Recursiveness in Hebrew Word Formation
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Derivational recursiveness in Hebrew can either occur in double or multiple stems or in single stems. It can be expressed either by reduplication of the same words or consonantal roots, by the same phrasal constructions, or by repeated morphological processes. Double or multiple stems can be formed recursively in three ways: repetition of the same word; repetition of the same word with the addition of a particle; repetition in the construct state. One stem recursive word formation includes two basic categories: accumulative morphological devices (diminutive formation; adjectival formations; particle and adverbial formation; abstract word formations); consonantal root formations (secondary formation; reduplication).
Except for particles and adverbial recursive formations, all the devices show a right edge preference. The various accumulative morphological devices follow a certain specific order: base or discontinuous root and pattern combination always precedes suffixation, and suffixes are ordered, too. Reduplication of the same words or consonantal roots often carries intensifying or diminutive connotations.

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1. Introduction

Recursiveness in syntax is a widely occurring and well explained phenomenon in many languages. Recursiveness in morphology is a less researched subject traditionally associated either with compound word formation (which is also syntactically dependent), or with reduplication. In this article I would like to describe the ways in which recursiveness transpires in Hebrew and to categorize these instances and explain their occurrences.

Recursiveness as a derivational process in word formation is defined here as the same morphological process that occurs in word formation more than once where a new lexical entry is formed. Derivational recursiveness in Hebrew can either occur in double or multiple stems (section 2), or in single stems (section 3). Recursiveness can be expressed either by reduplication of the same words or radicals (consonantal roots), by the same phrasal constructions, or by formation of similar morphological classes.

2. Recursive double or multiple stems

Double or multiple stems can be formed recursively in two ways: a. word reduplication; b. repeated construct state.

2.1 *Word reduplication*

The same words are repeated to form new lexical items. These can be repeated identically, separated by a conjunct, or doubled with some modification, as the following classifications demonstrate.

2.1.1 *Identical reduplication*
In the first category the same word is repeated, as in (1):

(1) *álef-álef* 'excellent' (*Aleph* is the first letter of the alphabet, and metaphorically symbolizes 'the best')
xen-xen 'thanks' (*xen* 'grace, charm')
géver géver 'very masculine' (*géver* 'male, man')
'exad 'exad 'one by one' (*'exad* 'one')
yom yom 'every day' (*yom* 'day')
fífti fífti 'fully equal, exactly half' (*fífti < fifty* 'half, fifty percent')
heytev heytev 'very cautiously, carefully' (*heytev* 'well, properly')
nú-nù 'exclamation of disbelief', *nu-nu-nu* 'exclamation of warning to a small child' (*nu* 'hurry up!, and…')
le'at le'at 'very slowly' (*le'at* 'slowly')

Onomatopoetic repetition is also common in words of one syllable, e.g. *tuk-tuk* 'knock-knock', *tax-tax* 'he harsh sound of a gun firing or other noises', *hav-hav* or *haw-haw* 'bow-wow 'a dog's bark', *cif-cif* 'a bird singing', *ku-ku-ri-ku* 'a chicken clucking', *kwa-kwa* 'a frog croaking', but not *miyau* 'a cat mewing', *muu* 'a cow mooing', *'i-'a* 'a donkey braying', which are multisyllabic. Most of these forms do not appear in standard dictionaries and I have therefore decided to not include them here (they exist in the language spoken by young children).

2.1.2 *Separated reduplication*
In the second category each word is repeated with the inclusion of a particle inserted between the first and second instance:

(2) *yad beyad* 'together' (*yad* 'hand', *be-* 'in')
ko vaxo 'hither and thither' (*ko* 'thus', *va-* 'and')[1]
lo valo 'not at all' (*lo* 'no', *va-* 'and')
klal uxlal '(not) at all' (*klal* 'at all' *u-* 'and'; always used in a negative context)
bad bevad 'simultaneously' (*bad* 'portion'; only ever used in this expression)
yeš vayeš 'certainly; plenty' (*yeš* 'there is', *va-* 'and')
beyn leveyn 'in the meantime' (*beyn* 'between', *le-* 'to')

2.1.3 *Singular-plural reduplication*
In the following examples of the third category, each word first appears in its singular form and is subsequently repeated in the plural:

(3) *péle pla'im* 'Wonder of wonders! Amazing!' (*péle* 'miracle')
'idan ve'idanim 'ages and ages' (*'idan* 'period, era')
kéfel kifláyim 'many times more' (*kéfel* 'double')

(le)nécax necaxim '(for) eternity' (*nécax* 'eternity')
'éfes 'afasim 'an absolute nobody' (*'éfes* 'zero')
havel havalim 'foolishness, nonsense' (*hével* 'nonsense')

All the aforementioned word repetition lexemes are expressions of strength used either as adverbials of intensity, especially the examples in (1) and (2), or as exclamatory terms involving emotions, especially those given in (3). Whereas some of the above examples are typical low register expressions, e.g. *géver géver*, *fífti fífti*, *'éfes 'afasim*, *nú-nù*, others are typically high register, e.g. *'idan ve'idanim, havel havalim*.

2.2 Repeated construct state

The use of a double genitive (the double construct state) creates new lexical items recursively, as demonstrated in (4).

(4)   *bet mišpat hašalom* 'magistrate's court'

Bet mišpat 'court (of law)' is a single unit construct state formation phrase (*bayit* 'house' > *bet* 'house of' + *mišpat* 'law') which in turn also serves as the first constituent of another construct state phrase - *bet mišpat hašalom* (*hašalom* means 'the peace').
        The construct state is created when one noun (or occasionally an adjective) is placed in juxtaposition with another in order to indicate a very broad sense of genitive relations. The uniqueness of the construct state is that the first noun appears in its inflected rather than in its lexical form. Further similar examples are given in (5) below:

(5)   *madad yóker hamixya* 'cost-of-living index' (*madad* 'index of', *yóker* 'cost-of', *hamixya* 'the living')
        mašber 'emca haxayim 'middle life crisis' (*mašber* 'crisis of', *'emca* 'middle of', *haxayim* 'the life')
        nixsey con barzel 'inalienable assets' (*nixsey* (<*nexasim*) 'assets of', *con* 'sheep of', *barzel* 'iron')
        neciv kvilot haxayalim 'commissioner for soldiers' complaints' (*neciv* 'commissioner of', *kvilot* 'complaints of', *haxayalim* 'the soldiers')
        midrax kaf régel 'foothold, small place' (*midrax* 'footplate of', *kaf* 'sole of', *régel* 'foot')
        zilut bet mišpat 'contempt of court' (*zilut* 'contempt of', *bet mišpat* 'court, house of law')
        govah pney hayam 'sea level' (*góvah* 'hight of', *pney* (<*panim*) 'faces of', *hayam* 'the sea'
        ma'ase yedey 'adam 'man-made' (*ma'ase* 'act of', *yedey* (<*yadáyim*) 'hands of', *'adam* 'man')
        ševa micvot bney noax 'the seven commandments that all people should follow' (*ševa* 'seven', *micvot* 'commandments of', *bney* (<*banim*) 'sons of', *noax* 'Noah')

This final example suggests another subcategory where numbers can occur either in their base form or in an inflected construct state. Some of the following phrases are formed by numerical inflected constructs (6a) while others take their base form (6b).

4

(6) a. *(mi)šéšet yeme berešit* '(from) the time of Creation, very ancient' (*mi-* 'from', *šéšet* (<*šiša*) 'six of', *yemey* (<*yamim*) 'days of', *berešit* 'Genesis, the beginning')
 'aséret yemey tšuva 'the ten days of repentance (the days between *Rosh HaShana* and *Yom Kippur*)' (*'aséret* (<*'asara*) 'ten of', *yemey* (*yamim*) 'days of', *tšuva* 'repentance')
 šte tipot máyim 'exactly alike' (*šte* (<*štáyim*) 'two', *tipot* 'drops of', *máyim* 'water')

 b. *šiv'a medorey gehinom* 'severe suffering' (*šiv'a* 'seven', *medorey* (<*medorim*) 'sections of', *gehinom* 'hell')
 xamiša xumšey tora 'the Pentateuch' (*xamiša* 'five', *xumšey* (<*xumašim*) 'the five books of', *tora* 'Torah, Bible')
 'arba ruxot šamáyim 'four winds: north, south, east, west' (*'arba* 'four', *ruxot* 'winds of', *šamáyim* 'sky')

New compounds are formed repeatedly in this category with the same word formation device with no extended connotation.

Many Hebrew nominal compounds are formed by a noun followed by an adjective, e.g. *léxem 'axid* 'common dark bread' (*léxem* 'bread', *'axid* 'uniform'), *lev raxav* 'generosity' (*lev* 'heart', *raxav* 'wide'), but I was only able to find one example of the recursive process in this category; the expression *yom tov šeni (šel galuyot)* 'the second holiday (celebrated outside Israel)' (*yom tov* 'holiday (*yom* 'day, *tov* 'good')', *šeni* 'second' (*šel* 'of', *galuyot* 'diasporas')).

3. Recursiveness in single stems

One stem recursive word formation includes two basic categories: a. accumulative morphological devices; b. root formations.

3.1 *Accumulative morphological devices*

Certain morphological devices in Hebrew create the same morpho-semantic categories. In the following paragraphs four of these devices will be discussed with examples of their recursive applications.

3.1.1 *Diminutives*
Diminutives (including affectionate and derogative) are formed in Hebrew either by partial word duplication (7a) or by suffixes (7b). Their combination causes accumulative devices forming extra-diminutive forms (7c).

(7) a. partial word reduplication: *xatul* 'cat' > *xataltul* 'kitten'; *cahov* 'yellow' > *cehavhav* 'yellowish'; *dag* 'fish' > *dagig* 'small fish',

 b. suffixation: *xamor* 'donkey' > *xamor-on* 'small donkey'; *xamor-íko* 'small lovable donkey'; *kar* 'pillow' > *kar-it* 'small pillow'; *šamen* 'fat' > *šamén-čik* 'chubby'

c. accumulation: *kelev* 'dog' > *klavlav* 'puppy' > *klavlav-on* 'small puppy' > *klavlavón-čik* 'cute little dog'; *xatul* 'cat' > *xataltul* 'kitten' > *xataltul-on* 'small kitten' > *xataltulón-čik* 'cute little kitten'; *kar* 'pillow' > *kar-it* 'small pillow' > *kariy-ónet* 'tiny pillow, pretty small pillow', *kaf* 'tablespoon' > *kap-it* 'teaspoon' > *kapiy-ónet* 'small teaspoon'

The examples in (7c) show that although diminutive formation is recursive, it follows a certain order: partial word reduplication precedes affixation. Within affixation, the suffix *-it* precedes *-on*, and *-on* precedes the suffix *–čik*.

3.1.2 *Adjectives*
Adjectives are formed by base, non derived stems (8a), by root and pattern combination (8b) or by suffixation (8c). Recursiveness occurs when an adjective is formed from another adjective (8d).

(8)   a. *tov* 'good', *ra* 'bad', *šovav* 'naughty'

    b. *gadol* 'big' (*g-d-l* + *CaCoC*), *tipeš* 'stupid' (*t-p-š* + *CiCeC*), *šavir* 'breakable' (*š-v-r* + *CaCiC*), *raša meruša* 'very evil' (*r-š-'* + *CaCaC*, *meCuCaC*) (note that there is a reduplication of the root in this phrase)

    c. *raš-i* 'main' (*roš* 'head', *rašim* 'heads'), *riš-on* 'first'

    d. *riš-on* 'first' (from *roš* 'head') > *rišon-i* 'initial, elementary, original'; *tipeš* 'silly (person)' > *tipš-i* 'silly (non-human; action); *nora* 'awful' > *nora'-i* 'horrifying'; *pére* 'wild' > *pra'-i~pir'-i* 'wild'

The most common way in which new adjectives are formed occurs when the suffix *-i* is added to other adjectives.

3.1.3 *Particle and adverbial formation*
Many Hebrew particles are formed by prefixation. Prefixation can occur more than once within a certain morpheme order, as in (9a). Examples of their use are shown in (9b1-3).

(9)   a. *še-* 'that', *k-še-* 'when', *li-xše-* 'when (before future verbs)'
      mi-zman 'a long time ago' (*mi-* 'from' *zman* 'time'), *mi-mizman* 'since long ago'
      li-fney 'before' (*li-* 'to', *pney* (<*panim*) 'face', *mi-lifney* 'from before'

    b1. *hu 'amar še-yavo*   *k-še-hu lomed hu macliax*
       he said that-will-come   when-he studies he succeeds
       'He said that he would come'   'When he studies he succeeds'

       li-xše-yitkabl-u   *ha-toca'-ot n-ece*   *le-xufša*
       when-will-receive-they the-result-s we-will go to-vacation
       'When the results are received we'll go on vacation'

b2. *mi-zamn   lo ra'i-ti 'oto*
    A-long-time-ago no saw-I him
    'I have not seen him for a long time'

    mi-mizman   lo ra'i-ti 'oto
    A-very-long-time-ago no saw-I him
    'I have not seen him for ages'

b3. *hu 'azav lifney ša'a*   *lo ra'i-ti 'oto mi-lifney   šana*
    He left   before hour   no saw-I him from-before year
    'He left an hour ago'   'I have not seen him since last year'

3.1.4 *Abstract word formations*

Abstract nouns are marked by the ending *-ut*. This ending can be part of a pattern as in (10a), added to nouns or adjectives as in (10b), or it may occur recursively twice in a word, as in (10c). In its repeated instance, this formation resembles the English *-ion*, e.g. *institution-institutionalization*, which are both derived from verbs (Spencer 1990: 9; Scalise 1986: 23-26).

(10)   a. *gadlut* 'greatness' (*g-d-l* + *CaCCut*; no adjectival or nominal *gadal, *gadel),
        prišut   'asceticism' (*p-r-š* + *CCiCut*; no adjectival or nominal *pariš, *priš),
        smixut 'proximity' (*s-m-x* + *CCiCut*; no adjectival or nominal *samix, *smix; cf. (10b)),

      b. *ciyon-ut* 'Zionism' (from *cion* 'Zion'); *ciyoniy-ut* 'Zionisticness' (from *ciyoni* 'Zionist'); *smix-ut* 'thickness' (from *samix* 'thick'; cf. (10a))

      c. *meci'ut* 'existence' (*m-c-'* + *CCiCut*) > *meci'ut-i* 'realistic' > *meci'utiy-ut* 'reality'
         yahadut 'Judaism' (*y-h-d* + *CaCCut*) > *yahadut-i* 'of Jewish (life, nature)' > *yahadutiy-ut* 'Jewishness'
         yaldut 'childhood' (*y-l-d* + *CaCCut*) > *yaldut-i* 'childish' > *yaldutiy-ut* 'childishness, infantilism'
         malxut 'kingdom' (*m-l-x* + *CaCCut*) > *malxut-i* 'royal' > *malxutiy-ut* 'royalty'
         xaver-ut 'friendship' (*xaver* 'friend') > *xavrut-i* 'friendly' > *xavrutiy-ut* 'friendliness, sociability'
         mah-ut 'essence' (*ma* 'what') > *mahut-i* 'essential' > *mahutiy-ut* 'essentiality'
         melaxuti 'artificial' (*melaxa* 'handicrafts' + *-ut* + *-i*) > *melaxutiy-ut* 'artificialness'
         'axray-ut 'responsibility, warranty' (*'axray* 'responsible') >#> *'axrayutiy-ut* 'accountability'

Two kinds of recursiveness can be seen to occur here: a. the first occurrence of *-ut* as part of the pattern and the second as a suffix (*meci'utiyut, yahadutiyut, yaldutiyut, malxutiyut, xavrutiyut*; b. *-ut* occurs twice as a suffix (*mahutiyut, melaxutiyut, 'axarayutiyut*). In all the above examples other than the last one, abstract nouns became adjectives as a result of the appendage of the suffix *-i* before further changing into different abstract nouns due to the addition of a final *-ut* suffix. In the last example there is no intervening stage in this process,

even though the resulting word appears as if it has been created using an *-i* suffix midway in its formation (*'axrayut-iy-ut*).

3.2 *Root formations*

The concept of root refers in Hebrew to discontinuous consonantal elements (radicals) that are combined to form a word with discontinuous vocalic patterns (at times with the inclusion of additional consonants and vowels). Most roots are tri-radicals. Two processes feature prominently in root recursive formation: (i) secondary root formation; (ii) radical reduplication.

3.2.1 *Secondary roots*
Root back formation refers to the creation of a new root from another word that was originally created from another separate root. This is a very common process in Hebrew and is demonstrated in the following examples:

(11) a. The word *malkódet* 'trap' originates from the primary root (PR) *l-k-d*, as in *laxad* 'capture'. The secondary root (SR) *m-l-k-d* is derived from *malkódet*, which in turn leads to the creation of a new verb *milked* 'booby-trapped'.

b. PR *s-p-r*: *safar* 'counted', *mispar* 'number' > SR *m-s-p-r* > *misper* 'numbered'

c. PR *x-š-v*: *xašav* 'thought', *xišev* 'calculated', (a) *maxšev* 'calculator, computer' > SR *m-x-š-v* > *mixšev* 'computerized'; (b) *xešbon* 'arithmetic, mathematics' > SR *x-š-b-n* > *xišben* 'calculated'

d. PR x-k-r: *xakar* 'investigated', *taxkir* 'investigation' > SR *t-x-k-r* > *tixker* 'interrogated'

e. PR *d-g-m*: *dagam* 'sampled', *dugma* 'example, sample', *dugman* 'model' > SR *d-g-m-n* > *digmen* 'modeled (clothes)'

f. PR *k-l-t*: *kalat* 'understood', *hiklit* 'recorded', *taklit* '(music) record' > SR *t-k-l-t* > *tiklet* 'deejayed'

g. PR *b-x-n*: *baxan* 'examined', *hivxin* 'distinguished', *'avxana* 'diagnosis' > SR *'-v-x-n* > *'ivxen* 'diagnosed'

h. PR *d-r-x*: *derex* 'way', *hidrix* 'instructed' > *tadrix* 'briefing' > SR *t-d-r-x* > *tidrex* 'briefed'

i. PR *b-x-y*: *béxi* 'cry' > *baxyan* 'cry-baby' > SR *b-x-y-n* > *hitbaxyen* 'complaint', *hitbaxyenut* 'tendency to feel sorry for oneself'

In each of the examples above, a noun serves as a mediator between the primary and the secondary root. The most common radical additions are the initial consonants *m*, *t*, and *'* and

the final consonant *n*. As they are so often used in the creation of new roots, these consonants *'* and *t* often develop into new radicals within roots without any mediator noun (12).

(12)   a. PR *d-l-k*: *délek* 'fuel' > SR *t-d-l-k* > *tidlek* 'refueled'

b. PR *t-x-l*: *hitxil* 'began' > SR *'-t-x-l* > *'itxel* '(computing) initialized'[2]

c. PR *z-m-n*: *zman* 'time' > SR *t-z-m-n* > *tizmen* 'timed'

d. PR *š-'-l*: *ša'al* 'asked', *še'ela* 'question' > SR *t-š-'-l* > *tiš'el* 'interrogated'

The initial consonant *š* which historically served as a Semitic borrowed verb pattern marker added to tri-consonantal roots has become today a productive secondary radical for root expansion (13).

(13)   a. PR *d-r-g*: *darga* 'rank', *dereg* 'ranked' > SR *š-d-r-g* > *šidreg* 'upgraded'

b. PR *k-l-l*: *kalal* 'included', *hixlil* 'generalized' > SR *š-x-l-l* > *šixlel* 'improved'

c. PR *k-f-l*: *kafal* 'multiplied', *hixpil* 'doubled' > SR *š-x-p-l* > *šixpel* 'duplicated, replicated'

3.2.2 *Radical reduplication*
One of the most common ways in which roots are expanded is when one or two radicals are reduplicated. Unlike in other languages, reduplication never occurs at the beginning of the root but always at the end (Bat-El 2004; Schwarzwald 2004).[3] Reduplication of A-B-C roots into A-B-C-B-C is typical of diminutive and intensified nouns and adjectives, as shown in example (7a) above and in (14) below.

(14)   *katan* 'small' > *ktantan* 'tiny'; *'adom* 'red' > *'adamdam* 'light red'; (historically) dark red', *safam* 'mustache' > *sfamfam* 'small mustache'; *lavan* 'white' > *levanban* 'whitish', *šafan* 'rabbit' > *šfanfan* 'small rabbit'

In the Hebrew verb system consonants are duplicated to give a tri- or quadri-radical root. This method of duplicating radicals is extremely common, especially in the derivation of verbs from monosyllabic words, but also in other cases, as in (15). The following examples are classified similarly to Tobin (2001: 233):

(15)   a. A-B > A-B-B:
  gal 'wave' > *galal* 'rolled up', *galil* 'cylinder'
  'ot 'sign, signal' > *'otet* 'signaled'
  hegen 'protected' > *hitgonen* 'defended oneself', *mignana* 'defensive fighting'
  sav > *savav* 'encircled', *histovev* 'wandered around'
  lek 'one lick' > *likek* 'licked'
  mila 'word' > *milel* '(idiomatic) said', *tamlil* 'lyrics, libretto', *himlil* 'verbalized'
  gar 'lived', *hitgorer* 'dwelled'
  'er 'awake' > *hit'orer* 'woke up', *'orer* 'aroused, wakened'

xor 'hole' > xorer 'perforated, pierced'
šar 'sang', šir 'song' > šorer 'sang (literary use)'
kar 'cold' > kerer 'cooled (trans)', hitkarer 'cooled (intrans); caught a cold'

b. A-B-C > A-B-C-C:
'išer 'confirmed' > 'išrer 'ratified'
'avir 'air' > 'ivrer 'ventilated'
safar 'counted' > sifrer 'numbered' (cf. (11b))
flirt 'flirt' > flirtet 'flirted'
faks 'fax' > fikses 'faxed'
'ereb 'mixed' > 'irbev 'mix up'
kimet 'wrinkled' > kimtet 'made tiny wrinkles'
cinor 'pipe; tube' > cinrer 'intubate', cinrur 'intubation'
davar 'thing; word' > divrer 'censored (military); was spokesman (journalism)'

c. A-B > A-B-A-B:
gal 'wave' > gilgel 'spun'
yafe 'beautiful' > hityafyef 'beautify oneself'
dak 'thin' > dikdek 'was precise', dikduk 'grammar'
lek 'one lick' > liklek 'lapped, licked'
tipa 'drop' > tiftef 'trickled'
réax 'smell', heriax 'smelled' > rixreax 'sniffed'
henif 'lifted up' > nifnef 'waved'
mila 'word' > milmel 'mumbled'
daf 'page' > difdef 'turned pages'

d. A-B-B > A-B-A-B:
balal 'mixed' > bilbel 'confused', hitbalbel 'got confused'
'amum 'gloomy' > 'im'em 'dimmed (a light)'

There are a huge number of A-B-A-B roots as can be observed from some of the examples given in (15c-d) above and in (16) below. Several of the A-B-A-B roots are onomatopoetic, reduplicating the monosyllabic sounds, e.g. zimzem 'buzzed', cilcel 'rang', kixkéax 'cleared one's throat', cikcek 'clicked one's tongue', šikšek 'chugged', birber '(slang) babbled', kirker 'croaked' (and see also milmel in (15c)), etc. Many others were originally created by reduplication with no existing base form, as in (16) and thus show reduplication but no recursiveness.

(16)   bizbez 'wasted', bicbec 'poked out', digdeg 'tickled', zilzel 'degraded', nimnem 'napped', 'im'em 'dimmed (a light)', 'if'ef 'blinked', sigseg 'prospered', šifšef 'rubbed'

One or two of the final basic form consonants are reduplicated in all recursive cases, whether or not these are different roots, real words or onomatopoetic syllables. It should be noted that, various reduplicated roots can be formed from the same base word (gal> galal, gilgel; lek>likek, liklek; mila> milel, milmel).

4. Discussion

Although there are a number of methods by which recursiveness contributes to Hebrew morphology, two of these are of particular importance: (i) reduplication of words or root radicals, and (ii) repeated morphological processes. Reduplication is found in a wide range of languages and language groups, though its level of linguistic productivity varies (Alderete et al 1999; Broselow & McCarthy 1984; Fabricius 2006; McCarthy & Prince 1995).

By no means unique to Hebrew, the repetition of words for the sake of intensifying expressions or for the purposes of derogation is a common literary technique in many languages (Dressler & Merlini Barbaresi 1994). It is interesting that radical repetition of type ABC > ABCBC has the same function as demonstrated above in (7a) and (14), and occasionally in some other cases in (15). It is worth stressing that in the case of radical reduplication, newly formed roots are based on existing words, although reduplicate roots are often created as primary roots, as in (16).

Repeated morphological processes show variation. The recursive occurrence of construct state constructions in Hebrew is very similar to compound noun formations in English such as "summer vacation school teacher training course" (Stekauer's example, personal communication), "royal historical society database", "student film society committee scandal inquiry", etc. These constructions are borderline cases between syntax and morphology (Spencer 1991: 48).

All the examples presented above, except particles and adverbial recursive formations, show a right edge preference, in double or multi stem as well as in single stem recursiveness.

The recursive process in single stems demonstrates various morphological phenomena that are unique to Hebrew (and also probably to other Semitic languages). Although several accumulative morphological devices have been used to form new words, these all follow a certain specific order: base or discontinuous root and pattern combination always precedes suffixation.

Diminutives are formed either by root and pattern combinations or by suffixation. As indicated earlier, root and pattern combinations always precede suffixation. Within suffixation, some suffixes are closer to the base form than others: original Hebrew *–on*, mostly for animate nouns, and *-it* for non-animate nouns always precede loan *-čik*. The suffix *-it* must always precede *-on* as in *kapiy-ónet* from *kap-it* (7c); *-iko* for animate nouns and *–čik* are mutually exclusive, and they will always be at the end of the word. It is interesting to note that root and pattern combination, the most basic formation in Hebrew, occurs first, then the Hebrew suffixes *–it* and *–on* are added to it, and the loan suffix *-čik* finishes the word. It is also worth noting that whereas loan suffixes occur in colloquial low register expressions, the suffixes *-on* and *-it* form normative well accepted words.

The same principles of constituent order apply in the formation of other morphological devices. An adjective can first be formed by root and pattern and will only have suffixes added to it subsequently. The suffix *-i* is the final marker of an adjective. No other suffixes can occur after this adjectival ending. The suffix *-i* itself cannot occur more than once in a word.

An abstract noun can be formed by root and pattern combination which includes the ending *-ut* as part of the pattern, and then, with (and rarely without) the mediation of an adjective ending with *–i*, another abstract noun can then be formed using the suffix *-ut*. This

in turn leads to a double occurrence of the marker *-ut*. I could not find co-occurrence of three *-ut*'s in a row.

Particle and adverbials are the only ones with left edge recursiveness. They are rare in the language and do not follow its general tendency for right edge recursiveness. It should be noted that these only occur in the smallest word classes which are universally unique from a morphological point of view.

Root recursive formation occurs extensively in Hebrew and can transpire in one of two ways: (i) secondary root formation either through a mediator or without, (ii) consonantal root reduplication – in both instances roots are primarily extracted from previously existing words. Only very occasionally are secondary roots created by the addition of supplementary consonants with no mediating word.

Notes

[1] a. Alternations of *k-x*, *p-f* and *b-v* are reminiscent of the historical Spirantization Rule whereby the occlusives *k*, *p*, *b*, *g*, *t*, and *d* change into the spirants *x*, *f*, *v*, *γ*, *δ*, and *θ* after a vowel when not geminated (Schwarzwald 2001: 14-16). b. The connective *ve-* 'and' is realized as *va-*, *u-*, *vi-*, *ve-*, and *vo-* in idiomatic phrases, reminiscent of the historical process.(ibid: 37-38).

[2] *Hitxil* is also a secondary root: Primary root ⵣ-l-l: *heⵣel* 'began' *tⵣilla* 'beginning' > secondary root *t-ⵣ-l > hitⵣil* 'began' (Modern Hebrew *hitxil*, where ⵣ > x).

[3] According to the Merriam-Webster Online Dictionary the definition of reduplication is: an often grammatically functional repetition of a radical element or part of it occurring usually at the beginning of a word and often accompanied by change of the radical vowel.

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