Linear and nonlinear word formation in Hebrew – words which end with *-on*

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Two major word formation processes exist in Hebrew (in addition to minor compounds, blends and acronyms): (a) nonlinear formation: a combination of consonantal root with template, e.g. higdil *'increased' and* migdal *'tower' are derived from the root* √gdl *using the templates hiCCiC and miCCaC; (b) linear formation: affixation to a stem, for example* balšanut *'linguistics' from* balšan *'linguist' +* -ut, *and* xidon *'quiz' from* xida *'riddle' +* -on. *The ending* -on *exhibits ambiguous cases of root and template construction as opposed to suffixed word formations. In many cases this ending is built using the nominal templates CiCaCon, CiCCon and CaCCon, the first of which usually create abstract nouns. In other cases* -on *is attached to various stems carrying the following connotations which are not always mutually exclusive, and sometimes share some of their meanings with words formed by the above templates: diminutive (e.g.* suson *'small horse'); collective (e.g.* še'elon *'questionnaire'); instrumental (e.g.* 'ecba'on *'thimble'); flora and fauna (e.g.* zeron *'harrier (bird)'); periodicals (e.g.* šavu'on *'weekly newspaper'); and division related words (e.g.* 'axuzon *'percentile'). Thus the ending* -on *creates opacity as part of a template and as a suffix for both derivational processes and meanings. One outcome of the findings is that syllabic structure is the most important factor in determining Hebrew word structure.*

Keywords: *word formation, suffix, root, template, syllabic structure*

1. Introduction

Most Hebrew words are derived from one of two major processes, linear and nonlinear (in addition to minor compounds, blends and acronyms):

i) A combination of consonantal root with vocalic template which sometimes includes additional consonants, for example *gadal* 'grew up', *higdil* 'increased', *gidel* 'raised', and *migdal* 'tower', all of which are derived from the root √gdl using the following templates: CaCaC, hiCCiC, CiCeC, miCCaC. This formation is nonlinear because the root is interwoven into the template, neither of which can be pronounced without the other.

ii) Linear affixation to a stem, for example, *du-mašma'i* 'ambiguous' from *du-* 'two' + *mašma* 'meaning' + *-i* (ADJECTIVAL suffix); *balšanut* 'linguistics' from *balšan* 'linguist', and + *-ut* (ABSTRACT suffix); *xidon* 'quiz' from *xida* 'riddle' + *-on*.

Most affixation in Hebrew is suffixal. Suffixes are added to various word classes for inflection and also to certain stems for derivation. The analysis of suffixes raises the issue of possible clashes between the two word formation processes when endings are involved.

The ending *-on*, which creates nouns, shows partial polysemy but at the same time demonstrates ambiguous cases of formation by root-template combination and by suffixation of *-on* to a stem. In many cases it is part of the nominal templates CiCaCon, CiCCon and CaCCon, in which case the ending *-on* is part of a template (§2.1); in other cases it is suffixed

to various nominal stems (§2.2). The distribution of this ending creates opacity with regards to derivational processes (§2.3, §2.4), and perhaps needs modification of the Word-to-Word Principle (§3) (Aronoff 1994; Stump 2001).

One outcome of the findings is that syllabic structure is the most important factor determining Hebrew words. Word-to-word formation must be modified in Hebrew to include nonlinear consonantal roots rather than existing lexical stems which include vowels.

2. The ending *-on*

There are more than 400 words that end with *on* in the *Rav Milim* Dictionary (Choueka 1997), all of which are stressed.[1] I am intentionally suggesting here that *on* is a word ending and not a suffix because, as will be explained, it is only used as a suffix in about two thirds of the cases where it is added to existing stems. This ending can be an integral part of a template (§2.1) as well as a suffix to nominal stems (§2.2). It is very rare for it to occur in words where the syllabic structure does not utilize a specific template or a stem (§2.3).

The following two groups need to be excluded from the set of words derived by the ending *on*: loan words in (1) and non-analyzable words in (2). Loan words were mostly borrowed into Hebrew during its classical periods, with the final *on* becoming part of the base in their original languages, and adjusted to the Hebrew structure (this is the case for about 30 words). The non-analyzable words in (2) include forms whose etymology is unclear, but which also include the final *on* as part of the base form (about 20 words).

(1)   *doron* 'present' (Greek), *kidon* 'bicycle handlebars' (French *guidon*),[2] *limon* 'lemon' (Persian), *notarikon* 'acronym' (Lat. *notarium*), *picpon* 'tiny' (Yiddish *píce-le*), *seminaryon* 'seminar', *sirton*[3] 'sandbank, shoal' (Greek), *špiyon* 'spy' (German), *xelmon* 'egg yolk' (Aramaic *ḥelmona*), *xilazon* 'snail' (Arabic *ḥalazun*) (see (13) in the §Appendix)

(2)   *'aron* 'cupboard', *'armon* 'palace; chestnut',[4] *harmon* 'harem',[5] *naxšon*[6] 'pioneer', *ciyon* 'Zion', *kilšon* 'pitchfork', *misderon* 'corridor',[7] *rimon* 'pomegranate; grenade', *šfifon* 'horned viper',[8] *širyon* 'armor; carapace' (see (14) in the §Appendix)

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[1] I would like to thank the *Rav-Milim* team for supplying me with a list of Hebrew words that end in *on*. Some loan words were not included in the list. A loan word like *mégafon* 'megaphone' has pre-penultimate stress because it ends with the foreign element *-fon* 'phone' (cf. *télefon*, *míkrofon*). Such words are excluded from this discussion.

[2] The biblical word *kidon* is homonymic with this word, meaning 'spear, lance'. It belongs to the non-analyzable words. See (14) in the Appendix.

[3] The word *sirton* here is homophonic with *sirton* 'short film / video' in (6). These are spelled differently in Hebrew: *sirton*, as shown here, with the letter *sin*, *sirton* in (6) with the letter *samex*.

[4] The word *'armon* is homophonic: when the first letter is *aleph* the meaning is 'palace', and when it is *ayin* the meaning is 'chestnut'.

[5] In Classical Arabic, *ḥarīm* 'women', from which the word *harem* was spread into European languages. In biblical Hebrew *harmon* is a variant of *'armon* 'palace'.

[6] Named after the biblical hero Nachshon, who was first to enter the Red Sea after the Exodus from Egypt according to the Babylonian Talmud (Sota 37a).

[7] The word *misderon* 'corridor' is biblical (Jud 3:23), its etymology is unclear but it is thought to be related to the root √*sdr* which indicates order (perhaps the order of pillars or of rows). I have included this word here because its etymology is dubious.

In the following sections I will present the classifications of words ending in *on*, explain the problems which arise from these classifications, and conclude by showing that syllabic structure is the most important factor in determining the shape of a Hebrew word.

2.1 *Templatic, non-suffixed words*

In about 130 cases, the ending *on* is part of the nominal templates CiCaCon (3), CiCCon (4) or CaCCon (5),[9] which can also be realized as CeCaCon, CeCCon or CaCaCon for phonological reasons: when either *'*, *h* or *r* occurs as a second consonant or when *'* or *x* occurs sometimes as the first consonant.[10] Many of these nouns, especially those which follow the CiCaCon template, express abstractness. In such cases one cannot consider the ending as a suffix because, unlike the examples given in 2.2, there is no stem or base word that the words can be related to. The root in each example appears in many other words, none of which can be considered as the stem for suffixation.[11]

(3)   CiCaCon: *bizayon* 'shame' (√*bzy*), *dera'on* 'disgrace' (√*dr'*), *dika'on* 'depression' (√*dk'*), *gizaron* 'etymology' (√*gzr*), *higayon* 'logic' (√*hgy*), *nisayon* 'trial; experience' (√*nsy*), *šiga'on* 'madness' (√*šg'*), *te'avon* 'appetite' (√*t'v*), *timahon* 'amazement' (√*tmh*), *xipazon* 'haste' (√*xpz*) (see (15) in the Appendix)

(4)   CiCCon: *bidyon* 'fiction' (√*bdy*), *birkon* 'booklet containing the grace after meal' (√*brk*), *dimyon* 'imagination; similarity' (√*dmy*), *'egron* 'lexicon' (√*'gr*), *gilšon* 'hang glider' (√*glš*), *pitron* 'solution' (√*ptr*), *pizmon* 'short song; ditty' (√*pzm*), *riv'on* 'quarter (of a year)' (√*rv'*), *šilton* 'rule, government' (√*šlt*), *yitron* 'advantage' (√*ytr*) (see (16) in the Appendix)

(5)   CaCCon: *'agmon* 'reed, bulrush' (√*'gmʔ 'agam* 'lake'), *caharon* 'school activity after school hours' (√*chr*; *cohoráyim* 'noon'), *kadmon* 'ancient' (√*kdm*; *kadum* 'ancient'), *kapcon* 'cap (for a cap gun)' (√*kpc*; *kipec* 'hop.v'), *pa'amon* 'bell' (√*p'm*; *pa'am* 'beat.v'), *ra'ayon* 'idea' (√*r'y*), *xanyon* 'parking lot' (√*xny*; *xana* 'park.v'), *zaharon* 'sunfish' (√*zhr*; *zóhar* 'brightness')

2.2 *Suffixed words*

In other cases, the suffix *-on* is linearly attached to nominal stems to form nouns which carry the following meanings: a. diminutive, affectionate, derogative and augmentative nouns, as in (6); b. collection nouns, as in (7); c. instruments, devices and objects, as in (8); d. flora and

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[8] The etymology of this word is unclear, although the consonants *š* and *p-f* occur in other Semitic languages to indicate the same kind of snail.

[9] The approximate roots from which these words were derived are listed in these examples. The source stem in §2.2 is given in parentheses.

[10] This is a residue of the historical process whereby a high vowel was lowered whenever it occurred close to a guttural consonant (Gesenius 1910: 76–79; Joüon & Muraoka 2011: 77–84).

[11] In several examples here, I have listed up to 10 items. For each category that includes more examples, an additional list, although not an exhaustive one, is featured in the Appendix.

fauna, as in (9); e. periodicals (publications), as in (10); f. division related words, as in (11).[12] Very few words which end with -on do not belong to one of these categories, and these are presented in (12).

(6) DIMINUTIVE, AFFECTIONATE, DEROGATIVE AND AUGMENTATIVE NOUNS: *'agamon* 'small lake' (*'agam* 'lake'), *ce'iron* 'young man (derogatory)' (*ca'ir* 'young', √*c'r*), *ganon* 'pre-kindergarten' (*gan* 'kindergarten', √*gnn*),[13] *karxon* 'glacier; iceberg' (*kérax* 'ice'), *kušon* 'Niger' (*kúši* 'Ethiopian, black'), *pic'on* 'pimple' (*péca* 'wound', √*pc'*), *sifron* 'booklet' (*séfer* 'book', √*sfr*), *sirton* 'short film/ video' (*séret* 'film', √*srt*; see Footnote 3), *tiyulon*[14] 'short trip' (*tiyul* 'trip', √*tyl*), *yehudon* '(derogatory) Jew, Yid, Kike' (*Yehudi* 'Jew', √*yhd*) (see (17) in the Appendix; Dressler & Merlini Barbaresi 1994)

(7) COLLECTION NOUNS: *'alfon* 'alphabetical index' (*'alef* 'Aleph'), *hemšexon* 'sequel' (*hemšex* 'continuation', √*mšx*), *mexiron* 'price-list' (*mexir* 'price'), *milon* 'dictionary' (*mila* 'word', √*mll*), *munaxon* 'glossary' (*munax* 'term'), *nivon* 'anthology of proverbs' (*niv* 'proverb'), *pa'oton* 'nursery school' (*pa'ot* 'small child'), *še'elon* 'questionnaire' (*še'ela* 'question', √*š'l*), *šnaton*[15] 'college/school calendar' (*šana* 'year', √*šny*) (see (18) in the Appendix)

(8) INSTRUMENTS, DEVICES AND OBJECTS: *'aviron* 'airplane' (*'avir* 'air'), *birkon* 'knee high stockings' (*bérex* 'knee', √*brk/x*), *cilon* 'window shade, blind' (*cel* 'shadow', √*cll*), *kova'on* 'condom' (*kova* 'hat'), *mapiyon* 'paper napkin dispenser' (*mapit* 'napkin', √*npy*), *maxševon* 'pocket calculator' (*maxšev* 'computer', √*xšv*), *mešivon* 'answering machine' (*mešiv* 'answering', √*šwv*), *sfaton* 'lipstick' (*safa* 'lip'), *tiyulon* 'stroller' (*tiyul* 'trip', √*tyl*), *yisumon* '(computing) applet' (*yisum* 'application', √*ysm*) (see (19) in the Appendix)

(9) FLORA AND FAUNA: *ce'elon* 'Poinciana (plant)' (*ce'el~cel* 'shadow', √*cll*), *naxšon* 'Anhinga rufa' (*naxaš* 'snake'), *nišpon* 'mouse-eared bat' (*néšef* 'late night', √*nšf/p*), *pilpelon* 'pepper tree', (*pilpel* 'pepper'), *savyon* 'groundsel' (*sav* 'old man'), *tukon* 'budgerigar (bird)' (*tuki* 'parrot'), *xasilon* 'shrimp' (*xasil* 'a kind of locust'), *ya'aron* 'field mouse' (*ya'ar* 'forest', √*y'r*), *yarkon* 'greenfinch (bird, √*yrk*)' (*yarok* 'green', √*yrk*), *zmiron* 'singing bird' (*zamir* 'nightingale', √*zmr*) (see (20) in the Appendix)

(10) PERIODICALS: (publications): *'alilon* 'comics' (*'alila* 'plot', √*'ll*), *cehubon* 'tabloid' (*cahov* 'yellow', √*chb/v*), *'iton* 'newspaper' (*'et* 'time', √*'tt*), *mekomon* 'local newspaper' (*makom* 'place', √*kwm*), *šavu'on* 'weekly newspaper' (*šavúa* 'week',

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√*šv'*), *šnaton* 'annual publication; yearbook' (*šana* 'year'), *tkufon* 'periodical' (*tkufa* 'period'), *xinamon* 'free local newspaper' (*xinam* 'free, no charge'), *yarxon* 'monthly publication' (*yérax* 'month', √*yrx*), *yomon* 'daily journal' (*yom* 'day') (see (21) in the Appendix)

(11) DIVISION RELATED WORDS: *'asiron* 'decile' (*'asara* 'ten.M', *'asiri* 'tenth', √*'sr*), *'axuzon* 'percentile' (*'axuz* 'percent', √*'xz*), *revi'on* 'quarter, quadrant' (*réva* 'quarter', √*rv'*), *šlišon* 'trimester' (*šliš* 'third', √*šlš*), *tixon* 'middle, central; median; high school' (*tox* 'inside, interior', √*twx*), *xamišon* 'quintile' (*xamiša* 'five.M', √*xmš*), *xecyon* '(statistics) median' (*xéci* 'half', √*xcy*)

(12) NON-SPECIFIED MEANINGS: *'eglon* 'carter, coachman' (*'agala* 'carriage, wagon', CNST: *'eglat-*), *purimon* 'Purim festival', *re'avon*[16] 'hunger' (*ra'av* 'hunger', √*r'v*), *rišon* 'first' (*roš* 'head'), *šabaton* 'sabbatical' (*šabat* 'Sabbath', √*šbt*),[17] *xicon* 'exterior; external' (*xuc* 'outside.N', √*xwc*)[18]

2.3 *Intermediate words*

Two words need special consideration: *'afifon* and *kdimon*, both formed using a similar syllabic structure, neither of which can be classified according to the groups described in §2.1 and §2.2.

The word *'afifon* 'kite' is related to the root √*'f* which carries the connotation of flying, yet the formation of the root is new because √*'f* is historically derived from the root structure CVC (CwC or CyC, √*'wf* in this case) rather than $C_1C_2C_2$. The reduplication of the second radical is quite common in newly formed roots. It appears that the word was formed in the same way as *svivon* 'spinning top' (from *saviv* 'around' (19)) or *yešišon* 'sweet old man' (from *yašiš* 'old man' (17)), although there is no existing word from which *'afifon* could have been derived.

The word *kdimon* 'promo' is linked to the root √*kdm* which in turn is related to many words: *kódem* 'before, early', *hikdim* 'preceded', *hitkadem* 'advanced', *hitkadmut* 'progress', *kidem* 'promoted, welcomed', *kidum* 'promotion', *hakdama* 'introduction', etc., all of which were formed by combining consonantal roots with existing templates.[19] However, no grammar book will argue that the template CCiCon exists purely to satisfy the word *kdimon*, because other than *'afifon*, no other Hebrew word is formed using this structure. If *kdimon* is a derivative of stem + *-on*, it would be beneficial to look for its stem; however, *kadim* does not exist in any similar sense: *kadim* can be related to the adverb *kadíma* 'forward, let's go', or to the compound *rúax kadim* 'an eastern hot and dusty wind'; there is no **kdim* either. The word *kdima* 'precedence' (derived from √*kdm*+CCiCa) only appears in the compounds *dmey kdima* 'down payment', or in *zxut kdima* 'priority, right of way'. It is clear that although the

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[16] Based on its pronunciation, *re'avon* was formed using the CiCaCon template with the root √*r'v*. However, according to the Hebrew vocalization system, *re'avon* is a derivative of the word *ra'av* 'hunger'.
[17] See the other meaning of *šabaton* in (17).
[18] The three words, *rišon* and *xicon* here and *tixon* in (11) were formed by dissimilation in order to avoid two consecutive back non-low vowels. The words are used as adjectives and as nouns, and they all were inherited from biblical Hebrew.
[19] CóCeC, hiCCiC, hitCaCeC, hitCaCCut, CiCeC, CiCum, haCCaCa. Many other words are derived with these templates.

word *kdimon* is related to the root √*kdm* and associated to its derived words, it cannot be associated with any specific stem or template.[20]

2.4 *Inferences*

A few observations can be drawn from data presented above in (1–12):

a) The data are classified according to morphological and semantic criteria. Primary morphological classification differentiates between words derived nonlinearly by a consonantal root and template (3–5), and words derived linearly by stem and suffix *-on* (6–12). Semantic classification applies only partly to words derived nonlinearly but more systematically to linear suffixed formation.

b) Many words expressing abstractness were formed using the template CiCaCon (3), and rarely to CiCCon (4). This characteristic is not typical of the various meanings of words derived by stem and the suffix *-on* (6–12).

c) Some loan words have been adjusted to fit Hebrew syllabic structures (1, 13), e.g. *doron* 'present (Greek) looks like *'oron* 'proper name; the Hebrew name of Oranus'; *'evyon* 'poor' (Old Egyptian), *sirton* 'sandbank, shoal' (Greek), *xelmon* 'egg yolk' (Aramaic), and *picpon* 'tiny' (Yiddish) take the same syllabic structure as CiCCon words in (4); *kidon* '(biblical) spear, lance' and 'bicycle handlebars' (French), *šifon* 'chiffon' (French), and *limon* 'lemon' (Persian) (1, 13) resemble *'iton* 'newspaper' (10) and *cilon* 'window shade, blind' (8); *kinamon* 'cinnamon' (Greek) in (13) and *xilazon* 'snail' (Arabic) in (1) have the same syllabic structure as CiCaCon words in (3).

d) In fact, because of the strong semantic load of the roots, it is quite difficult to determine the distinction between nonlinear root and template formed words on the one hand, and linear stem plus suffix words on the other. Each root in the templates (3–5) and many of the stems in (6–12) originate from roots. From the root √*rv'* one can derive nonlinearly the word *riv'on* 'quarter (of a year)' in (4) and the stem *réva* 'quarter' from which *revi'on* 'quarter, quadrant' in (11) is derived linearly. The same root √*rv'* is the base for many words, for example *'arba* 'four', *'arba'im* 'forty', *ribúa* 'square', *meruba* 'quadrangle', *ribéa* 'great-grandson.N; quadruple.V', *revi'i* 'fourth', and so on. The classification into root and template was specifically determined in cases where no clear stem was available. Therefore, the word *xinamon* 'free local newspaper' was included in (10; periodicals) because it is clearly derived from the stem *xinam* 'with no charge', rather than from the CiCaCon template, as the word *xinam* is not related to any other words, hence to no consonantal root.

e) The classification of meanings suggested here in (3–12) is not mutually exclusive. Some of the words can belong to more than one category. Some instruments in (8 and 19) could have been included in the diminutives and vice versa. Although *makle'on* 'small improved machine gun', *maxševon* 'pocket calculator', *yisumon* '(computing) applet', *mesofon* 'portable terminal' and *takliton* 'diskette' are instruments, they could also have been included in the diminutive examples (6); *clavon* 'small crucifix (jewelry)' (*clav* 'cross', √*clv*) in (17) could have been included in the instruments and objects (8, 19). Some periodicals could also be considered diminutives (6), e.g.

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[20] This word is discussed at length in Schwarzwald (2009).

mekomon 'local newspaper' in (10) has a derogatory connotation. The same applies to the other categories: *tukon* 'budgerigar (bird)' (9) could also be a diminutive. The name of the tree *sigalon* 'jacaranda' and *'iparon* 'pencil' which appear within CiCaCon template word examples (15), could be considered instances of flora and fauna (9), and instrument (8) respectively.

f) Some of the nouns are homonymic and fit into two categories, e.g. *šabaton* has two meanings and is therefore given in two places (12) and (17). The traditional meaning refers to the Sabbath, the seventh day of rest in a week, but it can also refer to a sabbatical year, the year a person takes off from work, which does not necessarily need to be the seventh year. The word *birkon* utilizes the CiCCon template (4) from the root √*brk* meaning a booklet containing the grace after meal, whereas the linear formation of the word meaning knee high stockings in (8) is derived from *bérex* 'knee' (PL. *birkáyim*). The word *caharon* means 'afternoon newspaper' (21) as well as 'school activity after school hours' (5). Although this can be attributed to the root √*chr* extracted from *cohoráyim* 'noon', it can also be derived linearly from the common pronunciation of the word as in *becaharey yom* 'in the middle of the day, at noon time'. The same considerations apply to *tiyulon* 'short trip' (6) and 'stroller' (8); *šnaton* 'college/school calendar' (7) and 'annual publication; yearbook' (10); *naxšon* 'pioneer' (2) and 'Anhinga rufa' (9); *yarkon* 'greenfinch (bird)' (9) and 'thigh high socks' (19).

g) Many of the words derived linearly by stem and suffix *-on* carry the same syllabic structure as the nonlinearly templates CiCCon (4) or CaCCon (5). Thus there is no clear cut phonological distinction between discontinuous root and template derivation and linear stem and suffix formation, compare *bidyon* 'fiction' (√*bdy*) and *pizmon* 'short song; ditty' (√*pzm*) in (4), with *sifron* 'booklet' (*séfer* 'book'), in (6), and *sirton* 'short film / video' (*séret* 'film'; see Footnote 3 above), and *nišpon* 'mouse-eared bat' (*néšef* 'late night', √*nšf/p*) in (9). Linear *'alfon* 'alphabetical index' in (7), *kalbon* 'puppy', and *karxon* 'glacier; iceberg' in (6), take the same syllabic structure as nonlinear *kadmon* 'ancient' (√*kdm*) from CaCCon template in (5), etc.

h) When analyzing the words derived from nonlinear roots and templates (3–5, 15–17), it is clear that some of these carry the same meaning as stem and suffixed words. The following examples demonstrate this resemblance: *bita'on* 'journal, mouthpiece' (√*bt'*) in (15) (cf. periodicals in (10)), *'egron* 'lexicon' (√*'gr*) in (4) (cf. collective in (7)), and *tilyon* 'pendant' (√*tly*) in (16) (cf. instruments and devices in (8)).

i) Two synonymous words with the suffix *-on* mean emoticon, *parcufon* and *rigšon* (19). The first of these is derived from *parcuf* (an old loan word from Greek, *prosopon*) 'face' + *-on*, while the second comes from the word *régeš* (cf. *rigšotay* 'my feelings') + *-on*. The first instance refers to the actual image of the emoticon, while the second reflects the feelings it arouses.

j) Many of the stems onto which the suffix *-on* was added were derived from consonantal roots.

3. Conclusion

The data presented here demonstrates that no matter what their derivation is, many Hebrew words that end in *on* exhibit similar syllabic structures and stress pattern. Morphological Hebraism is actually a matter of syllabic structure. Regardless of the way in which a derived word is formed, words sound Hebrew because of their syllabic structure. The generalized form for all the examples presented here can be ***Xon*** where X is either a linear stem or a kernel of a consonantal root. The suffix *-on* is attached to nominal stems in about two thirds of the occurrences of *Xon*; in other cases it is either part of a template, or part of borrowed and base form which is hardly recognized as foreign in many cases.

The few exceptional cases such as (1), (2), or the two single examples *'afifon* and *kdimon* in §2.3, also follow this generalization. While stems with suffixed *-on* shape distinct meaning classes (6–12), root and template formation words do not carry similar connotations, although singular words occasionally have the same meanings. Abstractness typifies many words which correspond to the CiCaCon and a few CiCCon templates, but not stems which feature the suffix *-on*.

Polysemy and sometimes homonymy may exist in the affixes of other languages (e.g. Plag 1997; Beard & Volpe 2005; Lieber 2005; Scalise & Guevara 2005; Rainer 2014; Efthymiou 2016; Nagano & Shimada 2016). The English suffix *-en* can provide some examples of this, forming causative or inchoative verbs from adjectives or nouns such as *sharpen* and *heighten*, as well as adjectives such as *golden* or *woolen*. The suffix *-al* can form adjectives like *national* or *commercial*, and substantives, such as *signal* and *betrayal* (Jespersen 1965: 337 ff., 380 ff.). The Hebrew case is unique because with the exception of a few loan and base words (examples (1) and (2)), the consonantal root plays an important role in word formation. This is important not only for cases which take the templates CiCaCon, CiCCon and CaCCon, but also for the derivation of many of the stems that utilize the suffix *-on*. Therefore, it is not always a necessarily word-to-word derivation as suggested by Stump (2001, 2005) but rather also a root-to-word derivation, where root refers to the Hebrew consonantal root.

Appendix: Additional examples

(13)   LOANS: *'alaxson* 'oblique line' (Greek *loxon*), *directoryon* 'board of directors', *historyon* 'historian', *kinamon* 'cinnamon' (Greek), *melafefon* 'cucumber' (Greek *melopepon*), *proletaryon* 'proletarian', *šifon* 'chiffon' (French), *simpozyon* 'symposium'

(14)   BASE WORDS: *dišon* 'antelope', *hamon* 'crowd', *kamon* 'cumin', *midron* 'slope', *cnon* 'radish', *ciklon* 'bag, sack', *lacon* 'clowning, joking', *kifon* 'mullet (fish)', *kimšon* 'thorn', *xazon* 'dream, vision'

(15)   CiCaCon: *bita'on* 'journal, mouthpiece' (√*bt'*), *bicaron* 'fortress' (√*bcr*), *bitaxon* 'security', *cima'on* 'thirst' (√*cm'*), *'eragon* 'strong yearning' (√*'rg*), *'eravon* 'guarantee, deposit' (√*'rv*), *gilayon* 'sheet of paper' (√*gly*), *herayon* 'pregnancy' (√*hry*), *higayon* 'logic' (√*hgy*), *hizayon* 'fantasy' (√*hzy*), *hišavon* 'drawback, restitution' (√*šwv*), *'icavon* 'sorrow' (√*'cv*), *'idašon* 'apathy' (√*'dš*), *'ikaron* 'principle'

(√*'kr*), *'ikavon* '(law) lien' (√*'kv*), *'ilafon* 'fainting' (√*'lf*), *'imadon* '(medicine) stasis' (√*'md*), *'iparon* 'pencil' (√*'pr*), *'ivaron* 'blindness' (√*'vr*), *'izavon* 'inheritance' (√*'zv*), *kiba'on* 'fixation' (√*kb'*), *kihayon* 'darkness' (√*khy*), *kixalon* 'cyanosis' (√*kxl*), *kilayon* 'total destruction' (√*kly*), *kimahon* 'yearning' (√*kmh*), *kimašon* 'withering disease' (√*kmš*), *kipa'on* 'freezing; stagnation' (√*kp'*), *kišalon* 'failure' (√*kšl*), *kišaron* 'talent' (√*kšr*), *nicaxon* 'victory' (√*ncx*), *nicayon* 'quarrel' (√*ncy*), *nikayon* 'cleanliness' (√*nky*), *pera'on* 'redemption, payment' (√*pr'*), *pikadon* 'deposit' (√*pkd*), *pikaxon* 'realistic observation' (√*pkx*), *se'avon* 'filth' (√*s'v*), *pitayon* 'bait, lure; temptation' (√*pty*), *rikavon* 'decomposition; rotting' (√*rkv*), *rišayon* 'permit' (√*ršy*), *seraxon* 'stench' (√*srx*), *šibaron* 'distress' (√*šbr*), *šigaron* 'rheumatism' (√*šgr*), *sigalon* 'jacaranda' (√*sgl*), *šitafon* 'flood' (√*štf*), *šizafon* 'suntan' (√*šzf*), *teradon* 'obsession' (√*trd*), *xeragon* 'trance' (√*xrg*), *xidalon* 'destruction, cessation' (√*xdl*), *xikayon* 'expectation' (√*xky*), *xiladon* 'wheat rust' (√*xld*), *xisaxon* 'saving' (√*xšx*), *xišaxon* 'blackout' (√*xšx*), *xivaron* 'pallor' (√*xvr*), *xisaron* 'disadvantage' (√*xsr*), *xizayon* 'spectacle' (√*xzy*), *zikaron* 'memory' (√*zkr*), *zikayon* 'concession, permit' (√zky)

(16) CiCCon: *biryon* 'hooligan' (√*bry*), *bitron* 'ravine, gorge' (√*btr*), *'elbon* 'insult' (√*'lb*), *'elson* '(literary) joy, cheerfulness' (√*'ls*), *'elyon* 'superior' (√*'ly*), *gidron* 'wren' (√*gdr*), *'igron* 'letter writing manual', *kifyon* 'epilepsy' (√*kfy*), *kišyon* '(medicine) rigidity, stiffness' (√*kšy*), *kivšon* 'secret, mystery' (√*kvš*), *nicron* 'plumule' (√*ncr*), *pidyon* 'redemption' (√*pdy*), *pirxon* 'fledgling' (√*prx*), *piryon* 'fertility' (√*pry*), *rifyon* 'weakness' (√*rfy*), *šifyon* 'clear mind' (√*šfy*), *šivyon* 'equality' (√*švy*), *tilyon* 'pendant' (√*tly*), *xelbon* 'white of egg' (√*xlb*), *xerbon* '(vulgar) disaster' (√*xrb*; cf. *xurban* 'destruction'), *xešbon* 'calculation' (√*xšb*)

(17) DIMINUTIVE, AFFECTIONATE, DEROGATIVE AND AUGMENTATIVE: *'avazon* 'gosling' (*'avaz* 'goose'), *barvazon* 'duckling' (*barvaz* 'goose'), *cnimon* 'crouton' (*cnim* 'zwieback, rusk', √*cnm*), *clavon* 'small crucifix (jewelry)' (*clav* 'cross', √*clv*), *crifon* 'small hut' (*crif* 'hut'), *gišron* 'small bridge' (*géšer* 'bridge'), *gvi'on* 'small goblet' (*gavía* 'goblet', √*gv'*), *gvišon* 'small crystal' (*gavish* 'crystal', √*gvš*), *'iyon* 'islet' (*'i* 'island'), *ka'aron* '(geology) synclinorium' (*ke'ara* 'bowl, basin', √*k'r*), *kficon* 'small spring, coil' (*kfic* 'spring', √*kfc*), *kimton* 'small wrinkle' (*kémet* 'wrinkle' √*kmt*), *krixon* 'small sandwich' (*karix* 'sandwich', √*krx*), *kumkumon* 'small kettle' (*kumkum* 'kettle'), *me'ilon* 'jacket, small coat' (*me'il* 'coat', √*m'l*), *mifracon* 'creek' (*mifrac* 'bay', √*p/frc*), *miskenon* 'little poor' (*misken* 'poor, miserable', √*skn*), *misxakon* 'one set of a tennis game' (*misxak* 'game', √*sxk*), *misron* 'SMS' (*méser* 'message'), *mitbaxon* 'kitchenette' (*mitbax* 'kitchen', √*tbx*), *nexmadon* 'sweetie' (*nexmad* 'cute', √*xmd*), *pilon* 'young elephant' (*pil* 'elephant'), *pinkason* 'small notepad' (*pinkas* 'small notebook'), *pislon* 'figurine, statuette' (*pésel* 'sculpture', √*psl*), *pišpešon* 'unworthy person' (*pišpeš* 'bug, cimex'), *pkidon* 'unworthy clerk' (*pakid* 'clerk', √*pkd*), *šabaton* '(big) rest' (*šabat* 'Sabbath', √*šbt*), *šedon* 'sprite, imp' (*šed* 'demon'), *siflon* 'demitasse' (*séfel* 'cup, mug'), *sifron* 'booklet' (*séfer* 'book', √*sfr*), *simlon* 'small badge' (*sémel* 'symbol, sign', √*sml*), *šoršon* '(botany) radicle' (*šóreš* 'root', √*šrš*), *štixon* 'small rug' (*šatíax* 'carpet', √*štx*), *šu'alon* 'small fox' (*šu'al* 'fox'), *šulxanon* 'small table' (*šulxan* 'table'), *suson* 'pony, small horse' (*sus* 'horse'), *taltalon* 'small curl' (*taltal* 'hair curl', √*tll*), *tanuron* 'small stove; toaster-oven' (*tanur* 'oven'), *tapuxon* 'small apple' (*tapúax* 'apple', √*tpx*), *tipšon* 'silly little fool' (*tipeš*

'silly', √*tpš*), *tmimon* 'endearing naïve person' (*tamim* 'naïve', √*tmm*), *xaravon* '(literary) heavy heat' (*xarev* 'dry', √*xrv*), *yaldon* 'little boy' (*yéled* 'child', √*yld*), *yešišon* 'sweet old man' (*yašiš* 'old man')

(18) COLLECTION NOUN: *mat'imon* 'concordance' (*mat'im* 'fitting', √*t'm*), *meyda'on* 'information booklet' (*meyda* 'information', √*yd'*), *mišpaxton* 'pre-nursery play group' (*mišpaxa* 'family', √*špx*), *mo'adon* 'club' (*mo'ed* 'appointed time', √*y/w'd*), *naxšon* 'series of hairpin bends on the road' (*naxaš* 'snake'), *nofšon* 'package tour' (*nófeš* 'vacation', √*nfš*), *pitgamon* 'collection of proverbs' (*pitgam* 'proverb'), *ptiton* 'confetti' (*ptitim* 'flakes', √*ptt*), *rešimon* 'list of entries' (*rešima* 'list', √*ršm*), *ša'ašu'on* 'quiz show, game show' (*ša'ašúa* 'entertainment', √*š'š'*), *šimušon* '(internet) useful links' (*šimuš* 'usage', √*šmš*), *širon* 'song book' (*šir* 'song', √*šyr*), *sixon* 'conversation manual' (*sixa* 'conversation', √*syx*), *šuron* 'lined sheet' (*šura* 'line'), *tarmilon* 'didactical word list' (*tarmil* 'satchel'), *xidon* 'quiz' (*xida* 'riddle', √*xdd*), *yedi'on* 'bulletin' (*yedi'a* 'news item; knowledge', √*yd'*)

(19) INSTRUMENT, DEVICES AND OBJECTS: *'adilyon* 'medallion' (blend of *'adi* 'piece of jewelry' and *tilyon* 'pendant', √*'dy*+√*tly*), *'aslon* 'paper for covering toilet bowl' (*'asla* 'toilet seat'), *saharon* 'croissant' (*sáhar* 'moon'), *camron* 'ear stick' (*cémer* 'wool'), *cavaron* 'collar' (*cavar* 'neck'), *darkon* 'passport' (*dérex* 'way', √*drk/x*), *'ecba'on* 'thimble' (*'ecba* 'finger'), *halixon* 'walker' (*halixa* 'walking', √*hlx*), *klasteron* '(police) facial composite, Identi-Kit' (*klaster* 'portrait', of Greek or Latin origin),[21] *magafon* 'bootee' (*magaf* 'boot', √*gff*), *makbilon* '(geometry) parallelepiped' (*makbil* 'parallel', √*kbl*), *makdexon* '(carpentry) hand drill' (*makdéax* 'drill bit', √*kdx*), *makle'on* 'small improved machine gun' (*makléa* 'machine gun', √*kl'*), *malkon* 'queen (bee) cup/cell' (*malka* 'queen', √*mlk/x*), *mapuxon* 'accordion' (*mapúax* 'bellows', √*npx*), *maskoron* 'document for calculating salary' (*maskóret* 'salary', √*sk/xr*), *maxperon* 'backhoe loader' (*maxper* 'dredger', √*xp/fr*), *meguron* 'caravan' (*megurim* 'dwelling', √*gwr*), *mesofon* 'portable terminal' (*masof* 'terminal', √*swf*), *mexikon* 'Tipp-ex, eraser' (*mexika* 'erasing, deletion', √*mxk*), *miklaxon* 'shower stall' (*mikláxat* 'shower' √*kl'*), *ne'imon* 'ringtone' (*ne'ima* 'melody', √*n'm*), *pa'alulon* 'activity game for babies' (*pa'alul* 'effect (in movies)', √*p'l*), *patišon* '(music) percussion mallet' (*patiš* 'hammer'), *parcufon* '(internet) emoticon' (*parcuf* 'face', of Greek origin), *paxon* 'tin shack' (*pax* 'tin', √*pxx*), *ptilon* 'colored marker' (*ptil* 'wick', √*ptl*), *rigšon* '(internet) emoticon' (*régeš* 'feeling', √*rgš*), *ša'on* 'clock, watch' (*ša'a* 'hour'), *šalgon* 'popsicle, ice lolly' (*šéleg* 'snow', √*šlg*), *šarvulon* 'open front bolero with sleeves' (*šarvul* 'sleeve'), *svivon* 'spinning top' (*saviv* 'around', √*svv*), *ta'arixon* 'date display' (*ta'arix* 'date', loan from Arabic), *takliton* 'diskette' (*taklit* 'record', √*klt*), *tikon* 'binder, folder for tax documents' (*tik* 'bag, folder'), *tiyon* 'teapot' (*te* 'tea'), *xalifon* 'garment bag' (*xalifa* 'suit', √*xlf*), *yarkon* 'thigh high socks' (*yarex* 'thigh')

(20) FLORA AND FAUNA: *gibton* 'bunting (bird)' (*gav*, *gavnun* 'hunchback'), *tmiron* 'stilt bird' (*tamir* 'tall', √*tmr*), *zeron* 'harrier (bird)' (*zer* 'wreath'), *zer'on* 'seed, grain' (*zéra* 'seed', √*zr'*)

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[21] Unlike the examples in (1) where borrowed words already include the ending *on*, in *klasteron* the *-on* is used as a suffix. The same applies to *parcufon* below.

(21) PERIODICALS: *'alon* 'leaflet, brochure' (*'ale* 'leaf', √*'ly*), *caharon* 'afternoon newspaper; school activity after school hours' (√*chr*; *cohoráyim* 'noon', √*chr*), *pnimon* 'the inside pages of the newspaper' (*pnim* 'inside', √*pnm*)

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