THE OCCURRENCE OF *ŠEL* IN HEBREW BINOMINAL CONSTRUCTIONS: A PROSODIC ACCOUNT

IRENA BOTWINIK
AVIAD ALBERT
Tel Aviv University

1 Introduction

Binominal NPs (BNPs) are Noun Phrases involving two nominals, such that the first nominal (N$_1$/N-modifier) modifies the second one (N$_2$) (1). The construction is used mainly in the colloquial varieties of the language.[1]

(1) **English BNPs** (adapted from Aarts 1998)
   a. that *fool* of a *doctor*
   b. a *skyscraper* of a *man*

Colloquial Hebrew exhibits cases of BNPs (2) as well, but with a much more limited set of N-modifiers than its English/Romance counterparts.

(2) **Hebrew BNPs**
   a. mótek   šel oto
      sweetie   of car
      Meaning: A very nice car
   b. zével   šel mesiba
      garbage of   party
      Meaning: A really bad party

---

[1] The origin of this construction in Romance and Germanic is assumed to be Latin, based on examples like *monstrum mulieris* lit. monster woman.gen., 'monster of a woman' (Aarts 1998, citing Curme 1914). The interest of these structures from both semantic and syntactic points of view is relatively well acknowledged (see the analyses of English, Dutch and French BNPs in Kayne 1994, den Dikken 1998, Aarts 1998; Paardekooper 1984, Everaert 1992; Milner 1973, 1978, Ruwet 1982).

An additional difference, which is the main concern of this paper, is the occurrence of the genitive element *šel* ('of'). Although it is commonly assumed that this element is obligatory in Hebrew BNPs, similarly to the obligatoriness of *of* in its English counterpart (*That fool *(of) a doctor*) (3a, b), there is evidence that this assumption is imprecise; it appears that Hebrew BNPs allow for some optionality of *šel* (3c, d).

(3) a. mótek   *(šel) oto
       sweetie   of car
       Meaning: A very nice car
   b. zével   *(šel) mesiba
       garbage of   party
       Meaning: A really bad party
   c. áxla   (?šel) oto
       great/best (of) car
       Meaning: A great/wonderful car
   d. xára (šel) mesiba
       shit (of) party
       Meaning: A really bad party

The focus of the study is on the optionality of *šel*. Specifically, we aim at clarifying the extent of this optionality and its nature, answering the following questions: Is the optionality of *šel* systematic, and if so, in what way? Given the colloquial nature of the Hebrew BNPs, we tackled the raised questions experimentally, eliciting grammaticality judgments of a variety of Hebrew BNPs with and without *šel*. Based on our experimental findings, we argue that the phenomenon is indeed quite systematic, and that despite its seemingly syntactic nature (optionality of the genitive marker), its scope is governed by phonological factors. We offer an explanation for this state of affairs which involves an appeal to the notion of language contact, and whose consequences touch on the architecture of the grammar.

The paper is structured as follows: In section 2 we first discuss issues underlying the rationale of our experiment, and then elaborate on its method. The results of the experiment are presented and discussed in section 3. Section 4 advances the phonological account for the optionality of *šel* in Hebrew BNPs. In section 5 we conclude, specifying venues for further research.

2 The Rationale of the Experiment and its Method

The rationale of our experiment is based on certain observations as to the origin of the Hebrew BNPs and the factors underlying the optionality of *šel*. These are presented in the following sub-section, followed by the method of the experiment.

2.1 The Nature of the Hebrew BNPs and their Origin(s)

2.1.1 English Loan BNP

As mentioned, the Hebrew BNPs manifest a high degree of lexicalization; only a small variety of mostly colloquial nouns can fill the N-modifier slot. In this respect, the Hebrew BNP construction is clearly different from its English counterpart, where virtually any nominal is a valid modifier, given the proper semantic/pragmatic context. This is exemplified in (4), where an attempt to provide the Hebrew correlates for the English examples in (1) fails.

> (4) a. *tipeš   šel rofe
>   stupid of doctor
>   b. *gored-šxakim šel ben-adam
>   skyscraper   of man

Moreover, the nominal modifiers in the Hebrew BNPs convey mainly idiomatic and polar (positive/negative) evaluations of the modified noun. The nouns in (5) form a nearly exhaustive list of the currently available BNP N-modifiers in Hebrew. They are divided here in accordance with their evaluative quality (positive/negative).

> (5) a. **Positive N-modifiers**
>   *áxla* (best/great), *bómba* (bomb), *picúc* (explosion), *pcacá* (bomb), *mótek* (sweetie), *yofi* (beauty), *búba* (doll), *sabába* (fun), *késem* (magic), *xómed* (cutie), *ben-zoná* (son of a bitch)
>   b. **Negative N-modifiers**
>   *xára* (shit), *báasa* (distress), *káka* (shit), *káki* (shit), *zével* (garbage)

Since adjectival modification in Hebrew is invariably post-nominal (6), the existence of BNPs in Hebrew is not readily expected (for instance, this construction does not exist in Arabic). Therefore, it is reasonable to entertain the idea that the BNP construction was transferred from English, where it is wide-spread and productive, via language contact. As a result, in addition to the standard Hebrew post nominal modification (6), the pre-nominal modification (the Hebrew BNP) was formed (7), which involved a nominal modifier, and the insertion of *šel*.[2]

> (6) a. tiyul **kasúm/yafé**
>   trip magical/beautiful
>   'a magical/beautiful trip'
>   b. yeled **xamúd/matók**
>   child cute/sweet
>   'a cute/sweet child'

---

[2] It seems to be the case that initially, the Hebrew BNP construction involved the standard, literal N-modifiers, that sound somewhat archaic nowadays (e.g. *késem*, 'magic'; *yófi*, 'beauty'; *xómed*, 'cutie', *mótek*, 'sweetie'), all of which have an adjectival counterpart (*kasum* 'magical'; *yafe* 'beautiful'; *xamud* 'cute'; matok 'sweet').

(7) a. **késem/yófi**   šel tiyul
       magic/beauty of trip
       'a magic/beauty of a trip'
   b. **xómed/mótek** šel yeled
       cutie/sweetie of child
       'a cutie/sweetie of a child'

This, however, cannot be the whole story of the Hebrew BNPs, as witnessed by the fact that nowadays this construction features mainly colloquial nominals, some of which are loan words from Arabic and Russian (e.g. from Arabic: *áxla* (best/great)*, sabába* (fun)*, xára* (shit)*, báasa* (distress)*;* from Russian: *bómba* (bomb)*, káka* (shit)*, káki* (shit)*.* In fact, one of the most popular N-modifiers in the Hebrew BNPs is the Arabic *áxla.* We believe that this is not accidental and deserves some elaboration.

2.1.2 The Special Case of *áxla*: Arabic Influence

As mentioned, *áxla* is a loan word from Arabic, where it is a comparative/superlative form of the adjective *xilwe* (beautiful). Adjectival modification in Arabic is post-nominal, like in Hebrew (e.g *bint xilwe*, lit. girl beautiful, 'a beautiful girl'). Arabic comparative and the superlative have the same morphological form but a different position within the DP. The comparative, like a regular adjective, follows the noun and is accompanied by the preposition 'from' (e.g. *bint axla min…* 'girl more beautiful from [than]…'), while the superlative precedes it, with no intervening preposition (e.g. *axla bint*, 'most beautiful girl').

   In colloquial Hebrew the use of *áxla* is wide-spread, either in isolation, as a discourse marker stating a positive reaction, or with a following modified nominal.[3] Similarly to its behaviour in Arabic, *áxla* can be both pre- and post-nominal in Hebrew. We suggest that the availability of the pre-nominal position is what rendered *áxla* the most natural N-modifier in the Hebrew BNPs.[4] Note that like in Arabic, the pre-nominal position of *áxla* does not require a preposition. Thus, the fact that *šel* is not obligatory in BNPs featuring *áxla* is not surprising. Rather, the question is why it is allowed at all. We will address this question later on, in section 4.

2.1.3 What Governs the Optionality of šel: The Rationale of the Experiment

Note first that the optionality of *šel* is clearly due to the nature of the N-modifier rather than the modified nominal. Consider once more the sentences in (3) (repeated in (8)), comparing (8a, b) where *šel* is obligatory, with those in (8c, d) where *šel* is optional. In both pairs the modified nouns (N_2) are identical ('car', 'party'), while the modifying nouns (N_1) change. Hence, N_2 cannot be held responsible for the alternation. Rather, the element governing the alternation must be N_1, the modifying noun.

---

[3] One might entertain the idea that the expression *áxla géver***,** 'great man', probably one of the first borrowings, paved the way to many analogous expressions using *áxla* as a modifier.

[4] Note that *áxla* in Hebrew is not adjectival, as it does not show the typical N-A agreement in gender and number (yalda/yeled/yeladim *áxla*, 'girl-Fem./boy-Masc./kids-Pl. great').

(8) a. mótek   *(šel) oto
        sweetie   of   car
        Meaning: A very nice car
    b. zével   *(šel) mesiba
        garbage of   party
        Meaning: A really bad party
    c. áxla   (?šel) oto
        great/best (of) car
        Meaning: A great/wonderful car
    d. xára (šel) mesiba
        shit (of) party
        Meaning: A really bad party

Further, although the phenomenon at hand looks syntactic or semantic in nature – the optionality of the genitive/possessor element – it is not dictated either by semantic or syntactic considerations. This is so because of the following.

Focusing on the N-modifiers and taking the semantic perspective, recall that Hebrew N-modifiers are polar, providing negative or positive evaluation. If this semantic aspect was responsible for the optionality of *šel*, we would have expected the optionality to pattern accordingly. This, however, is not the case; within the pair of sentences where *šel* is obligatory (8a, b), as well as in the pair of sentences where *šel* is optional (8c, d), the N-modifiers differ in their polar evaluation. Consequently, the optionality of *šel* cannot be due to the semantic import of the N-modifier.

From the syntactic perspective, note that since *šel* is optional in some cases of Hebrew BNPs, its presence cannot be maintained as a syntactic necessity. Alternatively, one might entertain the idea that the grammatical function it fulfills can be performed not only in the syntactic component, but probably also in the phonological one (see the analysis of Case checking in Neeleman & Reinhart 1997, Siloni 2002).

From the phonological perspective, the examination of the two N-modifiers in (8c, d) that we have initially noticed to allow optionality (*xára* 'shit', *áxla* 'great'), proves fruitful. They clearly share some phonological features: both end with an open unstressed syllable, headed by the vowel *a*.

In light of the above, our working hypothesis is that the optionality of *šel* is governed by the phonological form of the N-modifier (N_1), and it is this assumption that underlies the design of our experiment, as detailed in the following section.

2.2 Method

Participants: 120 monolingual Hebrew speakers, about half males and half females participated in the experiment. The age range of about 2/3 of the participants was 26-40; the remaining 1/3 were split between 14-25 and 41+.

Materials: Thirteen N-modifiers were included in the study: seven N-modifiers hypothesized to allow optionality of *šel* (henceforth**,** the ***allowing*** modifiers), having a final unstressed syllable headed by *a,* and six N-modifiers hypothesized to require *šel* (henceforth, the ***requiring*** modifiers).

Allowing modifiers: *xára* (shit); *áxla* (great); *búba* (doll); *bómba* (bomb); *káka* (shit); *báasa* (distress); *sabába* (fun). **Requiring** modifiers: *zével* (garbage); *mótek* (sweetie); *picúc* (explosion); *pcacá* (bomb); *kaki* (shit); *yófi* (beauty).

Procedure: The experiment was administered online. Participants were instructed to provide acceptability judgments of various sentences on a 1-5 scale (1, 2 ungrammatical, 3 do not know/not sure, 4, 5 grammatical).[5]

Design: The experiment included three conditions. The main condition tested acceptability of the BNPs with and without *šel*. There were two additional conditions that were hypothesized to affect the acceptability of BNPs without *šel* – one manipulating the stress pattern of N_2 (stress-initial and non-stress-initial), and the other featuring the adverb *mamáš* ('really') preceding the BNP (see Table 1).

Table 1. The conditions

Name of Condition	Manipulation
[±šel]	with *šel* ([+šel]), and without it ([–šel])
[±stress]	N_2 is stress-initial ([+stress]) or not ([–stress])
[±adv]	with *mamaš* ([+adv]) and without *mamaš* ([–adv]); only in [–šel] condition

For each modifier, six target sentences were created. All in all, there were 78 target sentences, accompanied by 151 grammatical and ungrammatical filler sentences (similar in length, complexity and register to the target sentences), resulting in 229 sentences. An example of the stimuli set for the modifier *báasa*, 'distress' is given in Table 2.

---

[5] Given the colloquial nature of the Hebrew BNP construction, one might consider analyzing large corpora of spontaneous speech rather than elicit acceptability judgments via a structured questionnaire. Note, however, that no matter how big the corpus is, it cannot provide direct evidence for ungrammaticality.

Table 2. The stimuli set for the modifier *báasa*, 'distress'

Target sentences	[±šel]	[±stress]	[±adv]
1. dani kibel <u>báasa</u> *šel* **avodá** Dani got distress *šel* job 'Dani got a distressing job.'	+	–	–
2. dani bila <u>báasa</u> *šel* **láyla** Dani spent distress *šel* night 'Dani had a distressing night.'	+	+	–
3. lisa hikira <u>báasa</u> **anaším** Lisa got acquainted [with] distress people 'Lisa got acquainted with distressing people.'	–	–	–
4. lisa patxa <u>báasa</u> **ések** Lisa opened distress business Lisa opened a distressing business.'	–	+	–
5. dani šama **mamaš** <u>báasa</u> **sipúr** Dani heard really distress story 'Dani heard a really distressing story.'	–	–	+
6. lisa katva **mama**š <u>báasa</u> **séfer** Lisa wrote really distress book 'Lisa wrote a really distressing book.'	–	+	+

To avoid fatigue effects we divided our 120 subjects into two groups, and split the questionnaire accordingly.

    Questionnaire A (group A, 50 subjects): *búba, sabába, xára, zével, picúc, káki*
    Questionnaire B (group B, 70 subjects): *bómba, káka, áxla, báasa, mótek, pcacá, yófi*


3 Results

Four subjects from group A and five from group B were discarded on the basis of inconsistency of their responses.[6] No effects were found for age or gender.[7] The marginal effects of the two secondary conditions ([±stress] and [±adv]) did not point at any acceptability trend or bias in relation to any other condition. Therefore the mean values of the [+šel] and [–šel] sentences of each modifier were combined in the analyses of the main condition, [±šel], as shown in Figure 1.

---

[6] We compared overall means of grammatical and ungrammatical filler sentences with BNP constructions to detect a-typical judgments (e.g. ungrammatical fillers judged as better than standard BNPs with *šel*).

[7] We tested the effects of age and gender using multivariate analyses of variance (MANOVA) on each group separately: Age (group A: Wilk's λ=.010, $F(108, 21.872)$=.740, p=.784; group B: Wilk's λ=.023 $F(126, 60.845)$=1.227, p = .717); Gender (group A: Wilk's λ =.223 $F(36, 9)$ = .873, p = .642; group B: Wilk's λ =.261 $F(42, 22)$=1.484, p=.161).

Figure 1. Mean values of all [+šel] and [–šel] pairs
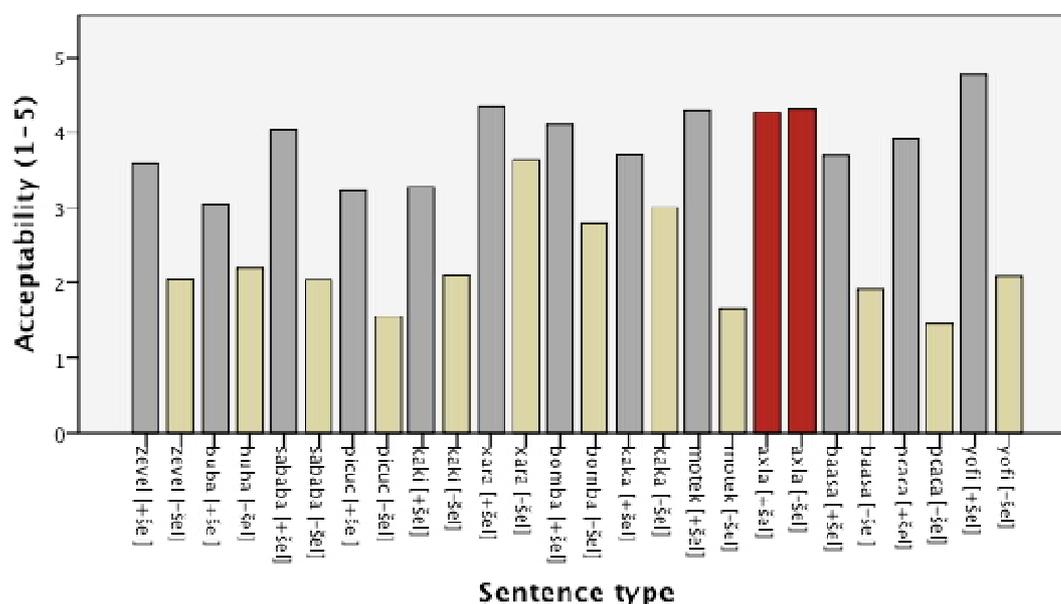
All of the modifiers, except for *áxla*, were found to be different between their [+šel] and [–šel] variants in a highly significant degree (p > 0.000004). The [±šel] condition for *áxla*, on the other hand, was highly insignificant (t(64) = −.483, p = .631).

In the **[–šel] condition** the following is noteworthy: All the highly ranked modifiers in this condition are of the allowing type (*áxla*, *xára*, *káka*, *bómba*). However, not all the allowing modifiers share these rates (*búba*, *sabába*, *báasa*), nor do they clearly outrank all the other requiring modifiers (e.g. see [–šel] rates for *káki* and *zével*).

Acceptability rates in [–šel] condition do not show the grammatical/ungrammatical dichotomy, correlating with the allowing/requiring distinction between the modifiers.

Acceptability rates in the **[+šel] condition** are scalar. Some modifiers are widely accepted (e.g. *yófi*, *xára*, *mótek* and *áxla*), but others barely pass an average value of 3 (3 = "not sure") (*káki*, *picúc* and *búba*). The differences between modifiers in the [+šel] condition are significant (p>.000).[8]

In light of the above, we performed some additional calculations as detailed right below.

The values of the different modifiers under [–šel] condition represent how well a given modifier performs in a BNP that lacks *šel*, in relation to other modifiers. We regard these values as *absolute* values, which maintain the original 1-5 scale. However, since the different modifiers also perform significantly different on the [+šel] condition, it makes sense to obtain *relative* values that would represent the differences between the [+šel] and [–šel] variants for a single given modifier (i.e., how likely it is to omit *šel* with a given modifier). To achieve this we take the mean value of each modifier in the [+šel] condition as 100%, and calculate the value of the corresponding [–šel] condition as a percentage out of the 100% value. These new relative values run on a 0-100 percentage scale.

---

[8] This result is not entirely surprising, given the clearly colloquial nature of the construction and the limited, probably lexicalized, set of N-modifiers.

The obtained values run on a theoretically infinite scale, which does not represent categories. We therefore transformed the values into categories using statistical comparisons. We ran Repeated Measures ANOVAs on our two groups and observed the pairwise comparisons to verify which modifiers pattern together and which ones are significantly different (Figures 2-3, Tables 3-4).
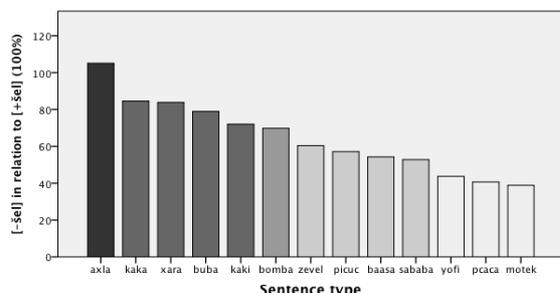
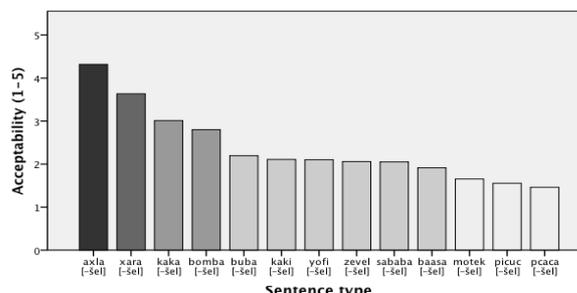**Figure 2**. Relative ranking

Figure 3. Absolute ranking

Table 3. Relative ranking
(Percentage of [–šel] out of [+šel])

Rank	Modifier	Value
1.	*áxla*	105
2.	*káka*	85
	xára	84
	búba	79
	káki	72
3.	*bómba*	70
4.	*zével*	60
	picúc	57
	báasa	54
	sabába	53
5.	*yófi*	44
	pcacá	41
	mótek	39

Table 4. Absolute ranking
(Combined [–šel] means)

Rank	Modifier	Value
1.	*áxla*	4.3
2.	*xára*	3.6
3.	*káka*	3.0
	bómba	2.8
4.	*búba*	2.2
	káki	2.1
	yófi	2.1
	zével	2.1
	sabába	2.1
	báasa	1.9
5.	*mótek*	1.7
	picúc	1.6
	pcacá	1.5

Since both absolute and relative ranks resulted in a 5-level scheme, which largely overlap, it is possible to compare those pseudo equal levels and come up with one final ranking. Modifiers that are graded similarly in both ranks (*áxla, xára, bómba, zével, sabába, báasa, mótek* and *pcacá*) remain in their respective position while those who differ between the two ranks (*káka, búba, káki, yófi* and *picúc*) end up in a mid level, either pre-existing or new. The final rank results in a 7-level scheme (Table 5).

Table 5. Final ranking (combined estimation of absolute and relative rankings)

Rank	Modifier
1.	*áxla*
2.	*xára*
3.	*káka*
4.	*bómba, búba, káki*
5.	*zével, sabába, báasa*
6.	*yófi, picúc*
7.	*mótek, pcacá*

4 The Account(s)

The results support our working hypothesis that the phonological form of the N-modifiers regulates the optionality of *šel* in the Hebrew BNPs. The three highest levels of acceptance in the final ranking are occupied exclusively by the *allowing* modifiers, namely those ending with an unstressed syllable headed by *a,* while none of them is in the lowest levels (6-7). The picture, however, is not as neat as one would have hoped for. First, not all *allowing* modifiers are better than some *requiring* ones (e.g. *sabába* and *báasa* vs. *káki*). Second, the degree of their acceptance on the [–šel] condition is scalar, with *áxla* in the lead. This state of affairs suggests that even if our working hypothesis is on the right track, it is too course to account for the full range of the results, requiring a closer look at the findings.

Our departure point is the unique status of *áxla* as the only modifier that does not discriminate between [+šel] and [–šel] variants, even showing a slight (statistically insignificant) preference towards [–šel] sentences, unlike all other modifiers which favor BNPs with *šel*.

4.1 Similarity based Account

Recall that while discussing the origins of the Hebrew BNP (see 2.1.2), we suggested that the loan of the Arabic superlative *áxla* was highly instrumental in the formation of the colloquial nowadays Hebrew BNPs. Especially significant was the fact that the pre-nominal (as well as post-nominal) position of this modifier is inherent to the modifier itself. That is, *áxla* does not require *šel* in this position. If so, it is plausible to view *áxla* as the *allowing* N-modifier prototype, and the ranking of the other modifiers as representing graded levels of similarity to the phonological form of *áxla*.

Table 6 provides a schematized sketch of graded similarity to *áxla,* exhibiting a tight fit with our experimental findings; the modifiers ranked higher in Table 5 share more phonological features with *áxla*. These features are both prosodic (disyllabic with a final unstressed open syllable) and segmental, both vocalic and consonantal (it is better to end with the vowel *a,* and it seems preferable to have a dorsal fricative consonant, *x*, or to a lesser extent, a dorsal obstruent, *k*, in the first syllable).

Table 6. Similarity features

1. *áxla*	Unstressed final syllable	a-Final syllable	Disyllabic	Dorsal obstruent	Dorsal obstruent [+cont]
2. *xára*	√	√	√	√	√
3. *káka*	√	√	√	√	*
4. *bómba*	√	√	√	*	*
4. *búba*	√	√	√	*	*
4. *káki*	√	*	√	√	*
5. *zével*	√	*	√	*	*
5. *sabába*	√	√	*	*	*
5. *báasa*	√	√	*	*	*
6. *yófi*	√	*	√	*	*
6. *picúc*	*	*	√	*	*
7. *mótek*	√	*	√	*	*
7. *pcacá*	*	√	√	*	*

In principle, it is possible to view the similarity features in Table 6 in an accumulative way; more similar features contribute to greater similarity. However, there are clear indications that the ordering of the features in Table 6 from left to right is relevant as well, suggesting hierarchical relationships between them. For example, note that the two modifiers at the lowest level of acceptance (level 7) share two features with *áxla*, similarly to the modifiers *sabába* and *báasa* at level 5. The fact that they are ranked differently shows that having a final unstressed *a* is more important than being disyllabic. In connection to this, note that these two features (final unstressed *a*) reflect our working hypothesis, to which we turn right away.
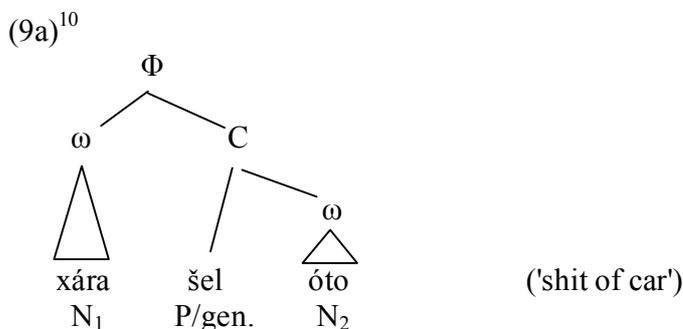
4.2 The Prosodic Account

The tight fit between the experimental data and the similarity-based proposal lends support to our assumption that phonological similarity to *áxla* plays a role in the optionality of *šel*. It does not explain, however, two interrelated issues: (i) the availability of *šel* with *áxla* (recall that genuinely, this modifier does not need *šel* in pre-nominal position); (ii) the phonological requirement which seems to be pivotal for the optionality of *šel*: having a final unstressed *a*.

In what follows we first address the second issue presenting a process of *prosodic reanalysis* that we take to be operative in the optionality of *šel*. Then we will turn to the first issue, the availability of *šel* with *áxla*, and discuss the intricate relation between the reanalysis and the origins of the Hebrew BNPs.
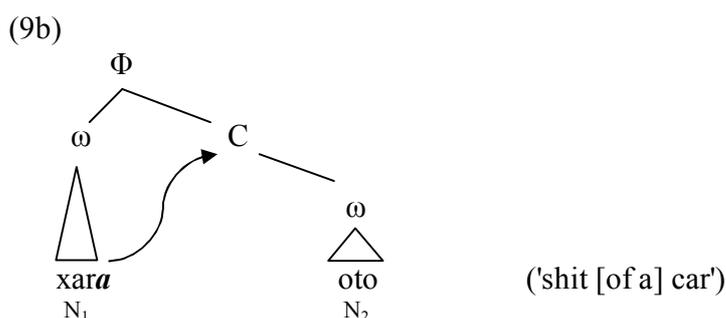
4.2.1 Prosodic Reanalysis in the Hebrew BNP

Based on our findings, we assume that the role of *šel* in the Hebrew BNP construction is phonological to a significant extent, rather than being purely syntactic (e.g. Kayne 1994, Den Dikken 1998) or semantic (Asaka 2005). Specifically, we propose that the occurrence of *šel*

before N$_2$ prosodically disambiguates the symmetric N N sequence, rendering the prosodic constituent of the modified noun (N$_2$) heavier (higher in the prosodic hierarchy), and thus distinguishable from the prosodic constituent of the modifier (N$_1$), as schematized in (9a).[9]

(9a)[10]

```
                Φ
              /   \
            ω       C
            /      / \
           /      /    ω
          /      /      \
        xára   šel      óto          ('shit of car')
        N₁    P/gen.    N₂
```

Consequently, we propose that *šel* can be omitted, if the prosodic structure of the BNP (9a) remains intact, namely if N$_2$ is sufficiently distinguished from N$_1$, dominated by C, rather than just ω. We claim that this can be achieved if the modifier, N$_1$, ends with an unstressed *a*. This is so, because in this case N$_2$ can be **prosodically** (re)analyzed as being introduced by the definite article (*ha-*), which in colloquial Hebrew is pronounced as *a*. This is schematized in (9b).

(9b)

```
             Φ
           /   \
         ω       C
         /  ↱     \
        /   |      ω
       /    |       \
     xara   |      oto          ('shit [of a] car')
      N₁           N₂
```

In (9b) the unstressed *a*, though syntactically part of N$_1$ (*xára,* 'shit'), is linked to the prosodic constituent that dominates N$_2$ (*oto,* 'car'), on a par with *šel* in (9a), and is prosodically interpreted as the (determiner) proclitic of the modified noun.[11]

Before we suggest some independent evidence for the prosodic function of the Hebrew definite article, the following is noteworthy. Note that the high scores for *zével* (Table 6) cannot be explained on grounds of similarity (compare with *mótek*). They can, however, be tentatively accounted for with the prosodic reanalysis in mind.

---

[9] The precise description of the node dominating the concatenated proclitic and content word is debatable. For our purposes, this node in the hierarchy correlates well enough with the "clitic group", adopted here (Nespor & Vogel 1986, Hayes 1989, Nespor 1999), "minor phonological phrase" (McCawley 1968, Selkirk & Tateishi 1988), "accentual phrase" (Pierrehumbert & Beckman 1988) or "maximal prosodic word" (Itô & Mester 2009).

[10] σ = syllable; F = foot; ω = prosodic word; C = clitic group; Φ = phonological phrase.

[11] Many function words in Hebrew, including the definite article, are proclitics, prosodified with the following content (phonological) word. In our analyses, proclitics attach directly to the prosodic constituent that dominates N$_2$ (in line with McCarthy & Prince 1993a, b). Other options, such as attachment to a marked unstressed foot (in line with Kiparsky 1979), are possible as well, with no bearing on our proposal.

The final rime of this modifier, -*el,* is identical to the rime of *šel,* and therefore, in principle, it could have been subject to the prosodic reanalysis (as *šel*) that we proposed for the modifiers ending with an unstressed *a*. However, unlike the case of final -*a*, which fully overlaps with the phonetic form of the definite article *a*, and therefore can be reanalyzed as such, here there is also an onset which is not identical (**š**el ≠ **v**el). Consequently, a full-fledged reanalysis is not possible for this modifier (as witnessed by its middle-field ranking). Rather, it is probably the potential of this modifier for such a reanalysis that underlies its ranking, which is much closer to the *allowing* modifiers like *xára* than to the *requiring* ones such as *mótek*.

4.2.2 The Phonological Function of (h)a-: Support for the Proposal

The idea that the presence of the Hebrew definite article affects the acceptability of a (syntactic) phrase gains support from syntactic contexts where the occurrence of (*h*)*a*- is not required by any obvious semantic or syntactic reasons. One of such contexts is the Hebrew (nominal) Construct State (CS).

   Consider the sentences in (10). In (10a) the DP subject ('windows of cars') is in the Free State (FS). It is fully grammatical, regardless of the indefiniteness of the complement 'cars'. In (10b) the same DP subject is in the Construct State (CS). The sentence sounds quite ungrammatical. (10c) differs from (10b) only in that the complement ('car') is prefixed by the definite clitic *ha-* ('the car'), which does not affect its generic flavor. However, its grammaticality status is significantly improved as compared to (10b). Since, as we noted, the addition of the definite article in (10c) does not change the generic flavor of the ungrammatical (10b), it is reasonable to conclude that the contribution of the definite article to the acceptability of the CS in (10c) is probably prosodic.

(10) a. xalonot   šel mexoniyot lo   nišbarim be-kalut.   FS (indefinite)
        windows of cars   not break   in-easiness
        'Car windows don't break easily.'
     b. ??xalonot   mexoniyot lo nišbarim be-kalut.   **CS (indefinite)**
         windows   cars   not break   in-easiness
     c. xalonot   **ha**-mexoniyot lo nišbarim be-kalut.   CS (definite)
        windows the-cars   not break   in-easiness
        '(The) car windows don't break easily.'

Furthermore, observe the contrast between the ungrammatical (10b) and the grammatical (11b). In both sentences the CS is indefinite, but in (11b), unlike in (10b), there is construct morphology on the head of the construct (*eyney*). This comparison suggests that the unacceptability of (10b) is due to the symmetrical sequence of two Ns, rendering the prosodic formation of the CS difficult or maybe even impossible.

(11) a. eynay**im** šel yeladim tamid   borkot.   FS (indefinite)
        eyes   of children always shine.

   b. eyn**ey** yeladim tamid   borkot.   **CS (indefinite)**
     eyes   children always shine

   c. eyn**ey** **ha**-yeladim tamid   borkot.   CS (definite)
     eyes the-children always shine
     'Children's eyes are always shining.'

Note also the following. A certain variety of locative Ps require the presence of the prepositional clitic *le-,* when their complement is indefinite (*mitaxat/meal *(**le**-*) *ecim,* 'under/above *le*-trees') (Botwinik & Terzi 2008). However, if the complement of these Ps is definite or phonologically heavy, the occurrence of *le-* is optional (*mitaxat/meal (le-) ecim gvohim ve-atikim/ha-ecim,* 'under/above (*le*-) high and old trees/the trees') (Botwinik 2008). Abstracting away from its semantic contribution, the fact that *ha-* patterns with phonologic heaviness strongly suggests that its occurrence is prosodically motivated.

The evidence presented here provides independent support for the prosodic reanalysis we claim to be operative in the Hebrew BNPs lacking *šel.* The question arises as to how the two proposals we have introduced, similarity to *áxla,* and prosodic reanalysis, should be conceived of. The key to this question, once more, is *áxla.*

4.3 Similarity-infused Reanalysis

Recall that we have proposed that although the Hebrew BNP construction was transferred from English (see section 2.1), one of the most popular N-modifiers in the Hebrew BNPs is *áxla,* a loan word from Arabic. We proposed the transfer from English, because regular modification in Hebrew is post-nomial, and we attributed the popularity of *áxla* in the Hebrew BNPs to the fact that this N-modifier is inherently pre- (and post-) nominal, because of its Arabic origin. Based on our results, BNPs with *áxla* manifest a genuine alternation with respect to the occurrence of *šel.* On the one hand, this fact led us to the similarity based proposal, but on the other hand, it is a surprising fact. This is so, because, in principle, *áxla* does not require *šel* at all, raising the question of why this modifier admits *šel.* Furthermore, our results also show that, apart from *áxla,* all other modifiers clearly prefer the [+šel] version of BNPs, begging the question of how come a certain group of them can do without *šel.*

We suggest that these synchronic facts reveal parts of a larger diachronic story, where two different grammatical loans, that of *áxla* and that of the English BNP, crossed paths. Specifically, we propose that the optionality of *šel* with certain N-modifiers, and the occurrence of *šel* with *áxla* are the result of co-influence between the Hebrew BNP featuring *áxla* and the BNPs whose origin is English. The 'original' BNP featuring *áxla,* where there is no *šel,* induced the optionality of *šel* with certain N-modifiers (e.g. *xára*), while the English loan BNPs, where *šel* is obligatory, introduced the possibility of *šel* with *áxla.* Let us make this idea more concrete.

It is plausible that the prosodic reanalysis of the final *a* proposed here is, in fact, rooted in the prosodic reanalysis of *áxla* BNPs without *šel,* as follows. Speakers prosodically analyzed the [–šel] BNPs featuring *áxla* as consisting of one 'heavier' prosodic unit (dominated by C, as in (9b)), similarly to the unit governing *šel*+N constituent in BNPs with *šel* (as in (9a)).

Consequently, this reanalysis was applied to N-modifiers like *xára* which are very similar to *áxla*, in the relevant respects.

Now we are in the position to answer the question we started with, namely how the similarity-based proposal and the prosodic reanalysis proposal should be conceived of. Since the prosodic reanalysis originated with BNPs featuring *áxla,* it is most readily applicable to the N-modifiers that are phonologically similar to *áxla*. Thus, *šel* can be omitted only if the reanalysis is possible, but the omission is also affected by the degree of similarity of the N-modifier to *áxla*. In other words, reanalysis 'infused' with similarity provides the best account for the optionality of *šel* in Hebrew BNPs.

5 Conclusion

Based on the surprising observation that the Hebrew BNP construction shows some optionality regarding the occurrence of the genitive element *šel,* we set up to delineate the conditions underlying the phenomenon. Motivated by our assumptions as to the origins of the Hebrew BNPs, the special status of the N-modifier *áxla*, and our preliminary observations as to the grammatical component underlying the phenomenon, we designed an experiment testing the acceptance of [±šel] BNPs in Hebrew. Our findings revealed a somewhat complicated picture, whereby the optionality of *šel* is systematic but not in the binary fashion that we originally expected. In order to explicate our findings, we developed an account whereby the systematic aspect attested in our findings is explained by the prosodic reanalysis, and the fact that the phenomenon is attested only to some (scalar) degree is taken care of by the similarity-based model, which reflects the special status of the modifier *áxla*.

Viewed this way, our study not only accounts for the optionality of *šel* in Hebrew BNPs, but it actually anchors the phenomenon in a broader context, that of language contact and language change. The mere existence of the BNP construction in Hebrew and its unique characteristic, the optionality of the genitive element *šel*, are shown to result from the intricate relation between the two sources of this construction in Hebrew; the English BNP and the superlative version of the Arabic *áxla*. The former introduced the construction into Hebrew grammar, while the latter brought about the optionality of *šel* in the Hebrew BNPs defining the scope of its application. The scalar acceptability, reflected by the graded similarity to *áxla*, highlights the present state of affairs, suggesting that in time, the optionality of *šel* in Hebrew BNPs will probably increase, including more of the allowing N-modifiers.

References

Aarts, Bas. 1998. Binominal noun phrases in English. *Transactions of the Philological Society,* Vol. 96:1, 117-158.

Asaka, Toshihiko. 2005. Predication in the English classifier construction. *Proceedings of the 59th Tohiko Literary society.*

Austin, Frances. 1980. A crescent-shaped jewel of an island: appositive nouns in phrases separated by *of. English Studies* 61, 357-366.

Bat-El, Outi. 2005. The emergence of the trochaic foot in Hebrew hypocoristics. *Phonology* 22: 115-143.

Botwinik, Irena. 2008. A closer look at the Hebrew Construct and Free locative PPs: the analysis of *mi*-locatives. In Kurzon, D. and S. Adler (eds.), *Adpositions: Pragmatic, Semantic and Syntactic Perspectives*, John Benjamins, pp. 85-114.

Botwinik, Irena and Arhonto Terzi. 2008. Greek and Hebrew locative Prepositional Phrases: A unified Case-driven account. *Lingua,* 118:3, 399-424.

Cohen, Evan-Gary. 2010. *The role of similarity in phonology: Evidence from loanword adaptation in Hebrew.* Doctoral dissertation. Tel Aviv University, Tel Aviv.

Curme, G. O. 1914. The development of the analytic genitive in Germanic, Part II. *Modern Philology,* 11, 33-57.

den Dikken, Marcel. 1998. Predicate inversion in DP. In A. Alexiadou and C. Wilder (eds.) *Possessives, predicates and movement in the DP.* John Benjamins, pp. 177-214.

Everaert, Martin. 1992. Nogmaals: *een schat van een kind.* In Hans Bennis and J. de Vries (eds.), *De Binnenbouw van het Nederlands: Ein Bundel Artikelen voor Piet Paardekooper.* Dordrecht: JCG Publications, 45-54.

Gussenhoven, Carlos. 1986. English plosive allophones and ambisyllabicity. *Gramma* 10:119-141.

Hayes, Bruce. 1989. The prosodic hierarchy in meter. In Paul Kiparsky and Gilbert Youmans (eds.), *Rhythm and Meter*. Orlando: Academic Press. 201-260.

Itô, Junko and Armin Mester. 2009. The onset of the prosodic word. *Phonological argumentation: Essays on evidence and motivation* 227-260.

Jensen, John T. 2000. Against ambisyllabicity. *Phonology* 17: 187-235.

Kahn, Daniel. 1976. *Syllable-based Generalizations in English Phonology*. Doctoral dissertation, MIT. Published by Garland Press, New York, 1980.

Kahn, Daniel. 1980. *Syllable-structure specifications in phonological rules*. In Mark Aronoff and Mary-Louise Kean (eds.), *Juncture*. Saratoga, CA: Amma Libri. 91-105.

Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge, Mass., MIT Press

Kiparsky, Paul. 1979. Metrical structure assignment is cyclic. *Linguistic Inquiry* 10:421-441.

McCarthy, John J. and Alan S. Prince. 1993a. Generalized Alignment. In Geert Booij and Jaap van Marle (eds.), *Yearbook of Morphology*. 79-153.

McCarthy, John J., and Alan S. Prince. 1993b. *Prosodic Morphology I: Constraint Interaction and Satisfaction*. University of Massachusetts, Amherst, and Rutgers University. to appear, MIT Press, Cambridge, Massachusetts.

McCawley, James D. 1968. *The Phonological Component of a Grammar of Japanese*. Mouton: The Hague.

Milner, J-C. 1973. *Arguments Linguistiques*. Paris: Mame.

Milner, J-C. 1978. *De la Syntaxe à l'interprétation*. Paris: Éditions du Seuil.

Neeleman, Ad and Tanya Reinhart. 1997. Scrambling and the PF Interface. In W. Gueder and M. Butt (eds.), *Projecting from the Lexicon.* Stanford: CSLI.

Nespor, Marina and Irene Vogel. 1986. *Prosodic Phonology*. Dordrecht: Foris.

Nespor, Marina. 1999. The phonology of clitic groups. In Henk van Riemsdijk (ed.), *Clitics in the languages of Europe*. Berlin: Mouton de Gruyter, 865-887.

Paardekooper, Piet. 1984. *Beknopte ABN Syntaksis.* Eindhoven: private publication.

Pierrehumbert, Janet and Mary Beckman. 1988. *Japanese Tone Structure*. Cambridge MA: MIT Press.

Rubach, Jerzy. 1996. Shortening and ambisyllabicity in English. *Phonology* 13:197-237.

Ruwet, Nicolas. 1982. *Grammar des insultes et autre etudes*. Paris: Éditions du Seuil.

Selkirk, Elisabeth and Koichi Tateishi. 1988. Constraints on minor phrase formation in Japanese. In *Papers from the 24th Annual Regional Meeting of the Chicago Linguistic Society*. Chicago: Chicago Linguistic Society. 316-336.

Siloni, Tal. 2002. Construct States at the PF-Interface, In P. Pica & J. Rooryck (eds.)*, The Year Book of Language Variations* 1, 229-266.