Available online at www.sciencedirect.com
SCIENCE DIRECT®
Lingua 116 (2006) A1–A40
Lingua
www.elsevier.com/locate/lingua

Head movement in Hebrew nominals: A reply to Shlonsky

Asya Pereltsvaig *

Cornell University, Department of Linguistics, 203 Morrill Hall, Ithaca, NY 14853-4701, USA

Received 30 January 2005; received in revised form 16 November 2005; accepted 17 November 2005
Available online 18 January 2006

Abstract

In his recent article (Shlonsky, U., 2004. The form of Semitic noun phrases. Lingua 114, 1465–1526), Shlonsky proposes a phrasal-movement analysis of word order in Hebrew (and Arabic) noun phrases and argues that the positioning of nominal modifiers with respect to the head-noun cannot be adequately handled by an N-raising derivation. In the present article I argue that in fact the head movement approach to Hebrew noun phrases handles the data more adequately and without as many stipulations. Specifically, I show that Shlonsky's remnant phrasal movement analysis fails provide an account of three empirical problems: (i) the distinct behavior of light and heavy adjectives, (ii) the position of DP and PP complements of the noun, and (iii) the correlation between agreement in definiteness (but not necessarily in gender or number) and pre- versus post-nominal position of modifiers. Furthermore, I identify several theoretical complications needed for Shlonsky's analysis to work and argue that they outweigh the apparent reduction in theoretical complexity that the elimination of head movement is supposed to result in.

Keywords: NP; Head movement; Remnant movement; Phrasal movement; Modern Hebrew

1. Introduction

In recent years, the familiar dichotomy between head movement and phrasal movement has been challenged. A number of authors have argued that head movement is both theoretically problematic and empirically unnecessary. For example, Mahajan (2003) argues that "the syntactic computation does not involve a rule of head movement" (p. 219; cf. Chomsky, 2000). Accepting this view means that "the phenomena that have been previously analyzed using head movement should be reanalyzed as involving complete or remnant phrasal movement" (ibid.).

DOI of original article: 10.1016/j.lingua.2003.09.019.
* Tel.: +1 607 255 0733.
E-mail address: asya_pereltsvaig@yahoo.com.

0024-3841/$ – see front matter © 2005 Elsevier B.V. All rights reserved.
doi:10.1016/j.lingua.2005.11.001

This is exactly what a number of authors have undertaken to do for the clausal domain. For instance, Mahajan (2003) himself provides an analysis of the OV–VO distinction in terms of remnant phrasal movement; Taraldsen's (2000) approach to the same problem is similar (albeit not identical). Furthermore, Rackowsky and Travis (2000) propose to analyze VSO languages (e.g., Niuean; in addition to VOS languages, such as Malagasy) as derived by VP-movement rather than V-movement; Freeze and Georgopoulos (2000), Lee (2000), Massam (2000), and several others all converge on a similar analysis. Likewise, Müller (2004) reanalyzes V2 in terms of remnant phrasal movement instead of head movement (as in the classical analysis by den Besten, 1983). In addition, Haegeman (2000), Hallman (2000), Koopman and Szabolcsi (2000), and Nilsen (2002) all seek to limit the scope of application of head movement.

Seen in light of these developments, Shlonsky's (2004) analysis extends this approach to the domain of noun phrases; he argues that "there is virtually no movement of lexical X° categories internally to DP" (p. 1466). Instead of the approach traditional to Semitic literature (cf. Borer, 1996; Duffield, 1999:129; Fassi-Fehri, 1989, 1993; Hazout, 1990, 1995; Ritter, 1987, 1988, 1991; Shlonsky, 1991; Siloni, 1991, 1994, 1996a) – which use head movement to derive the orders where the noun precedes (rather than follows) possessors, adjectives and demonstratives, as illustrated in (1) – Shlonsky proposes to derive such orders using remnant phrasal movement.[1,2]

(1) a. **širey** ha-'ahava šel šlomo 'arci ha-yafim ha-'ele
songs DEF-love of Shlomo Artzi DEF-beautiful DEF-these
'those beautiful love songs of Shlomo Artzi'

b. **kutub-u** l-'aqqad-i l-xadra?-u t-talaatat-u kull-u-haa
books-NOM al-Aqqad-GEN the-green-NOM the-three-NOM all-NOM-them
'all of al-Aqqad's three green books' (Cinque, 2003:67)

Thus, Shlonsky's analysis of Semitic noun phrases is parallel to the analysis of V-initial orders proposed by Freeze and Georgopoulos (2000), Lee (2000), Mahajan (2003), Massam (2000), Rackowsky and Travis (2000), and Taraldsen (2000). As will be shown below, not only is Shlonsky's remnant NP-movement analysis of N-initial orders similar to the remnant VP-movement analysis of V-initial orders, but some of the problems it faces are similar to those faced by the remnant phrasal movement analysis in the clausal domain as well.

Even though reanalyzing head movement constructions as involving remnant phrasal movement instead has become a common trend in syntactic theory, several authors converge on the idea that head movement should not be dispensed with. For example, Carnie and Harley (2000) and McCloskey (2005) reject remnant phrasal movement as the correct approach to VSO order in Irish; for instance, McCloskey (2005:157) concludes that "the hypothesis of predicate fronting is not obviously useful in accounting for verb-initial orders in [Irish]" and that "one must

[1] Similar although not identical analyses have been proposed by Sichel (2002, 2003) for Hebrew and Cinque (2003) for Arabic. For the sake of clarity and exposition, I will focus on Shlonsky's proposal in this paper, although some of my critique of his analysis applies to Sichel's and Cinque's proposals as well. However, I agree with Sichel (2002) – who uses head movement to derive construct state nominals (see section 5) – that head movement is "a last resort" (p. 299) since it is more economical than phrasal movement (since it moves less material).

[2] The following abbreviations are used in glossing the examples: ABS, absolutive case; ACC, accusative case; AGR, agreement marker; COP, copula; CS, construct state form (only where morphologically distinct); DEF, definiteness marker; EMPH, emphatic *ha*-marker (in reduced relatives); ERG, ergative case; F, feminine; GEN, genitive case; L, linker; M, masculine; NOM, nominative case; OBL, oblique case; OM, object marker; PAST, past; Pl, plural; PTCP, participial *beynoni* form; Sg, singular.

still postulate head-movement to account for the ultimate position of the finite verb''.[3] Furthermore, Zwart (2003) argues for the view of head movement as ''independent of morphosyntactic features'' (p. 5) and defends ''the strict separation between head movement and phrasal movement brought out in Hans den Besten's earliest work . . .'' (p. 4). Thus, for Zwart (2003),

> head movement is the outcome of an automatic chaining process of heads of connected projections, with 'phonological' considerations determining which head of the chain gets to be spelled out. (p. 7)[4]

In addition, Lechner (2005) argues that, despite claims to the contrary in the literature (cf. Chomsky, 1999:30–31; Mahajan, 2003:220), head movement does affect meaning and hence cannot be placed entirely in the PF component (even in cases where Chomsky, 1999, argues it must be done).

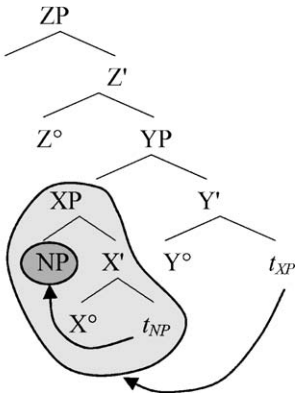
In this paper, I side with Carnie and Harley (2000), Lechner (2005), McCloskey (2005), and Zwart (2003) and argue in support of head movement. But unlike these authors, I derive evidence in support of head movement from the nominal domain, by showing that a head movement analysis of Semitic noun phrases is preferable to a (remnant) phrasal movement analysis, proposed by Shlonsky (2004). For purposes of exposition, I focus on Hebrew noun phrases.

The paper is organized as follows: in the next section, I present Shlonsky's analysis of Semitic noun phrase and some of its empirical advantages. In section 3, I describe my alternative analysis of Hebrew noun phrases based on head movement. In sections 4–6, I discuss three empirical areas where Shlonsky's analysis runs into problems. Section 7 concludes the paper.

2. Shlonsky (2004) on Semitic noun phrases

Shlonsky's (2004) analysis is based on ''roll-up'' or ''snowballing'' phrasal movement: in the first step, the lexical NP moves into the Spec of a higher functional projection XP; however, in the second step, it is not the same NP that moves but rather the XP, that is the phrase whose Spec the NP occupies (the content of the labels XP, YP, ZP is discussed in section 6). Similarly, in the third step, it is the YP that would move into Spec-ZP. This is schematized in (2):

(2)

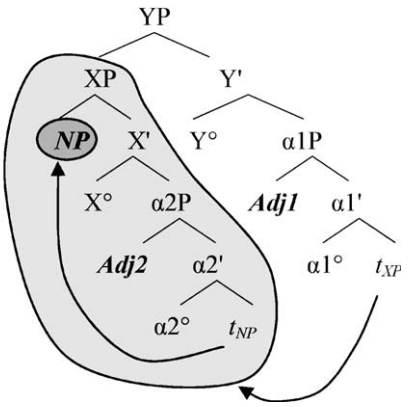


[3] In addition, Otsuka (2005) and Oda (2005) argue against a uniform approach to VSO orders: Otsuka's proposal is to derive the VSO order in Niuean by VP-remnant movement and the VSO order in Tongan by head movement. Oda argues that although some verb-initial languages are derived by head movement, Irish is not one of them.

[4] I return to this idea in section 6.

However, since Shlonsky assumes that adjectives are APs hosted in Specs of dedicated functional projections (cf. Cinque, 1994, 1999), he must adopt a more complex representation, one where the projections hosting the remnant NP movement (i.e., XP, YP, ZP in the diagram above) are sandwiched between functional projections that host adjectives in their Specs (which I call here α1P, α2P, etc.). The resulting derivation is schematized in (3); pronounceable elements are marked in italics and boldface[5]:

(3)



This allows Shlonsky to account for the following empirical generalization: the order of post-nominal adjectives in Hebrew mirrors the order of pre-nominal adjectives in languages like English (note that unlike in French or Italian, all adjectives in Hebrew are post-nominal). For instance, in English adjectives denoting color precede those denoting nationality and adjectives denoting a subjective evaluation precede those denoting age; a more detailed hierarchy for pre-nominal adjectives from Scott (2002:99, 102) is given in (4).[6]

(4) (Partial) hierarchy for languages with prenominal adjectives
EVALUATING COMMENT > SIZE > LENGTH > HEIGHT > SPEED > WIDTH > WEIGHT > TEMPERATURE > AGE > SHAPE > COLOR > NATIONALITY/PROVENANCE > MATERIAL

In contrast, the order of post-nominal adjectives in Hebrew is the reverse, as shown in (5a–b, c–d); for more Hebrew data see Shlonsky (2004:1485–1486).[7]

[5] A similar analysis is proposed in Sichel (2002, 2003) for Hebrew, in Cinque (2003) for Arabic, and in Laenzlinger (2005) for post-nominal adjectives in French.

[6] Other languages with pre-nominal adjectives that follow this hierarchy are Chinese (with *de*-less adjectives), Greek, Kannada (see Sproat and Shih, 1991), as well as Russian. For the purposes of this paper, I will ignore the issue of whether this hierarchy is cognitive or grammatical in nature, and if the latter, if it is semantic or syntactic (see Bouchard, 2002; Laenzlinger, 2005; Scott, 2002; Sproat and Shih, 1988, 1991, inter alia).

[7] There is a debate in the literature as to whether Hebrew and Arabic have adjective ordering restrictions. Sproat and Shih's (1991) often-cited claim that Arabic does not have adjective ordering restrictions and Duffield's (1999) similar claim with respect to Hebrew are not corroborated by a more detailed consideration of the data, taking into account such factors as intonation, relative size of the two adjectives, their frequency in the language, and contrastive focus. See Shlonsky (2004) and Cinque (2003:66–67) for Arabic.

(5) a. a brown Swiss cow [English: adj1>adj2>N]
b. para švejcarit xuma [Hebrew: N>adj2>adj1]
cow Swiss brown
c. a typical young voter [English: adj1>adj2>N]
d. ha-boxer ha-caʔir ha-tipusi [Hebrew: N>adj2>adj1]
DEF-voter DEF-young DEF-typical

As can be seen in (3), the mirror order of adjectives is derived under Shlonsky's analysis as follows: first the NP containing the noun inverts around the lower adjective (i.e., Adj2) and then the constituent containing the noun and the lower adjective – in that order – (i.e., XP) inverts around the higher adjective (i.e., Adj2).

Assuming that the order of merger accounts for the scope of multiple adjectives (cf. Ernst, 2002), the derivation in (3) provides an account of yet another generalization (not discussed by Shlonsky himself): in Hebrew it is the rightmost adjective that takes scope over the leftmost adjective, once again in reverse of the English facts. For instance, in English *a fake antique coin* is a coin whose antiquity is faked (i.e., the leftmost adjective *fake* takes scope over the rightmost adjective *antique*), whereas *an antique fake coin* is a coin that was faked in antiquity (again, the leftmost adjective takes scope over the rightmost adjective). Similarly, *valuable broken pottery* is necessarily valuable (perhaps to archaeologists, for example), whereas *broken valuable pottery* might be worthless; *a dead dangerous animal* might be a stuffed lion, which was dangerous in life but is now dead, whereas *a dangerous dead animal* might be a dead sheep which is infected with anthrax and is thus dangerous (cf. Svenonius, 1993:450–451). The corresponding Hebrew examples are given in (6):

(6) a. matbeʔa ʔatiq mezuyaf
coin antique fake
'a fake antique coin'
(= a coin whose antiquity is faked)

a'. matbeʔa mezyaf ʔatiq
coin fake antique
'an antique fake coin'
(= a coin that was faked in antiquity)

b. kli-xeres šavur rav-ʔerex
pottery broken valuable
'valuable broken pottery'
(= pottery shards valuable to archaeologists)

b'. kli-xeres rav-ʔerex šavur
pottery valuable broken
'broken valuable pottery'
(which may be worthless)

c. xaya mesukenet meta
animal dangerous dead
'a dead dangerous animal'
(e.g., a stuffed lion)

c'. xaya meta mesukenet
animal dead dangerous
'a dangerous dead animal'
(e.g., an anthrax-infected sheep)

Shlonsky (2004:1487) notes that movement of the noun through a series of empty heads of projections (with adjectives in their Specs) cannot derive the Hebrew order (the order derived in this fashion is the order *N>adj1>adj2*, which is grammatical in Irish; cf. Duffield, 1999; McCloskey, 2004; Rouveret, 1994; and Sproat and Shih, 1988, 1991). However, as shown in section 4, the mirror order of adjectives in Hebrew can be derived by the ''snowballing'' head movement, proposed in section 3 of this paper.

The second empirical area where Shlonsky's (2004) analysis appears to be advantageous is the analysis of construct state nominals. As is well-known, in such nominals the Genitive

complement (*aka* construct state complement, annex, or supporter, or *somex* in Hebrew; in boldface in (7)) precedes the adjectives (in stark contrast with Celtic languages, where the adjective must occur between the Head and the Genitive complement; cf. Duffield, 1999:130; Sadler, 1998, 2000)[8]:

(7) a. [lehaqat **roq-en-rol**] qtana
group.CS rock-n-roll little
'a little rock-n-roll group' (Shlomo Artzi, ''Pcacat atom'')

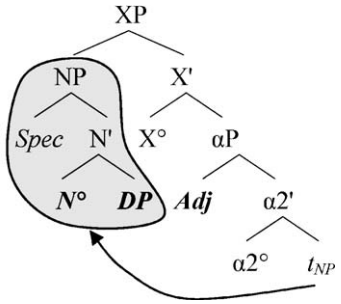
a'. * lehaqat qtana **roq-en-rol**
group.CS little rock-n-roll

b. [hafgazat **ha-kfar**] ha-'israelit ha-masivit ha-'efšarit
bombardment DEF-village DEF-Israeli DEF-massive DEF-possible
'the possible massive Israeli bombardment of the village'

b'. * hafgazat ha-'israelit ha-masivit ha-'efšarit **ha-kfar**
bombardment DEF-Israeli DEF-massive DEF-possible DEF-village

According to Shlonsky (2004:1505), this order is derived by phrasal movement of the constituent that contains the noun plus the Genitive complement DP (bracketed in (7)) over the adjective; the relevant constituent is the lexical NP, which contains the head noun and the Genitive complement DP, in that order. For this to work, Shlonsky assumes that the Genitive complement is exactly that, a complement (i.e., sister) to the noun rather than its Spec:

(8)



In section 5 of this paper, I show that although this analysis has initial appeal, it runs into insurmountable problems in accounting for both construct state and free state nominals.

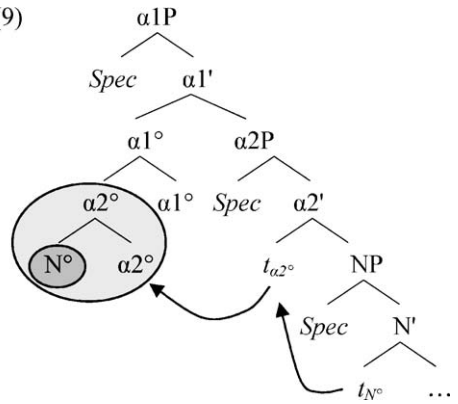
Finally, consider the nature of the nodes sandwiched between the dedicated functional projections hosting adjectives, which I have so far labeled XP, YP, ZP. According to Shlonsky (2004, section 6), these are AgrP nodes representing agreement on adjectives. In section 6 of this paper, I argue that using such AgrP nodes is problematic, both theoretically and empirically. Specifically, these nodes unnecessarily complicate the analysis of intra-DP agreement and appear to serve no purpose in the structure but to provide landing sites for a moving constituent, and as such should be avoided.

[8] Hebrew does not have morphological Genitive case marking; however, Arabic does. The term ''Genitive complement'' is traditionally used in Semitic literature for both languages.

3. A head movement alternative

In this paper, I propose a head movement alternative to Shlonsky's phrasal movement analysis.[9] Unlike the classical head movement analysis (cf. Borer, 1996; Fassi-Fehri, 1989, 1993; Hazout, 1990, 1995; Ritter, 1987, 1988, 1991; Shlonsky, 1991; Siloni, 1991, 1994, 1996a), which is successive cyclic in nature, the analysis proposed here shares with Shlonsky's analysis its "snowballing" character. Thus, each consecutive step in the derivation moves a larger constituent, instead of moving the same constituent. However, unlike in Shlonsky's analysis, it applies to (complex) heads. Specifically, in the first step, the lexical head N° left-adjoins to α2°, the head of the functional projection that hosts the lower adjective, and then the complex head N°+α2° left adjoins to α1°, the head of the functional projection that hosts the higher adjective, and so on (the same analysis applies to cardinals and demonstratives, as discussed in section 6).

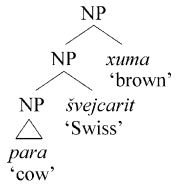
(9)



This analysis is not as radically new as may seem. It is in line with the traditional view of head movement that it "picks up material through its cyclic movement through other heads" (Travis,

[9] An alternative approach to post-nominal adjectives in Hebrew would involve no movement at all, but would merge the adjectives in a right-adjunction structure, where the rightmost adjective c-commands the preceding one(s), which would account for the scope facts illustrated in (6) in the main text.

(i)



According to this approach, the relative hierarchy of adjectives is the same across languages, but the left-right direction of adjunction is parametrized. Note, however, that this approach is incompatible with Kayne's (1994) anti-symmetry of syntax. Moreover, there does not seem to be any explanation as to why some languages allow pre-nominal adjectives (and left-adjunction only, such as English), while others allow post-nominal adjectives (and right-adjunction, such as Hebrew), or why some elements are right-adjoined and post-nominal, while others are not; I return to this issue and the solution provided under the "snowballing" head movement analysis in section 6. Therefore, I reject this right-adjunction approach and will not consider it any further in this paper.

2004a). The novelty here is extending this view of head movement beyond the realm of inflectional morphology (cf. Baker, 1985) and into the realm of morphologically independent heads. It has been an often-sought goal to make morphological derivations look like syntactic ones. The analysis proposed in this paper is in essence the syntactic derivation that Baker-style inflectional morphology seeks to emulate. My analysis is also similar in spirit to that of Sproat and Shih (1991), who claim that adjectives involved in what they call 'direct modification', that is the ones that are subject to ordering restrictions (see section 2), form ''syntactic words'' with the noun, being in essence syntactic compounds.[10]

Note that for this analysis to account for the basic fact of the mirror order for post-nominal adjectives (illustrated in section 2), the relevant adjectives must be assumed to occupy the heads – rather than Specs – of ''distinct functional projections that are intrinsically related to aspects of their semantic interpretation'' (Scott, 2002:91), namely $\alpha 1^{\circ}$ and $\alpha 2^{\circ}$. This approach – analyzing at least some adjectives as heads – has been taken by Abney (1987), Bernstein (1992, 1993), Delsing (1993), Sadler and Arnold (1994), Sichel (2002:302), and Sigurðsson (1993).[11]

Assuming that at least some adjectives are heads leads us to the first prediction that can distinguish the head movement analysis proposed in this paper, on the one hand, and the remnant phrasal movement analysis proposed by Shlonsky (2004), on the other hand: according to the former, only adjectives that occupy head positions (i.e., ''light adjectives'', cf. Sadler and Arnold, 1994) will occur in the mirror order, whereas adjectives that are necessarily phrasal (i.e., adjectives with phrasal complements or modifiers, or ''heavy adjectives'') will not occur in the mirror order. Under the phrasal movement analysis, both heavy and light adjectives are expected to pattern the same, everything else being equal. In section 4 I show that it is the prediction of the head movement analysis that is borne out.

The second obvious difference between the head movement analysis proposed in this paper and the remnant phrasal movement analysis proposed by Shlonsky is that under my analysis only the head N° moves, whereas under the latter analysis the whole NP moves. Thus, the head movement analysis predicts that NP-internal material, such as complements of the noun, will be stranded at the right edge of the noun phrase, whereas the phrasal movement analysis predicts that NP-internal material will move together with the noun. Recall from the previous section that Shlonsky shows how this prediction favors the phrasal movement analysis if one considers construct states nominals. In section 5 I show that not only the head movement analysis proposed here works better for free state nominals, but also that phrasal movement analysis leads to an irresolvable paradox with respect to construct state nominals themselves. All in all, I argue that my head movement analysis is preferable to Shlonsky's phrasal movement analysis as far as complements of the noun are concerned.

The third difference between Shlonsky's phrasal movement analysis, outlined in (3), and the head movement analysis proposed here is that the former requires a number of functional projections, dubbed here XP, YP and ZP, whose semantic content is rather dubious. As mentioned

[10] The claim that (light) adjectives form a complex head is further supported by the fact that (for many speakers) parentheticals cannot be inserted either between the N° and an adjective, nor between two (light) adjectives (but see Shlonsky, 2004:1467). I thank Eithan Zweig for bringing this point to my attention.

[11] Delsing (1993) argues that adjectives (in Mainland Scandinavian) are heads which take the NP as their right-hand specifiers. As heads, adjectives block the N-to-D movement, forcing the use of a pre-nominal article. For me, adjectives in the head position would block cyclic HM but not ''snowballing'' movement (because of the impossibility of excorporation). Sadler and Arnold (1994) argue that only pre-nominal adjectives in English are heads, but not the post-nominal ones, a point to which I return in section 4.

in the previous section, Shlonsky (2004) identifies these projections as AgrPs which encode the agreement between the noun and the adjective. In section 6, I show that once elements such as demonstratives, quantifiers, and numerals are considered, (morphological) agreement turns out to be less uniform, making the use of AgrPs to represent agreement empirically undesirable. Furthermore, I argue that the use of AgrPs goes against the Minimalist spirit that Shlonsky strives for in his article. Thus, once again, the head movement analysis, which does not require any AgrPs comes out as the more elegant of the two, both empirically and theoretically.

4. Adjective placement

According to Sadler and Arnold (1994), ''light adjectives'', that is those that occupy a head position, must be distinguished from ''heavy adjectives'', that is adjectives that are phrasal in virtue of having a phrasal complement (e.g., *grateful* ***for the present***) or a phrasal modifier (e.g., *polite* ***in manner***). In English, light adjectives may (in fact, typically do) appear pre-nominally, whereas heavy adjectives must appear post-nominally; hence the ungrammaticality of **a grateful for the present child* or **a polite in manner student* (see Sadler and Arnold, 1994:189–192). Note that adjectives with non-phrasal modifiers (such as degree modifiers) are allowed to appear pre-nominally in English (e.g., *a rather noticeably defective heater*); hence, such adjectives are considered light and analyzed as (complex) heads (cf. Sigurðsson, 1993:194–195).[12] The same is true of coordinated light adjectives: they can appear pre-nominally (e.g., *his blue and gray palette*, **his palette blue and gray*) and are analyzed as complex heads.

Keeping this distinction in mind, it turns out that Hebrew distinguishes light from heavy adjectives as well. As shown in section 2, light adjectives occur in the mirror order (compared to pre-nominal adjectives, e.g., in English). However, the same is not true for heavy adjectives.

Before we consider heavy adjectives, a caveat must be made regarding reduced relatives in Hebrew. As shown in Doron and Reintges (2005), heavy adjectives in Hebrew are often confounded with reduced relatives (similar to participial reduced relatives). In order to distinguish heavy adjectives per se from adjectival reduced relatives, one must consider the nature of the *ha*-marker on the adjectival phrase. First, the *ha*-marker on reduced relatives does not show agreement in definiteness; it appears even if the noun modified by the reduced relative is

[12] Further argument for treating degree (and similar adverbial) modifiers as heads, brought to my attention by Marcel den Dikken (personal communication), comes from the fact that such modifiers block incorporation of an adjective into a verb in Dutch (and such incorporation is typically analyzed as head movement).

(i) a. dat Jan de deur heeft rood-geverfd
that Jan the door has red-painted
'that Jan has painted the door red'

b. * dat Jan de deur erg heeft rood-geverfd
that Jan the door very has red-painted
intended: 'that Jan has painted the door very red'

The difference between degree modifiers in Dutch and Hebrew seems to be that in Dutch they cannot participate in the head movement themselves, as they can in Hebrew. I have no account of this difference so far.

(ii) * dat Jan de deur heft erg-rood-geverfd
that Jan the door has very-red-painted
intended: 'that Jan has painted the door very red'

indefinite (following Doron and Reintges, 2005, who borrow this term from traditional Semitic literature, I call this marker ''emphatic''). In contrast, the *ha*-marker on heavy adjectives, as with light adjectives, always shows agreement in definiteness and does not appear if the head noun is indefinite (this agreement-in-definiteness phenomenon is discussed in more detail in section 6). The second test, distinguishing ''emphatic'' *ha-* from definiteness *ha-*, is the attachment site of the *ha*-marker: in reduced relatives the ''emphatic'' *ha-* must attach to the head (i.e., the participle or the adjective itself) and cannot attach to a degree adverb or a comparative *yoter* 'more'. Consider the following examples: (10a) is an example of a participial reduced relative and it is ungrammatical because the emphatic *ha*-marker is present (it is clearly not a definiteness marker since the head noun *laqoxot* 'customers' is morphologically indefinite), yet, as such it cannot attach to a degree modifier *me'od* 'very'. The comparison of (10a) and (10b) shows the parallelism between participial and adjectival reduced relatives.

(10) a. * laqoxot [ha-me'od **maʔadifim** 'et ha-model ha-me'od yafe ha-ze]
customers EMPH-very prefer.PTCP ACC DEF-model DEF-very beatuful DEF-this
'customers who very much prefer this very beautiful model'

b. * naʔara [ha-me'od **gvoha** yaxasit le-gil-a]
girl EMPH-very tall relative to-age-her
'a very tall girl relative to her age'

Having made this distinction between heavy adjectives proper and adjectival reduced relatives, we can consider the placement of the former.[13] Consider the example in (11): light adjectives appear in the mirror order compared to English, namely an evaluative adjective (e.g., *yafim* 'beautiful') follows a size adjective (e.g., *gvohim* 'tall'):

(11) a. psalim gvohim yafim b. * psalim yafim gvohim
sculptures tall beautiful sculptures beautiful tall
'beautiful tall sculptures' (cf. Borer, 2004:195, 229)

However, if the size adjective *gvohim* 'tall' has a comparative PP complement, as in (12), or a phrasal modifier, as in (13), it no longer precedes the evaluative adjective *yafim* 'beautiful'; instead, it must follow the evaluative adjective[14]:

(12) a. * ha-psalim [ha-yoter gvohim mi-david šel mikelandželo] ha-yafim
DEF-sculptures DEF-more tall from-David of Michelangelo DEF-beautiful
intended: 'the beautiful sculptures taller than ''David'' by Michelangelo'

b. ha-psalim ha-yafim [ha-yoter gvohim mi-david šel mikelandželo]
DEF-sculptures DEF-beautiful DEF-more tall from-David of Michelangelo
'the beautiful sculptures taller than ''David'' by Michelangelo'

[13] Reduced relatives do not occur in the mirror order either, but being relative clauses they may have independent reasons for their placement, so I will not consider them here any further.

[14] The bracketed constituent in (12) is not a reduced relative because the marker *ha-* is attached to a comparative *yoter* 'more' and not to the head adjective. The bracketed constituent in (13) and (17) is not a reduced relative because the marker *ha-* is absent.

(13) a. * psalim [gvohim yaxasit la-'axerim] yafim
sculptures tall relative to.DEF-others beautiful
intended: 'many tall sculptures relative to the others'

b. psalim yafim [gvohim yaxasit la-'axerim]
sculptures beautiful tall relative to.DEF-others
'many tall sculptures relative to the others'

As expected from English, adjectives with non-phrasal modifiers (e.g., *me'od* 'very', *mid'ay* 'too much', *legamrey* 'completely', *lix'ora* 'apparently') pattern with light adjectives in that they occur in the mirror order:

(14) a. psalim [gvohim me'od] yafim
sculptures tall very beautiful
'beautiful very tall sculptures'

b. * psalim yafim [gvohim me'od]
sculptures beautiful tall very

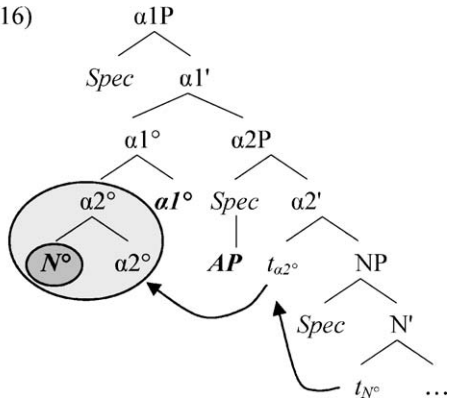
Similarly, coordinated light adjectives pattern with single light adjectives in that they occur in the mirror order (cf. the pre-nominal position of coordinated light adjectives in English).

(15) a. degel [kaxol ve-lavan] yafe
flag blue and-white beautiful
'a beautiful blue and white flag'

b. * degel yafe [kaxol ve-lavan]
flag beautiful blue and-white

This contrast in placement between light and heavy adjectives suggests that the head movement analysis is on the right track: unlike the phrasal movement analysis of Shlonsky (2004), which analyzes both heavy and light adjectives as APs in Specs of dedicated functional projections, the head movement analysis draws a distinction between (i) light adjectives, which are merged in the heads of those functional projections and therefore participate in the ''snowballing'' head movement, which is responsible for the mirror order, and (ii) heavy adjectives which must be merged in Specs and therefore are left unaffected by the ''snowballing'' head movement. The derivation of (13b) under the analysis proposed in this paper is given below (the nodes filled by overt material are given in italics and boldface):

(16)



In contrast to my head movement analysis, Shlonsky's remnant phrasal movement analysis cannot easily account for the data in (12) and (13). In order to save the remnant phrasal movement analysis, one could consider a solution in terms of a PF movement of heavy adjectives to the right edge of the noun phrase (much like Heavy NP Shift, due to its prosodic/structural heaviness). However, this solution is not very promising since the placement of heavy adjectives in Hebrew is not actually sensitive to the right edge of the noun phrase; in some cases, a heavy adjective cannot occur at the right edge of the noun phrase, as in the following example from Doron and Reintges (2005), where a heavy adjective cannot follow a possessor:

(17) * xavera šel Dani [gvoha yaxasit le-gil-a]
girlfriend of Danny tall relative to-age-her
intended: 'Danny's girlfriend who is tall relative to her age'

To recap, only light adjectives occur in the mirror order; if an adjective is made heavy, its position changes. The analysis proposed in this paper, which derives the mirror order through head movement, handles this fact in a more direct and elegant way than Shlonsky's (2004) phrasal movement analysis.

An additional prediction distinguishing the two analyses concerns noun phrases with two heavy adjectives. According to the head movement analysis proposed in this paper, two heavy adjectives should appear in the reverse order compared to two light adjectives, as in (18a), whereas according to Shlonsky's remnant movement analysis, two heavy adjectives are predicted to appear in the same order as two light adjectives, as in (18b).

(18) a. Head Movement analysis: N>Adj2(light)>Adj1(light), N>Adj1(heavy)>Adj2(heavy)
b. Phrasal Movement analysis: N>Adj2(light)>Adj1(light), N>Adj2(heavy)>Adj1(heavy)

Unfortunately, this prediction cannot be tested, since strings with two heavy adjectives in Hebrew appear to be degraded, regardless of the order of adjectives, unless the two adjectives are coordinated or at least one of them is in a (reduced) relative. For example, as shown in (19a–b), neither order of the heavy adjectives of warmth/style and color is acceptable unless the second adjective in a row is embedded into a relative clause. The example in (19c) shows that the order of the two light adjectives is *N-A(color)-A(warmth/style)*, as is expected with the hierarchy in (4) in mind.

(19) a. meʔil xam miday la-'aviv *(še-hu) yoter 'adom mi-xum
coat warm too-much to.DEF-spring (that-it) more red from-brown
'a coat too warm for spring, more red than brown in color'

b. me'il yoter adom mi-xum *(Se-hu) xam miday la-'aviv
coat more red from-brown (that-it) warm too-much to.DEF-spring
'a coat too warm for spring, more red than brown in color'

c. me'il adom xam
coat red warm
'a warm red coat'

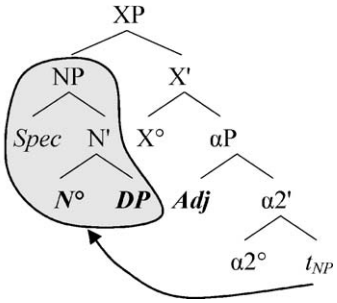
To summarize, an approach that takes light adjectives to be heads rather than Specs (as does the ''snowballing'' head movement analysis proposed in this paper) provides an immediate account for the distinct distribution patterns of light and heavy adjectives in Hebrew, whereas these patterns present a problem for Shlonsky's (2004) phrasal movement approach.

5. Complements of the noun

The second problem for Shlonsky's (2004) analysis based on remnant phrasal movement concerns complements of the noun. As mentioned in section 2, Shlonsky's analysis appears to account elegantly for the adjacency of the head noun and its Genitive complement in construct nominals. However, as I show immediately below, this account is not without severe problems. Furthermore, remnant phrasal movement analysis faces insurmountable problems as far as PP complements of a noun are concerned.

Recall that Shlonsky (2004:1505) derives the adjacency of the head noun and its Genitive complement in construct nominals by phrasal movement of the lexical NP (i.e., the constituent that contains the noun plus the Genitive complement DP, in that order) over the adjective, as shown in (8), repeated here as (20).

(20)



Hence, Shlonsky must assume that the Genitive complement is always merged as the complement (i.e., sister) of the head noun. This is unproblematic as long as one considers only construct nominals where the Genitive complement is the Theme (internal) argument of the noun, as in the examples in (7b), repeated below as (21).

(21) a. hafgazat **ha-kfar** ha-'israelit ha-masivit ha-'efšarit
bombardment DEF-village DEF-Israeli DEF-massive DEF-possible
'the possible massive Israeli bombardment of the village'

b. * hafgazat ha-'israelit ha-masivit ha-'efšarit **ha-kfar**
bombardment DEF-Israeli DEF-massive DEF-possible DEF-village

But as is well-known, the Genitive complement in Hebrew construct nominals need not be an internal argument of the noun. It can be an Agent, as in (22a) and (24a), or a Possessor, as in (22b) (in both cases an external and not an internal argument of the head noun), or even in some cases it

need not be related thematically to the head noun at all, as with modifiers, as in (22c), and in ECM cases, such as (22d). For further examples, see (40).[15,16]

(22) a. tmunat van gox ha-mefursemet
picture van Gogh DEF-famous
'van Gogh's famous painting'

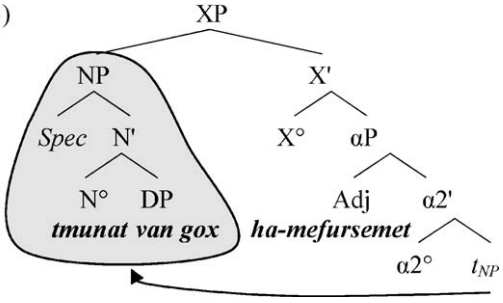
b. misʔedet šuki ha-mefursemet
restaurant.CS Shuki DEF-famous
'Shuki's famous restaurant'

c. mitat ʔec xadaša
bed.CS wood new
'a new wooden bed'

d. meci'at ha-'ašem ne'ešam ha-lo-cfuya
finding DEF-defendant guilty DEF-not-expected
'the unexpected finding of the defendant guilty'

For Shlonsky's analysis to work (in a uniform fashion), he must assume that these Genitive complements are merged as a complement of the head noun too. For example, the structure he must adopt for (22a) is given in (23):

(23)



This, however, leads to a problem involving (event) nominals with both an external and internal argument (and an adjectival modifier). In such nominals, the Genitive complement must be the external argument, while the internal argument is rendered as an *'et*-PP (I agree with

[15] Some construct nominals are ambiguous between Agent/Possessor reading and Theme reading, as in (i), or between a Possessor reading and a Modifier reading, as in (ii):
(i) sipurey ha-maxšefot
stories.CS DEF-witches
'witches' stories' & 'stories about witches' (Engelhardt, 1998:70)
(ii) bigdey našim
clothes.CS women
'clothes belonging to some women' & 'women's clothing' (e.g., drag worn by a male transvestite)

[16] Engelhardt (1998:99 fn. 26; 2000:65–66 fn. 20) notes that "such [ECM] constructions are . . . entirely unproductive in Modern Hebrew. In fact, nominalization from other existing verbal ECM constructions is impossible" and even limited with the noun *meci'a*. This construction appears to be more productive in Arabic (Benmamoun, 2000:147).

Shlonsky, 2004:1520 that *'et* in nominalizations is a preposition parallel to inherent genitive preposition *šel* 'of' and differs from the Accusative Case marker *'et* in clauses; hence, it is glossed here as OM = object marker). The adjectival modifier in such nominals must appear between the external argument and the internal argument (in other words, the internal argument, the *'et*-PP, follows rather than precedes the adjective):[17]

(24) a. hafgazat ha-cava **ha-masivit** 'et ha-kfar
bombardment.CS DEF-army DEF-massive OM DEF-village
'the massive bombardment of the village by the army' (cf. Shlonsky, 2004:1520)

b. * hafgazat ha-cava 'et ha-kfar **ha-masivit**
bombardment.CS DEF-army OM DEF-village DEF-massive
'the massive bombardment of the village by the army'

Under Shlonsky's assumptions, the order in (24a) is derived by merging the external argument *ha-cava* 'the army' as the sister of the head noun *hafgazat* 'bombardment.CS' and moving the constituent containing the noun and the external argument (in that order) over the adjective *ha-masivit* 'massive'. The internal argument cannot be part of the moving constituent because if it were, the resulting order would be the one in (24b). Hence, the internal argument must be merged outside this [*hafgazat* + *ha-cava*] constituent, in a position from which it c-commands into it. However, prominence diagnostics, such as anaphor binding in (25) from Ritter (1991), indicate that the external argument must c-command the internal argument, not the other way around. If, however, the external argument c-commands the internal argument, as the binding diagnostics indicate, there is no constituent that contains the head noun *hafgazat* 'bombardment.CS' and the external argument *ha-cava* 'the army', on the exclusion of the internal argument *'et ha-kfar* 'the village'.

(25) a. 'ahavat dan 'et ʔacmo
love Dan OM himself
'Dan's love of himself'

b. * 'ahavat ʔacmo 'et dan
love self OM Dan

The only way to achieve both the correct word order, as in (24a), and the correct prominence configuration, as in (25), is to assume the following movements (cf. (26a)): first, the external argument *ha-cava* 'the army' moves into the Spec of the lowest functional projection (e.g., *n*P).[18] Second, the internal argument *'et ha-kfar* 'the village' moves into the Spec of the third functional projection from the bottom (here labeled YP). Third, as shown in (26b), the lexical NP (which now contains only the traces of both arguments of the N° in addition to the head noun itself) moves into the Spec of the second functional projection from the bottom (here labeled ZP).[19]

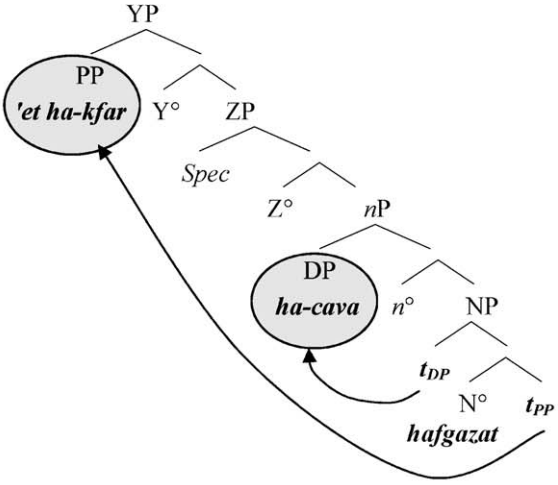
[17] Ritter (1991) presents an example similar to (24a) as marginal (marked as '??'), but this order is certainly preferred to the order in (24b), which is unanimously judged as ungrammatical.

[18] Alternatively, the external argument DP is merged in Spec-*n*P, by analogy with the external argument of the verb being merged in Spec-*v*P or Spec-VoiceP (cf. Kratzer, 1996).

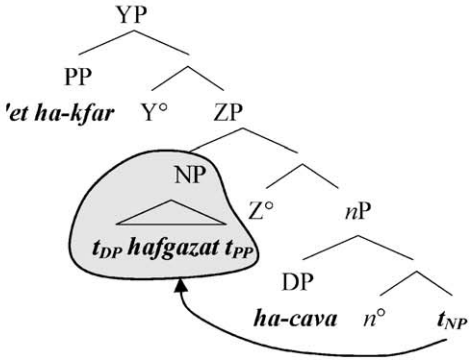
[19] Alternatively, the second and third movements are reversed in order. This possibility does not alter the argument made in the main text.

After these three movements obtain, the second functional category from the bottom (i.e., ZP) contains the lexical NP (which in its turn contains only the head noun and the traces of the arguments) and the external argument, in that order (but not the internal argument). This functional projection ZP is the constituent that moves further over the adjective, which is merged higher than the landing site of the internal argument, as shown in (26c).

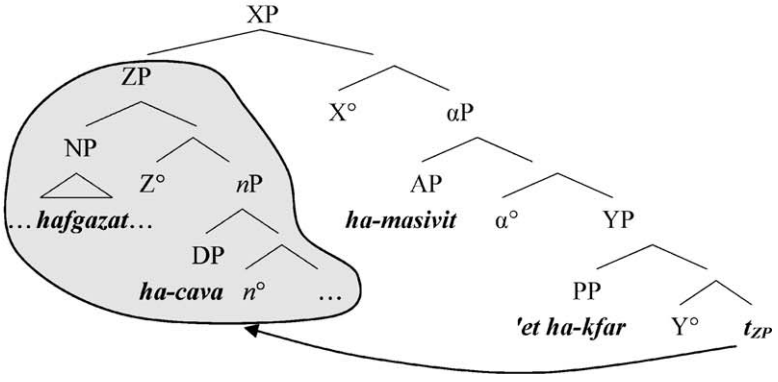
(26) a.



b.



c.



While this analysis achieves the desired word order (while allowing for the correct prominence configuration), it runs into a number of problems. First, it no longer accounts for the fact that parenthetical intervention is strictly ruled out in construct nominals, something that Shlonsky (2004:1467) points out as an advantage of his analysis:

(27) a. * hafgazat {ke'ilu / lix'ora} ha-cava . . .
bombardment.CS as-if / apparently DEF-army

b. hafgaza ke'ilu šel ha-cava [colloquial Hebrew]
bombardment as-if of DEF-army

c. hafgaza lix'ora ʔal-yadey ha-cava [literary Hebrew]
bombardment apparently by DEF-army
both: 'bombardment as if by the army'

As shown in (27b–c), regardless of the register a parenthetical can intervene between the head noun and its PP complement.[20] Yet, the same parentheticals cannot intervene between the head noun and its Genitive complement in construct nominals.

Second, the price for the desired binding configuration is stipulating at least two movements that have no independent motivation (and may, depending on one's assumptions and definitions, present a locality problem as well).

The placement of internal PP arguments is, in fact, a more general problem (not considered in detail by Shlonsky himself), which concerns not only *'et*-PPs (in event nominalizations), but also *šel*-PPs and a whole range of other argument PPs as well. Consider, for example, internal argument *šel*-PPs in (28a) and PP internal arguments of nouns which correspond to accusative direct objects of verbs in (28b–c):

(28) a. tmuna [$_{PP}$ šel xamaniyot]
picture of sunflowers
'a picture of sunflowers'

b. 'ahava [$_{PP}$ la-yeladim]
love to.DEF-children
'love for the children'

b'. hu 'ahav [$_{DP}$ 'et ha-yeladim]
he loves ACC DEF-children
'He loved the children.'

c. nicaxon [$_{PP}$ ʔal ha-'oyev]
victory over DEF-enemy
'love for the children'

c'. hu nacax [$_{DP}$ 'et ha-'oyvim]
he loves ACC DEF-enemies
'He beat the enemies.'

As with *'et*-PPs considered above, such argument PPs follow rather than precede the attributive adjective[21]:

[20] I thank Nora Boneh for a discussion of register variation in connection with parentheticals.

[21] The same is true of directional PP arguments of nouns:

(i) a. ha-xayim hem min tiyul ka-ze **muclax** [$_{PP}$ la-luna park]
DEF-life COP sort trip sort-of successful to.DEF-amusement-park
'Life is some sort of a successful trip to the amusement park.' (Shlomo Artzi, ''Kartis la-lunapark'')

b. * min tiyul [$_{PP}$ la-luna park] ka-ze **muclax**
sort trip to.DEF-amusement-park sort-of successful

(29) a. tmuna **yafa** [$_{PP}$ šel xamaniyot]
picture beautiful of sunflowers
'a beautiful picture of sunflowers'

a'. * tmuna [$_{PP}$ šel xamaniyot] **yafa**
picture of sunflowers beautiful

b. 'ahava **'amitit** [$_{PP}$ la-yeladim]
love true to.DEF-children
'a true love for the children'

b'. * 'ahava [$_{PP}$ la-yeladim] **'amitit**
love to.DEF-children true

c. nicaxon **muxlat** [$_{PP}$ ʔal ha-'oyev]
victory complete over DEF-enemy
'a complete victory over the enemy'

c'. * nicaxon [$_{PP}$ ʔal ha-'oyev] **muxlat**
victory over DEF-enemy complete

Two arguments can be put forward in support of generating these argument PPs inside the lexical NP at the bottom of the tree. The first one is the usual θ-theoretic reasoning that (internal) arguments of heads are merged in the lexical projection of the head and have their θ-roles checked at Merge (cf. e.g., Chomsky, 1995:313: ''θ-relatedness is a property of the position of merger and its (very local) configuration''). The second argument concerns prominence (i.e., c-command) relations, illustrated for *'et*-PPs in (25) and for other argument PPs below:

(30) 'ahavat dan$_i$ le-ʔacmo$_i$
love.CS Dan to-self
'Dan's love for himself'

Thus, argument PPs are merged inside the lexical NP and for Shlonsky's (2004) remnant movement analysis to work they must vacate the lexical NP prior to its (remnant) phrasal movement. The two obvious questions that arise at this point are formulated in (31):

(31) a. Where in the geometry of the tree does the PP move to?
b. Why does it move?

Although these questions are ultimately related, let us address these questions in turn. As can be seen in (26c), the PP moves to Spec-YP, a functional projection below αP, the projection that hosts an attributive adjective. Yet, this cannot be the whole story because if there is another adjective in the structure, the following step of the remnant phrasal movement would move the constituent (XP in (26c)) that contains the head noun (with the Genitive complement, if available), the lower adjective and the evacuated PP (in that order) over the higher adjective and create the order where the PP is sandwiched between the two adjectives, which is ungrammatical in Hebrew:

(32) a. * [ha-nicxonot ha-muxlatim ʔal ha-'oyev] ha-'efšariyim
DEF-victories DEF-complete over DEF-enemy DEF-possible
intended: 'the possible complete victories over the enemy'

b. [ha-nicxonot ha-muxlatim] ha-'efšariyim ʔal ha-'oyev
DEF-victories DEF-complete DEF-possible over DEF-enemy
'the possible complete victories over the enemy'

Thus, the PP must move higher (i.e., outside) the constituent that contains the noun and the lower adjective (i.e., XP in (26c)), but below the projection that hosts the higher adjective

ha-'efšariyim 'possible'. Recall that the PP cannot move as high if only one adjective is present: if it did, the resulting order would be the ungrammatical (24b).[22] The same problem arises if the higher adjective (here, *ha-'efšariyim* 'possible') is replaced by a post-nominal cardinal (e.g., *ha-rabim* 'many')[23]:

(33) a. * [ha-nicxonot ha-muxlatim ha-'efšariyim ʔal ha-'oyev] ha-rabim
DEF-victories DEF-complete DEF-possible over DEF-enemy DEF-many
intended: 'the many possible complete victories over the enemy'

b. [ha-nicxonot ha-muxlatim ha-'efšariyim] ha-rabim ʔal ha-'oyev
DEF-victories DEF-complete DEF-possible DEF-many over DEF-enemy
'the many possible complete victories over the enemy'

In such cases, it must be assumed that the PP moves higher, to a position above the projection hosting the higher adjective *ha-'efšariyim* 'possible', but below the projection that hosts the cardinal *ha-rabim* 'many'. Once again, the PP cannot move above *ha-'efšariyim* 'possible' in examples like (32), as it would result in the ungrammatical order in (32a). Note further that the PP cannot always move to a position above all attributive adjectives even if a cardinal is merged in the structure. It depends on the choice of the cardinal: crucially, if a (related) pre-nominal cardinal is chosen (e.g., *harbe* 'many'), the PP may not move to the same position (i.e., above the highest attributive adjective but below the cardinal); otherwise, the order in (34a) would have been grammatical.

(34) a. * harbe ʔal ha-'oyev nicxonot muxlatim
over DEF-enemy many victories complete
intended: 'many complete victories over the enemy'

b. harbe nicxonot muxlatim ʔal ha-'oyev
many victories complete over DEF-enemy
'many complete victories over the enemy'

From the discussion above, we must conclude that the PP's landing site depends on the choice of the other elements in the noun phrase: the PP must land in the Spec of a projection just below the one hosting the highest element that ends up post-nominally (an adjective, a cardinal, or a demonstrative). This is, however, a completely new kind of movement, motivated by neither a feature of the Probe (i.e., Attract) nor of the Goal (i.e., Greed). As discussed in more detail in section 6, pre-nominal and post-nominal cardinals (and pre- and post-nominal elements in general) differ in whether they are carriers of the morphological definiteness feature. Thus, how high or how low the PP moves depends on a morphological feature of neither the PP itself nor the associated landing site. Here, I will call this new type of movement ''third party interest'' movement. Obviously, a need to postulate a whole new type of movement is a reason for concern with the remnant movement analysis proposed by Shlonsky (2004).

[22] An alternative account for these facts (brought to my attention by an anonymous reviewer) would hold that the PP raises past all the possible AP merge positions, to some higher argument licensing position, followed by remnant movement. Note, however, that this account is impossible in a strictly bottom-up derivational approach to syntax, assumed in this paper. Furthermore, it would not solve the problem discussed in the main text in connection with pre- and post-nominal cardinals.

[23] This argument can be replicated with a demonstrative such as *(ha-)'ele* 'these'.

The problem becomes even more thorny if we consider the question in (31b): what is the semantic content of the projection to which the PP moves, why does it move there, what features need to be checked? In essence, this is the question of how remnant NPs arise. A parallel issue ''of exactly how remnant VPs arise'' has not only been considered in the literature using remnant phrasal movement to analyze V-initial (VSO or VOS) orders, but has also been dubbed ''the most pressing question that confronts the remnant VP raising hypothesis'' (Chung, 2005:21). Unfortunately, a satisfactory solution to this issue has not been found yet. In what follows, I consider the answers proposed in ''verb-first'' literature and whether they are applicable to noun phrases of interest in this paper.[24]

The first type of motivation for the arguments vacating the VP prior to the application of remnant phrasal movement, considered in ''verb-first'' literature, is Case checking. For instance, Massam (2000, 2001) proposed that in Niuean DP complements vacate the VP to check their Case in Specs of functional projections. One piece of evidence for this analysis comes from the so-called ''pseudo noun-incorporation'' (PNI) construction in Niuean, where an indefinite object noun phrase is not marked for Absolutive Case and does not vacate the lexical VP, as shown by the VOS order in such constructions (examples from Massam, 2000:98):

(35) a. Ne inu kofe kono a Mele. – PNI (VOS order)
PAST drink coffee bitter ABS Mele
'Mary drank bitter coffee.'

b. Ne inu e Sione e kofe. – basic VSO order
PAST drink ERG Sione ABS coffee
'Mary drank coffee.'

Similarly, Taraldsen (2000) derives the OV order (e.g., in German and Dutch) by moving the internal arguments of the verb into Specs of the dedicated functional projections which check Case (à la Zwart, 1993, and Koster, 1994), and the VO order by an ***additional*** remnant VP movement which moves the VP (which contains only the verb, plus optionally a particle, plus traces) over the arguments.

The biggest challenge for the Case checking approach to VP-remnant creation comes from the fact that PP arguments need to vacate the VP as well as DP arguments do; for instance, Chung (2005:21) states that ''[g]iven that PPs do not need to be Case-licensed, it is unclear what would

[24] Note, however, that whatever the reason for the arguments vacating the VP that scholars of V-initial languages might find may not be ultimately applicable to the nominal domain at all. As noted in McCloskey (2005:156), many verb-initial languages are also predicate initial, yet ''all non-head subconstituents must be moved out before predicate-fronting applies'' ''[i]n the case of VP, but not in the case of the other phrasal categories''. Thus, whatever the reason that triggers arguments of verbal predicates to vacate the VP, the same is not applicable in the case of nominal predicates. Chamorro, in (ia) from Chung (1990:571), and Irish, in (ib) from McCloskey (2005:159), are but two examples of such VSO and predicate-initial languages:

(i) a. [I rigalu ginin as nana-hu] esti na aniyu.
the present from OBL mother-AGR.1Sg this L ring
'This ring is a present from my mother.'

b. Is [comhartha go bhfuil muid pósta] an mhalairt fainní seo.
COP sign that are we married the exchange rings.GEN this
'This exchange of rings is a sign that we are married.'

Interestingly, although Modern Hebrew is N-initial in noun phrases, it is neither verb-initial (VSO or VOS) nor predicate-initial in clauses (unlike, for example, Irish, which is both N-initial and verb-/predicate-initial).

cause the PP in [Niuean] to exit from VP prior to VP raising''. This is one of the main reasons why Rackowsky and Travis (2000), for example, claim specifically that the evacuation of arguments prior to the application of remnant VP movement is ***not*** due to Case (cf. also Travis, 2004a, 2004b, 2005).[25] Thus, Rackowsky and Travis (2000) conclude that the issue of which arguments must vacate the VP prior to remnant VP-movement is just a parameter that distinguishes languages with the VOS basic word order (such as Malagasy) and languages with the VSO basic word order (such as Niuean): in the former only the subject vacates the VP (and the fronting VP remnant contain the verb and the object), whereas in the latter both the subject and the object vacate the VP (and the fronting VP remnant contains only the verb and the traces).[26]

Is Case a possible reason for arguments vacating the lexical NP in Hebrew? Recall from the above discussion that it is PP arguments that must be assumed to vacate the lexical NP prior to the remnant NP-movement in Hebrew, whereas (at least according to Shlonsky, 2004) DP arguments do not. This strongly suggests that the independent motivation for the movement of the PP (if indeed it exists) does not involve Case checking. Even though *šel*-PPs may be analyzed as checking Genitive Case (taking *šel* as a Genitive Case marker, parallel to the clausal Accusative Case marker *ʾet*, and for some researchers, the Dative Case marker *le*-), other lexical prepositions, such as *ʔal* 'over', are not good candidates for Case markers. Recall further that DP arguments are argued by Shlonsky to stay in the NP; this is the essence of his analysis of construct nominals, as discussed in section 2. If Case checking were the driving force behind the movement of arguments outside the lexical NP, we would expect the reverse situation in which DP arguments move, but PP arguments do not.

An attempt to face the PP challenge for the VP-raising hypothesis in the ''verb-first'' literature is Massam's (2001) idea that all PPs (in Niuean) are merged as adjuncts outside the VP, so that VP-raising strands them. However, as mentioned above in connection with (25) and (30), such an approach would not work for the PP complements of nouns in Hebrew: if PP complements were merged as adjuncts outside the lexical NP, these binding facts would be inexplicable.

A different answer to the question of how VP remnants arise is given in Mahajan (2003), for whom ''the crucial difference between SOV and SVO basic word orders hinges on whether or not the object vacates the VP prior to VP-movement'' (p. 225). Mahajan (2003:225–226) proposes that the movement of the object DP is triggered by D° being merged outside the object (in fact, outside the VP as a whole). For example, a simple SVO sentence in English is derived as follows:

(36) a. Mary the [$_{VP}$ likes book]. – Merge positions according to Mahajan
b. Mary the book [$_{VP}$ likes t_{book}]. – D° attracts NP
c. Mary [$_{VP}$ likes t_{book}] the book t_{VP}. – remnant VP fronting

Thus, he attempts to tie the SVO versus SOV difference to the presence versus absence of determiners in a language. However, although it seems to work for the English versus Hindi

[25] Furthermore, Rackowsky and Travis (2000) maintain that the evacuation has nothing to do with the EPP either, since it is the remnant VP itself that satisfies the EPP in what they call Predicate Fronting languages (cf. Massam, 2000, 2001). The (clausal) EPP is obviously not a possible reason for the noun's internal arguments vacating the lexical NP.

[26] The situation is somewhat more complex, as Malagasy and Niuean differ as to which arguments are allowed not to vacate the VP (Lisa Travis, personal communication). For some such examples, see (35) in the main text.

contrasts (as discussed by Mahajan, 2003), it can hardly be extended much further. For instance, German and Dutch, which have overt determiners just like English, have an overt SOV basic word order; thus, it appears that Mahajan would have to distinguish SOV languages of the Hindi type from those of the German type, a step whose validity could be and has been debated at length in the literature. Furthermore, Basque, which has (at least the definite) determiners, has the SOV basic word order. Worse still, a whole host of (historically unrelated) languages, which notoriously lack overt determiners like *a/the*, exhibit the VO order, including Russian, Finnish, Lithuanian, and Chinese, to name only a few.[27]

However, although the independent motivation for the object's vacating the VP proposed by Mahajan (2003) seems problematic, the possibility that an argument vacates the maximal projection of its selecting head because the argument's head is merged outside that maximal projection must be considered for the nominal domain as well. For nominals with PP arguments this would mean that the P° head of the PP argument is merged outside the lexical NP, whereas the P's complement is merged as a sister of the N°. In fact, such an analysis where P° is merged separate from its complement has been proposed by Kayne (2002, 2004). Implementing this analysis for Hebrew noun phrases would look as follows:

(37) a. ha-mefursemet šel [$_{NP}$ ha-tmuna ha-xamanioyt]. – Merge positions
DEF-famous of DEF-picture DEF-sunflowers

b. ha-mefursemet šel ha-xamanioyt [$_{NP}$ ha-tmuna t_{DP}]. – P° attracts DP
DEF-famous of DEF-sunflowers DEF-picture

c. [$_{NP}$ ha-tmuna t_{DP}] ha-mefursemet šel ha-xamanioyt t_{NP}. – remnant NP fronting
DEF-picture DEF-famous of DEF-sunflowers
'the famous painting of the sunflowers'

Although this approach may seem appealing for *šel*-PPs (or *'et*-PPs), it is less palatable for other lexical prepositions, such as *le-* 'for' and *ʔal* 'over' in (29b–c): it allows no room for a local selection relation between the head N° and the P°, whereby *'ahava* 'love' and *nicaxon* 'victory' may select *le-* 'for' and *ʔal* 'over', respectively. In fact, Kayne (2002, 2004) himself proposed this external-P-merger analysis for ***structural*** prepositions, such as the English *of* and its French counterpart *de* (and the French *à* 'to'). In fact, even if we limit our attention to prepositions selected by verbs in English versus Hebrew, it would be hard to extend the external-P-merger analysis to ***lexical*** prepositions because of non-correspondences between the two languages: in English one looks ***at*** something, whereas in Hebrew one looks ***in*** something (*mistakel be-*); in English one pleads or deals ***with*** someone, whereas in Hebrew one pleads or deals ***in*** someone (*mafcir/metapel be-*); in English one is disgusted ***by*** something, whereas in Hebrew one is disgusted ***from*** something (*soled me-*); in English one worries ***about*** something, whereas in Hebrew one worries ***to*** something (*do'eg le-*), and so on.

Hence, neither Case nor external merger of the P° can be held responsible for the fronting of the PP and creating a remnant lexical NP. Thus, I conclude that there is no independent

[27] Worse still, if we adopt Pereltsvaig's (in press) view that both languages with and without overt determiners like *a/the* have some DPs and some Small Nominals (i.e., nominals that lack the DP projection), Mahajan's view that the basic word order is related to the presence of the DP projection cannot be maintained: there is no one-to-one correlation between the categorial status of object (DP versus Small Nominal) and the word order (either in English/Norwegian or Russian).

motivation for moving PP arguments outside the lexical NP prior to applying remnant NP movement. This is yet another serious problem for Shlonsky's analysis.[28]

To summarize so far, Shlonsky's attempt to simplify the movement component of the grammar by eliminating a certain type of movement, namely movement of lexical heads as such, leads to complicating both the phrase structure component (i.e., postulating a host of otherwise unnecessary functional projections whose sole role is to provide landing sites for remnant phrasal movement) and the movement component itself: as discussed above, to make the analysis work, Shlonsky would have to postulate what I termed ''third party interest'' movement, which is neither Attract, nor Greed. In other words, the analysis turns out to be problematic not only from the empirical point of view (i.e., predicting ungrammatical strings to be grammatical, as discussed in detail above), but also from the point of view of theoretical elegance.

Consider now how the ''snowballing'' head movement alternative proposed in this paper deals with the facts concerning strings with arguments of the noun. First, as far as PP arguments are concerned their post-adjectival position is predicted directly by my analysis: the PP is merged at the bottom of the tree and stays there throughout the derivation. As a result, it appears stranded after all the attributive adjectives, post-nominal cardinals and demonstratives, all of which occur in the mirror order derived through multiple applications of the ''snowballing'' head movement (the placement of cardinals and demonstratives and its derivation are discussed in more detail in section 6).

It is the DP arguments (namely, the so-called Genitive complements in construct nominals) which appear to present a problem for my ''snowballing'' head movement analysis: unlike the PP complements, they do not follow the attributive adjectives but precede them (cf., e.g., (21) and (22)). Thus, it appears that DP arguments move out of the lexical NP. However, as mentioned above, DP arguments have an independent motivation for moving out of the NP – Case checking.

This brings us to an alternative analysis of construct nominals, which has been the classic analysis in the Semitic literature since the late 1980's and has been ''modernized'' by Siloni (2003).[29] According to the classical analysis (cf. Longobardi, 1996; Ritter, 1988, 1991:39–40; Siloni, 1991, 1994, 1997; inter alia), the head noun moves into D° and the Genitive complement moves into a Spec of a functional projection just below DP (but presumably above the position of attributive adjectives), which accounts for their adjacency. This is schematized below:

[28] An alternative account for the PP's post-adjectival placement, which still assumes remnant phrasal movement rather than head movement, is a prosodically driven movement of the PP to the right edge of the NP ***after*** the phrasal movement applies to an NP containing the head noun and the PP. However, the position of PP arguments does not seem to be sensitive to either prosodic factors (such as weight, whether syllabic or structural) or edges, as shown by the possibility of both of the following orders (with differing preferences for different speakers). In these cases the PP appears either to the right of a (heavier!) relative clause, not being sensitive to weight, or to the left of it, not being sensitive to edges:

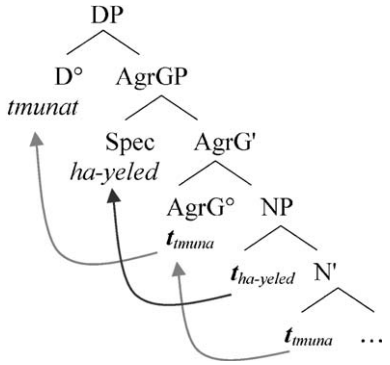
(i) a. sefer me?anyen [$_{CP}$ še-timce'i be-sifriya] [$_{PP}$?al ha-milxama]
book interesting that-will-find-you.F in-library about DEF-war
'an interesting book about the war that you will find in a library'

b. sefer me?anyen [$_{PP}$?al ha-milxama] [$_{CP}$ še-timce'i be-sifriya]
book interesting about DEF-war that-will-find-you.F in-library
'an interesting book about the war that you will find in a library'

Under the head movement analysis proposed in this paper, these data are unproblematic: the order in (ia) is derived by stranding both the relative clause and the PP in their merger positions and the order in (ib) is derived by moving a heavy relative clause post-syntactically.

[29] See Benmamoun (2000:147–149, 150–152) for parallel Arabic data and some further arguments in favor of the prosodic analysis of constructs, which are not applicable in Hebrew. Ghomeshi (1997) takes a similar approach to Ezafe in Persian: she proposes that Ezafe vowel is inserted post-syntactically.

(38)



Siloni (2003) modifies this analysis by following Reinhart and Neeleman (1997) and assuming that Case checking is a PF phenomenon; in other words, these authors take Case checking domains as necessary only at PF.[30] Thus, for Siloni (2003) the adjacency of the head noun and its Genitive complement (as well as the stress subordination) is a sign of a prosodic word status, which obtains only at PF. It is this prosodic word (i.e., the head plus the Genitive complement) that serves as a Case checking domain for the Genitive Case.[31] According to her analysis, the order of the head and the Genitive complement does not necessarily tell us the whole story about movements that apply in syntax proper.

Although both analyses face certain challenges, it appears to me that Siloni's (2003) analysis is preferable to that of Shlonsky (2004): what all constructs have in common is not the sisterhood relation (at Merge) between the head and the complement, but the prosodically weak nature of the head, regardless of the head's category or the Genitive complement's relation to the head. Thus, the head need not be a noun (as in the examples discussed so far), but it can be an adjective (39a), a cardinal numeral (39b), a participial form (known in Hebrew grammar as *beynoni*) (39c), or – in higher registers of Hebrew – a gerund (39d); this is well-documented in Berman (1978:237–245), Bliboim (2000), Danon (1996:19, 1998), Gesenius (1910), Glinert (1989), Hazout (1990:123–130, 2000), Kim (2001), Siloni (1996b, 2000, 2002, 2003), Williams (1976), Wintner (2000:327–329), inter alia.[32]

[30] That the Genitive Case in constructs is structural rather than inherent is indicated by the lack of morphological realization in Hebrew, as well as the ECM examples, such as (40e).

[31] The peculiar prosody of constructs (i.e., the deaccented head) has long been noted in the Semitic literature, both traditional and generative; cf., e.g., Benmamoun (2000:140; 2003), Berman (1978:254), Borer (1989:47), Cinque (2003), Gesenius (1910:247), Gray (1934:8), Longobardi (1996:183), Ritter (1991:59 fn. 2), Williams (1976), and Wintner (2000:324), inter alia.

[32] Two additional types of CSs involving category cross-over are the so-called quasi-adjectival CSs, as in (i), where the head is a noun, but the whole CS behaves as an adjectival modifier, and the so-called superlative CSs, as in (ii), where the head is a superlative adjectival form (found in Modern Hebrew only in such CSs), but the whole CS behaves as a nominal (according to Wintner, 2000:329, the superlative head undergoes category conversion from A to N).

(i) šlomo 'arci hu 'aman [baʔal signon 'iši ve-yexudi].
Shlomo Artzi COP artist owner style personal and-individual
'Shlomo Artzi is an artist with a personal and individual style' [from www.shlomoartzi.net]

(ii) qatonti mi-[ceʔir banay-ix].
am-small from-youngest.CS builders-2.F.SG
'I am smaller than the youngest of your builders' (Naomi Shemer, "Jerusalem of gold")

(39) a. yeled [bhir seʔar] ve- [txol ʔeynayim]
boy bright.CS hair and-light-blue.CS eyes
'a boy with brightly colored hair and light blue eyes' (Ha'aretz Online, 30-Nov-2004)

b. ['alfey šmašot] zorxot
thousands.CS glass-shards shine
'Thousands of glass shards shine.' (Naomi Shemer, ''Jerusalem of gold'')

c. ʔitonim [rodfey sensaciyot]
newpapers chasing(Pl).CS sensations
'sensation-seeking newspapers' (Glinert, 1989:25)

d. kol ha-nosʔim nispu bi-[hitraseq ha-matos] meʔal ha-alpim
all DEF-passengers perished in-crashing DEF-plane over the-Alps
'All the passengers perished when the plane crashed over the Alps' (Berman, 1978:290)

Crucially, none of the construct heads in (39) can be analyzed as nominal. Although adjectives can convert freely into nouns in Hebrew (see Wintner, 2000:329), the head of the adjectival construct, as in (39a), does not undergo such conversion, as can be seen from the fact that the whole construct behaves as an AP, not a nominal. Furthermore, even though Danon (1996, 1998) assimilates cardinal numerals to nouns, his main argument for doing so is that they can be heads of constructs; there is no independent evidence for cardinal numerals being nouns. In addition, the participial *beynoni* forms heading constructs, as in (39c), are neither (agentive) nouns, as shown by Berman (1978:238–240), nor headless relatives, as shown by Glinert (1989:40–41). Finally, gerunds heading constructs, as in (39d), cannot be assimilated to (derived event) nouns, as shown by Berman (1978:240–242) and Siloni (1996b:419–420). I do not repeat their arguments here but refer the interested reader to the references cited for details. To recapitulate, although adjectives, cardinal numerals, *beynoni* participial forms, and gerunds are not nouns, they can all head constructs.

Furthermore, as mentioned above, the head of a construct and its Genitive complement need not be merged as sisters, that is the Genitive complement is not necessarily an internal argument of the head. It can be its external argument, as in (40a–b), or not an argument at all, as in (40c–e); see also examples in (22).[33]

(40) a. taxazit **ha-'analistim** hayta le-revax naqi šel ...
forecast DEF-analysts was to-gain clean of
'The forecast of the analysts was for the net gain of ...'
(Ha'aretz Online, 12-Nov-2004)

b. lehaqat **šlomo arci**
band.CS Shlomo Artzi
'Shlomo Artzi's band'

[33] Constructs (but not their free state counterparts) can also be used to introduce borrowed nouns, especially with trade mark names and titles, e.g., *mixnasey džins* lit. 'pants.CS jeans', *lehaqat 'abba* lit. 'group.CS ABBA', *ugat tiramisu* lit. 'cake.CS tiramisu'.

c. bigdey {**meši / ʔavoda / yevu' / yukra**}
clothes.CS silk / work / import / prestige
'silk clothing' / 'work clothing' / 'imported clothing' / 'clothing that is a sign of prestige'

d. medinat {**isra'el / qalifornia**}
state.CS Israel / California
'the State of {Israel / California}'

e. meci'at **'ašem** ne'ešam
finding.CS defendant guilty
'finding a defendant guilty' (Siloni, 1994)

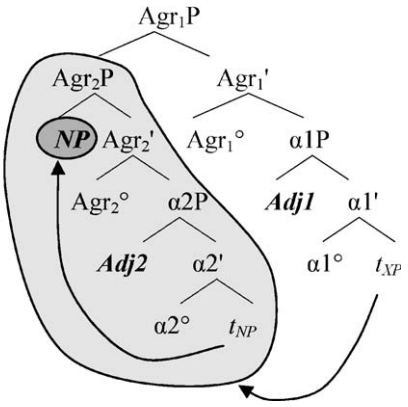
Both that the head of a construct need not be a noun and that the Genitive complement need not be a complement in the structural sense are serious blows to Shlonsky's (2004) analysis. Of course, they can be dealt with by postulating a number of movements (lacking an independent motivation) to functional projections (also lacking an independent motivation); however, such solutions would only account for the correct word order and would be none other than restatements of the facts.

To recapitulate, Shlonsky's (2004) analysis provides no satisfactory account of the distribution of complements to the noun, be they PPs or DPs. On the other hand, if Siloni's (2003) analysis of constructs is on the right track and the adjacency between the head and the Genitive complement is formed at PF, construct nominals present no problem for the head movement analysis of Hebrew nominals proposed in this paper.

6. Agreement inside noun phrases

So far, I have not discussed the nature of the functional projections sandwiched between the projections that host adjectives under Shlonsky's (2004) analysis (such as XP and YP in (3)). In section 6 of his paper, Shlonsky proposes that these intermediate functional projections are AgrPs that encode the agreement between the noun and its modifiers. The revised version of (3) is given in (41):

(41)



One problem with this analysis is that it clearly goes against the Minimalist spirit of ''keeping to functional categories with intrinsic properties that are manifested at the interface levels'' since ''Agr consists of—Interpretable formal features only'' (Chomsky, 1995:355, 349). Thus, the Minimalist goal is to eliminate AgrPs or associate the nodes known AgrPs with different label/content. This has been the fate of AgrPs in clauses. For example, AgrOP, which used to be a derived Case/Agreement position for objects, has been identified as AspP (cf. Borer, 1994; Pereltsvaig, 2000; Travis, 1992; inter alia). Similarly, AgrSP, which used to be a derived Case/Agreement position for subjects, has gradually turned into an EPP position, or Topic position, or FinP.

Another problem with this analysis is that Shlonsky uses AgrPs in this fashion to account for the generalization ''that post-nominal modifiers, adjectives, numerals phrases, quantifiers and demonstratives must agree with the noun'' (p. 1493). However, if AgrPs were the correct way to encode agreement, one would expect that in the absence of AgrPs ***pre-nominal*** quantifiers, numerals, demonstratives etc. never agree. However, this is not so: as noted by Shlonsky himself, as far as agreement with pre-nominal elements is concerned, ''fairly arbitrary variation is manifested'' (p. 1493), that is, some elements show agreement, while others do not. If pre-nominal elements lack AgrPs (as Shlonsky appears to assume), why is there agreement in some cases? And if agreement can happen in the absence of AgrPs, why postulate AgrPs in other cases of agreement?

Although Shlonsky's agreement generalization is on the right track and there is a correlation between position and agreement, the correct generalization is more fine-grained. A stronger correlation between position and agreement obtains if one considers different agreement features separately. Typically, the term ''agreement features'' refers to gender and number (and possibly Case, which I will ignore here since there is not much of a morphological case system in Hebrew). However, in Hebrew definiteness appears to be an agreement feature as well; see Borer (1996), Siloni (1996a, 1997), Wintner (2000). Alternatively each instance of the definiteness marker may be associated with its own DP (cf. Sichel, 2002); however, the main problem with extending the analysis originally proposed for Greek by Alexiadou (2001) and Androutsopoulou (1994) to Hebrew is that, as noted in Shlonsky (2004:1492 fn. 30), in Greek agreement in definiteness (*aka* definiteness spread, *aka* polydefiniteness) obtains only with predicative adjectives, whereas in Hebrew it obtains with non-predicative adjectives as well[34]:

(42) a. ha-nasi' ha-kodem
DEF-president DEF-former
'the former president'

b. ha-rakevet ha-xašmalit
DEF-train DEF-electric
'the electric train'

Hence, I adopt the featural approach to definiteness. Shlonsky too adopts the featural approach rather than an approach that associates each instance of the definiteness marker with its own DP: ''[f]or the purposes of the present paper, it suffices to consider [±definite] on adjectives to be a

[34] For additional arguments in favor of treating definiteness marking as a realization of a morphological feature rather than always as an instantiation of a D°, the reader is referred to Borer (1996) and Wintner (2000).

nominal phi-feature'' (p. 1492 fn. 30). However, he does not notice that of all agreement features definiteness is the best predictor of the modifier's position: while gender and number agreement may or may not obtain with both pre- and post-nominal elements, definiteness agreement obtains only and always with post-nominal elements. For instance, the demonstrative *ze/zot* 'this (masculine/feminine)' exhibits gender/number agreement both pre- and post-nominally, but definiteness agreement only post-nominally:

(43) a. (*ha) {ze / *zot} ha-yeled
(*DEF) this.M / *this.F DEF-boy

b. (*ha) {zot / *ze} ha-yalda
(*DEF) this.F / *this.M DEF-girl

c. ha-yeled *(ha) {ze / *zot}
DEF-boy *(DEF) this.M / *this.F
'this boy'

d. ha-yalda *(ha) {zot / *ze}
DEF-girl *(DEF) this.F / *this.M
'this girl'

Similarly, cardinal numerals in Hebrew appear pre-nominally and exhibit variable gender and number agreement, and no definiteness agreement, as shown in (44a–b).[35] However, the same forms can be used as ordinal numerals (for 11th+), in which case (like specifically ordinal forms for 1st through 10th) these numerals appear post-nominally and agree in gender, number, and crucially, definiteness (44c):

(44) a. qvar ra'iti 'et (***ha-**)xamiša-ʔasar **ha-**sratim be-rešimat-ex.
already saw.1Sg ACC DEF- fifteen DEF-films in-list.CS-2.F.Sg
'I already saw the fifteen films on your list.' [LitHeb]

b. qvar ra'iti **ta-** xameš-ʔesre (***ha-**)sratim be-rešima šelax.
already saw.1Sg ACC.DEF fifteen DEF-films in-list of-2.F.Sg
'I already saw the fifteen films on your list.' [CollHeb]

c. «be-ʔeyzor ha-sakana» hu **ha-**seret ***(ha-)**xameš-ʔesre be-sidrat James Bond.
in-area DEF-danger COP DEF-film DEF-fifteen in-series.CS James Bond
'«The Living Daylights» is the fifteenth film in the James Bond series.'

The same is true of other elements that can appear pre- or post-nominally: gender and number agreement may or may not obtain both pre- and post-nominally and is subject to ''fairly arbitrary variation'' (to use Shlonsky's expression), whereas definiteness agreement obtains only with

[35] In Colloquial Hebrew gender agreement of cardinal numerals is being gradually lost (see Borer, 2004 ch. 7; Glinert, 1994:74–75; and Schwarzwald, 2001:52). Also, nouns used with cardinal numerals 11+ (esp. in Colloquial Hebrew) may be either plural or singular. This variation is illustrated with the following examples from Shlomo Artzi's song ''Be-Sheqet Be-Sheqet'':

(i) a. me'a 'elef **dmaʔ-ot** nišpexu bišvil ma
hundred thousand tear-**Pl** were-spilled.Pl for what
'A hundred thousand tears were spilled for what?'

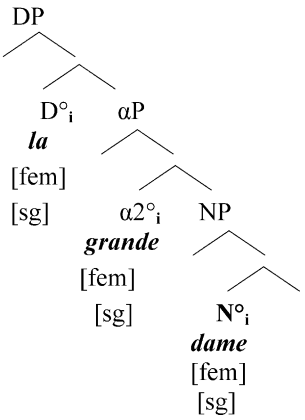
b. me'a 'elef **'adam** nehergu bišvil ma
hundred thousand man(**Sg**) were-spilled.Pl for what
'A hundred thousand men were killed for what?'

post-nominal elements and with all post-nominal elements. The agreement facts are summarized in Table 1[36]:

As can be seen from Table 1, only definiteness consistently correlates with position: pre-nominal elements never agree in definiteness, whereas post-nominal elements always do. In contrast, gender and number may or may not obtain pre-nominally and may or may not be expressed post-nominally. However, if one uses AgrPs to encode agreement, it is not clear how different features can be teased apart, nor why post-nominal agreement is associated with AgrPs, while pre-nominal agreement is not.

A simpler, AgrP-less account is possible under the ''snowballing'' head-movement analysis proposed in this paper. First of all, I assume that agreement is not a functional projection AgrP, but rather a relation between heads (and concomitantly between their projections) in an extended projection. Following Zwart (2003), I take it that all heads in an extended projection are automatically chained, which results in them sharing agreement features (this is marked by subscript ''i''). For examples, in the French *la grande dame* 'the grand dame' the D°, the α° (which hosts the adjective) and the N° all share agreement features, such as [+fem], [+sg] (or [−pl]):

(45)



Thus, gender and number are available in each projection within the extended projection of the noun. Wherever morphological paradigms allow it, gender and number are expressed morphologically, both pre- and post-nominally. Note that gender and number morphology across different types of elements in Hebrew is not uniform; for example, feminine singular is expressed differently on pre-nominal *'ota* 'that' and post-nominal *mešumešet* 'used':

[36] This correlation between word order and agreement is reminiscent of the similar correlation between the position of the subject and the subject-verb agreement in Standard Arabic (see Fassi-Fehri, 1993), as well as certain Romance varieties discussed by Brandi and Cordin (1989), Haiman and Benincá (1992), and Saccon (1993), where full agreement co-occurs with S-V order and reduced agreement with V-S order. In both cases, the robust agreement correlations with the configuration where the controller (i.e., the subject in Arabic/Romance clauses, the noun in Hebrew nominals) precedes the target (i.e., the verb in Arabic/Romance clauses, the adjective in Hebrew nominals). However, a crucial difference between the two correlations is that the subject-verb agreement structure in Arabic/Romance is also implicated in Nominative Case checking, whereas the noun-adjective structure in Hebrew nominals discussed in this paper is not implicated in Case checking. For the relevance of agreement and word order/movement in Case checking see Longobardi (1996:196–203). Thanks to Richard Kayne for bringing this point to my attention and to Tony Kroch for a helpful discussion.

Table 1
Agreement with pre- and post-nominal elements, by feature

		Pre-nominal			Post-nominal		
		[gender]	[number]	[def]	[gender]	[number]	[def]
Determiners	*ʔod* 'another', *šum/'ʔaf* 'no', *min/meʔen* 'some sort'	✘	✘	✘	–	–	–
Demonstratives	*ze* 'this'	✔	✔	✘	✔	✔	✔
	'oto anaphoric 'that' [CollHeb]	✔	✔	✘	–	–	–
	ha-hu 'that', *ha-lalu* 'those abovementioned'[a]	–	–	–	(✔)	(✔)	✔
Cardinal numerals	2+	(✔)	(✔)	✘	–	–	–
	'exad 'one'[b]	✘	✘	✘	✔	(✔)	✔
Vague cardinals	*harbe / hamon* 'many, much', *meʔat / qcat* 'little, few', *kama* 'several', *maspiq / day* 'enough'	✘	✘	✘	–	–	–
	rav 'many, much', *muʔat* 'few, scanty', *merube* 'numerous', *'exadim / sfurim* 'a few'[c]	–	–	–	✔	(✔)	✔
Ordinal numerals		–	–	–	✔	✔	✔
Adjectives		–	–	–	✔	✔	✔

[a]Unlike other plurals, *ha-lalu* 'those aforementioned' does not distinguish genders. Williams (1976:16) calls *ha-hu* 'that' and *ha-lalu* 'those aforementioned' ''demonstrative adjectives'' and Danon (2001:1075) calls them ''adjectives'': like adjectives they are post-nominal and show agreement in gender, number, and definiteness. However, they are in complimentary distribution with pre-nominal determiners rather than with adjectives; hence, I analyze them as demonstratives rather than as adjectives.

[b]'One' is pre-nominal in Grocerese Hebrew (cf. Borer, 2004) and post-nominal in Standard Hebrew. The indefinite ''article'' *–xad/xat* in Street/Colloquial Hebrew (cf. Borer, 2004 ch. 5; Danon, 1996:3; Givón, 1981) patterns with *'exad/ 'axat* 'one' in Standard Hebrew. Note that Williams (1976:19) calls 'one' in Hebrew ''an attributive adjective''. Once again, 'one' patterns with adjectives with respect to its post-nominal position and full agreement, but is clearly a cardinal numeral semantically.

[c]Glinert (1989:89–90) calls these ''adjectives of quantity'' and Borer (2004 ch. 7) claims that they are ''ambiguous between quantifiers and adjectives''. However, they are in complementary distribution with cardinal numerals and not with adjectives. Moreover, unlike adjectives and like pre-nominal ''vague cardinals'', post-nominal ones cannot modify a complement of a ''container noun'' (in (i)), or a of a ''Grocerese Numeral'' (see Borer, 2004:248–249, 254):

(i) a. šney qufsa'ot (*{harbe / šlošim}) zeytim (*rabim)
two.CS boxes many thirty olives many
intended: 'two boxes of {many/thirty} olives'

b. šney qufsa'ot zeytim yerukim
two.CS boxes olives green
'two boxes of green olives'

Kayne (2005) also argues that *few/little/many/much* in English are morphologically and syntactically adjectives. However, for him, they do not modify the following noun directly, but modify an unpronounced noun NUMBER:

(ii) . . . few NUMBER books . . . [Kayne's (39)]

According to this hypothesis, *few* and its cousins are placed into the projection(s) hosting cardinals, not into projections hosting (other) adjectives. Thus, my analysis is akin to Kayne's in that both attempt to account for both similarities of *few/rabim* to other adjectives and differences between them.

(46) 'ot-a mexonit mešumeš-et
that.same-F.Sg car(F.Sg) used-F.Sg
'that (same) used car' (Shlomo Artzi, ''Vals be-xamesh u-shloshim'')

Moreover, while some plurals distinguish genders, others do not (cf. Shlonsky, 2004:1497–1498).

(47) ha-rabanim ha-fanat-im ha-rab-im ha-elu
DEF-rabbis(M.Pl) DEF-fanatic-**M.Pl** DEF-many-**M.Pl** DEF-these.**Pl**
'these many fanatic rabbis'

Definiteness in Hebrew is, however, different from gender and number in that it is marked morphologically in a uniform way (with the marker *ha-*) and, crucially, must be checked in a local (i.e., head-adjunction) configuration. In other words, while gender and number can be checked purely via Agree (without Move), definiteness requires the Move operation to apply. Depending on one's preferred version of Minimalism, this can be formalized by taking the definiteness feature to be a strong feature or a feature with an EPP component. Crucially, feature checking among automatically chained heads in an extended projection of the noun is not enough to check (or license) the definiteness feature. This difference in configuration required for checking between gender/number, on the one hand, and definiteness, on the other hand, is what accounts for the fact that definiteness agreement is expressible only within the noun phrase and does not obtain between a subject noun phrase and its predicate (whereas gender and number agreement does obtain between the noun phrase subject and the predicate, be it verbal or adjectival predicate with a copula).[37]

(48) a. ha-meragel (*ha-)nirdam.
DEF-spy(M.Sg) DEF-fell.asleep(M.Sg)
'The spy fell asleep.'

b. ha-meragel (*ha-)hu (*ha-)xaxam.
DEF-spy(M.Sg) DEF-COP(M.Sg) DEF-smart(M.Sg)
'The spy is smart.'

Thus, according to my analysis, it is the need to create a local head-adjunction configuration for checking the morphological definiteness feature that triggers the ''snowballing'' head movement, which in turns creates the mirror order among post-nominal elements. Hence, an elegant account is achieved for the generalization that all and only the elements that bear a definiteness feature (that is, those that can take the *ha-*marker) appear post-nominally and in the mirror order. This includes not only (light) adjectives, discussed in detail in the preceding sections, but also ordinal numerals, such as *rišonim* 'first', post-nominal ''vague cardinals'', such as *rabim* 'many', and demonstratives, such as *'ele* 'these' (note also that like adjectives these other post-nominal elements precede rather than follow the PP complement of the noun):

[37] I assume that D-to-T movement to check the definiteness feature in the clausal domain is impossible in Hebrew because it is not a D°-movement language (in Travis's 2004a, 2004b terminology).

(49) ha-sfar-im ha-mudpas-im ha-rišon-im ha-rab-im ha-ele
DEF-books(M)-Pl DEF-printed-M.Pl DEF-first-M.Pl DEF-many-M.Pl DEF-these(M.Pl)
'these many first printed books'[38]

(50) a. qilometr-im **rab-im** [$_{PP}$ šel ke'ev]
kilometer-M.Pl many-M.Pl of pain
'many kilometers of pain' (Shlomo Artzi, ''Mafrid Beynenu Yam'', about a long-distance relationship)

b. ha-cad **ha-šeni** [$_{PP}$ šel ha-ʔolam]
DEF-side(M.Sg) DEF-second.M.Sg of DEF-world
'the other side of the world' (Shlomo Artzi, ''Lehacil Otax'')

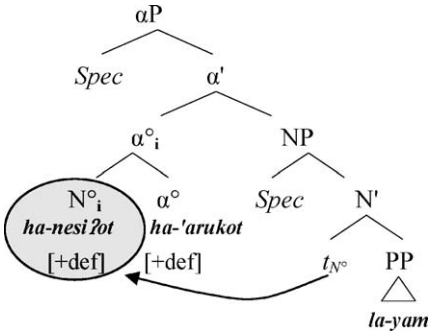
c. ha-'ahava **ha-zot** [$_{PP}$ la-yeladim]
DEF-love(F.Sg) DEF-this.F.Sg to.DEF-children
'this love for the children'

Consider now a step-by-step derivation of (51a) within the framework of the ''snowballing'' head movement analysis proposed in this paper. First, the definiteness feature on the (light) adjective (in α°) triggers the movement of the N°, so that the definiteness feature can be checked locally, as in (51b). Note that the automatic chaining of the heads in the DP (i.e., D°, $Card^{\circ}$, α° and N°), which is sufficient for checking gender and number features, is not sufficient for checking the definiteness feature, as discussed above. After the cardinal *ha-rabim* lit. 'DEF-many' is merged, its definiteness feature triggers another round of the ''snowballing'' head movement, whereby the complex head $N^{\circ}+\alpha^{\circ}$ head-adjoins to $Card^{\circ}$, as in (51c). Finally, the demonstrative is merged (for the sake of presentation I assume that demonstratives are in D°; however, nothing hinges on there being a special DemP projection for demonstratives); the definiteness feature of the demonstrative triggers yet another round of the ''snowballing'' head movement, whereby the complex head $N^{\circ}+\alpha^{\circ}+Card^{\circ}$ head-adjoins to D°, as in (51d). Note that the PP complement of the noun ends up at the right edge of the noun phrase because it is stranded in its base-position as the sister to N°.

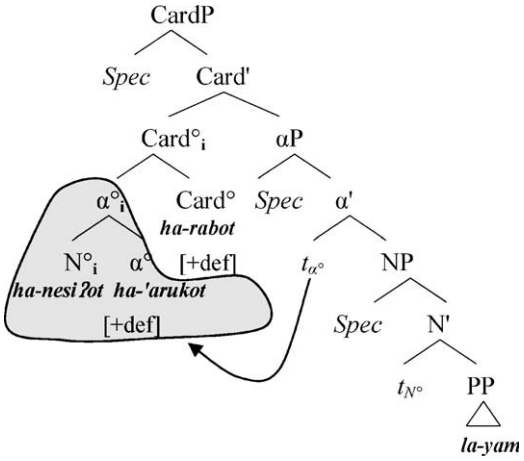
(51) a. ha-nesiʔ-ot ha-'aruk-ot ha-rab-ot ha-'ele la-yam
DEF-trip-F.Pl DEF-long-F.Pl DEF-many-F.Pl DEF-these.Pl to.DEF-sea
'these many long trips to the sea'

[38] The interaction of (post-nominal) cardinals with ordinal numerals is a complex issue. Here, I wish to point out that Scott's (2002:114) and Shlonsky's (2004:1484–1485) claim that the projection hosting ordinal numerals is always merged above the projection hosting cardinal numerals fails to account for the variability of ordering and scope of cardinals and ordinals; for instance, in English one might use *first three symphonies* to refer to Beethoven's First, Second, and Third Symphonies, but *three first symphonies* to refer to three début works by three different composes (say, Beethoven's First, Mozart's First, and Tchaikovsky's First Symphonies). The same contrast is found, for example, in Russian, where case marking clearly indicates that neither of the two orders is derived from the other order by moving one of the numerals around the other. A detailed analysis of the interaction between cardinals and ordinals must be left for future research.

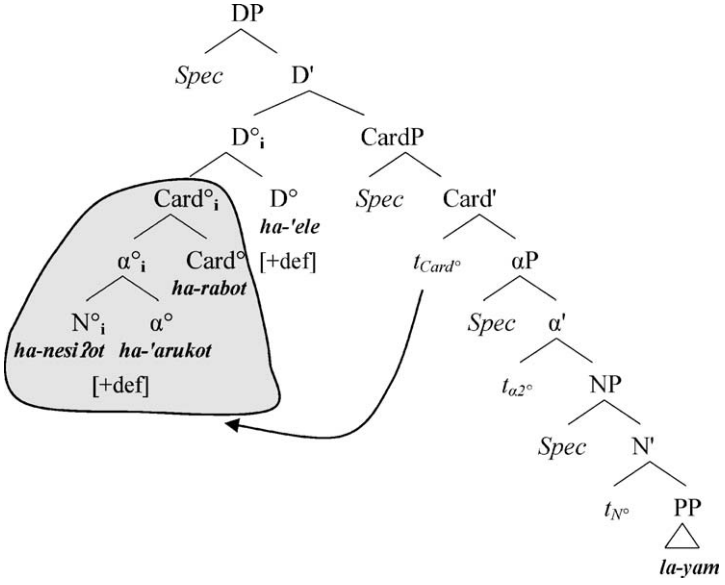
b.


αP
Spec
α'
α°i
NP
N°i
ha-nesi ʔot
[+def]
α°
ha-'arukot
[+def]
Spec
N'
tN°
PP
la-yam

c.


CardP
Spec
Card'
Card°i
αP
α°i
Card°
ha-rabot
Spec
α'
N°i
α°
[+def]
ha-nesi ʔot
ha-'arukot
[+def]
tα°
NP
Spec
N'
tN°
PP
la-yam

d.


DP
Spec
D'
D°i
CardP
Card°i
D°
ha-'ele
Spec
Card'
α°i
Card°
[+def]
ha-rabot
tCard°
αP
N°i
α°
Spec
α'
ha-nesi ʔot
ha-'arukot
[+def]
tα2°
NP
Spec
N'
tN°
PP
la-yam

Before I conclude this section, I would like to consider an alternative analysis of post-nominal demonstratives, proposed by Brugè (1996, 2002), who postulates that all demonstratives are merged in a low position situated below all adjectives (but above possessives) and then move into a higher position on the top of the extended projection of the noun. Whether this movement applies before or after Spell-out is parameterized and this parameter setting determines whether a given language has pre-nominal or post-nominal demonstratives (e.g., in English the movement of the demonstrative applies pre-Spell out and the demonstrative appears pre-nominally, whereas – according to Brugè, 2002 – in Hebrew the movement of the demonstrative applies post-Spell out and the demonstrative appears post-nominally).[39] The appeal of this analysis is that two positions for demonstratives are useful in accounting for strengthening demonstratives (e.g., the French *ce garcon-ci* lit. 'this boy-here'). However, there are several problems with such an analysis. First of all, it still requires some movement that brings the noun in-between the two demonstrative positions (so that the low demonstrative turns out post-nominal); therefore, this analysis does not help us decide whether the noun moves by head movement or (remnant) phrasal movement. Second, this analysis fails to capture the correlation between post-nominal position and agreement in definiteness, discussed above. Thus, it is not clear why in Hebrew demonstratives specified for the definiteness feature would stay low, whereas demonstratives lacking the definiteness feature would raise into the highest position in the noun phrase. Third, if this analysis is to be extended to other elements that may appear pre- or post-nominally, it requires doubling of the projections for all such elements (e.g., doubling of CardP/NumP for *'exad/'axat* 'one' and ''vague cardinals'' like *rabim* 'many' in Hebrew). Not only does this step lead to complicating the phrase structure, it fails to explain why the order of the low CardP and DemP (which end up hosting post-nominal elements) mirrors the order of the high DemP and CardP (which end up hosting pre-nominal elements). Thus, there is no semantic motivation for the low CardP to be merged above the low DemP (where scopal considerations, of course, explain why the high DemP is merged above the high CardP). In other words, under an analysis that doubles positions for all types of elements that can appear either pre- or post-nominally, the mirror order remains a mystery. Therefore, I conclude that Brugè's analysis is not a viable alternative to the analysis developed in this paper.

To conclude, I think that the AgrP-based analysis of agreement inside noun phrases in Hebrew (such as the one proposed by Shlonsky, 2004) is both theoretically inelegant and non-minimalist, as well as empirically problematic, because it fails to distinguish different types of agreement features (i.e., gender/number versus definiteness) which require distinct configurations for checking. In contrast, the ''snowballing'' head movement analysis proposed in this paper accounts for the agreements facts, as well as for the ''adjective-like'' behavior of post-nominal (vague) cardinals, ordinals and demonstratives. Their similarity to adjectives is reduced to a morphological property: like adjectives they are carriers of the definiteness feature, which needs to be checked in a local head-adjunction configuration triggering the ''snowballing'' head movement with the resulting post-nominal placement of these elements (in the mirror order).

7. Conclusion

In this paper, I have considered Shlonsky's (2004) remnant movement analysis of Semitic noun phrases and a proposed ''snowballing'' head movement alternative. I have examined how

[39] Brugè (2002) claims that Hebrew has only post-nominal demonstratives, something shown above to be incorrect.

these two analyses account for the data concerning the placement of adjective, of noun's arguments, and of cardinals and demonstratives, as well as the agreement data, and have shown that the head movement analysis is preferable to the (remnant) phrasal movement analysis (proposed by Shlonsky, 2004), both from the point of view of empirical adequacy and of theoretical elegance.

With respect to adjective placement, I have argued that a distinction must be drawn between light and heavy adjectives, as they are not placed in the same way in Hebrew: light adjective occur in the mirror order, whereas heavy adjectives do not. The head movement analysis predicts this distribution directly, whereas the phrasal movement analysis requires ad hoc amendments (none of which work anyway, as far as I can tell) in order to account for the differing distribution of light and heavy adjectives.

Furthermore, I have argued that the adjacency between the head noun and its Genitive complement in construct nominals – which according to Shlonsky buttresses his analysis – need not (and in some cases, cannot) be created at Merge, as he assumes. Instead, I have suggested that Siloni's (2003) PF-based analysis of constructs is on the right track, as it provides a uniform account of various constructs, including those with a non-noun head or a non-Theme Genitive complement. I have also argued that PP internal arguments of nouns (be they *'et*-PPs in nominalizations, *šel*-PPs or other lexical PPs) present a serious dilemma for Shlonsky's remnant movement analysis: on the one hand, θ-theoretic considerations and binding diagnostics show that the PP must be merged low in the structure (i.e., as a sister to N°), but on the other hand, word order considerations require that the PP appear overtly in a much higher position. In order to fulfill both of these conditions, one must postulate that the PP vacates the lexical NP prior to remnant movement application and moves to some higher position; however, as I have argued in detail in section 5, such movement of the PP is rather ad hoc because it has no independent motivation (apart from getting the word order right, of course!) and its landing site cannot be identified uniformly without taking into consideration the choice of other items in the noun phrase. In other words, both where the PP moves to when it vacates the NP and why it moves there remain as unsolved puzzles under Shlonsky's (2004) analysis. The head movement alternative proposed in this paper accounts for the placement of PP arguments of the noun in a very straightforward manner: they are merged as sisters to N° and remain in that position even after the noun itself has moved leftward (and around adjectives, ''vague cardinals'', and/or demonstratives).

In addition, I have contended that Shlonsky's analysis of agreement inside Hebrew noun phrases, relying on AgrPs, is both non-Minimalist in spirit and empirically inadequate, as it does not allow to distinguish between gender and number agreement, which obtains variably both pre- and post-nominally, on the one hand, and definiteness agreement, which obtains with all and only post-nominal elements, on the other hand. Instead, I proposed to incorporate the agreement generalization (i.e., ''definiteness agreement = post-nominal position'') into the analysis by maintaining that it is the definiteness feature (or its strength, or its EPP component) that requires a local head-adjunction configuration thus triggering the ''snowballing'' head movement and the creation of complex heads.

I have argued that not only is the head movement analysis more adequate empirically than the remnant phrasal movement analysis, but also that it is theoretically more elegant. Recall that the original motivation for Shlonsky has been the elimination of one of two previously distinguished types of movement, namely of the head movement. However, as I have argued extensively in this paper, to do so one is required to complicate the grammar elsewhere. In particular, the phrase structure component must be complicated by an introduction of numerous semantically vacuous

functional projections whose sole *raison d'être* is to provide a landing site for various (remnant) phrasal movement steps in the derivation. But ironically, the problem of simplicity-complexity balance with Shlonsky's remnant movement analysis does not end there. As I have shown in section 5, in order to adequately account for the placement of PP arguments of the noun, proponents of remnant phrasal movement analysis must either (i) loosen the thematic component of the grammar, allowing arguments to be merged outside the maximal projection of the head they are arguments of, as well as the binding theory, or (ii) postulate a totally new kind of movement, whose application and landing site depends not on the properties of the Goal or those of the Probe, but on the morphological properties of other items selected into the numeration. Furthermore, such movement would have no independent motivation (such as Case, EPP, topic/focus, etc.) and would serve solely to derive the correct word order, something that makes the syntactic theory lose much of its restrictiveness and hence should be avoided.

In conclusion, I think that the "snowballing" head movement alternative to Shlonsky's (2004) remnant phrasal movement analysis is more adequate empirically and more elegant theoretically. This means that head movement cannot be dispensed with at least as far as Semitic noun phrases are concerned. Furthermore, I note here that the problem of independent motivation for the creation of remnants remains a serious issue in the clausal domain as well, if remnant phrasal movement analyses of verb-initial orders are to replace those based on head movement.

Acknowledgements

This paper has benefited greatly from discussions with and criticisms from numerous linguists. Earlier versions of this work have been presented at conferences and colloquia at the University of Pennsylvania, University of Connecticut, Université de Genève, NYU, and Princeton; I thank the audiences at this venues for their comments and questions. My special thanks to Nora Boneh, Hagit Borer, Edit Doron, Joel Hoffman, Aviv Hoffmann, Idan Landau, Yale Sharvit, Ivy Sichel, and Eitan Zweig for discussions of the Hebrew data. I am also grateful to John Bailyn, Jonathan Bobaljik, John Bowers, Marcel den Dikken, Richard Kayne, Tony Kroch, Halldór Sigurðsson, Tali Siloni, Anna Szabolcsi, Lisa Travis, Susi Wurmbrand, and two *Lingua* reviewers for helpful comments and criticisms. All errors are solely mine.

References

Abney, S., 1987. The English noun phrase and its sentential aspect. Ph.D. dissertation, MIT.

Alexiadou, A., 2001. Adjectival syntax and noun raising: word order asymmetries in the DP as the result of adjective distribution. Studia Linguistica 55, 217–248.

Androutsopoulou, A., 1994. The distribution of the definite determiner and the syntax of Greek DPs. Proceedings of the Regional Meeting of the Chicago Linguistic Society 30, 16–29.

Baker, M., 1985. The Mirror Principle and morphosyntactic explanation. Linguistic Inquiry 16, 373–416.

Benmamoun, E., 2000. The Feature Structure of Functional Categories. A Comparative Study of Arabic Dialects. Oxford University Press, Oxford.

Benmamoun, E., 2003. Agreement parallelism between sentences and noun phrases: a historical sketch. Lingua 113, 747–764.

Berman, R., 1978. Modern Hebrew Structure. University Publishing Projects, Tel-Aviv.

Bernstein, J., 1992. On the syntactic status of adjectives in Romance. CUNYForum 17, 105–122.

Bernstein, J., 1993. Topics in the syntax of nominal structure across Romance. Ph.D. dissertation, CUNY.

den Besten, H., 1983. The interaction of root transformations and lexical deletive rules. In: Abraham, W. (Ed.), On the Formal Syntax of Westgermania. John Benjamins, Amsterdam, pp. 47–131.

Bliboim, R., 2000. Adjective annexation and its equivalents. Leshonenu 63, 81–105 (in Hebrew).

Borer, H., [1988]/1989. On the morphological parallelism between compounds and construct state nominals. In: Booij, G., van Marle, J. (Eds.), The Morphology Yearbook, vol. 1. Foris Publications, Dordrecht, pp. 45–64.
Borer, H., 1994. The projections of arguments. In: Benedicto, E., Runner, J. (Eds.), UMass Occasional Papers in Linguistics, vol. 17. University of Massachusetts, Amherst, pp. 19–47.
Borer, H., 1996. The construct in review. In: Lecarme, J., et al. (Eds.), Studies in Afroasiatic Grammar. HAG, The Hague, pp. 30–61.
Borer, H., 2004. Structuring Sense. An Exo-Skeletal Trilogy. Oxford University Press, Oxford.
Bouchard, D., 2002. Adjectives, Number and Interfaces: Why Languages Vary? North-Holland/Elsevier, Amsterdam.
Brandi, L., Cordin, P., 1989. Two Italian dialects and the null subject parameter. In: Jaeggli, O., Safir, K. (Eds.), The Null Subject Parameter. Kluwer, Boston, pp. 111–142.
Brugè, L., 1996. Demonstrative movement in Spanish: a comparative approach. Venice Working Papers in Linguistics 6, 1–53.
Brugè, L., 2002. The positions of demonstratives in the extended nominal projection. In: Cinque, G. (Ed.), Functional Structure in DP and IP. The Cartography of Syntactic Structures, vol. 1. Oxford University Press, Oxford, pp. 15–53.
Carnie, A., Harley H., 2000. Clausal architecture: the licensing of major constituents in a verb initial language. Ms., University of Arizona.
Chomsky, N., 1995. The Minimalist Program for Linguistic Theory. MIT Press, Cambridge, MA.
Chomsky, N., 1999. Derivation by Phase. MIT Occasional Papers in Linguistics 17.
Chomsky, N., 2000. Minimalist inquiries: the framework. In: Martin, R., et al. (Eds.), Step by Step. MIT Press, Cambridge, MA, pp. 89–156.
Chung, S., 1990. VPs and verb movement in Chamorro. Natural Language and Linguistic Theory 8, 559–619.
Chung, S., 2005. What fronts? On the VP raising account of verb-initial order. In: Carnie, A., et al. (Eds.), Verb First. On the Syntax of Verb-Initial Languages. John Benjamins, Amsterdam, pp. 9–29.
Cinque, G., 1994. Evidence for partial N-movement in the Romance DP. In: Cinque, G., et al. (Eds.), Paths Towards Universal Grammar. Studies in Honor of Richard S. Kayne. Georgetown University Press, Washington, DC, pp. 85–110.
Cinque, G., 1999. Adverbs and Functional Heads: A Cross-Linguistic Perspective. Oxford University Press, Oxford.
Cinque, G., 2003. Greenberg's universal 20 and the Semitic DP. In: Delsing, L.-O., et al. (Eds.), Grammatik i fokus/Grammar in Focus. Festschrift for Christer Platzack, vol. II. Wallin & Dalholm, Lund, pp. 243–251.
Danon, G., 1996. The syntax of determiners in Hebrew. MA thesis, Tel-Aviv University.
Danon, G., 1998. Two syntactic positions for determiners in Hebrew. In: Wyner, A. (Ed.), Proceedings of IATL, vol. 13. Hebrew University of Jerusalem, pp. 55–73.
Danon, G., 2001. Syntactic definiteness in the grammar of Modern Hebrew. Linguistics 39, 1071–1116.
Delsing, L.-O., 1993. On attributive adjectives in Scandinavian and other languages. Studia Linguistica 47, 105–125.
Doron, E., Reintges C., 2005. The syntax of Semitic participial relative clauses. Paper presented at the GLOW Semitic Syntax Workshop, Geneva.
Duffield, N., 1999. Adjectival modifiers and the specifier-adjunct distinction. In: Adger, D., et al. (Eds.), Specifiers: Minimalist Approaches. Oxford University Press, Oxford, pp. 126–145.
Engelhardt, M., 1998. The syntax of nominalized properties. Ph.D. dissertation, Hebrew University of Jerusalem.
Engelhardt, M., 2000. The projection of argument-taking nominals. Natural Language and Linguistic Theory 18, 41–88.
Ernst, T., 2002. The Syntax of Adjuncts. Cambridge University Press, Cambridge.
Fassi-Fehri, A., 1989. Generalised IP structure, case and VS order. In: Laka, I., Mahajan, A.K. (Eds.), Functional Heads and Clause Structure (MIT Working Papers in Linguistics), MIT, Dept. of Linguistics and Philosophy. pp. 75–113.
Fassi-Fehri, A., 1993. Issues in the Structure of Arabic Clauses and Words. Kluwer, Dordrecht.
Freeze, R., Georgopoulos, C., 2000. Locus operandi. In: Carnie, A., Guilfoyle, E. (Eds.), The Syntax of Verb Initial Languages. Oxford University Press, Oxford, pp. 163–184.
Gesenius, W., 1910. Gesenius Hebrew Grammar. Clarendon Press, Oxford.
Givón, T., 1981. On the development of numeral 'one' as an indefinite marker. In: Borer, H., Aoun, Y. (Eds.), Theoretical Issues in the Grammar of Semitic Languages (MIT Working Papers in Linguistics), MIT, Dept. of Linguistics and Philosophy, vol. 3, pp. 233–255.
Glinert, L., 1989. The Grammar of Modern Hebrew. Cambridge University Press, Cambridge, UK.
Glinert, L., 1994. Modern Hebrew. An Essential Grammar. Routledge, London.

Ghomeshi, J., 1997. Non-projecting nouns and the Ezafe construction in Persian. Natural Language and Linguistic Theory 15, 729–788.

Gray, L.H., 1934. Introduction to Semitic Comparative Linguistics. Columbia University Press, New York City.

Haegeman, L., 2000. Remnant movement and OV order. In: Svenonius, P. (Ed.), The Derivation of VO and OV. John Benjamins, Philadelphia, pp. 69–96.

Haiman, J., Benincá, P., 1992. The Rhaeto-Romance Languages. Routledge, London.

Hallman, P., 2000. Verb-final as a subcase of verb-second. In: Hirotani, M., et al. (Eds.), Proceedings of NELS, vol. 30. GLSA, Amherst, MA, pp. 287–298.

Hazout, I., 1990. Verbal nouns: theta-theoretic studies in Hebrew and Arabic. Ph.D. dissertation, University of Massachusetts, Amherst.

Hazout, I., 1995. Action nominalization and the Lexicalist hypothesis. Natural Language and Linguistic Theory 13, 355–404.

Hazout, I., 2000. Adjectival genitive constructions in Modern Hebrew: a case study in co-analysis. The Linguistic Review 17, 29–52.

Kayne, R., 1994. The Antisymmetry of Syntax. MIT Press, Cambridge, MA.

Kayne, R., 2002. On some prepositions that look DP-internal: English 'of' and French 'de'. Catalan Journal of Linguistics 1, 71–115.

Kayne, R., 2004. Prepositions as probes. In: Belletti, A. (Ed.), Structures and Beyond. The Cartography of Syntactic Structures, vol. 3. Oxford University Press, New York, pp. 192–212.

Kayne, R., 2005. On the syntax of quantity in English. In: Kayne, R. (Ed.), Movement and Silence. Oxford University Press, New York, pp. 176–214.

Kim, J., 2001. Adjectives in construct. Ms., University of Massachusetts, Amherst.

Koopman, H., Szabolcsi, A., 2000. Verbal Complexes. MIT Press, Cambridge, MA.

Koster, J., 1994. Predicate incorporation and the word order of Dutch. In: Cinque, G., et al. (Eds.), Paths Towards Universal Grammar. Studies in Honor of Richard S. Kayne. Georgetown University Press, Washington, DC, pp. 255–277.

Kratzer, A., 1996. Severing the external argument from its verb. In: Rooryck, J., Zaring, L. (Eds.), Phrase Structure and the Lexicon. Kluwer, Dordrecht, pp. 109–138.

Laenzlinger, C., 2005. French adjective ordering: perspectives on DP-internal movement types. Lingua 115, 645–689.

Lechner, W., 2005. Syntactic and Semantic effects of head movement. Paper presented at GLOW, Geneva.

Lee, F., 2000. Remnant VP-movement and VSO in Quiaviní Zapotec. In: Carnie, A., Guilfoyle, E. (Eds.), The Syntax of Verb Initial Languages. Oxford University Press, Oxford, pp. 143–162.

Longobardi, G., 1996. On the typological unity of Indo-European and Semitic genitive case. In: Lecarme, J., et al. (Eds.), Studies in Afroasiatic Grammar. HAG, The Hague, pp. 179–214.

Longobardi, G., 2001. The structure of DPs: some principles, parameters, and problems. In: Baltin, M., Collins, C. (Eds.), The Handbook of Contemporary Syntactic Theory. Blackwell, Oxford, pp. 562–603.

Mahajan, A.K., 2003. Word order and (remnant) VP movement. In: Karimi, S. (Ed.), Word Order and Scrambling. Blackwell, Oxford, pp. 217–237.

Massam, D., 2000. VSO and VOS: aspects of Niuean word order. In: Carnie, A., Guilfoyle, E. (Eds.), The Syntax of Verb Initial Languages. Oxford University Press, Oxford, pp. 97–116.

Massam, D., 2001. On predication and the status of subjects in Niuean. In: Davies, W., Dubinsky, S. (Eds.), Objects and Other Subjects: Grammatical Functions, Functional Categories, and Configurationality. Kluwer, Dordrecht, pp. 225–246.

McCloskey, J., 2004. Irish nominal syntax 1: demonstratives. Ms., University of California Santa Cruz.

McCloskey, J., 2005. A note on predicates and heads in Irish clausal syntax. In: Carnie, A., et al. (Eds.), Verb First. On the Syntax of Verb-Initial Languages. John Benjamins, Amsterdam, pp. 155–174.

Müller, G., 2004. Verb second as vP first. Journal of Comparative Germanic Linguistics 7, 179–234.

Nilsen, Ø., 2002. V2 and Holmberg's generalization. In: Zwart, J.-W., Abraham, W. (Eds.), Studies in Comparative Germanic Syntax: Proceedigs from the 15th Workshop on Comparative Germanic Syntax. John Benjamins, Amsterdam, pp. 151–173.

Oda, K., 2005. V1 and wh-questions: a typology. In: Carnie, A., et al. (Eds.), Verb First. On the Syntax of Verb-Initial Languages. John Benjamins, Amsterdam, pp. 107–134.

Otsuka, Y., 2005. Two derivations of VSO: a comparative study of Niuean and Tongan. In: Carnie, A., et al. (Eds.), Verb First. On the Syntax of Verb-Initial Languages. John Benjamins, Amsterdam, pp. 65–90.

Pereltsvaig, A., 2000. On Accusative adverbials in Russian and Finnish. In: Alexiadou, A., Svenonius, P. (Eds.), Adverbs and Adjunction. Linguistics in Potsdam 6, 155–176.

Pereltsvaig, A., 2006. Small nominals. Natural Language and Linguistic Theory 24 (2), in press.

Rackowsky, A., Travis, L., 2000. V-initial languages: X or XP movement and adverbial placement. In: Carnie, A., Guilfoyle, E. (Eds.), The Syntax of Verb Initial Languages. Oxford University Press, Oxford, pp. 117–143.

Reinhart, T., Neeleman, A., 1997. Scrambling and the PF interface. In: Cobler, W., Butt, M. (Eds.), Projecting from the Lexicon. CSLI, Stanford.

Ritter, E., 1987. NSO orders in Modern Hebrew. Proceedings of the North Eastern Linguistic Society 17, 521–537.

Ritter, E., 1988. A head-movement approach to construct state noun phrases. Linguistics 26, 909–929.

Ritter, E., 1991. Two functional categories in noun phrases: evidence from modern Hebrew. In: Rothstein, S. (Ed.), Syntax and Semantics, vol. 25. Academic Press, New York, pp. 37–62.

Rouveret, A., 1994. Syntaxe du Gallois. CNRS Editions, Paris.

Saccon, G., 1993. Postverbal subjects. Ph.D. dissertation, Harvard University.

Sadler, L., 1998. Welsh NPs without head movement. In: Proceedings of the LFG98 Conference, University of Queensland, Brisbane.

Sadler, L., 2000. Noun phrase structure in Welsh. In: Butt, M., King, T. (Eds.), Argument Realization. CSLI Publications, Stanford, CA, pp. 73–109.

Sadler, L., Arnold, D., 1994. Prenominal adjectives and the phrasal/lexical distinction. Journal of Linguistics 30, 187–226.

Schwarzwald, O., 2001. Modern Hebrew. Lincom Europa, Munich.

Scott, G.-J., 2002. Stacked adjectival modification and the structure of nominal phrases. In: Cinque, G. (Ed.), Functional Structure in DP and IP. The Cartography of Syntactic Structures, vol. 1. Oxford University Press, Oxford, pp. 91–122.

Shlonsky, U., 1991. Hebrew construct state nominals, Arabic verb-initial clauses and the Head Movement Constraint. Ms., Université du Québec à Montréal.

Shlonsky, U., 2004. The form of Semitic noun phrases. Lingua 114, 1465–1526.

Sichel, I., 2002. Phrasal movement in Hebrew adjectives and possessives. In: Alexiadou, A., et al. (Eds.), Remnant Movement, Feature Movement and the T-Model. John Benjamins, Amsterdam, pp. 297–339.

Sichel, I., 2003. Phrasal movement in Hebrew DPs. In: Lecarme, J. (Ed.), Research in Afroasiatic Grammar, vol. II. John Benjamins, Amsterdam, pp. 447–479.

Sigurðsson, H.Á., 1993. The structure of the Icelandic NP. Studia Linguistica 47, 177–197.

Siloni, T., 1991. Noun raising and the structure of noun phrases. In: Bobaljik, J., Bures, T. (Eds.), Proceedings of SCIL. (MIT Working Papers in Linguistics), MIT, Dept. of Linguistics and Philosophy, vol. 14, pp. 255–270.

Siloni, T., 1994. Noun phrases and nominalizations. Ph.D. dissertation, Université de Genève.

Siloni, T., 1996a. Hebrew noun phrases: generalized noun raising. In: Belletti, A., Rizzi, L. (Eds.), Parameters and Functional Heads: Essays in Comparative Syntax. Oxford University Press, Oxford, pp. 239–267.

Siloni, T., 1996b. Hebrew verbal gerunds. In: Lecarme, J., et al. (Eds.), Studies in Afroasiatic Grammar. HAG, The Hague, pp. 410–430.

Siloni, T., 1997. Noun Phrases and Nominalizations. The Syntax of DPs. Kluwer, Dordrecht.

Siloni, T., 2000. Nonnominal constructs. In: Lecarme, J., et al. (Eds.), Research in Afroasiatic Grammar. John Benjamins, Amsterdam, pp. 301–323.

Siloni, T., 2002. Adjectival constructs and inalienable constructions. In: Ouhalla, J., Shlonsky, U. (Eds.), Themes in Arabic and Hebrew Syntax. Kluwer, Dordrecht, pp. 161–188.

Siloni, T., 2003. Prosodic case checking domain: the case of constructs. In: Lecarme, J. (Ed.), Research in Afroasiatic Grammar, vol. II. John Benjamins, Amsterdam, pp. 481–510.

Sproat, R., Shih, C., 1988. The cross-linguistic distribution of adjective ordering restrictions. In: Georgopoulos, C., Ishihara, R. (Eds.), Interdisciplinary Approaches to Language. Kluwer, Dordrecht, pp. 565–595.

Sproat, R., Shih, C., 1991. Prenominal adjectival ordering in English and Mandarin. Proceedings of NELS 18, 465–489.

Svenonius, P., 1993. The structural location of the attributive adjective. In: Duncan, E., et al. (Eds.), The Proceedings of the Twelfth West Coast Conference on Formal Linguistics. CSLI, Stanford, CA, pp. 439–454.

Taraldsen, T., 2000. V-movement and VP movement in derivations Leading to VO-order. In: Svenonius, P. (Ed.), The Derivation of VO and OV. John Benjamins, Philadelphia, pp. 97–122.

Travis, L., 1992. Inner aspect and the structure of VP. Cahiers de Linguistique de l'UQAM 1, 130–146.

Travis, L., 2004a. VP, D° movement languages. Paper presented at the Georgetown University Roundtable (GURT), Washington, DC, March 2004.

Travis, L., 2004b. VP-, D°-movement languages: Malagasy in wonderland. Paper presented at the Austronesian Formal Linguistics Association (AFLA 11), Berlin, Germany, April 2004.

Travis, L., 2005. Case as feature checking and the status of predicate initial languages. In: Amberber, M., de Hoop, H. (Eds.), Competition and Variation in Natural Languages: The Case for Case. Elsevier, Amsterdam, pp. 147–178.

Williams, R., 1976. Hebrew Syntax. An Outline, second ed. University of Toronto Press, Toronto.

Wintner, S., 2000. Definiteness in the Hebrew noun phrase. Journal of Linguistics 36, 319–363.

Zwart, C.J.-W., 1993. Dutch syntax: a minimalist approach. Ph.D. dissertation, University of Groningen.

Zwart, C.J.-W., 2003. Agreement and remnant movement in the domain of West-Germanic verb movement. In: Koster, J., van Riemsdijk, H. (Eds.), Germania et alia: a linguistic Webschrift for Hans den Besten. University of Groningen E-book: http://odur.let.rug.nl/∼koster/DenBesten/contents.htm.