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 (N₁/N-modifier) modifies the second one (N₂) (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

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 obligatoryness 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 subsection, 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. *tipesz *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 kasum/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. xóméd/móték 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: bómbla (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. 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. 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 (N2) are identical ('car', 'party'), while the modifying nouns (N1) change. Hence, N2 cannot be held responsible for the alternation. Rather, the element governing the alternation must be N1, 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').
The Occurrence of šel in Hebrew Binominal Constructions: A Prosodic Account

(8) a. mótek *(šel) oto
   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 (N₁), 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 Nmodifiers were included in the study: seven N-modifiers hypothesized to allow optionality of šel (hereforth, the allowing modifiers), having a final unstressed syllable headed by a, and six N-modifiers hypothesized to require šel (hereforth, 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).

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 N₂ (stress-initial and non-stress-initial), and the other featuring the adverb mamáš ('really') preceding the BNP (see Table 1).

Table 1. The conditions

<table>
<thead>
<tr>
<th>Name of Condition</th>
<th>Manipulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>[±šel]</td>
<td>with šel ([+šel]), and without it ([–šel])</td>
</tr>
<tr>
<td>[±stress]</td>
<td>N₂ is stress-initial ([+stress]) or not ([–stress])</td>
</tr>
<tr>
<td>[±adv]</td>
<td>with mamaš ([+adv]) and without mamaš ([–adv]); only in [–šel] condition</td>
</tr>
</tbody>
</table>

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.

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'

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

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 BNP 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 $\lambda$=.010, F(108, 21.872)=.740, p=.784; group B: Wilk's $\lambda$=.023 F(126, 60.845)=1.227, p = .717); Gender (group A: Wilk's $\lambda$ =.223 F(36, 9) = .873, p = .642; group B: Wilk's $\lambda$ =.261 F(42, 22)=1.484, p=.161).
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 (\( t(64) = -0.483, p = .631 \)).

In the [−šel] condition the following is noteworthy: All the highly ranked modifiers in this condition are of the allowing type (áxla, xára, káka, bómbla). However, not all the allowing modifiers share these rates (búba, sabába, bása), 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 búa). The differences between modifiers in the [+šel] condition are significant (\( p > .000 \)).

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).

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, bóasá, mótek and pcacá) remain in their respective position while those who differ between the two ranks (káka, búbá, káki, yófi and pcucú) 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)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Modifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>áxla</td>
</tr>
<tr>
<td>2.</td>
<td>xára</td>
</tr>
<tr>
<td>3.</td>
<td>káka</td>
</tr>
<tr>
<td>4.</td>
<td>bómba, búba, káki</td>
</tr>
<tr>
<td>5.</td>
<td>zével, sabába, báasa</td>
</tr>
<tr>
<td>6.</td>
<td>yófi, picúc</td>
</tr>
<tr>
<td>7.</td>
<td>mótek, pcacá</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>áxla</th>
<th>Unstressed final syllable</th>
<th>α-Final syllable</th>
<th>Disyllabic</th>
<th>Dorsal obstruent</th>
<th>Dorsal obstruent [+cont]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>xára</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3.</td>
<td>káka</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4.</td>
<td>bóbma</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td>✓</td>
</tr>
<tr>
<td>4.</td>
<td>búba</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4.</td>
<td>káki</td>
<td>✓</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5.</td>
<td>zével</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
<td>✓</td>
</tr>
<tr>
<td>5.</td>
<td>sabába</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5.</td>
<td>báasa</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>6.</td>
<td>yófi</td>
<td>✓</td>
<td>*</td>
<td>✓</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>6.</td>
<td>picúc</td>
<td>*</td>
<td>*</td>
<td>✓</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>7.</td>
<td>mótek</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>7.</td>
<td>peacá</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

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 $NN$ 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).

\[(9a)\]

\[\Phi \omega C \omega xára \quad šel \quad \ddot{o}to (\text{shit of car})\]

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 $\omega$. 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).

\[(9b)\]

\[\Phi \omega C \omega xar \quad oto (\text{shit [of a] car})\]

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.

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" (Pierre Humbert & Beckman 1988) or "maximal prosodic word" (Itô & Mester 2009).

10 $\sigma =$ syllable; $F =$ foot; $\omega =$ prosodic word; $C =$ clitic group; $\Phi =$ 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 ($\text{šel} \neq \text{vel}$). 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 $\text{xàra}$ than to the requiring ones such as $\text{mótek}$.

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
   'Car windows don't break easily.'

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. eynayim šel yeladim tamid borkot. eyes of children always shine. FS (indefinite)
b. eyney yeladim tamid borkot. eyes children always shine CS (indefinite)
c. eyney ha-yeladim tamid borkot. eyes the-children always shine CS (definite)

'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-nominal, 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


