

CHAPTER 27

AFRO-ASIATIC,
SEMITIC: HEBREW

HAGIT BORER

27.1 INTRODUCTION

That Hebrew does have compounds is very clear, given the possible concatenation of two nouns, as in (1a–c), with a meaning that is neither compositional nor predictable from the individual N components:

- (1) a. *orex* (*ha-*)*din*
 editor (the-)law
 ‘(the) lawyer’
- b. *melaxex* (*ha-*)*pinka*
 chewer (the-)bowl
 ‘(the) sycophant’
- c. *beyt* (*ha-*)*sefer*
 house (the-)book
 ‘(the) school’

What is trickier, however, is setting a precise boundary between the clear compounds in (1), and noun concatenations such as those in (2), which are syntactically productive and which have a meaning entirely predictable from their parts:

- (2) a. *orex* (*ha-*)*ma’amar*
 editor (the-)article
 ‘(the) editor of (the) article’

- b. *melaxex* (ha-)’esev
 chewer (the-)grass
 ‘(the) (one who) chews grass’
- c. *beyt* (ha-)sar
 house (the-)minister
 ‘(the) house of (the) minister’

The structures in (2) (construct nominals) have been discussed extensively in the generative literature in the past decades, and there is a consensus that regardless of their specific analysis, they are clearly creatures of the syntax. In turn, the nominals in (1) and in (2) share some major structural properties, making it implausible that their respective derivations follow entirely distinct routes. Distinctions between the two groups exist, however, suggesting that their paths do diverge, at some point. At the end of the day, then, any investigation of the shared and disjoint properties of compounds (as we shall refer to the combinations in (1)) and constructs (the combinations in (2)) perforce bears on how word formation operations should be modelled, relative to, or within, the syntax.

Section 27.2 of this chapter is devoted to reviewing, largely following Borer (1988), the grounds for assuming that the paradigm in (1) – but not in (2) – is associated with compounding. In section 27.3 I show that there are at least two distinct types of N + N constructs; one, labelled here an *R*-construct, whose non-head is referential, and another, an *M*-construct, whose non-head is a modifier. I will further show that *M*-constructs, but not *R*-constructs, share important properties with compounds. Finally, section 27.4 is a sketchy outline of an analysis of constructs and compounds in Hebrew.

27.2 CONSTRUCTS AND COMPOUNDS

27.2.1 Similarities

27.2.1.1 Phonological

Phonologically, N + N combinations, both constructs and compounds, are prosodic words. Combinations such as those in (1)–(2) have only one primary stress falling on the non-head. A variety of phonological operations sensitive to stress placement take place in both constructs and compounds in an identical fashion: for example, non-final (short) vowels of the head are subject to deletion on a par with such pre-penultimate vowel deletion in stress-suffixed forms (e.g. pluralization) (cf. (3)). Further, feminine singular forms ending in *-á* when free, and masculine

plural forms ending in *-ím*, when free, exhibit a distinct bound form for the head both in compounds and in constructs (compounds in bold) (cf. (4)):

- (3) a. *báyit* *ha-báyit*
 ‘house.sg’ ‘the-house’
- b. *beyt* *midrás* *beyt* *morá*
 house sermon house teacher
 ‘religious school’ ‘house of a teacher’
- (4) a. *šmira* *batím*
 guarding.FEM houses
- b. *šmirat sáf* *šmirat* *yeladím*
 guarding threshold guarding children
 ‘gate keeping’ ‘guarding children’
- c. *batey* *midrás* *batey* *morót*
 houses sermon houses teachers
 ‘religious schools’ ‘teachers houses’

27.2.1.2 Syntactic

The head of the construct cannot be directly modified. While in free nominals a modifying adjective occurs between the head and any additional non-head constituent, in the construct, the modifying adjective must follow the non-head; indeed, it must follow all construct non-heads, if there is more than one. An identical restriction holds for compounds:

- (5) *ha-bayit* *ha-xadaš* (free nominal)
 the-house the-new
 ‘the new house’
- (6) a. *beyt* *mora* *xadaš* (construct)
 house teacher new
 ‘a new teacher’s house’
- b. **beyt* *xadaš* *mora*
 house new teacher
- (7) a. *beyt* *xolim* *xadaš* (compound)
 house patients new
 ‘a new hospital’
- b. **beyt* *xadaš* *xolim*
 house new patients

The definite article, *ha-*, cannot be realized on the head of either constructs or compounds. In turn, when it is realized on the (last) non-head, the entire expression, with the bare leftmost N as its head, is interpreted as definite, triggering,

subsequently, definite agreement on a modifying adjective (compare (8) with (9) for constructs and (10) for compounds; definite agreement involves the reiteration of the definite article *ha-* on the adjective):¹

- (8) *ha-bayit* *ha-xadaš* (free nominal)
the-house.MASC the-new.MASC
- (9) a. **ha-beyt* (*ha-*)*mora* (*ha-xadaš*) (construct)
the-house.MASC (the-)teacher.FEM (the-new.MASC)
b. *beyt* *ha-mora* *ha-xadaš*
house.MASC the-teacher.FEM the-new.MASC
'the new teacher's house'
- (10) a. **ha-beyt* (*ha-*)*xolim* (*ha-xadaš*)
the-house.SG (the-)patients.PL (the-new.SG)
b. *beyt* *ha-xolim* *ha-xadaš*
house.SG the-patients.PL the-new.SG
'the new hospital'

We return below to some additional syntactic similarities between compounds and *some* constructs, but not others.

27.2.2 Differences

27.2.2.1 Constituent structure

While constructs allow the modification of the non-head, such modification is impossible for compounds without the loss of the non-compositional reading:

- (11) a. *beyt* *ha-talmidim* *ha-xadašim*
house.SG the-students.PL the-new.PL
b. *beyt* *ha-xolim* *ha-xadašim*
house.SG the-patients.PL the-new.PL
'the new patients' house; *the new hospital; the hospital for the new patients'

While the non-head in constructs may be coordinated (cf. (12)), such a coordination is excluded with a non-compositional (compound) reading (cf. (13)):

- (12) a. *beyt* *talmidim* *ve-talmidot*
house students.MASC.PL and-students.FEM.PL
b. *gan* *perot* *ve-yerakot*
garden fruits and-vegetables
'a garden of fruit and vegetables'
- (13) a. **beyt* *xolim* *ve-xolot*
house patients.MASC.PL and-patient.FEM.PL

¹ For some potentially complicating factors, see Engelhardt (2000) as well as Danon (2001, 2008b).

- b. *gan yeladim ve-xayot*
 garden children and-animals
 ‘*a kindergarten and a zoo’; ‘a kindergarten and animals’; ‘a garden for children and animals’
- cf. *gan yeladim gan xayot*
 garden children garden animals
 ‘kindergarten’ ‘zoo’

While a pronoun may refer to the head of a construct (excluding the non-head), (cf. (14a–b)), such reference is impossible with a non-compositional (compound) reading (cf. (15)):

- (14) a. *hu bana li šney batey ‘ec ve-exad mi-plastik*
 he built me two houses wood and-one of-plastic
 ‘he built for me two wooden houses and one of plastic’
- b. *’amdu šam šney batey morot mi-xul*
 stood there two houses teachers from-abroad
ve-’exad šel mora mi-be’er ševa
 and one of teacher from Be’er Sheba
 ‘there were two houses there of teachers from abroad, and one of a teacher from Be’er Sheba’
- (15) **hu bana lanu shney batey xolim ve-exad le-yetomim*
 he built us two houses-patients and-one for-orphans
 ‘he built for us two hospitals and orphanage’
- cf. *beyt xolim beyt yetomim*
 house sick house orphans
 ‘hospital’ ‘orphanage’

Finally, while at least prescriptively the head of the construct may not be coordinated directly, the entire construct may be coordinated with the identical non-head realized as a pronoun on the second conjunct, as illustrated in (16):

- (16) a. *beyt ha-mora_i ve-xacer-a_i*
 house the-teacher_i and-yard-her_i
 ‘the teacher’s house and her yard’
- b. *beyt mora_i ve-xacer-a_i*
 house teacher_i and-yard-her_i
 ‘a teacher’s house and her yard’

Such coordination is not possible for compounds, nor is any pronominal reference to the non-head allowed without a loss of non-compositional meaning:

- (17) a. *mitat (ha-)xolim_i ve-beyt-am_i*
 bed (the-)patients_i and house-theirs_i
 *‘(the) patients’ bed and their hospital’

- b. *beyt* (*ha-*)*xolim*_i *ve-mitat-am*_i
 house (the-)patients_i and bed-theirs_i
 ‘(the) patients’_i home and their_i bed’; ‘the/a hospital and their bed’ (with
 reference of ‘their’ vague)
- cf. *beyt* (*ha-*)*xolim*
 house (the-)patients
 ‘(the) hospital’
- (18) *’iš* (*ha-*)*sefer*_i *ve-beyt-o*_i
 man book_i and-house-his_i
 *‘the/a scholar and the school’; ‘the/a scholar and his house’
- cf. *iš* (*ha-*)*sefer* *beyt* (*ha-*)*sefer*
 man (the-)book house (the-)book
 ‘(the) scholar’ ‘(the) school’

27.2.2.2 Definiteness spreading

While the definite determiner in both constructs and compounds may only be realized on the last non-head member, in the construct, the definiteness marked on that non-head is associated not only with the entire expression, as already noted, but also with the non-head itself. If the construct has more than two members, such definiteness comes to be associated with every single noun in it, as can be illustrated through the obligatoriness of agreement on adjectives modifying such non-heads:²

- (19) a. *delet* *beyt* *ha-mora* *ha-vatiqa* *ha-xadaš*
 door.FEM house.MASC the-teacher.FEM the-senior.FEM the-new.MASC
 ‘the door of the new house of the senior teacher’
- b. *delet* *beyt* *ha-mora* *ha-vatiqa* *ha-xadaša*
 door.FEM house.MASC the-teacher.FEM the-senior.FEM the-new.FEM
 ‘the new door of the house of the senior teacher’
- c. *delet* *beyt* *ha-mora* *ha-xadaš* *ha-levana*
 door.FEM house.MASC the-teacher.FEM the-new.MASC the-white.FEM
 ‘the white door of the new house of the teacher’

Not so in compounds, where the non-head, although directly marked by a definite article, is not even referential. The ‘orphans’ under discussion in (20a) not only need not be specific, they need not exist altogether, nor does the ‘king’ (20b) need to be a specific one or to exist. The expression is best translated as ‘prince’, rather than ‘a king’s son’:

² The order of adjectives in constructs mirrors that of the nouns. As such cases of centre embedding tend to deteriorate rather rapidly, all exemplifications in (19) involve only two-adjective combinations. As we shall see shortly, definiteness spreading is relevant to *R*-constructs, but not to *M*-constructs.

- (20) a. *beyt ha-yetomim*
house the-orphans
'orphanage'
- b. *ben ha-melex*
son the-king
'prince'

27.2.2.3 Semantic headedness

Adapting somewhat the 'IS A' condition of Allen (1978), we note that a construct *IS A* modified version of its head. Not so compounds, where such semantic connection does not typically obtain:

- (21) a. *beyt mora IS A bayit*
house teacher IS A house
- b. *šomer mexoniyot IS A šomer*
guard cars IS A guard
- (22) a. *beyt sefer IS NOT (necessarily) A bayit* cf. *beyt sefer*
house book IS NOT (necessarily) A house house book
'school'
- b. *yošev roš IS NOT A yošev* cf. *yošev roš*
sitter head IS NOT A sitter sitter head
'chairman'

Summarizing thus far, we note that the lack of compositional reading for some N+N combinations correlates directly with syntactic opacity. In turn, cases of compositional readings correlate with syntactic transparency. The label 'compounds' thus appears well deserved for the former.

This said, a closer scrutiny reveals that at least some compositional N+N combinations are not as syntactically distinct from compounds as may be presumed on the basis of the comparison just outlined. We now turn to the discussion of these combinations.

27.3 MODIFICATION CONSTRUCTS

27.3.1 M-constructs vs. R-constructs – the syntax

Construct formation is an extremely heterogeneous phenomenon which is not restricted to N+N combinations. In turn, even within the class of N+N

combinations (by far the largest construct group) we find diverse properties associated with distinct subtypes. A full review of all construct types is outside the scope of this chapter, but with the properties of compounds in mind, I will focus here on the properties of modificational constructs (henceforth *M*-constructs; broadly speaking, a type of Modificational Genitive as discussed in Munn 1995 and others), and whose syntactic properties are closer to those of compounds. *M*-constructs are illustrated in (23), to be contrasted with the constructs in (24):

- (23) *beyt* (ha-)‘ec; *kos* (ha-)mic; *signon* (ha-)ktiva;
house (the-)wood; glass (the-)juice; style (the-)writing;
‘(the)wooden house’; ‘(the) juice glass’; ‘(the) writing style’;
magevet (ha-)mitbax
towel (the-)kitchen
‘(the) kitchen towel’
- (24) *beyt* (ha-)mora; *gag* (ha-)bayit; *na’aley* (ha-)yalda;
house (the-)teacher; roof (the-)house; shoes (the-)girl;
mexonit (ha-)nasi
car (the-)president

The intuitive meaning difference between the two groups of constructs is clear, but considerably more crucial is the fact that they are syntactically distinct. Most saliently, the non-head of *M*-constructs is not referential and is interpreted as a modifying property, while the non-head of the constructs in (24) (henceforth *R*-constructs) must be referential.³ In (25), we list syntactic differences, in turn illustrated by the contrasts between (26a–f) and (27a–f):⁴

- (25) The non-head in *M*-constructs –
- cannot be modified by a definite adjective ((26a) vs. (27a));
 - when indefinite, can only be modified by a property modifier ((26b) vs. (27b));
 - cannot be pluralized, unless the plural itself is interpreted as a property ((26c) vs. (27c));
 - cannot be quantified ((26d) vs. (27d));

³ The term *R*-construct is used here for all constructs with a referential non-head (broadly, the Individual Genitives of Munn 1995 and subsequent literature). Constructs in Event Derived Nominals are formed of the head N and one of the arguments. Since arguments are perforce referential, all such constructs are *R*-constructs. For some previous discussion of this distinction within Hebrew constructs see Hazout (1991); Dobrovie-Sorin (2003).

⁴ Dobrovie-Sorin (2003) likewise draws a syntactic distinction between (our) *R*-constructs and *M*-constructs, and suggests that compounds are related to the latter. Dobrovie-Sorin’s (2003) syntactic analysis of these structures, however, cannot be adopted. See Borer (2008) for a fuller review.

- e. does not allow pronominal reference ((26e) vs. (27e));
 f. does not allow determiners or adjectives that entail reference ((26) vs. (27f)).
- (26) a. *beyt ha-mora ha-vatiqa*
 house the-teacher the-senior
 ‘the house of the senior teacher’
 b. *beyt mora vatiqa*
 house teacher senior
 ‘a house of a senior teacher’
 c. *beyt (ha-)morot*
 house (the-)teachers
 ‘(the) teachers’ house’
 d. *beyt šaloš/harbe morot / beyt kol mora*
 house three/many teachers house every teacher
 ‘a house of three/many teachers’ ‘every teacher’s house’
 e. *beyt (ha-)mora_i ve-rahite-ha_i*
 house (the) teacher_i and furniture-her_i
 ‘the/a teacher’s house and her furniture’
 f. *beyt {‘eyze} mora {kolšehi/mesuyemet}*
 house {some} teacher {some/specific}
 ‘a house of some/a specific teacher’
- (27) a. *beyt ha-zxuxit {*ha-xadaša; ??ha-venezianit}*
 house the-glass {*the-new; ??the-Venetian}
 ‘the [{*new; ??Venetian} glass] house’
 b. *beyt zxuxit {*xadaša; venezianit}*
 house glass {*new; Venetian}
 *‘a [new glass] house’; ‘a [Venetian glass] house’
 c. **beyt (ha-)zxuxiot kir (ha-)levenim mic (ha-)tapuzim*
 house (the-)glasses wall (the-)bricks juice (the-)oranges
 *‘(the-) (multiple) glasses’ house’ ‘(the) brick wall’ ‘(the) orange juice’
 d. **kir me’a/harbe levenim *beyt kol ‘ec*
 wall hundred/many bricks house every wood
 *‘a wall of hundred/many bricks’ *‘a house from every (type of) wood’
 e. **xalon (ha-)zxuxit_i ve-dalt-a_i*
 window (the-)glass_i and-door-her_i
 *‘the/a glass window and its door’
 f. **xalon {‘eyze} zxuxit {kolšehi/msuyemet}*
 window {some} glass {some/specific}
 *‘a window of some/specific glass’

27.3.2 *M*-constructs, compounds, and pre-N + N Determiners

As the reader has no doubt noted already, the behaviour of *M*-constructs is suspiciously similar to that of compounds. The similarity is further supported by a development in spoken Modern Hebrew which affects *M*-constructs and compounds, but not *R*-constructs. Specifically, the placement of the definite article in constructs is shifting in spoken Modern Hebrew from a realization on the non-head to a realization on the head itself. In such cases, the entire construct is definite. The non-head, however, cannot be independently marked with a definite article (cf. (30)), and is not interpreted as definite, as illustrated by (28)–(29):⁵

(28) COMPOUNDS

- a. *ha-yom huledet šeli*
the-day birth mine
'my birthday'
- b. *ha-beyt sefer ha-ze*
the-house book the-this
'this school'
- c. *ha-beyt xolim ha-'ironi*
the-house patients the-municipal
'the municipal hospital'
- d. *ha-'orex din ha-ca'ir*
the editor law the-young
'the young lawyer'

(29) *M*-CONSTRUCTS

- a. *ha-kos mic ha-zot*
the-glass juice the-this
'this glass of juice'
- b. *ha-magevet mitbax ha-meluxlexet ha-zot*
the-towel kitchen the-dirty the-this
'this dirty kitchen towel'
- c. *ha-mic tapuzim šeli*
the-juice oranges mine
'my orange juice'
- d. *ha-signon dibur šelo*
the-style talking his
'his talking style'

⁵ The reanalysed definite marker appears to require some anchoring in the form of an additional demonstrative, adjective, or PP.

- (30) a. **ha-yom ha-huledet*; **ha-beyt ha-sefer*; **ha-orex ha-din*
 the-day the-birth the-house the-book the-editor the-law
 (the birthday) (the school) (the lawyer)
- b. **ha-kos ha-mic*; **ha-magevet ha-mitbax*; **ha-signon ha-dibur*
 the-glass the-juice the-towel the-kitchen the-style the-talking

When applied to constructs with a (contextually plausible) referential non-head, such placement of the definite article has the effect of converting them, however implausibly, to *M*-constructs (cf. (31)): the non-head acquires a property interpretation, disallowing definite and non-property modification of the non-head; it cannot be pluralized or quantified, and pronominal reference to it becomes impossible (cf. (32)):

- (31) a. *ha-tmunot muzeon ha-ele*
 the-pictures museum the-these
 *‘these pictures of the museum’
 (ok: ‘these museum-type pictures’)
- b. *ha-beyt mora ha-xadaš*
 the-house teacher the-new
 (*‘the new house of the teacher’)
 (ok: ‘the new teacher-type house’)
- c. *ha-na’aley yalda ha-xumot*
 the-shoes girl the-brown.PL
 (*‘the brown shoes of the girl’)
 (ok: ‘the brown girl-type shoes’)
- (32) a. **ha-simlat rof’a (ha-)vatiqa*
 the-dress physician (the-)senior
 ‘the dress of the/a senior physician’
- b. **ha-simlat rof’ot*
 the-dress physicians
 ‘the physicians’ dress’
- c. **ha-simlat kol rof’a*
 the-dress every physician
 ‘the dress of every physician’
- d. **ha-simlat rof’a_i ve-rahite-ha_i*
 the-dress physician_i and-furniture-her_i
 ‘the physician’s dress and her furniture’
- e. **ha-simlat {’eyze} rof’a {kolšehi/mesuyemet}*
 the-dress {some} physician {some/specific}
 ‘the dress of some/a specific physician’

Siloni (2001) notes that when semantically definite determiners such as *oto* ‘the same’ and the (post-nominal) demonstrative *ze* are used with N + N compounds, the entire expression is definite, but not so the non-head. This, Siloni reasons, suggests that while definiteness does spread from the non-head to the head, indefiniteness does not, and is rather associated independently with each N member of the construct. However, the properties of *oto* and *ze*, as it turns out, are exactly identical to those just outlined for the reanalysed definite article *ha-* when it occurs on the head – they are only compatible with *M*-constructs and are strictly barred in the context of referential non-heads:

- (33) a. *'oto* *'orex* *din ca'ir* / *'orex* *din ca'ir* *ze*
 same.MASC editor.MASC law young editor.MASC law young this.MASC
 ‘the same young lawyer’ ‘this young lawyer’
- b. *ota* *kos* *mic* / *kos* *mic* *zot*
 same.FEM glass.FEM juice glass.FEM juice this.FEM
 ‘the same glass of juice’ ‘this glass of juice’
- (34) a. *oto* *beyt* *mora* (**vatiqa*)
 same.MASC house.MASC teacher (*senior)
 ‘the same [(*)senior teacher’s house]’
 / *beyt* *mora* (**vatiqa*) *ze*
 house.MASC teacher (*senior) this.MASC
 ‘this [(*)senior teacher’s house]’
- b. **ota* *simlat* *rof'ot*
 same.FEM dress.FEM physicians
 ‘the same [dress of physicians]’
 / **simlat* *rof'ot* *zot*
 dress.FEM physicians this.FEM
 ‘this [dress of physicians]’
- c. **ota* *simlat* *kol* *rof'a*
 same.FEM dress.FEM every physician
 ‘the same [dress of every physician]’
 / **simlat* *kol* *rof'a* *zot*
 dress.FEM every physician this.FEM
 ‘this [dress of every physician]’
- d. **ota* *simlat* *rof'a_i* *ve-rahite-ha_i*
 same.FEM dress.FEM physician_i and-furniture-her_i
 ‘the same [dress of a physician] and her furniture’
 / *simlat* *rof'a_i* *zot* *ve-rahite-ha_i*
 dress.FEM physician_i this.FEM and-furniture-her_i
 ‘this [dress of a physician] and her furniture’

- e. **ota simlat {’ezye} rof’a {kolšehi/mesuyemet}*
 same.FEM dress.FEM {some} physician {some/certain}
 ‘the same [some/specific] physician’s dress’
 / *simlat {’eyze} rof’a {kolšehi/mesuyemet} zot*
 dress.FEM {some} physician {some/specific} this.FEM
 ‘this (some/specific) physician’s dress’

The absence of indefiniteness spreading exactly in these contexts follows now directly from the very same factor which excludes definite modification for such a non-head – as the non-head is not referential in *M*-constructs and compounds, it is neither sensibly definite nor sensibly indefinite. Not so the non-head in *R*-constructs, which is referential, and where both definite and indefinite spreading hold as traditionally described.⁶

27.3.3 *M*-constructs vs. compounds

Are *M*-constructs compounds, then? Even more significantly, are all Det + N + N combinations, including those in (31) and (33b) compounds? In terms of their interpretation, they most certainly come closest to the properties of typical English primary N + N compounds nevertheless. The answer to this must be ‘no’. Some crucial distinctions do remain between *M*-constructs and compounds, both with and without a preceding determiner, mandating a separate treatment. Specifically, although the modification of the non-head in *M*-constructs is limited, as compared with *R*-constructs, it is possible: not only by adjectives (providing they refer to properties) but also by a PP and through the non-head itself heading a construct. Such modification is never possible in compounds without the loss of non-compositional meaning (cf. (35)–(36)). It further remains possible to coordinate the non-head in *M*-constructs (with and without a preceding Det), whereas such coordination remains incompatible with non-compositional reading (cf. (37)–(38)), and finally, reference to the head of *M*-constructs with a pronoun, never possible in compounds, is possible in *M*-constructs (cf. (39)–(40)):⁷

- (35) a. *mitkan ’energiya tiv’it* / *ha-mitkan ’energiya tiv’it ha-ze*
 facility energy the-natural / the-facility energy natural the-this
 ‘a/this natural energy facility’

⁶ For a fuller analysis of the exclusion of referential DP non-heads in the context of pre-N + N determiners, see Borer (2008).

⁷ [N + [N + N]] compounds (non-compositional) do occur, just in case the embedded [N + N] itself is a compound:

- i. *oxel lexem xesed*
 eater bread compassion
 eater [‘charity’]
 ‘charity receiver’ (derogatory, implies laziness)

- b. *na'aley yaldat rexov / ha-na'aley yaldat rexov ha-'ele*
 shoes girl street / the-shoes girl street the-these
 '(these) street girl shoes'
- c. *mic [tapuzim mi sfarad] / ha-mic [tapuzim mi-sfarad] ha-ze*
 juice [oranges from spain] / the-juice [oranges from-spain] the-this
 '(this) juice from Spanish oranges'
- (36) a. **beyt xolim xroniyim / *ha-beyt*
 house-patients chronic.PL /the-house
xolim xroniyim ha-ze
 patients chronic.PL the-this
 'a/this hospital for chronic patients'
- b. **beyt xoley Alzheimer / *ha-beyt*
 house patients Alzheimer / *the-house
xoley Alzheimer ha-ze
 patients Alzheimer the-this
 'the/this hospital for Alzheimer patients'
- c. **beyt xolim me-'ayarot pituax / *ha-beyt*
 house patients from towns development / the-house
xolim me-'ayarot pituax ha-ze
 patient from towns development the-this
 'a/this hospital for patients from under-developed towns'
- (37) a. *beyt 'ec ve-levenim / ha-beyt 'ec ve-levenim ha-ze*
 house wood and-bricks / the-house wood and-bricks the-this
 'this/a house of wood and bricks'
- b. *'aron magavot ve-sdinim / ha-'aron magavot ve-sdinim ha-xadaš*
 cabinet towels and-sheets / the-cabinet towels and-sheets the-new
 'the/a (new) cabinet for towels and sheets'
- (38) a. **beyt xolim ve-yetomim / *ha-beyt xolim ve-yetomim ha-ze*
 house patients and-orphans / the house patients and-orphans the-this
 'a/this hospital and orphanage'
- b. **gan yeladim ve-xayot / *ha-gan yeladim ve-xayot ha-ze*
 garden children and-animals / the-garden children and-animals the-this
 'a/this kindergarden and zoo'
- (39) a. *hu bana lanu šney batey 'ec ve-'exad mi-levenim*
 he built for. us two houses wood and-one from-bricks
- b. *ha-magavot mitbax šekanita yoter šimušiyot*
 the-towels kitchen that-you-bought more useful
me-ha-'ele le-ambatia
 than-the-those for-bathroom

Table 27.1 Compounds, *R*-constructs, and *M*-constructs

	Compounds	<i>M</i> -constructs	<i>R</i> -constructs
a. Semantic compositionality	No	Yes	Yes
b. Coordination	No	Yes	Yes
c. Pronominal reference to the head	No	Yes	Yes
d. [N + N] + N structures	Yes	No	No
e. Non-head modification	No	Property modification only	Yes
f. Free pluralization of non-head	No	Property reading only	Yes
g. Pronominal reference to the non-head	No	No	Yes
h. Cardinals or quantifiers w/the non-head	No	No	Yes
i. (In)definiteness spreading	No	No	Yes
j. Reanalysed DEF placement	Yes	Yes	No
k. Determiners and reference denoting adjectives w/non-head	No	No	Yes

- (40) a. **hu bana lanu šney batey xolim ve-'exad le-yetomim*
 he built for. us two houses patients and-one for orphans
 *‘he built for us two hospitals and one orphanage’
- b. **ha-batey xolim yoter muclacim me-ha-ele le-yetomim*
 the-houses sick more successful than-the-those for orphans
 *‘the hospitals are better than the orphanages’

Finally, we observed that the non-head in *R*-constructs and in *M*-constructs may itself be a construct, but not so for compounds. Significantly, however, the compound *as a whole* can, at least at times, function as a head of a construct, never a possibility for either *M*-constructs or *R*-constructs:

- (41) [*beyt sefer*] *sade*; [*beyt xolim*] *sade*; [*begged yam*] *meši*;
 house book field house patients field suit sea silk
 ‘field school’ ‘field hospital’ ‘silk bathing suit’
 [*'orex din*] *xuc*;
 editor law out
 ‘external lawyer’
 [*yošev roš*] *mo'aca*; [*beyt mišpat*] *'al*
 sitter head council house court up
 ‘council chairman’ ‘higher court’

Table 27.1 summarizes the diagnostics of compounds, *R*-constructs, and *M*-constructs, before we turn to some speculations on the theoretical ramifications of this three-way distinction in section 27.4.

27.4 STRUCTURAL CONSIDERATIONS

27.4.1 *R*-constructs and *M*-constructs

Effectively, Table 27.1 suggests that there are three types of nominal constructs in Hebrew. Only one of them allows for a referential non-head (*R*-constructs), and only one of them can be semantically and syntactically opaque. Considerations of scope exclude a detailed analysis of these distinct types. A sketchy outline of such an analysis, however, is attempted in the next few paragraphs (and see Borer 2008, for a fuller treatment).

Seeking to account for the referentiality, or lack thereof, of the non-head, suppose we assume (following Munn 1995) that the non-head in *R*-constructs (Individual Genitives) is a full DP, while the non-head in *M*-constructs (Modification Genitives) and compounds is not a full DP.⁸ In fact, even the projection of a #P (Quantity Phrase) non-head in *M*-construct and compounds appears unwarranted given (h) in Table 27.1. Rather, the non-head appears to be either a CIP (Classifier Phrase) or an NP, a predicate.⁹ Assume now that non-heads in N + N constructs always merge in the specifier of some nominal functional projection associated with the head N. If the non-head is a full DP, it will be interpreted referentially, as a possessor, as an argument, or as bearing a part-whole relation with the head. If, on the other hand the non-head is a predicate, it will be interpreted as a modifier.¹⁰ Finally, regardless of the merger site of the non-head, the order *Head-Non-head* is generated, I assume, through the movement of N to a functional head above the relevant specifier, in line with Ritter's original (1988) analysis and much subsequent work. Schematic structures for *R*-constructs and *M*-constructs are given in (42)–(43):

- (42) *R*-CONSTRUCT
 $[_{FP} N [\dots [_{specifier} [_{DP} Non-Head] \bar{N} \dots [_{NP} \bar{N}]]]]$

- (43) *M*-CONSTRUCT
 $[_{FP} N [\dots [_{specifier} [_{CIP/NP} Non-Head] \bar{N} \dots [_{NP} \bar{N}]]]]$

In Borer (1996, 1999) I propose that the phonological word properties of constructs are derived through the syntactic incorporation of the non-head into the head (see also Shlonsky 1990). As Siloni (1997) points out, however, such an

⁸ For a similar claim for some construct nominals see Danon (2008b). See Dobrovie-Sorin (2003) for the claim that these non-heads must be bare Ns, a claim which, I believe, cannot be sustained.

⁹ As is argued extensively in Borer (2005a), 'plural' marking is a Classifier, not a Number (#) specification.

¹⁰ A maximal #P will presumably be interpreted as a measure phrase. We set this case aside. That modifiers, including adjectives and PPs, may merge as specifiers is explicitly suggested in Cinque (2000) and pursued for Hebrew by Shlonsky (2000) and by Sichel (2000). I depart from the Cinque model in assuming that modifiers can be licensed by *any* functional specifier.

incorporation account must allow for violations of the Coordinate Structure Constraint (e.g. in (12), (37)) (and see also Benmamoun 2000 for Arabic). Rather crucially, the coordination of non-heads *is* possible for *M*-constructs, making it untenable that the *M*-construct, but not the *R*-construct, is derived through incorporation.

In Borer (2005a, b, forthcoming), I argue that morphophonological merger rules affecting constituent structure do not exist. Constituent-structure-forming operations as well as recursion are, rather, within the province of the syntax alone. Word formation, in turn, consists of two components – one, morpheme-based, is syntactic and recursive (see section 27.4.2 below). The other, a-morphemic, involves the phonological spell-out of non-hierarchical formal syntactic features on L-heads (e.g. *dance.PST.* \Rightarrow /dænst/; *sing.PST* \Rightarrow /sang/) very much in line with the approach to (much of) inflectional morphology put forth by the Word and Paradigm approach (see in particular Beard 1995, Anderson 1992). It therefore follows that if the construct is not formed by syntactic incorporation, it fails to involve an incorporation altogether. We must therefore conclude that the word properties of constructs derive from liaison, the assignment of pure prosodic structure to syntactic constituents, often resulting in the emergence of bound forms conditioned exclusively by phonological string adjacency (with clitics being the prime comparison class).¹¹

If on the right track, we do not expect constructs to be syntactically uniform, a conclusion that is independently extremely plausible. The essence of the construct diagnostics, it would appear, involves a bare head form of *any* category, an obligatorily *nominal* non-head, and the prosodic-word properties of the output. Beyond that, we do not expect, nor do we find, syntactic similarities between constructs formed from N + N combinations, A + N combinations, Participle + N combinations, Cardinal + N combinations, Q + N combinations, and P + N combinations, exemplified by (44a–f):¹²

- (44) a. *yefe* (ha-)‘eynayim A + N
 beautiful (the-)eyes
 ‘beautiful of eyes’
 b. *kotev* (ha-)ma’amar PTPL + N
 writer (the-)article
 ‘the writer of the article’

¹¹ I thus reject explicitly the phonological merger approach put forth by Benmamoun (2000) and adopted in Siloni (2001).

¹² The existence of P + N constructs is an inevitable conclusion from the properties of prepositions which are attested as a bound plural form in conjunction with pronominal complementation (cf. (44f)). See also the archaic form in (i):

i. *al-ey* kinor
 on-[PL.MASC.BOUND FORM] violin
 ‘on violin’ (e.g. in the context of playing ‘on’ it)

- | | | |
|----|---|--------------|
| c. | <i>šlošet ha-dubim</i>
three the-bears
'the three bears' | Cardinal + N |
| d. | <i>rav nocot; mrube yeladim;</i>
multiple features; multiple children;
'of many features'; '(one with) many children';
<i>mu'at emca'im</i>
few means
'(one of) few means' | Qu + N |
| e. | <i>rov ha-no'ar; kol ha-kita;</i>
most the-youth; all the-class
'most of the youth'; 'all the class' | Qu + N |
| f. | <i>al ha-šulxanot; aleyhem</i>
on the-tables; ON-PL-PRON
'on the tables'; 'on them' | P + N |

27.4.2 Deriving compounds

I concluded in section 27.4.1 that the prosodic-word properties of both *M*-constructs and *R*-constructs do not involve any change in constituent structure, and are rather a phonological liaison. Given this conclusion, one plausible assumption concerning Hebrew compounds would be that they are not a morphological formation altogether, but rather a species of idioms with a syntax and morphology identical to that of constructs. This conclusion, however, is unsatisfactory. First, unlike idioms, and with the exception of plural inflection, compounds never involve any functional material otherwise attested in constructs – no (non-affixal) articles, no adjectives, no pronouns, etc., all potentially possible in idiomatic expressions. Second, languages do not typically exhibit an 'idiom strategy', with idioms systematically formed from one syntactic structure, and yet constructs are, by far, the language's predictable source for compound formation. Finally, that compounds, but not any other constructs, can themselves head a construct argues in favour of them having a distinct structure.

Note now that intriguingly, no syntactic problem faces an incorporation account for compounds. The Coordinate Structure Constraint (CSC) invoked to exclude incorporation in at least some cases of *M*-constructs and *R*-constructs is tangential, for the simple reason that non-head coordination never occurs with compounding. Suppose, then, that syntactic incorporation may take place where licit (i.e. when the CSC is not violated), and that compounds are formed through such an incorporation.

What are the unique properties of compounds such that they can be attributed to incorporation? By assumption, these could not be the phonological word-like

properties of compounds, as these are shared with constructs, which do not involve incorporation.

Suppose we assume that incorporation is an operation which merges predicates ($\langle et \rangle$), and that both N and $N + CL$ are of type $\langle et \rangle$, but $\#$ and D are of type $\langle e \rangle$. Suppose we assume further that incorporation may not proceed past functional heads (*contra* Baker 1988). It now follows that if $\#P$ or DP project, incorporation cannot take place, thereby excluding incorporation in (non-coordinated) R -constructs, and excluding the formation of compounds with referential non-heads. We now also derive the obligatoriness of non-referential non-heads in compounds, accounting for their affinity with M -constructs.

Why, the reader may now wonder, is incorporation necessary for the formation of compounds? Such a question, however, appears to be ill-phrased. Incorporation is not necessary for compounds. Rather, compounds, by definition, are constructs that have undergone incorporation. Elaborating, suppose we re-examine the entire logic of the distinction between compounds and constructs. Assuming no pre-theoretical category of 'compounds', what we have done, in actuality, is diagnose three types of nominal constructs, distinguished from each other along syntactic and semantic lines. Having called one of these groups 'compounds' already implies some conclusions on our part concerning the properties of that group. Those conclusions are not based on the phonological properties of that group, as these are identical to those of other construct types. They are not based on the syntactic properties of that group either, as those syntactic properties in and of themselves do not classify that group as what is traditionally referred to as 'compounds'. Fundamentally, then, we labelled that group 'compounds' because of its semantic non-compositionality, a key factor in the diagnostic of compounds, proceeding then to ask whether non-compositional constructs have syntactic properties which distinguish them from those of compositional constructs. Having answered this question in the affirmative, we then proceeded to propose that they involve a unique syntactic derivation – incorporation – which is impossible for R -constructs and at the very least unnecessary for M -constructs, thereby attempting to relate the possibility of incorporation with the emergence of a non-compositional meaning.¹³

Reformulating the original question, then – what is it about incorporation which allows a non-compositional meaning?

By way of offering an answer, suppose we define (morpheme-based) morphology as the syntactic merger of L -head predicates in general, either with each other (i.e. *incorporation*, giving rise to e.g. English compounding) or with functional morphemes, including L -affixes, where by L -affixes we refer to affixes that are themselves categorically marked (e.g. [_N -ation], [_A -al]). According to this view morphology is not a separate component, but a generalization over a class of particular syntactic operations and their outputs.

¹³ Incorporation in non-coordinated M -constructs (with compositional meaning) may arguably be ruled out by considerations of economy.

We may now define the constituents of the morphological stratum (but not those of higher phrasal strata) as the input to encyclopedic searches. In other words, encyclopedic interpretation, as linked to phonological spell-out, confines its searches to L domains (with the intended meaning), with interpretation for bigger syntactic domains requiring compositionality.¹⁴ The boxed combinations in (45a, b) are now possible targets for an encyclopedic search. Their pre-incorporation components, as in (45a, b) can only be searched separately, and put together compositionally. It thus follows that ‘compounds’ must undergo incorporation, insofar as by definition, their ‘holistic’ meaning can only be assigned on the basis of the post-merger structure.

- (45) a. $[_{FNP1} \boxed{N_1} [_{CLP} \boxed{N_2 + CL} [_{NP2} N_2] \dots a'] \cdot [_{FNP1} \boxed{N_1 + [N_2 + CL]} [_{CLP} \boxed{N_2 + CL} [_{NP2} N_2] \dots}]$
 b. $[_{FNP1} \boxed{N_1} [_{NP2} \boxed{N_2}] \dots]$ b'. $[_{FNP1} \boxed{N_1 + N_2} [_{NP2} N_2] \dots]$
 (FNP = some functional projection in the N extended projection)

We can now explain in full the distinctions between compounds and *M*-constructs in Table 27.1. The impossibility of coordinated non-heads in compounds follows from the fact that compounds are formed by syntactic incorporation. The impossibility of pronominal reference to the head follows from the fact that the compound is assigned an encyclopedic interpretation as a whole. As the head is not assigned any reference or meaning independently of the compound, pronominal reference to it in exclusion of the non-head is impossible. The exclusion of modification for the non-head is likewise excluded, as the non-head does not effectively exist as an independent meaning to be modified.

And finally, that compounds, but not *M*-constructs, can themselves head a construct follows from the existence of an N constituent $[_N N + N]$ formed by the incorporation. No such constituent exists in either *M*-constructs or *R*-constructs.

We have now derived in full the properties of compounds without recourse to non-syntactic operations, or to syntactic structures that are not otherwise available.¹⁵

¹⁴ For the relations between PF and encyclopedic searches, see Marantz (1996). This description, we note, covers not only the output of word formation (internal merger), but external merger as well, to wit, ‘lexical insertion’, insofar as it concerns the properties of any merged L-heads.

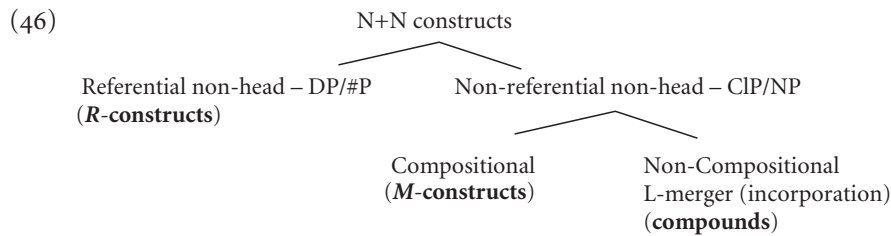
A few comments are warranted (and see Borer 2008 for a fuller execution). First, note that phrasal idioms are now excluded, as whole units, from the domain of encyclopedic searches. Rather, we must assume that an encyclopedic entry such as *kick* makes reference to the relevant reading of *kick* in the context of *bucket* (and, presumably, the entry for *bucket* references *kick* in a similar fashion.) See Harley and Noyer (1999) for an explicit suggestion along these lines. Second, the system explicitly allows for separate searches for the L subparts of mergers within the morphological stratum. Thus $N + N$ may remain compositional, as may the L in any $L + \text{Affix}$ combination, thereby allowing compositional morphological operations.

Finally, this execution entails that copies are not assigned meaning by the encyclopedia, a direct result of the fact that the encyclopedia operates on (syntactically annotated) PF representations.

¹⁵ For completeness’s sake, we note that synthetic compounds, just like other compounds, have non-referential non-heads, and altogether share the properties of compounds discussed thus far. It

27.5 CONCLUSION

Beyond establishing the existence of compounds in Hebrew, I investigated the systematic relations which hold between their properties and those of construct nominals. The typology that emerges is given in (46):



Crucially, while the properties of compounds are syntactically entirely regular, their formation through the merger of two L-stems results in allowing the encyclopedia to search for their PF representation, thus potentially associating them with non-compositional meanings. At least for Hebrew compounds, then, there is no need for any recourse to a non-syntactic component of word formation or an independent grammatical lexicon, nor is it necessary to define a specialized syntactic component dedicated to the formation of ‘words.’ What is needed is a clearer delineation of the domain which falls under the jurisdiction of encyclopedic searches, independently needed within any model involving late insertion.

follows that synthetic compounds cannot be derived from Complex Event Nominals, in the sense of Grimshaw (1990). This is further supported by the fact that Event Nominals (in their construct form) allow for event modification (ia), strictly barred in synthetic compounds (ib), as illustrated in (ic). Therefore at least Hebrew synthetic compounds do not differ from ‘primary’ compounds, and their non-head is a modifier and not an argument. The appearance of complementation relation between the head and the non-head thus must be otherwise accounted for. See Borer (forthcoming) for some relevant discussion.

- i. a. *šmirat ran ’et ha-bayit be-mešex 30 ša’ot/ be-hac’laxa*
 guarding Ran DOM* the-house for 30 hours/ successfully
 ‘Ran’s guarding of the house for 30 hours/successfully’
- b. *šmirat saf šomer saf*
 guarding threshold guard threshold
 ‘gate keeping’ ‘gate keeper’
- c. **šmirat ha-saf be-haclaxa/ be-mešex šanim rabot*
 guarding the-threshold successfully/ in-duration years many
 (literal (absurd) reading only)

* DOM = Direct Object Marker.