and the dual marker may co-occur, as shown in (10b). This is consistent with the analysis of *-ayim* as the plural allomorph that occurs with paired items. In this context the numeral is licit because it contributes new information when the affix simply means more than one of things that usually come in pairs.

(10)a. *Sney Svu'-ayim
two week-dual

b. Sney garb-ayim
two sock-dual
two socks

The contrast in (11) makes a similar point. The ungrammaticality of (11a) is due to the fact that the numeral three and the dual marker, which in this context is interpreted as 'exactly two', cannot both quantify the same noun. On the other hand, the numeral three can co-occur with *-ayim* in (11b), because in this context it is simply an irregular plural marker.

(11)a. *SloSa Svu'-ayim
three week-dual

(11)b. SloSa garb-ayim
three sock-dual
three socks

In the context of nouns denoting periods of time, I postulated that both the dual and plural suffixes were base-generated as the head of NumP. Simply extending this analysis to body-part nouns fails to account for the difference in the semantic composition of the noun stem and *-ayim* in the two classes. In order to account for the fact that the dual morpheme sometimes functions as an irregular plural, I now suggest that *-ayim* is bi-morphemic. In the context of nouns denoting periods of time this bimorphemic element is a syntactic affix base-generated as the head of NumP, but in the context of nouns denoting paired body parts one morpheme is a lexical affix, while the other is a syntactic one.

Strikingly, some speakers permit nouns that denote paired body parts and items of clothing to trigger feminine agreement on adjectives and verbs whenever they bear the affix *-ayim*. In other words, for these speakers feminine nouns of this semantic class always trigger feminine agreement, but masculine nouns have split agreement, i.e., they may trigger masculine agreement when they are singular, but feminine agreement when they are pluralized. An example is given in (12). The minimal difference with the standard dialect is illustrated by the contrast between examples (12b) and (12c).

(12)a. magaf xadaS
boot(m.) new(m.)
a new boot

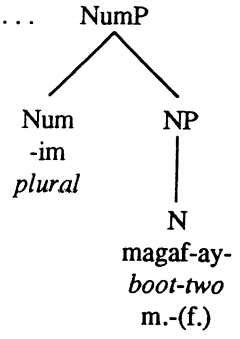
b. magaf-ayim xadaS-im (Standard dialect)
boot(m.)-dual new-m.pl
(a pair of) new boots

c. magaf-ayim xadaS-ot (Non-standard dialect)
boot(m.)-dual new-f.pl.
(a pair of) new boots

The gender-switching in the non-standard dialect indicates that the dual affix, which is specified only for number (plural) when it is added to periods of time, may be specified for gender (feminine) and number (plural) when it is added to paired body parts. If we postulate that suffixes encoding gender are lexical and suffixes encoding number are syntactic,

then the dual marker should be both a lexical suffix and a syntactic one in the context of body-part nouns. In order to achieve this result, it is necessary to analyse *-ayim* as bi-morphemic, and on closer inspection, it appears plausible to do so. This suffix may be analyzed as containing two subconstituents, *-ay* 'two' and *-im* 'plural'.[5] The former is lexically affixed to body-part nouns to derive a plural base whose meaning is 'paired N'. The latter is the same genderless plural suffix that appears on the masculine plural noun *xodaSim* 'months' and the feminine plural noun *Sanim* 'years'. I also assume that it is attached to the noun in the same way in both contexts, i.e., *-im* is inserted as the head of the functional projection (Num), and the lexical head (N) adjoins to *-im* in the syntactic component. Thus, nouns like *magaf* 'boot' have an exceptional plural base which is composed of the singular stem and the dual suffix *-ay*. For speakers of the standard dialect, this suffix is unspecified for gender. For speakers of the non-standard dialect, this suffix is feminine. The structure I attribute to the plural noun *magafayim* 'boots' is given in (13).

(13) magaf-ay-im
boots



[5] According to Glinert (1989), the dual marker *-ayim* that attaches to periods of time is an allomorph of *Snayim* 'two'. In the context of paired body parts, Glinert calls *-ayim* a pseudo-dual and analyzes it as a type of plural. In this context, the plural markers *-im* and *-ayim* have the same construct state form, i.e., *-ey*.

2.1.3. *Two Part N(s)*

Finally, consider nouns denoting two-part singletons, illustrated in (5c), repeated here as (14). These nouns always appear with the dual marker, so they have no contrasting singular form.[6]

(14)

	singular	*plural*	*two*
glasses	miSkafa**yim**	_____	_____
trousers	mixnasa**yim**	_____	_____
scissors	mispara**yim**	_____	_____

As with English 'scissors', 'glasses' and 'trousers', the non-singular form is used with both singular and plural referents. The fact that *-ay-im* may appear on a singular noun of this class indicates that the semantic interpretation of the noun stem and dual marker is opaque. I interpret this as evidence that these nouns are lexically derived. More specifically, the evidence indicates that both *-ay* and *-im* are lexical affixes which combine with a nominal stem to derive a noun which refers to one or more two-part entities. In this context *-ay-im* is an affix on the noun at all levels of syntactic representation.

It should be noted that in standard Hebrew, *pluralia tantum* always trigger masculine plural agreement. Since masculine is the unmarked form of agreement in this language, this fact would be consistent with an analysis of these nouns as either masculine or ungendered. It was argued above that *-im* is ungendered and that *-ay* is ungendered in standard Hebrew, but feminine in a non-standard dialect. Consequently, if such nouns are masculine, they must receive this gender specification from the noun stem. Unfortunately, it is impossible to verify this hypothesis directly because stems of two-part singleton nouns never appear in isolation.

On the other hand, there are at least two reasons to consider that this class of nouns is ungendered. First of all, there appear to be no feminine nouns in this class. Since both other classes considered here contain nouns of both genders, it is somewhat suspicious that *pluralia tantum* are always masculine. A stronger argument for analysing these nouns as ungendered comes from the fact that some speakers allow them to trigger plural agreement of either gender, as shown in (15).[7]

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[6] Glinert (1989) identifies a second class of masculine nouns that invariably end in *ayim*, e.g., *mayim* 'water', *cohorayim* 'midday' and *kirayim* 'stove'. Nouns of this class have no dual component in their semantic makeup. Thus, it is unclear whether they should be assigned the same morphological analysis as the *pluralia tantum* class discussed in the text.

[7] I am grateful to Hagit Borer for drawing these facts to my attention.

(15)a. miSkafayim xadaS-ot/xadaS-im
glasses *new-f.pl./new-m.pl.*
new glasses

b. misparayim xadot/xadim
scissors *sharp-f.pl./sharp-m.pl.*
sharp scissors

Like assignment of default masculine, free variation in gender marking is a reasonable strategy for dealing with nouns that lack an inherent gender specification. This exceptional property of Hebrew *pluralia tantum* may be due to the fact that they consist of noun stems which have no inherent gender (presumably because they never appear in isolation) and ungendered suffixes.

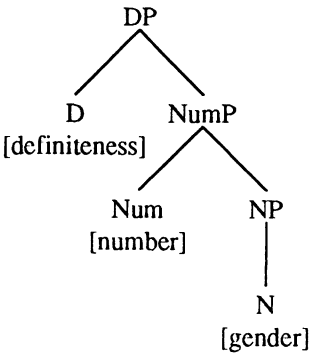
2.1.4. *Summary*

In this section I analyzed three classes of nouns that take the dual marker *-ayim*. The distinguishing semantic, syntactic and morphological properties of each class follow straightforwardly from the analysis of this element as bi-morphemic (*-ay* 'two' and *-im* 'plural'). In the context of periods of time, *-ay-im* is a syntactic affix, in the context of two-part singletons, *-ay-im* is a lexical affix, and in the context of paired body parts and items of clothing, *-ay* is a lexical affix, while *-im* is syntactic. A complex set of facts regarding the distribution of dual and plural markers, as well as the assignment of grammatical gender and plural reference across the three classes of nouns and across dialects, was accounted for by postulating that gender is a feature of N, but that number is not. It appears that in Hebrew suffixes may only determine the gender of the noun phrase when they are lexical affixes on the lexical head, and that the noun phrase only has a plural denotation set when the number suffix is base-generated as a distinct functional head.

One way to interpret this is to assume that only affixes which appear on the lexical head at all levels of syntactic representation may bear a gender specification, but that affixes which bear number are attached to the noun via head movement in the syntax. The analysis of genitive constructions in Ritter (1991) provides independent motivation for a syntactic projection intermediate between D and N. The analysis of dual suffixes presented here suggests that this intermediate projection is NumP. This discussion of gender and number in full noun phrases establishes that in Hebrew the gender specification is on the head of NP; the number

specification is on the head of NumP; and definiteness is on the head of DP.

(16)



3. Two Kinds of Pronouns

The distribution of nominal features among the various heads depicted in (16) does not extend to pronouns because, following Abney (1987), pronouns have no NP projection. Since Hebrew pronouns trigger agreement for gender, it may be deduced that they are specified for this feature, even if they contain only functional categories. In this section, I focus on the structure and content of pronominal DPs in Hebrew. In Abney's analysis, a pronoun is a DP that contains only the functional head D. The hypothesis that there are two distinct nominal functional categories, D and Num, leads to the expectation of two classes of pronouns. The evidence from Hebrew indicates that this is indeed the case. More specifically, it motivates a structural distinction between first and second person pronouns, on the one hand, and third person pronouns, on the other.

Investigations into a variety of unrelated languages, including Chipewan, Kanuri, Hungarian and Russian, suggest that there exists a fundamental difference between first and second person pronouns on the one hand, and third person pronouns on the other (cf. Moravcsik 1978 and references cited therein). This fact should not be surprising given the range of interpretations available for the different persons. All first and second person pronouns refer to the speaker and hearer, the participants in the discourse. Plural pronouns may, of course, include non-participants who are associated with the speaker or listener. Third person pronouns refer to anyone or anything else. In other words, for any given utterance, the reference of first and second person pronouns is fixed, but the reference for third person pronouns ranges over the remaining individuals in the domain of discourse. The claim that this difference is represented

structurally in Hebrew is supported by the distribution of different classes of pronouns and the definite article.

In his analysis of English, Jackendoff (1977) classifies the grammatical elements in (17) as members of the same syntactic category because they cannot co-occur as specifiers of the same noun phrase.

(17) the, this, which, every, . . .

In current terms, these elements are all Ds. The hypothesis that personal pronouns are also Ds leads to the prediction that these Ds should also be in complementary distribution with pronouns. The ungrammaticality of the examples in (18) bears out this prediction.

(18)a. *the you
b. *this he
c. *every we
. . .

In Hebrew, the definite article *ha* belongs to the category D. If all personal pronouns were also Ds, we would never expect to find *ha* in the same minimal DP as any pronoun. The nominative forms of personal pronouns are listed in (19a), and impersonal pronouns are listed in (19b).[8] As shown in (20), only first and second person pronouns are in complementary distribution with the definite determiner. The examples in (20c) and (20d) show that third person pronouns co-occur with *ha* to derive remote demonstratives, and impersonal pronouns co-occur with *ha* to derive proximate demonstratives.

(19)a. *Personal Pronouns*

	singular		plural	
	masc.	fem.	masc.	fem.
1st	ani		anaxnu	
2nd	ata	at	atem	aten
3rd	hu	hi	hem	hen

b. *Impersonal Pronouns*

singular		plural
masc.	fem.	
ze	zot	ele

[8] Only nominative forms of the pronouns in (19a) are independent words. The accusative, genitive and oblique case-marked forms of these pronouns are realized as clitics. Impersonal pronouns take the same form in all contexts.

(20)a. *ha-ani /*ha-anaxnu
**the-I /*the-we*

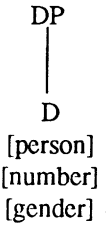
b. *ha-ata /*ha-at /*ha-atem /*ha-aten
**the-you(m.sg.)/*the-you(f.sg.)/*the-you(m.pl.)/*the-you(f.pl.)*

c. ha-hu/ha-hi /ha-hem /ha-hen
the-he/the-she /the-they(m) /the-they(f)
that(m)/that(f)/those(m)/those(f)

d. ha-ze /ha-zot /ha-ele
the-it(m)/the-it(f)/the-they
this(m)/this(f)/these

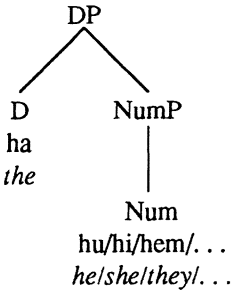
These facts provide support for a non-unified treatment of pronouns in Hebrew. More specifically, they suggest that first and second person pronouns are DPs which contain only the functional head D. Since these pronouns trigger verbal agreement for person, number and gender, I assume that the head D is specified for this set of *phi* features, as shown in (21).

(21) *1st/2nd Person Pronouns*



Third person pronouns, on the other hand, are not Ds. Let us suppose that *hu/hi/hem*, etc. belong to the functional category Num. Demonstratives, such as (20c) simply combine the pronominal element in Num with the definite article in D. The structure of the demonstrative pronouns is given in (22).

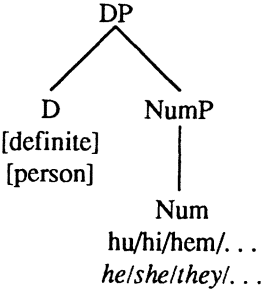
(22) *Demonstrative Pronouns*
ha-hu/ha-hi /ha-hem . . .
the-he/the-she/the-they(m) . . .
that(m)/that(f)/those(m) . . .



The structure of third person non-demonstrative pronouns remains to be considered. A reasonable hypothesis is that they have the same structure as demonstrative pronouns, and that the only difference between demonstratives and non-demonstratives is in the element that occupies the head of DP. One piece of evidence that supports the hypothesis that all Hebrew pronouns are definite is the fact that they trigger overt accusative case-marking. The accusative case-marker *et* only appears in the context of a definite DP. In addition, since personal pronouns pick out a particular individual, it seems reasonable to assume that they are specified for person. I assume that this feature is contributed by an abstract head of DP and that the number and gender specifications are contributed by the overt morpheme base-generated in the head of NumP.

Finally, non-person or impersonal pronouns have the same structure as demonstrative and third person pronouns, but in this case, the head of DP is an abstract element specified for definiteness, rather than person. Let us suppose that a DP specified for person picks out a particular human (or animate) individual in the domain of discourse, and that a definite DP refers to any definite entity. On this view, the feature person implies definiteness, but definiteness does not imply person. The structure of these pronouns is given in (23).

(23) *3rd person pronouns*



Summarizing the results of this section, pronouns are analyzed as noun

phrases that consist entirely of functional categories. There are two kinds of pronouns – first and second person pronouns contain only the DP projection, while third person pronouns contain both functional projections, DP and NumP. This non-unified treatment of pronouns permits an account of the fact that the Hebrew counterparts of 'he', 'she' and 'they' pattern with impersonal pronouns in that they constitute a subpart of demonstratives.

Although all referential DPs are specified for the full complement of *phi* features, the mapping of features to nominal heads is subject to availability. Full noun phrases consist of all three projections, DP, NumP and NP, and the head of each projection contributes a different *phi* feature: D specifies definiteness, Num is responsible for number, and N gender. However, third person pronouns contain a DP and NumP, but no NP, so gender is specified on Num. First/second person pronouns contain only a DP, so all three features must be specified on D. The generalization appears to be that if a particular category is not projected, the feature it normally bears is specified on the lowest available head. For example, gender is a feature of N if there is one, otherwise it is specified on the lowest available head. Similarly, Num is realized on Num if present, but otherwise on the lowest available head.

4. Two Kinds of Agreement

Agreement is often viewed as a nominal element in the verbal system. For example, Rizzi (1982) argues that the agreement which licenses null subjects in Italian is pronominal in nature. Borer (1989) proposes that, cross-linguistically, controlled null subjects are licensed by agreement which is anaphoric. I suggest that both proposals derive from the fact that the syntactic category of agreement is drawn from the same set of nominal functional categories as pronouns, i.e., D and Num. In this section, I argue that the Hebrew agreement system, which mirrors the pronominal system in its feature specification, also requires a non-unified categorical analysis.

Hebrew has three tenses: past, present and future. Verbs agree with their subjects in all three tenses, but the agreement features vary across tenses and across persons. Past and future tense verbs are inflected for person, number and gender, but their present tense counterparts are inflected for number and gender only. These features are realized as suffixes in the past and present tenses, but are split between prefixes and suffixes in the future tense. The past, present and future paradigms for the verb *katav* 'write' are illustrated below:

(24) *katav* 'write'

PAST	singular		plural	
	masc.	fem.	masc.	fem.
1st	katavti		katavnu	
2nd	katavta	katavt	katavtem	katavten
3rd	katav	katva	katvu	

PRESENT	singular		plural	
	masc.	fem.	masc.	fem.
	kotev	kotevet	kotvim	kotvot

FUTURE[9]	singular		plural	
	masc.	fem.	masc.	fem.
1st	ektov		niktov	
2nd	tiktov	tiktəvi	tiktəvu	
3rd	yiktov	tiktov	yiktəvu	

In the last section I observed that a pronominal element in D may be specified for the features person, number and gender, and that a pronominal element in Num is specified for number and gender only. If the same nominal functional categories function as agreement, then agreement in the past and future tenses is of the category D, while agreement in present tense belongs to the syntactic category Num.

4.1. *Num Agreement in Present Tense*

Striking confirmation for the idea that agreement and pronouns are of the same categories comes from the investigation of present tense nominal sentences. This type of sentence contains a nonverbal predicate and an inflectional element which is spelled out as a third person pronoun.[10] As illustrated in (25), this pronominal element bears the same number and gender features as the subject.

[9] There also exists a distinct feminine form for second and third person plural, e.g., *tiktovna* 'you(f.pl.)/they(f) will write'. Use of this form is restricted to the formal register. Generally, it seems that Hebrew is losing gender distinctions in plural pronouns and agreement. For example, in casual Modern Hebrew, (i) the pronoun *atem* 'you-(m).pl.' often substitutes for *aten* 'you-f.pl.', and *hem* 'they-(m.)pl.' substitutes for *hen* 'they-f.pl.'; (ii) present tense verbs only optionally agree in gender with second person plural subjects and (iii) past tense verbs which are inflected to agree with second person plural subjects are unmarked for gender of the subject.

(25)a. dan **hu** xaxam.
*Dan **he** smart(m.)*
Dan is smart.

b. sara **hi** xaxam-a.
*Sara **she** smart-f.*
Sara is smart.

c. sara ve dan **hem** xaxam-im.
*Sara and Dan **they** smart-pl.*
Sara and Dan are smart.

Doron (1983) and Rapoport (1987) have both analyzed this pronominal element as the spell-out of INFL or agreement in verbless sentences.[11] Given this analysis, the hypothesis that present tense agreement is Num sheds light on the fact that when this element is not affixed to the head of the predicate, it has the same shape as a third person pronoun.

In the last section it was argued that the morphemes *hu*, *hi*, *hem* and *hen* are Nums, and that they are specified for number and gender only. Notice that if these pronominal elements were specified for person, as well as number and gender, verbless sentences would constitute the only class of present tense sentences in which agreement is specified for the feature person. Moreover, if agreement were specified for person in this construction, one would expect first and second person agreement to be possible. However, only 'third person' agreement ever occurs in present tense verbless sentences. Finally, if the syntactic category of agreement were distinct from the syntactic category of third person pronouns, it would be a total mystery as to why agreement should have the shape of these pronouns when it is not a verbal affix.

[10] In past and future tenses these sentences contain a form of the verb *haya* 'be'.

[11] This pronominal INFL element never occurs with verbal predicates such as (i). This fact suggests that V is the only lexical head that raises to INFL (or alternatively, INFL may lower onto the head of VP, but not NP, AP or PP).

(i) dan (***hu**) ohev glida.
*Dan (*he) likes ice cream*
Dan likes ice cream.

4.2. *D Agreement in Past/Future Tense*

Turning next to past and future tenses, we find that the agreement system manifests person as well as number and gender distinctions. Moreover, these distinctions are identical to those in the pronoun system. This may be seen by a comparison of the past and future tense forms of the verb *katav* 'write', in (26a) and (26b), and the corresponding nominative forms of pronouns in (26c).

(26)a. Past tense 'wrote'

	singular		plural	
	masc.	fem.	masc.	fem.
1st	katavti		katavnu	
2nd	katavta	katavt	katavtem	katavten
3rd	katav	katva	katvu	

b. Future tense 'will write'

	singular		plural	
	masc.	fem.	masc.	fem.
1st	ektov		niktov	
2nd	tiktov	tiktəvi	tiktəvu	
3rd	yiktov	tiktov	yiktəvu	

c. *Nominative pronouns*

	singular		plural	
	masc.	fem.	masc.	fem.
1st	ani		anaxnu	
2nd	ata	at	atem	(aten)[12]
3rd	hu	hi	hem	(hen)

Notice, for example, that neither first person singular pronouns nor first person singular agreement affixes manifest gender distinctions, but that there are distinct masculine and feminine forms of both second person singular pronouns and second person singular agreement. This exact matching between pronouns and agreement is compatible with the hypothesis that D, the nominal syntactic category of these pronouns, is also the syntactic category of past/future tense agreement.

The morphological parallels in the pronominal and agreement para-

[12] The brackets around the feminine plural forms of second and third person pronouns indicate that these forms are optional in casual Modern Hebrew. See footnote 9 for discussion.

digms for pronouns and agreement on past and future tensed verbs would be coincidental in a framework which assumed that AGR was a distinct syntactic category from pronouns. However, given the hypothesis that the same nominal categories function as both agreement and pronouns, one might expect that agreement and pronouns which belong to the same syntactic category make parallel paradigmatic distinctions. In other words, the reason that these forms of agreement and pronouns manifest the same morphological distinctions is that they are both Ds, and, consequently, are specified for the same set of features, i.e., person, number and gender.

4.3. *The Structure of Tensed Clauses*

Until now, I have not addressed the question of the position of the various agreement projections in the clause. Pollock (1989) originally proposed that clauses (IPs) should be analysed as TPs, maximal projections of the category tense (T). In his analysis, subject agreement (AgrP) is a distinct maximal projection intermediate between T and the predicate VP. Chomsky (1989) proposes a revision to this analysis by distinguishing subject agreement (Agr-s) and object agreement (Agr-o) (see also Belletti 1990, Mahajan 1990 for discussion). According to Chomsky's analysis, IPs are maximal projections of Agr-s. TP is the complement of Agr-s, and the agreement projection intermediate between T and the predicate VP is the maximal projection of Agr-o, as schematized in (27).

(27) $[_{\text{Agr-sP}} \ldots \text{Agr-s} \ldots [_{\text{TP}} \ldots \text{Tns} \ldots [_{\text{Agr-oP}} \ldots$
$\text{Agr-o} \ldots [_{\text{VP}} \ldots \text{V} \ldots]]]]$

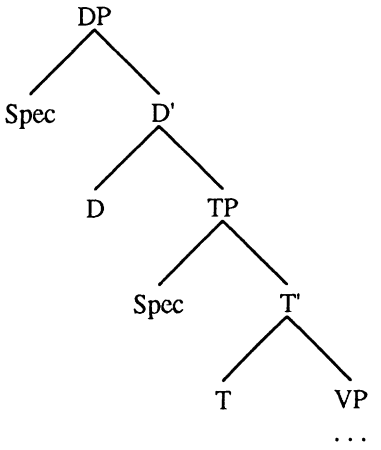
Shlonsky (1989) develops a modification of this proposal to account for the variation in subject-verb agreement patterns found in Hebrew and Arabic. He investigates a range of data in the two languages and observes that verbal agreement is specified for gender only, for both number and gender, or for person, number and gender. Given the relative independence of these three features, Shlonsky proposes that person, number and gender each head a distinct syntactic projection, so there are three separate subject agreement phrases, i.e., Per(son)P, Num(ber)P, and Gen(der)P. In his analysis, all sentences are maximal projections of PerP. The complement of PerP is TP, which in turn dominates the other agreement projections, as depicted in (28).

(28) $[_{\text{PerP}} \ldots \text{Per} \ldots [_{\text{TP}} \ldots \text{Tns} \ldots [_{\text{NumP}} \ldots \text{Num} \ldots$
$[_{\text{GenP}} \ldots \text{Gen} \ldots [_{\text{VP}} \ldots \text{V} \ldots]]]]]$

Focusing on Hebrew, I propose an alternative which not only accounts

for the range of agreement facts, but also captures the parallels between agreement and pronouns.[13] Following Chomsky and Shlonsky, I assume that the agreement category which manifests person is the head of its clause and that it selects TP as its complement. However, I depart from these proposals in assuming that the syntactic category of agreement is DP, rather than AgrP or PerP, and that it occurs only in clauses that are inflected for person, i.e., in past/future tense clauses as shown in (29a). In present tense clauses, where verbs agree with their subjects in number and gender only, the category of agreement is NumP. As illustrated in (29b), I assume that NumP is realized as the complement of Tns. This analysis is consistent with Shlonsky's view of the hierarchical relationship between tense and number and gender agreement.[14]

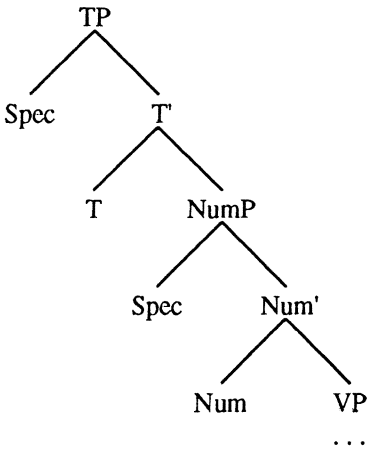
(29)a. *Structure of Past/Future Tense Sentence*



[13] According to Shlonsky's (1989) analysis, Arabic verbs agree with their subjects in gender only or in person, number and gender. Assuming that Arabic, like Hebrew, has two nominal functional categories, it may be that the Arabic counterpart of Num is specified for gender only.

[14] As is the case for all proposals that entail more than one INFL projection, a number of technical issues arise regarding the definition of barriers. Although these questions need to be addressed, they are beyond the scope of this paper.

(29)b. *Structure of Present Tense Sentence*



The proposal presented here departs from previous analyses in two respects: First, it assumes that clausal structure varies across tenses, depending on which agreement projections are present.[15] Second, it assumes that the term 'agreement', like 'pronoun', names a syntactic function of the categories D and Num.

4.4. *Third Person Pronouns and Agreement*

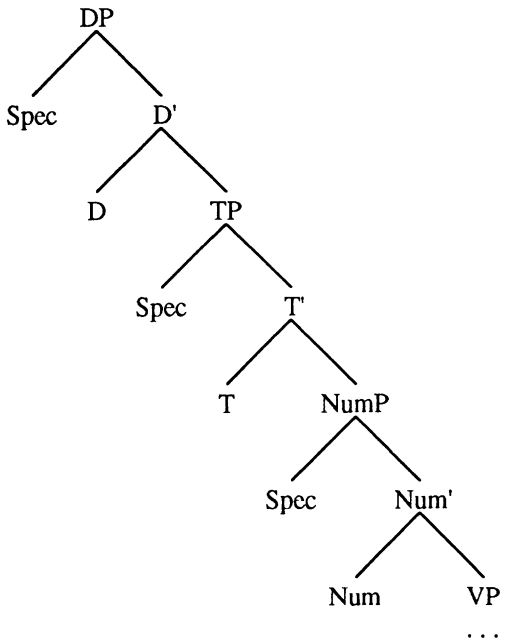
It was argued in section 3 that third person pronouns have a complex structure consisting of a DP whose head is specified for definiteness and a NumP whose head is specified for number and gender. According to the analysis I have developed, third person pronouns are distinguished from first and second person pronouns and from agreement for past and future tenses. This instance of agreement consists of a single functional category (D), which is specified for person, number and gender features. Let us reconsider the nature of third person agreement in past and future tenses and its relationship to so-called third person pronouns. The issue to be resolved is whether third person agreement in past and future tenses is D, Num or a complex containing both functional categories, like third person pronouns.

According to the structures proposed in section 4.3, the two types of agreement occupy distinct positions in the sentence. Hence, there is no *a*

[15] This structural difference may be eliminated at LF if one adopts Chomsky's (1992) notion that agreement features disappear at LF once they have been checked. The proposal in this paper departs from his minimalist program in that it assumes agreement has only nominal features, specifically phi-features.

priori reason why a sentence could not contain both projections, as shown in (30).

(30) *Structure of Past/Future Tense Sentence – third person subjects*



I suggest that this is in fact the structure of past/future tense clauses containing third person subjects. This analysis extends the parallel between the agreement system and the pronominal system which was established on the basis of the present tense agreement paradigm and the first and second person paradigms for the past and future tenses. In this context, Num agreement is specified for number and gender, as it is in the present tense, and D agreement is specified for definiteness and perhaps person.[16]

[16] Borer (1986) notes that a definiteness effect may be observed in raising structures like the following:

(i)a. hitxilu laredet giSmey xoref
began to-fall rains winter
Winter rains started falling. (Borer 1986, p. 410)

b. *hitxilu laredet ha-gSamim ha-xorpyim
began to-fall the-rains the-wintry
The winter rains began to fall. (Borer 1986, p. 411)

The contrast might be due, in part, to a difference in the definiteness specification of the matrix clause agreement and the post-verbal subject.

See section 5.3 for further discussion of the feature content of D agreement in this context. Note also that the structure containing only D agreement in (29a) is now only appropriate for past/future tense sentences containing first or second person subjects.[17]

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[17] One phonological argument for a non-unified treatment of inflection in past and future tenses may be gleaned from the facts of stress assignment. According to Glinert (1989), present tense verbs are stressed on the last syllable of the word, as are third person forms of past and future tense verbs, unless it is retracted onto a preceding high vowel. (The only exception to this generalization regarding the present tense forms is to be found on feminine singular verbs ending in *-et*, such as *kotév-et*, 'write-f.sg.' The final vowel in these forms is inserted by rule, presumably after stress assignment takes place.) Some examples are given below.

(i)a. *Present tense verbs*
mekapél 'fold (m.sg.)'
kotv-ím 'write-m.pl.'
mafsik-á 'stop-f.sg.'
kam-ót 'arise-f.pl.'

b. *Past tense verbs, 3rd person, final stress*
katáv 'wrote-3.m.sg.'
katv-á 'wrote-3.f.sg.'
katv-ú 'wrote-3.pl.'

c. *Past tense verbs, 3rd person, high vowel retraction*
hekím-a 'set up-3.f.sg.'
hifsík-a 'stopped-3.f.sg.'
yakúm-u 'will arise-3.pl.' (Glinert 1989, pp. 469–71)

In contrast, past tense verbs bearing first or second person agreement are never stressed on an inflectional suffix. Rather, as the examples in (ii) illustrate, stress is always assigned to the final vowel of the stem.

(ii) *Past tense verb, 1st & 2nd person*
kipál-ti 'folded-1.sg.'
kipál-ta 'folded-2.m.sg.'
kipál-t 'folded-2.f.sg.'
kipál-nu 'folded-1.pl.'
kipál-tem 'folded-2.pl.' (Glinert 1989, p. 470)

Thus, it would appear that present tense and past tense number and gender agreement (i.e., Num) is affixed before stress assignment, while past tense person agreement (i.e., D) is affixed after stress assignment. Second person, future tense verb forms provide further evidence for the claim that number and gender agreement is within the domain of stress assignment. As illustrated in (iii), these inflected verbs, which contain a prefix bearing the person specification as well as a suffix bearing number and gender specification, are stressed on the last syllable, regardless of its morphological status.

(iii) *Future tense verb, 1st & 2nd person*
e-kapél '1.sg.-will fold'
ne-kapél '1.pl.-will fold'
te-kapél '2-will fold(m.sg.)'
te-kapl-í '2-will fold-f.sg.'
te-kapl-ú '2-will fold-pl.' (Glinert 1989, p. 470)

Finally, I have assumed a unified analysis for personal agreement in past and future tenses. My analysis has ignored the fact that past tense agreement takes the form of a synthetic suffix which specifies the complete set of agreement features on the subject, while future tense agreement consists of a prefix-suffix combination. The relevant paradigms are reproduced in (31).

(31)a. Past tense 'wrote'

	singular		plural	
	masc.	fem.	masc.	fem.
1st	katavti		katavnu	
2nd	katavta	katavt	katavtem	katavten
3rd	katav	katva	katvu	

b. Future tense 'will write'

	singular		plural	
	masc.	fem.	masc.	fem.
1st	ektov		niktov	
2nd	tiktov	tiktəvi	tiktəvu	
3rd	yiktov	tiktov	yiktəvu	

These facts of morphology seem to indicate that the future tense sentences might distinguish person agreement from number and gender agreement. In fact, it appears that Hebrew future tense sentences with first person subjects may be undergoing a change to a structure with two distinct agreement projections, i.e., a structure which more closely resembles that of future tense sentences with third person/impersonal subjects. Colloquial Hebrew has recently lost the morphological distinction between first singular and third singular subjects.[18] As the following examples illustrate, the third person form is now used in both contexts.

(32)a. 'ani/hu yoxal et ha-banana
I/he will-eat-sg. ACC the banana
I/he will eat the banana.

b. **pro* yoxal et ha-banana
will-eat-sg. ACC the banana (Borer 1989, p. 95)

One consequence of this innovation is the loss of first person singular

[18] This fact is reported in Borer (1989), who credits Bolozky (1982) with the original observation.

null subjects in future tense sentences. As Borer suggests, this innovation involves the loss of the first person form of future tensed verbs. In contrast, although there is homophony between the future tensed verbs which agree with second person masculine singular subjects and future tensed verbs which agree with third person feminine singular subjects, only the former license a null subject. This suggests that verbs like the following are only superficially similar.

(33)a. 'ata toxal et ha-banana
you-m.sg. will-eat-2.m.sg. ACC the banana
You will eat the banana.

b. *pro* toxal et ha-banana
will-eat-2.m.sg. ACC the banana
You will eat the banana.

c. hi toxal et ha-banana
she will-eat-3.f.sg. ACC the banana
She will eat the banana.

b. **pro* toxal et ha-banana
will-eat-3.f.sg. ACC the banana

These facts may be interpreted as evidence that the language internal variation currently attested in Modern Hebrew is a marked phenomenon representing an unstable stage in the development of the language. Nevertheless, a non-unified analysis across tenses and across persons appears to be consistent with current syntactic, morphological and phonological properties.

Section 5 explores the consequences of this analysis of pronouns and agreement for the complex null subject phenomenon in Modern Hebrew. These facts support a three-way distinction between present tense agreement, first and second person agreement in past/future tenses and third person agreement in past/future tenses.

5. Null Subjects

In his analysis of null subjects in Italian, Rizzi (1982) suggests that the agreement element that licenses null subjects is pronominal in nature. I argue that a rather literal interpretation of Rizzi's proposal can account for the facts of null subjects in Hebrew.

According to Adams (1987), licensing of null arguments has two separate requirements: identification of the position of a phonetically null argument by the head that governs it and identification of the content by co-indexation with the proper features. It is generally assumed that agreement, specifically so-called rich agreement, plays a crucial role in the licensing of null subjects, because rich agreement has the features necessary to assign an appropriate interpretation to the empty category. In other words, rich agreement serves to identify the content of the null subject. Hebrew provides striking confirmation for this view because the availability of null subjects varies across tenses and across persons. I show that there is a strong correlation between the category and feature specification of agreement and the types of null subjects it licenses in this language. Specifically, the three classes of agreement identified in the last section can account for the three-way contrast in the availability of null subjects in Modern Hebrew.

5.1. *The Distribution of Null Subjects*

I begin by reviewing the facts regarding the distribution of null subjects. As was first pointed out by Borer (1981), the availability of null subjects is correlated with the richness of agreement in this language. Borer observed that present tense agreement, which is unspecified for person, is incapable of identifying null subjects with specific reference, as illustrated by the following examples.

(34)a. ani/ata/hu/ roce glida
I/you(m.sg.)/he want-m.sg. ice cream
I/you/he want(s) ice cream.

b. **pro* roce glida
want-m.sg. ice cream

c. ani/at/hi roca glida
I/you(f.sg.)/she want-f.sg. ice cream
I/you/she want(s) ice cream.

d. **pro* roca glida
want-f.sg. ice cream

In the past and future tenses, where agreement is specified for person

as well as for number and gender, null subjects with first and second person referents are freely available, as illustrated in (35).

(35)a. ani/*pro* axalti glida
I *ate-1.sg. ice cream*

b. at /*pro* axalt glida
you-f.sg. *ate-2.f.sg. ice cream*

c. anaxnu/*pro* axalnu glida
we *ate-1.pl. ice cream*

d. atem/*pro* axaltem glida
you *ate-2.pl. ice cream*

According to Borer (1984, 1989), third person null subjects with specific reference are also available in past and future tenses, but only where there is a coreferential c-commanding NP, i.e., only in some embedded clauses.

(36)a. talila 'amra le-itamar$_i$ Se *pro*$_i$ hicliax
Talila said *to-Itamar that* *succeeded(m.sg.)*
Talila told Itamar that he succeeded.

b. talila$_j$ 'amra le-itamar Se *pro*$_j$ hiclixa
Talila said *to-Itamar that* *succeeded-f.sg.*
Talila told Itamar that she succeeded.

c. talila$_j$ 'amra le-itamar$_i$ Se hem$_k$/**pro*$_k$ hiclixu
Talila said *to-Itamar that they* *succeeded-m.pl.*
Talila told Itamar that they succeeded. (Borer 1989, p. 93)

The examples in (37) show that expletive null subjects are available in all three tenses, presumably because this class of null subjects is unspecified for person features. Agreement in this context takes the unmarked masculine singular form.

(37)a. *pro* meanyen Se dan kara et ha sefer
interesting(m.sg.) that Dan read ACC the book
It is interesting that Dan read the book. (Hazout 1991)

b. *pro* nir'e Se itamar Suv me'axer
seem(m.sg.) that Itamar again is late
It seems that Itamar is late again. (Borer 1981)

Finally, null subjects with a non-specific, indefinite reference are available in all tenses. Indefinite null subjects always co-occur with masculine plural agreement in the present tense and so-called third person masculine plural agreement in the past and future tenses. This class of null subjects never alternates with overt pronouns.[19]

(38)a. *pro*/*hem Sotim hamon mic ba arec
they drink-m.pl. lots juice in-the country
People/They drink lots of juice in Israel.

b. *pro*/*hem tafsu kvar et kol ha mavrixim
they caught-3.m.pl. already ACC all the smugglers
All the smugglers have been caught.

c. *pro*/*hem yodiu bekarov mi zaxa
they will-announce-3.m.pl soon who won
ba taxarut
in-the contest
They'll soon announce/It will soon be announced who won the contest. (Berman 1980, p. 763)

Summarizing briefly, expletive null subjects and non-specific null subjects are available in all tenses. Null subjects with specific reference are only available in the past and future tenses. First and second person referential null subjects are freely available in these tenses, but third person referential null subjects must have a c-commanding antecedent and, consequently, are only available in embedded clauses. In terms of distribution, it is possible to identify three distinct classes of null subjects in Hebrew: (a) expletive null subjects and thematic null subjects with non-specific, indefinite reference, (b) thematic null subjects with first and second person reference and (c) thematic null subjects with third person reference.

It is argued that each of these classes of null subjects must be licensed by agreement which has the same *phi* feature specification and is of the same syntactic category. Here are the various null subjects with their particular licensing agreement: (a) expletives and null subjects with non-specific, indefinite reference are licensed by Num-Agreement specified for number and gender; (b) null subjects with first and second person reference are licensed by D-Agreement specified for person, number and gen-

[19] Cf. Berman (1980) for discussion.

der; and (c) third person null subjects are licensed by Num-Agreement specified for number and gender in conjunction with D-agreement, which lacks an inherent person specification.[20]

Tense	Agreement category	Features	Explitive *pro*	non-sp. indef. *pro*	ref. *pro*
present	Num	n, g	ok	ok	*
past/fut 1 & 2	D	p, n, g	n/a	n/a	ok
past/fut 3	D Num	def/p n, g	ok	ok	(ok)

(Features: p(erson), n(umber), g(ender), def(initeness); n/a: not applicable).

5.2. *Null Subjects and Num-Agreement*

Any theory which stipulates that present tense agreement is completely unspecified for person can account for the unavailability of null subjects with specific reference in this tense. In the analysis articulated in section 4, present tense agreement is unspecified for person because it is of the syntactic category Num, and in Hebrew Num may be specified for number and gender, but not person. As for expletive subjects, they have no particular reference. I interpret this to mean that expletives have no person specification. Consequently, they may be identified by present tense agreement whose number and gender specifications are sufficient to identify their content.

The fact that thematic null subjects with non-specific, indefinite reference are available in present tense suggests that, like expletive null subjects, they are unspecified for person. Berman (1980) mentions two facts about this type of *pro* which would appear to confirm this hypothesis. First, it is never construed as coreferential with an overt pronoun, as shown in (39). Second, it can never function as the antecedent of a reflexive anaphor, as shown in (40).

(39)a. $pro_{(*i)}$ omrim Se hem$_i$ meSuga'im
say that they crazy
They$_{(\neq i)}$ say that they$_i$ are crazy.

[20] The discussion in this section focuses on the role of agreement in identifying the contents of the empty category in subject position. For an interesting proposal regarding the role of inflection in licensing the position occupied by the null subjects in Hebrew and in VSO languages such as Irish, Welsh and Chamorro, see Doron (1988).

b. hem$_i$ yadu Se *pro*$_{(*i)}$ yefatru et dan
they knew that will-fire ACC Dan
They$_i$ knew that they$_{(\neq i)}$ would fire Dan. (Berman 1980, p. 763)

(40)a. hem$_i$ somxim 'al acmam$_i$ ve 'al dan
they rely on themselves and on Dan
They rely on themselves and on Dan.

b. **pro* somxim 'al acmam$_i$ ve 'al dan
rely on themselves and on Dan (Berman 1980, p. 763)

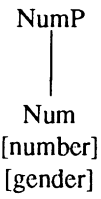
Both of these observations can be accounted for if we assume that non-specific, indefinite *pro* cannot be co-indexed with either pronominals or anaphors because they have incompatible feature specifications. More specifically, personal pronouns and anaphors pick out particular individuals and hence are definite, but the null subjects considered here are indefinite. In section 3, it was suggested that a specification for person implied a specification as definite. Now I further propose that an indefinite, non-specific noun phrase cannot be specified for a person feature.[21] This view is consistent with the fact that a non-specific, indefinite null subject may be identified by present tense agreement which has no person specification.

Let us suppose that a null subject can only be identified by an agreement element which not only has the same feature composition but which also belongs to the same syntactic category. This means that non-specific, indefinite *pro* is of the same syntactic category and contains the same features as present tense agreement. More specifically, it is of the category Num, is specified for number and gender only and has the following structure.

[21] English indefinite specific DPs may be coreferential with personal pronouns, but indefinite nonspecific DPs are pronominalized with an impersonal pronoun, as illustrated by the following contrast:

(i) I am looking for a French phonetician$_i$. Do you know him$_i$? (specific)
(ii) I am looking for a French phonetician$_i$. Do you know one$_i$? (non-specific)

(41) *Non-specific, indefinite* ***pro***



5.3. *Null Subjects and D-Agreement*

Turning next to past and future tenses, one finds a richer agreement paradigm which manifests distinctions in person as well as in number and gender. One finds also that first and second person null subjects are freely available in these tenses, which indicates that past and future tense agreement is rich enough to identify thematic null subjects with specific reference. Any theory which assumes that agreement is specified for person in these tenses can account for this fact. However, the fact that third person null subjects with specific reference require a c-commanding noun phrase antecedent in past and future tenses suggests that third person agreement must be accorded a different status in Hebrew.

Borer (1989) analyzes Hebrew third person agreement as anaphoric, rather than pronominal, in order to account for the limited availability of third person null subjects in this language. In this section, I show that the structure I posited for this form of agreement can be integrated with Borer's proposal to account for the differences between first and second person agreement on the one hand and third person agreement on the other.

Let us begin by reviewing the relevant aspects of Borer's anaphoric AGR analysis. Borer assumes that agreement which is anaphoric in nature must be bound by a +N category at S-structure. She attributes the unavailability of third person null subjects in Hebrew matrix clauses to the fact that *pro* is the only potential binder for AGR in this context, but *pro* itself lacks the necessary referential (person) index to bind AGR because AGR assigns *pro* its interpretation. In other words, the ungrammaticality of sentences such as (42) is due to the fact that neither *pro* nor AGR has an inherent person specification.

(42)a. **pro* 'axal banana
ate-3.m.sg. banana

b. **pro* 'yoxal banana
will eat-3.m.sg. banana (Borer 1989, p.94)

Borer notes that AGR may not have a split antecedent, a property which distinguishes anaphors from pronouns, as shown by the ungrammatical examples in (43). The reason that anaphoric AGR may license null subjects in embedded clauses is that in this context it can raise to C, a position in which it can be bound by a +N element in a higher clause.

(43)a. *rina$_i$ amra le-ran$_j$ Se-**pro*$_{i+j}$ hiclixu ba- bxina
rina said to-Ran that succeeded-3.m.pl. in-the-test
(Borer 1989, p. 96)

b. rina$_i$ amra le-ran$_j$ Se-*pro*$_j$ hicliax ba- bxina
rina said to-Ran that succeeded-3.m.sg. in-the-test
Rina told Ran that he succeeded in the exam.

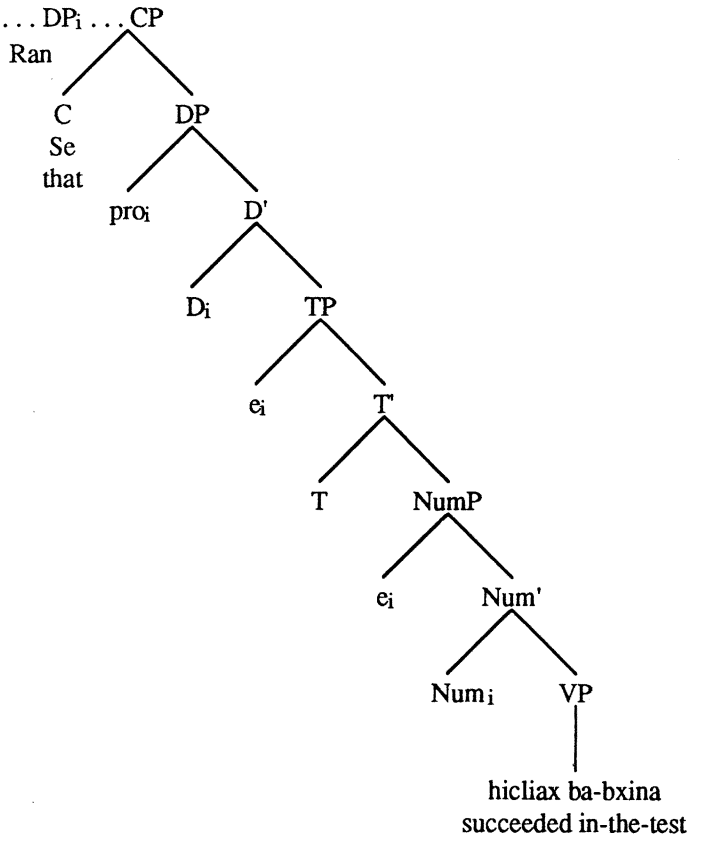
In section 4, I suggested that third person agreement in past and future tenses consists of two distinct syntactic categories: NumP and DP. The former is the complement of TP and the latter is the maximal projection of the sentence. The head of NumP is an affix with phonological content which is specified for number and gender. The head of DP is an abstract element specified for definiteness. The abstract agreement element in the head of DP is the anaphoric AGR element that Borer identifies. This abstract agreement element is anaphoric because it lacks an inherent feature specification, and must acquire a specification either by Spec-head co-indexation with an overt subject, or by raising to C where it can be bound by a nominal element with the necessary feature specification in a higher clause.

Given the analysis to this point, embedded clauses containing third person referential *pro* would appear to contain two distinct null subjects: an expletive or non-specific element in [Spec, NumP] which is specified only for number and gender features and a referential null subject in [Spec, DP] which acquires its feature specification indirectly through anaphoric agreement from a fully specified, c-commanding nominal constituent. However, this option can be ruled out on the basis of Case considerations. I assume that a null subject can be licensed only if it (or the agreement category that identifies its contents) is Case-marked. Consequently, a sentence that contains two null subjects would have two distinct nominals competing for the same nominative case.

This problem can be avoided if [Spec, DP] and [Spec, NumP] belong to the same NP chain and thus share a single case. Moreover, since case

is assigned to the head of an NP chain, it must be the element in [Spec, DP] which is directly assigned nominative case. Since [Spec, NumP] is co-indexed with both [Spec, DP] and Num, they must all bear the same number and gender features, ensuring that the verb agrees with its null subject. In other words, the empty category in [Spec, NumP] would have the properties characteristic of an NP-trace. This results in a caseless empty category with a co-indexed, local antecedent in an A-position. A partial structure of (43b) is given in (44) below.

(44)



Summarizing the results of this section, I have presented an analysis of null subjects which assumes a literal interpretation of Rizzi's (1982) proposal that null subjects are licensed by agreement which is pronominal in nature. The complexities in the distribution of null subjects indicate that agreement which is 'rich enough' to license null subjects determines both the feature specification and the syntactic category of the empty category it identifies. The extension of this approach to the case of anaphoric

agreement which licenses third person null subjects in past and future tenses suggests that anaphoric agreement, like pronominal agreement, is a nominal functional category. The difference between the two is that only the latter is *inherently* specified with the necessary features, while the former acquires its feature specification by co-indexation with a noun phrase in a higher clause.

6. Conclusion

In conclusion, I have argued that noun phrases contain two functional categories – D and Num. Pronouns are analysed as noun phrases that contain only these functional categories. I have further hypothesized that the syntactic category of agreement, another nominal functional element, is also either D or Num. This analysis supports the view that the essential difference between pronouns and agreement is their role in the syntax, rather than their syntactic category. In addition, it provides a structural foundation for the distinction between rich and impoverished agreement.

I have further argued for categorical differences among personal pronouns in Hebrew: First and second person pronouns are Determiners, as originally suggested by Postal (1966). Third person pronouns, on the other hand, have a more complex structure. Given the universal nature of this person distinction, the exceptional properties of Hebrew would appear to derive not from the fact that this language differentiates these two classes of pronouns, but rather from the strategy it uses to express this difference.

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