

The Templatic Morphology of English Loan Verbs in Modern Hebrew*

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Abstract

This thesis examines the phenomenon of English verbs borrowed into Modern Hebrew, and their integration into the Hebrew verbal system. Focusing on the difficulties which arise when borrowing from a stem-based language into a root-based language, I analyze my data using McCarthy's theory of templatic morphology (1989). I find that the vast majority of the verbs do not fall into any of the existing verbal templates in Hebrew, but rather select a different pattern, one which I argue is based on a historical version of the pi'el verbal template. Additionally, I show that recognizability of the source in the Hebrew verb is a strong motivating factor in the borrowing process, and that to accommodate qualities of the source verb, the Hebrew template is acted on by natural phonetic processes, including metathesis.

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1 Introduction

The phenomenon of loan verbs in Hebrew is one that has been mentioned by several authors (Glinert 1989, Schwartzwald 1998) in passing, usually in the context of larger discussions of borrowing, but has not yet been treated in depth as its own subject. In this paper I seek to fill that void of description and analysis by addressing the topic directly, looking specifically at loan verbs from English into Hebrew, and centering my analysis around the application of the theory of templatic morphology first advanced by John J. McCarthy in his paper “Linear Order in Phonological Representation” (McCarthy 1989). I show that by looking at the characteristics of the templates used by English loan verbs into Hebrew, I can account for the given data using a modified version of McCarthy’s theory, as well as learn information about loan words and how the language integrates loan verbs into its existing verbal templates.

2 Background

The discussion in this section is quite general and informed by many works, from Glinert (1989) through Coffin (2005), and gives a brief outline of the basics of the Hebrew verbal system, as far as it is relevant to the verbs addressed in this thesis. The verbal morphology of Modern Hebrew, like that of other Semitic languages, is based on an analysis of the verb as a group of consonants which are associated with a general semantic concept. This root is at a level which is below any notion of tense, person, aspect, voice, or valency, and embodies only a general notion of an action or state. Significantly for this discussion, native Hebrew verbal roots are almost always composed of three consonants, with verbs based on a root of two, four, or more consonants making up a very small proportion of Hebrew verbs (Glinert 1989: 459). Examples of this commonest 3C type of verbal root are given below.

/drx/ – דרך – “step” (Glinert 1989: 458)

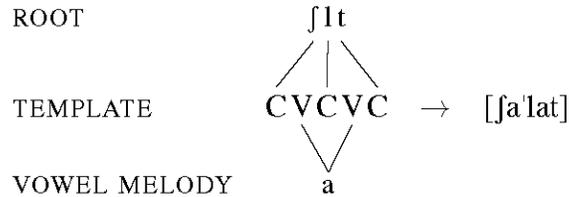
/bʃl/ – בשל – “be ripe / cook” (Glinert 1989: 459)

/lkx/ – לקח – “take” (Glinert 1989: 462)

To inflect the verb from the root, vowels (and sometimes consonants) are added in and around the consonants, according to different templates that dictate the order and number of Cs and Vs, as well as preset patterns of vowels, called vowel melodies. These combinations determine the voice, valency, mood, tense, person, and number of the verb. Once verbal root and the vowel melody of the *binyan*¹ are selected, they are combined into a

¹This is a term used to describe verbal templates in Hebrew; I expand on it in a later section.

phonological form. For example, consider the root /ʃlt/, *control*, *govern*. To inflect this verb in the past indicative active, the template CVCVC is applied, with the vowel melody /a/. The mapping is shown below.



The resulting form, [ʃa'lat], then takes prefixes or suffixes, most often when inflecting verbs for person and number. Although these prefixes are morphemes containing consonants and vowels themselves, they do not participate in the inflection of the consonantal root in combination with the different vowel melodies, remaining distinct and constant throughout different verbal paradigms. For example, to [ʃa'lat] I can add the suffix /-nu/, the first person plural past marker, to yield [ʃa'lat.nu], *we governed*. I will not delve into the intricacies of prefixal morphemes and their effect on the final form, because none of my loan verbs require this discussion.

There are seven *binyanim* (sg. *binyan*), each characterized by a morphological template (sequences of C-slots and V-slots), and paired with a given set of vowel melodies, as well as occasionally with other inflectional morphemes. These vowel melodies of the *binyanim* have many different interpretations and shades of meaning, but in general can all be said to encode some information about voice, valency, reciprocity, as well as semantic information about how the action is taking place. The seven *binyanim*, along with their common name, semantic alterations, morphological template, vowel melody, and an example are given below.

Pa'al: Basic active meaning of root. Passive counterpart is nif'al.

Root /ʃlt/, *control*, *govern*
 Template CVCVC
 Vowel melody /a/
 [ʃa'lat] *he governed*

Nif'al: Basic passive meaning of root. Active counterpart is pa'al.

Root /ktb/, *write*

Template niCCVC

Vowel melody /a/

[nix'tav]² *it/he was written*

Pi'el: Intensive active meaning of root. Passive counterpart is pu'al.

Root /ʃlt/, *control, govern*

Template CVCVC

Vowel melody /ae/

[ʃa'let] *he fitted with signposts*

Pu'al: Intensive passive meaning of root. Active counterpart is pi'el.

Root /bʃl/, *cook*

Template CVCVC

Vowel melody /ua/

[bu'ʃal] *it/he was cooked*

Hif'il: Causative active meaning of root. Passive counterpart is huf'al.

Root /ʃlt/, *control, govern*

Template hiCCVC

Vowel melody /i/

[hi'lit] *he imposed*

Huf'al: Causative passive meaning of root. Active counterpart is hif'il.

Root /ktb/, *write*

Template huCCVC

Vowel melody /a/

[hux'tav] *it was dictated*

Hitpa'el: Reciprocal/reflexive meaning of root. No direct counterpart.

Root /ktb/, *write*

Template hitCVCVC

Vowel melody /ae/

[hit.ka'tev] *he corresponded*

²In Modern Hebrew, [b] and [v] are allophonic, as are [k] and [x] (Coffin 2005).

While the citation form vowel melody for each *binyan* appears above, different melodies are licensed by different tenses, syllable structures created by affixes, and the presence of certain consonants in the root (Glinert 1989: 476).

Although a single verbal root can be inflected meaningfully through many, and sometimes all, of the seven *binyanim*, all verbal roots also have a base *binyan* in which the verb inflects independent of any particular additional shading of semantic meaning granted by the *binyanim*. The idea of a “base *binyan*” is a similar notion to the way that Harley (2005) describes the semantic root of some English denominal verbs: though in the Hebrew instance the root is an abstract lexical notion instead of a source noun, the verb derived from it bears a minimally modified semantic meaning, and the morphological template that this form uses is the verb’s base *binyan*. For many verbs, the pa’al *binyan* holds the most semantically neutral meaning but for some, notably many loan verbs or newly derived Hebrew verbs, the pi’el *binyan* serves this function. However, a verb can be based in any of the seven *binyanim*, and there are no restrictions on which *binyanim* a root can be active in, while being inactive in others. For example, the verb [nil’xam], “he fought”, from the root /lxm/, is based in the nif’al, which is most commonly thought of as the medio-passive corollary of pa’al, even though in this case the verb itself, *to fight*, has nothing passive about it semantically. This presence of semantically neutral verb forms in *binyanim* which would normally encode a more complex semantic meaning is similar to the way that in certain highly inflected Indo-European languages, notably Latin and Ancient Greek, some verbs appear in a morphologically passive form while maintaining their active meaning. For example, the Latin verb *precor*, “I pray,” has an active meaning, but is formed with passive morphology (Allen and Greenough 1931: section 190).

Because of the non-concatenative nature of Hebrew’s verbal morphology, the issue of verbs entering the language through borrowing becomes more complex, especially when verbs come from a language which uses phonetically local stems to construct or inflect verbs, as opposed to Hebrew’s non-local root system. Hebrew has been shown to be able to borrow and incorporate words from languages with different ways of handling verbal roots and morphology, including Russian, Yiddish, and English (Schwartzwald 1998: 116). However, the language’s strict system of verbal morphology, based on the normative unit of the native tri-consonantal root, presents some interesting challenges to the adoption and integration of foreign verbs.

3 Literature

Because of the strictness of the non-linear derivational patterns of the root-based verbal system (Bolzky 1999: 13), Hebrew verbs are identified solely by a sequence of consonants. Therefore English verbs, which are based on a linear continuous root of both Cs and Vs and generally only participate in suffixing inflectional and derivational morphology, present something of a difficulty to conventional morphological theory when they are borrowed into Hebrew.

The first problem is how to look at the English verb and identify in it the consonants that could be used as a Hebrew root. Bolzky argues that when a Hebrew speaker forms a novel verb, they actually pull the consonants not from some underlying lexical semantic root, but rather from related words, many of which tend to feature the root consonants prominently (Bolzky 1999: 12). Though this angle is used primarily to address noun formation in Bolzky's book, here the same concept applies very well to the approach taken to the clashing of morphological systems which arises when English verbs are borrowed into Hebrew. These English verbs don't have anything that is obviously comparable to a root in the Hebrew sense, and therefore any effort to deduce the "semantically loaded" or "correct" root consonants of, for example, *flirt*, would fail, because the Indo-European morphological system functions on a linearly contiguous stem, rather than discontinuous roots.

Using Bolzky's analysis, however, the English verb is treated by Hebrew speakers like any native Hebrew word: as a semantically relevant source from which new derivations can be created through the extraction of consonants. According to Bolzky, Hebrew speakers work from inflected words to extract consonantal roots, rather than starting with an identified root, regardless of whether the word they are working from is Hebrew or another language. The actual process of extracting the consonants is quite simple: the consonants of the source are identified and pulled out from left to right, the order in which they are spoken. Thus, the English word *telephone* becomes the source of the Hebrew verb [tal'fen] through the linear extraction of the consonants /tlfn/, which are then inflected using a template and vowel melody.

The selection of this template has been the topic of some discussion in relation to the productivity and relative "openness" to new coinings of each *binyan*. Glinert (1989: 464, 467) and Bolzky (1999: 62-69) both remark that at least the pi'el, pu'al, and hif'il *binyanim* are productive in Hebrew; that is, when the language coins new verbs they can be slotted into any one of these *binyanim*. Although Morag notes that many newly coined verbs in Hebrew seem to fall into the pi'el *binyan* (Morag 1959: 256), he doesn't give

an account for this phenomenon using any methodological framework. I further note that *all* of the English loan verbs provided by my native speaker informants fall into the pi'el, and in this paper I provide an account of that distribution. I argue that the pi'el *binyan* contains phonetic and morphological characteristics which make it uniquely receptive to English loan verbs, and that the particular template that is used for such verbs is based historically on the pi'el form. Therefore although new Hebrew verbs can be coined based on the pi'el, pu'al, or hif'il templates at least, verbs borrowed from English are based on the pi'el template.

Bolozky (1999: 13) notes that the form from which the consonants are extracted is not necessarily one containing only those root consonants, but can include other morphemes attached to the verb stem, such as markers for person, tense, or other overtly marked features. In this paper, however, all of the data can be seen to derive from the bare root of the English verb. Thus, it appears that through the process of borrowing verbs from English into Hebrew, many morphemes which are used as part of the English verbal derivation process do not appear in the Hebrew root. English has multiple morphemes that can be added to roots of another category to form stems that are verbal, among them: *-ize* (*theorize*) and *-ify* (*objectify*). The Cs in the derivational morphemes do not appear, however, in the roots of loan verbs from English into Hebrew. Loan verbs such as *organize*, being borrowed as [ar'gen], based on the root /rgn_[+V]/, and *objectify* as [ab'jekt], based on /bjkt_[+V]/, challenge the notion of consonant extraction: the process must ignore certain English derivational morphemes, striving to borrow the root of the verb alone, directly contradicting the evidence presented by Bolozky in the process. That is, applying the extraction process described above to the English source *organize* would yield the root /*rgnz_[+V]/, but the Hebrew verb [ar'gen] uses the root /rgn_[+V]/ . There are at least two possible accounts one could offer for these data. First, one could posit that the Hebrew speaker extracts only the root of the English verb, ignoring the derivational morpheme. I eschew that possibility since it is unlikely the Hebrew speaker has access to the internal structure of English verbs. Second, one could simply posit that *-ize* and *-ify* are ignored exceptionally. This is the solution I opt for here, since the data are too few to convincingly draw more extensive conclusions.

The main method of analysis that I will use in this paper is the concept of templatic morphology described in John J. McCarthy's 1989 paper "Linear Order in Phonological Representation". In it, McCarthy lays out a framework through which the discontinuous verbal morphology of Hebrew is analyzed as mapping onto a series of templates composed of Cs and Vs corresponding to each of the *binyanim*, as Bolozky (1999:10) claims. Using this analysis, I will analyze the data for English loan verbs into Hebrew and show that the seven *binyanim* templates are not sufficient to account for the morphological characteristics

of English loan verbs. Additionally, I will describe a template which can be used to account for such morphology, and discuss the consequences of such a system.

4 Methodology

To collect the verbs used in this thesis, I consulted with Hadass Sheffer, Adina Newberg, Lihu Ben-Ezri Ravin, and Lani Ravin, all native speakers of Modern Hebrew. Due to the changing, flexible nature of loan verbs, I subsequently verified all of the collected verbs with each of these consultants, and included in my analysis only the verbs which were agreed upon by all four consultants to be true and extant forms. In this way I established the list of twenty-one verbs shown in Figure 1.0, upon which I base my analysis of the templatic morphology of English loan verbs into Modern Hebrew.

5 Data

Based on qualities that their extracted roots exhibit, I have grouped these verbs into three categories by their number of root consonants, as well as subcategories containing verbs which are vowel-initial, here noted [+VI]. Each of these categories will be discussed below, but Figure 1.0 presents the entire corpus of data from which I draw my conclusions. Additionally, for the benefit of speakers of Hebrew, the vowel-pointed form of the verb is given next to the romanization.

Figure 1.0

3C Verbs:

google – /gg/ – [ga'gel] – גגל
bluff – /blf/ – [ba'lef] – בלף

[+VI] Verbs:

3C [+VI] verbs:

anglicize – /ɲlz_[+VI]/ – [aŋ'lez] – אנגליז
organize – /rgn_[+VI]/ – [ar'gen] – ארגן

4C [+VI] verbs:

objectify – /bjkt_[+VI]/ – [ab'jekt] – אב'ייקט
index – /ndks_[+VI]/ – [an'deks] – אנדקס

4+C Verbs:

- format* – /fmrt/ – [far'met] – פֶּרְמַט
discuss – /dsk/ – [das'kes] – דִּסְקַס
torpedo – /trpd/ – [tar'ped] – טֶרְפֶּדוֹ
telephone – /tfn/ – [tal'fen] – טֵלֶפֶן
zigzag – /zgzg/ – [zag'zeg] – זִגְזָג
galvenize – /glvn/ – [gal'ven] – גַּלְבֵּן
pingpong – /pnkn/ – [paŋ'peŋ] – פִּינְגֶּפֶן
transfer – /trnsfr/ – [tran'sfer] – טְרַנְסְפֶּר
telegraph – /tlgrf/ – [tal'gref] – טֵלֵגְרָף
compress – /kmprs/ – [kam'pres] – קַמְפְּרֶס
snorkel – /snrk/ – [snar'kel] – שְׁנַרְקֵל
synchronize – /snxrn/ – [san'xren] – סִנְכְּרֶן
flirt – /flrt/ – [flar'tet] – פֶּלְרֵט

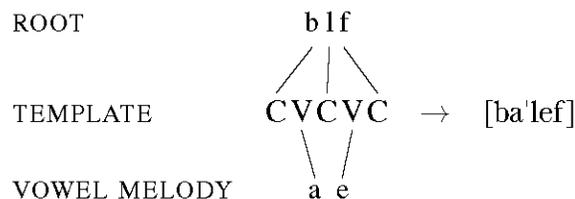
2C Verbs³:

- shake* – /jk/ – [jak'fek] – שֶׁקֶשֶׁק
pump – /pm/ – [pam'pem] – פֶּמְפֶּם

6 Analysis

6.1 3C Verbs

Of the data presented above in Figure 1.0, only two verbs, [bi'lef] and [ga'gel] are in the 3C Type 1 category, having the roots /blf/ and /ggl/ respectively. Therefore, they conform to the standard pattern of Hebrew triconsonantal verbs, and as such they behave exactly as native Hebrew verbs do when inflected.



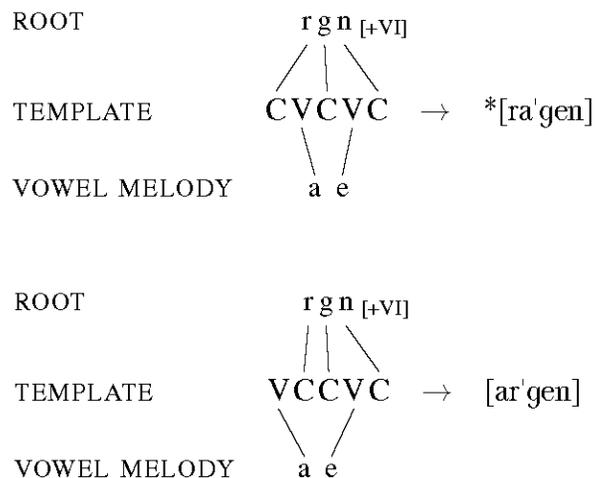
While those two behave like a regular Hebrew pi'el, all other English loan verbs examined here do not behave in such a straightforward way. Instead, they either make use of a different pi'el template which comes from a historical pi'el template, or modify the

³While Hebrew verbs inflected from these roots have four C slots in their template, I will argue below that only the first two form the root of the verb.

modern pi'el template via metathesis to accommodate characteristics of the source verb: all of these templates will be discussed below.

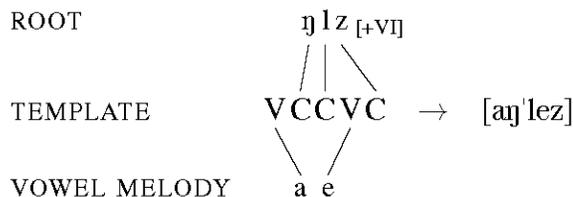
6.2 [+VI] Verbs

This group of roots wind up being realized as Hebrew words which are always [+VI], and the English sources are also [+VI]. I posit a marker on these roots, here written as _[+VI], which indicates that the English verb was [+VI]. Because of this specification on the root, the output of the template is similarly constrained to begin with a vowel. To accommodate this, before the association of the root consonants with the template there is metathesis of the initial C and V of the CVCVC template, after which the consonants and clusters associate from left to right as usual, leaving the output to begin with a vowel. Additionally, extending the work of Ellison (1994), this metathesis shows that natural phonological rules can not only be active on the level of the phonetic realization of the verb after the component pieces associate into the template, but also on the very Cs and Vs of the template themselves. Within this category there are verbs which have 3Cs of root, and some which have 4Cs. An example of the correct (using the VCCVC metathesized template) and incorrect (using the regular 3C CVCVC template) mapping of [ar'gen], from the root /rgn/_[+VI] is shown below.



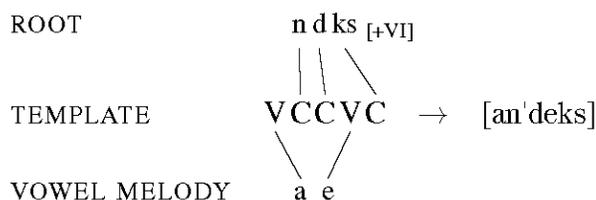
6.2.1 3C [+VI] Verbs

In the diagram below, the verb [aŋ'lez], “he anglicized”, from the English *anglicize* is shown to use the same mapping process as [ar'gen].



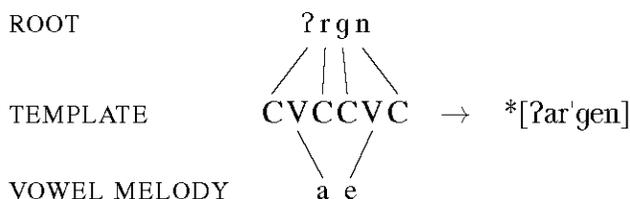
6.2.2 4C [+VI] Verbs

The word [an'deks], mapped below, has the [ks] consonant sequence mapped onto a single C slot in the template, grouped together in the mapping process by a quality of the source verb. The verb [ab'jekt] is mapped in the same way, with the [kt] consonant sequence also mapped onto a single C. This process is expanded on in greater length in the *4+C Verbs* section below.



In this template, the two-consonant sequences that occur in the final C slot of the template, [ks] and [kt], are the only real clusters, and although they do not occur in native Hebrew words, they are present in loan words, namely the nouns ['in.deks] and [ob'jekt] from which the verbs discussed above derive. While [ks] and [kt] are not good syllable codas in native Hebrew words, they are somehow tolerated in the loan verbs. The same phenomenon occurs in English: the language tolerates onsets in loan words that don't occur on native words, as in *pueblo* and *genre*. Again, the number of examples makes it risky to suggest why, but initial speculation about what motivates this acceptance of foreign onsets is the desire to maintain as high a level as possible of recognizability of the English source in the borrowing. The same could be true of Hebrew in the case of these consonant strings.

Two of my readers on this thesis raised the question of whether this metathesis actually takes place, or whether this [+VI] phenomenon could be analyzed by extracting an initial glottal stop from the source, which would then map onto the CVCCVC template, as shown below with the verb [ar'gen], from the proposed root /*ʔrɡn/.



The primary advantage of this analysis is that through the imposition of the initial glottal stop, there is no metathesis required on the template. The issue with this is that it posits a consonant which in fact has no phonetic reality in the English source, and which according to Gesenius (1910: 32) is the “lightest” of the glottal stops, and before a vowel is “almost lost to our ear, like the *h* in *hour*” (italics mine). Additionally, Coffin (2005: 18) says that with the exception of marked and deliberate speech, vowel-initial words in Hebrew do not begin with a glottal stop. Positing the existence of this consonant just to make the analysis more tidy I think misses a more interesting, and potentially stronger analysis: by following the ear of the speakers and basing the analysis on what is heard, my proposition of metathesis holds, motivated by the desire to make the source maximally recognizable. This same preference for recognizability is noted above in this section regarding coda clusters in loanverbs from English. This process of leading by what is heard is exemplified in the way that English treats *hour* as [+VI], disregarding any historical fricative or glottal, and marks it as such by the use of *an* as the indefinite article.

Later in the discussion of 2C roots, other template-level processes arise by which Hebrew tries to maintain some semblance of recognizeability between the source and the Hebrew verb, and my analysis of metathesis is supported through the existence of other processes functioning in this domain. Additionally, the proposition of an inserted [ʔ] into the root does not allow for the existence of [+VI] 4C roots such as /bjkt_[+VI]/ and /ndks_[+VI]/ mentioned above. The addition of a fifth root C, in those cases, would require the supposition of an entirely different template for these verbs, a route which I choose to eschew in favor of the simpler and more interesting analysis.

6.3 4+C Verbs

The majority of the verbs in Figure 1.0 fall into the category of having roots with four or more consonants. To accommodate these extra consonants, all of the inflected forms of these verbs have *at minimum* one contiguous sequence of two Cs, and these are always the second and third consonants of the pi’el paradigm. Note, however, that above I listed the template of that paradigm as CVC:VC, thus the expectation is that the medial C sequence would be a geminate. Instead, it seems that there can be two different Cs there. How does that happen?

In Biblical Hebrew, the direct ancestor of Modern Hebrew, the pi’el *binyan* is characterized by a gemination of the middle consonant of the root (Gesenius 1910: 139-140), but over time and through the death and revitalization of Hebrew as a spoken language, the

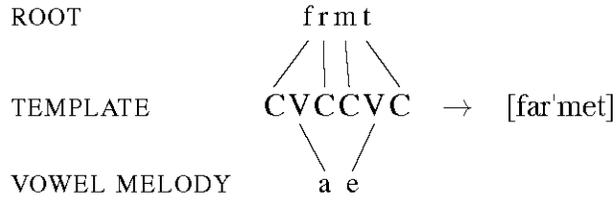
phonetic realization of the gemination of the middle C in the pi'el template has been lost (Morag 1959). Today, therefore, the template for this *binyan* is often written CVCVC.

I propose that the CVCCVC template found in loan verbs of four or more root consonants is in fact a re-analysis of the underlying CVC:VC template, which divides the underlying geminate into two independent consonant slots in the form CVCCVC, accommodating roots that have 4 or more Cs. From the evidence presented, it is clear that the natural phonological process of degemination and splitting which the medial C: undergoes is taking place not on the string of consonants and vowels, but on the template itself. This raises interesting questions for future research about what other rules may be operating in this templatic domain.

Also in this category are Hebrew verbs whose sources have onset or coda clusters that are mapped onto a single C slot on the template. In the verbs discussed below, sequences of consonants are observed occupying a single C slot in the template. If this occurs in the first C of the CVCCVC template, the two consonants form the onset of the first syllable of the verb, as in the word [ʃnar'kel]. Similarly, if there are two consonants mapped to the same C slot at the very rightmost edge of the template, they form the coda of the second syllable, as in [an'deks]. If two consonants are mapped to the second or third C of the template, however, the result is a sequence of three root consonants which can syllabify into a two-consonant coda of the first syllable plus a one-consonant onset of the second syllable, as in [tal'gref]. Alternatively, the three consonants can syllabify into a one-consonant coda to the first syllable, and a two-consonant onset to the next syllable, with both of these processes following the constraints of the Sonority Hierarchy (Chomsky and Halle 1968).

Therefore, while it appears on the surface that the distribution of consonant strings is seemingly arbitrary with respect to overarching templatic structure, the presence of these clusters in the output is not entirely surprising. Because lexical borrowing and the creation of new words is a conscious undertaking, as linguistic processes go, it is reasonable to find some irregularity in which root consonants are mapped to the same C slot in the template, so as to closely imitate the form of the source verb.

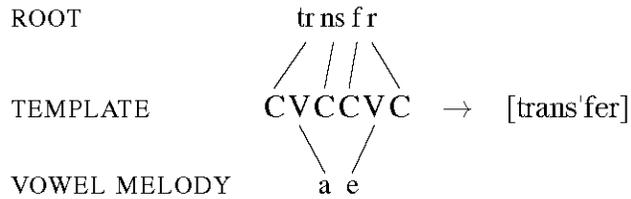
The verb *format*, [far'met], is an example of a verb with four root consonants, /frmt/, which follows my proposed normative pattern for loan verbs of this type, using the CVCCVC template because it has more than three root Cs, resulting in a sequence of two root consonants, [rm], at the center of the template, filling the two C slots.



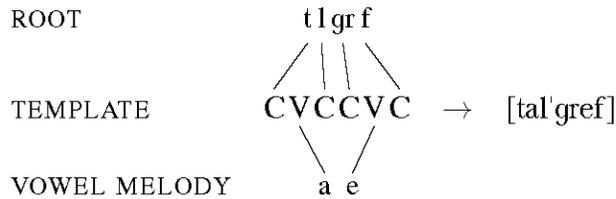
Other examples of English loan verbs in Hebrew in which there is a one-to-one correspondence between the root consonants and C slots in the template are [das'kes], [tar'ped], [tal'fen], [zag'zeg], [gal'ven], and [paɪ'peɪ], all of which are mapped in the same way as [far'met] above.

Other verbs in this category have two Cs of the extracted root mapped onto one C slot in the template. These verbs exhibit sequences of Cs in the middle of the pi'el template like the rest of this category, but also then additionally have some of the other C slots filled by two consonants of the root, preserved as somehow “characteristic” of the origin verb during the extraction process. These verbs in which two Cs in the root are mapped onto one consonantal slot in the template are shown individually below, because each one exhibits an idiosyncratic grouping of root consonants.

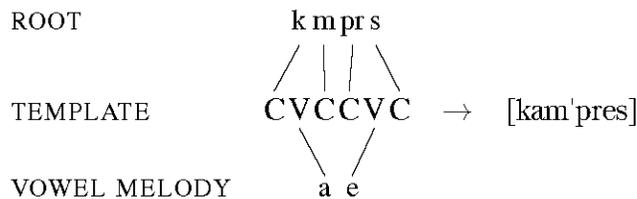
transfer yields root /trnsfr/ where /tr/ and /ns/ are each mapped onto one C.



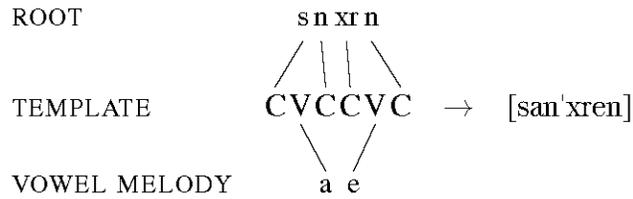
telegraph yields root /tlgrf/ where /gr/ is mapped onto one C.



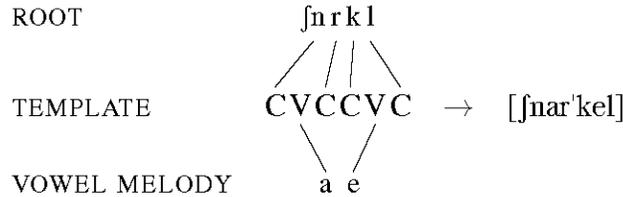
compress yields root /kmrps/ where /pr/ is mapped onto one C.



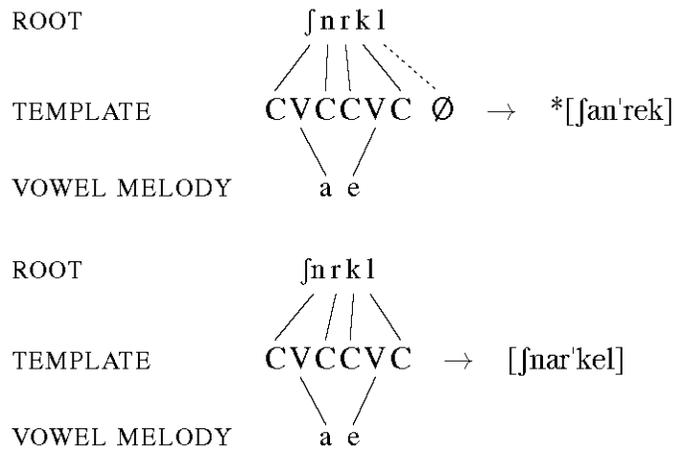
synchronize yields the root /snxrn/ where /xr/ is mapped onto one C.



snorkel yields the root /ʃnrkl/ where /ʃn/ is mapped onto one C.

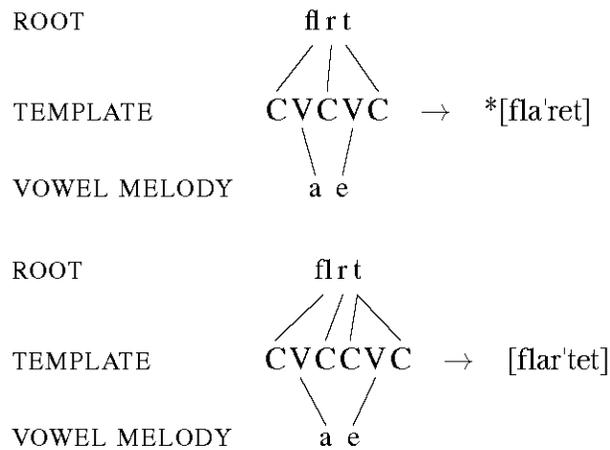


For each of these verbs, it is necessary to consider the consonant sequences from the source as a unit grouping within the root. That is, for these verbs the root is not thought of as C1 C2 C3 C4, instead it contains groupings of root consonants which are mapped onto one templatic C slot, and can be characterized as, for instance, (C1 C2) C3 C4. Otherwise, when mapping the root consonants onto the Cs of the template from left to right as McCarthy's theory indicates, the verb would not be well-formed. For example:



The last verb in this category exhibits the property of spreading of root consonants that McCarthy (1989) describes in his paper: the Hebrew verb “to flirt”, taken from the English *flirt*, has the root /flrt/, and the consonant distribution shown in [flar'tet]. This is a case where although there are exactly four root consonants, the first and second root Cs are bound together and are both mapped onto the first C of the CVCCVC template that the verb uses. This verb has a 4C root, and so it uses the alternate pi'el template which splits the underlying medial geminate consonant into two consonant slots. One might expect that

because of the double-mapping of two of the root consonants onto one C slot, the verb would use the CVCVC pattern, but because it has four root Cs, regardless of how they are mapped onto the template, the CVCCVC template is selected. To cope with the extra C slot in the template once the root Cs have been mapped, the final root consonant, /t/, spreads (McCarthy 1989) to fill this slot.

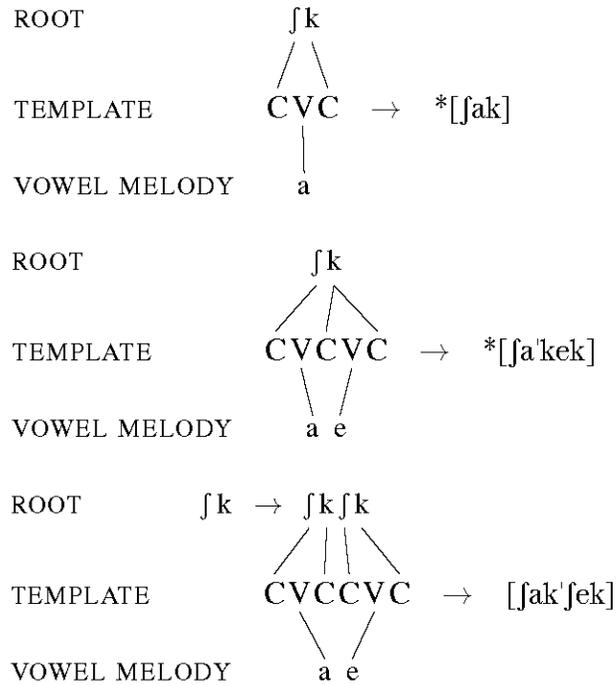


Although one could question the validity of describing CVCCVC as the template with the maximum number of Cs when in the data there is often more than one root consonant mapped to a given templatic C, here I choose to maintain CVCCVC as the maximal expansion. The difference between calling each C in the template two possible Cs and associating more than one root consonant to a given C in the template is purely one of terminology. Here I choose to complicate the association process of root consonants into the template, while preserving a maximal expansion of the *binyan* which is in line with other historical templates.

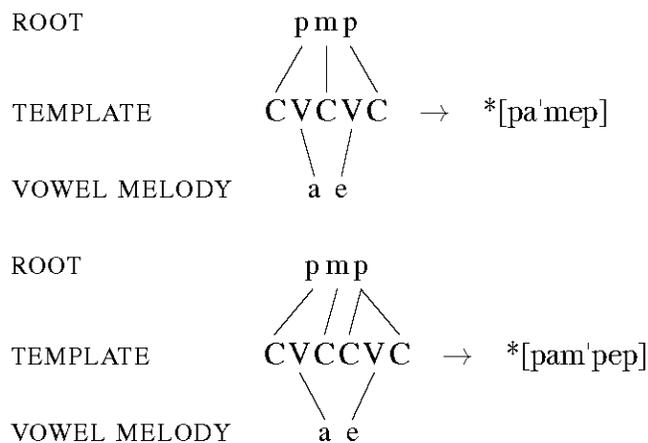
6.4 2C Verbs

The section on verbs with two root consonants in Figure 1.0 is short, but the verbs contained therein exhibit interesting qualities which are telling about the way that loan verbs are conceptualized and marked as foreign in Hebrew. There is a collection of so-called “hollow verbs” (Glinert 1989) native to Modern Hebrew which contain only two root consonants which are sometimes analyzed as being separated by a semi-vowel, which, although part of the root and technically considered a “consonant”, rarely behaves like a regular consonant in the root, and is in common phonetic alternation with full vowels of a related nature. In 2C loan verbs, however, Hebrew employs a different strategy: instead of assimilating the verbs into the existing two-consonant template, CVC, the root is reduplicated and then treated as any other verb with four root consonants. The reduplication and association process

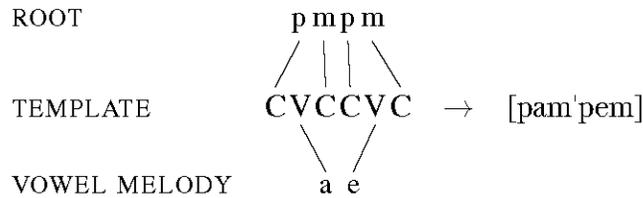
for [ʃakʹʃek], meaning “he shook” from the English *shake*, is shown below to demonstrate these processes. Also shown are several incorrect forms which would result from treating the verb as having two root consonants and using the Hebrew 2C template CVC, from using the CVC:VC template without reduplication, and using spreading to fill the remaining C slots.



A potentially problematic example is the verb [pamʹpem], “he pumped”, from the English *pump*. Based on the process of extraction outlined above, the extracted root of the Hebrew verb derived from *pump* would be expected to be /*pmp/. This is not the case, however, because if it were, it would generate either [paʹmep] (if it behaves like /ggl/, /blf/, and other native Hebrew 3C roots) or [pamʹpep] (if it behaves like all other English loan verbs and filled the fourth C slot through spreading of the final root /p/).



Instead, the verb is formed as [pam'pem]. There are two possibilities for the analysis here. One is that the root is 2Cs, /pm/, like the 2C root of [ʃak'ʃek], and that it undergoes reduplication. The other possibility is that the root is 4Cs: /pmpm/. The 2C analysis requires us to account for why the final [p] in the English source *pump* is lost, which might seem particularly ad hoc, given that two [p]'s really do appear in the Hebrew loan verb. Alternatively, the 4C analysis requires us to account for why an additional [m] appears finally in the Hebrew verb. Here, it is important to note that /p/ and /m/ are homorganic, and one can slide from the articulation of one to the articulation of the other simply by adjusting voicing and the height of the velum. Indeed, epenthetic nasals often appear after bilabial stops (/p/ and /b/) in many languages, so perhaps the analysis of the root as quadriliteral (/pmpm/) is motivated by articulatory factors. However this question is still open to speculation, because either analysis requires special adjustments (deletion of final [p] for the 2C analysis and additional of final [m] for the 4C analysis). In either case, the root is then mapped onto the CVCCVC template.



7 Conclusion

I have demonstrated that most English loan verbs into Hebrew do not participate in any of the established morphological templates reserved for native Hebrew verbs, and that the vast majority of these loan verbs fall into a single template, based on a historical form of the pi'el but distinct from the modern pi'el template. This directly contradicts Bolozky (1999) when he claims that English verbs, once reduced to their component consonants, are integrated into the *binyan* system without any alterations, but bears out Bolozky's (1999) suggestion that new forms of pi'el may be forming to account for different strategies of verb production in Hebrew.

We have seen that there is an element of intentionality in the way that verbs are borrowed: certain consonant clusters of the original English verbs are retained in the Hebrew and are treated as one consonant by McCarthy's (1989) templatic approach. Also, all English [+VI] sources are marked with a feature that triggers metathesis on the template, allowing the Hebrew loan verb to also be [+VI]. Thirdly, most English verbs are explicitly marked as foreign through their use of a common, new morphological template. This tem-

plate, based on that of the historical pi'el, is unique to English loan verbs, and is highly preferred, as shown by the modification of two-root verbs to fit into this “foreign-designated” pattern, even though simpler templatic strategies for dealing with these types of verbs exist within the language (Glinert 1989). This also tidily explains the absence of English loan verbs in vowel melodies other than that of pi'el, even though Glinert (1989) and Bolozky (1999) note that more *binyanim* than just the pi'el are productive today in Hebrew verbal coinings.

Lastly, in addition to the conscious retention of consonant clusters and being marked as foreign through the use of this new morphological template, the geminate medial C in the historic CVC:VC pi'el template, splits in response to the number of root consonants in a given verb in an effort to accommodate them each with a C of their own. This is an example of a natural phonological process acting on the template itself, rather than on the level of the spoken word.

The data from the [+VI] verbs have also shown that metathesis, another natural process, can operate on the template itself. These two phenomena arising from my data indicate that the rules of metathesis and geminate splitting are functional at the meta-level of the template, and raises questions about what other processes may also function in this domain.

In conclusion, I have presented a full explanatory analysis for the morphological realizations of English loan verbs into Modern Hebrew, and presented evidence for the existence of a new morphemic template to accommodate them. These data and their analysis shed light on the nature of the consonantal root and the status of loan verbs in Hebrew.

References

- Allen, Joseph Henry, and J. B. Greenough. 1931. *Allen and Greenough's New Latin Grammar: For Schools and Colleges: Founded on Comparative Grammar*. Boston: Ginn.
- Bolozky, Shmuel. 1999. *Measuring Productivity in Word Formation: The Case of Israeli Hebrew*. Leiden: Brill.
- Chomsky, Noam, and Morris Halle. 1968. *The Sound Pattern of English*. New York: Harper & Row.
- Coffin, Edna Amir. 2005. *A Reference Grammar of Modern Hebrew*. Cambridge: Cambridge University Press.
- Ellison, T. Mark. 1994. Phonological Derivation in Optimality Theory. *Proceedings of the 15th Conference on Computational Linguistics*.
- Gesenius, Wilhelm. 1910. *Gesenius' Hebrew Grammar*. Oxford, England: Clarendon Press.
- Glinert, Lewis. 1989. *The Grammar of Modern Hebrew*. Cambridge: Cambridge University Press.
- Harley, Heidi. 2005. How Do Verbs Get Their Names? Denominal Verbs, Manner Incorporation, and the Ontology of Verb Roots in English. *The Syntax of Aspect* 42-64.
- McCarthy, John J. 1989. Linear Order in Phonological Representation. *Linguistic Inquiry* 20.1 71-99.
- Morag, Shelmo. 1959. Planned and Unplanned Development in Modern Hebrew. *Lingua* 8 247-63.
- Schwarzwald, Ora (Rodrigue). 1998. Word Foreignness in Modern Hebrew. *Hebrew Studies* 39.1 115-42.