STRATEGIES OF MODERN HEBREW VERB FORMATION*

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ABSTRACT: Reinvestigation of Modern Hebrew verb formation strategies suggests that assignment of recent as well as potential innovations to canonical morphological forms in the verb system is essentially semantic, and is based on the notions "causation," "agency" and "activity." It is claimed that the basic division is not between transitive and intransitive verbs, but rather into agentive and nonagentive ones, the latter being normally realized in *hitpa'el*. Causative agentives tend to be assigned to *hif'il*, noncausative agentives to *pi'el* (which may also allow causatives with nonactive patients). The great productivity of *pi'el*, which is often attributed to its phonological elasticity, is also due in part to its allowing transitive as well as intransitive noncausative agentives, the natural semantic category for denominative verbs. The three semantic notions are integrated into a 'control' continuum the like of which may be found in other languages.

1. Introduction

Native Semitic stems are grouped in morphological patterns, characterized by discontinuous constant sequences of vowels and affixes, into which variable consonantal roots can be fitted. In a canonical pattern like hit+CaCeC, for instance, *l b š* 'DRESS' is inserted to yield *hitlabeš* 'he got dressed', *r g l* 'BE ACCUSTOMED' to yield *hitragel* 'he got accustomed', etc. Although native nouns are *also* assigned to canonical, mor-

phological forms, borrowed ones are not forced into such patterns. Any verb, however, whether native or borrowed, must be assigned to one of the existing verb patterns, which in Hebrew number seven. But as these patterns normally are not arbitrary segment configurations (as can be seen even from the illustration above), realization in a particular pattern implies choice of a syntactic function and/or semantic feature. Examination of recent innovations in the verb and potential verb formation would, then, reveal, crystallize and even magnify speakers' awareness of the relationships between morphological verb patterns and syntactic/semantic functions. This study proposes that the Modern Hebrew verb formation strategy is essentially semantic, and is based on the notions of "causation," "agency" and "activity," stretched over a "control" continuum the like of which may probably be found in other languages.

2. Previous research

In Bolozky (1978), the productivity of the Hebrew *binyanim* (canonical verb patterns) was explored via the formation of denominative verbal innovations. It was established there that although phonetic, phonological and morphological factors play a role as well, they do so within the framework of the semantic characteristics and syntactic functions traditionally attributed to the *binyanim*. Thus, the innovator avoids unpronounceable sequences, or sequences disallowed in Hebrew. For instance, a noun like *torpedo* 'torpedo' is realized in *pi'el* (the consonants *p*, ' and *l* are used to represent the first, second and third radical of the root, respectively) as *tirped* 'he torpedoed'; *hif'il* realization would yield unpronounceable **hitrpid*, and a future *pa'al* realization would have been **yitrpod*. *Pi'el* alone accommodates quadriliteral or longer stems, since it is bisyllabic, and its middle radical can expand to two consonants (or even three, when pronounceable, e.g. *VntrV*). Still, *tirped* fits into *pi'el* anyway, both syntactically and semantically, as a transitive non-causative verb. *Pi'el* is also the *binyan* in which non-causative agentive verbs are realized. If phonetic considerations were given priority over semantic and syntactic ones in the formation of denominative verbs, nouns like *šmalc* 'schmaltz', used in Bolozky (1978) in productivity tests, would not have been realized in *hif'il*, i.e. *hišmilc* 'he made schmaltzy', in over 60% of the cases (and in only 40% or less as *pi'el šimlec*, *šimelc* or *šmilcec* all combined), in spite of the fact that the native lexicon does not allow stem-final consonant clusters in the verb. Similarly (see Bolozky 1978, p. 120), the innovator avoids "occupied" slots, e.g. *miten* 'moderate' and *pišet* 'simplify' are realized in

pi'el because *hif'il* is already "occupied" by the roots concerned, i.e. by *himtin* 'wait' and *hifšit* 'take off (clothes)', respectively; at the same time, though, their assignment to *pi'el* also reflects syntactic and semantic categories allowed in *pi'el* (in this case transitive and causing-change-of-state). Bolozky (1978) also discusses a tendency to preserve original consonant sequences of source nouns and adjectives (to keep the origin "transparent"). It occasionally outweighs all other factors (e.g. *hišpric* 'squirt' is realized in *hif'il*, which is semantically unexpected, but preserves the source intact). But normally this tendency leads to devices such as reduplication in order to permit assignment to a *binyan* that will best characterize the verbs concerned syntactically as well as semantically (e.g. *pi'el* realization of *flirtet* 'flirt (V)', from *flirt* 'flirt (N)', *sifrer* 'assign digits', from *sifra* 'digit'). A tendency is also sometimes observed[1] for the inflection of weak roots (e.g. with a glide for first or second radical) to follow the regular "strong" pattern, which favors *pi'el*, *pu'al* and *hitpa'el* choice (realization in other *binyanim* would necessitate reduction, e.g. *hešim* in *hif'il* vs. regular *yišem* 'apply' in *pi'el*). But even then, such forms would still conform to syntactic and semantic constraints on *binyan* assignment.

A survey of recent denominative verbs and four productivity tests reported in Bolozky (1978) indicate that the basic division is between transitives and intransitives; further branching refers to semantic categories. Inchoatives, reflexives, etc. are realized in *hitpa'el*, and other intransitives in *pi'el*, except for a small class of color and physical-human quality inchoatives assigned to *hif'il*. Causatives prefer *hif'il*, and other transitives are realized in *pi'el*. There is a difference, however, between the preference demonstrated in inchoatives/reflexives for *hitpa'el*, which approaches 100% in the productivity tests, and the tendency for causatives to be realized in *hif'il*, which is about 60%, the other 40% going to *pi'el*. This is due to the general distribution of all causatives, new and old, between these two *binyanim*: While *hif'il* accommodates any causative, *pi'el* typically takes only "factitives," i.e. 'cause to be/become' verbs, which bring about a state or change of state. The distribution is discussed in Bolozky and Saad (1981) for both Hebrew and Arabic; it is shown that *hif'il* (or *'af'ala*) is indeed the unmarked causative, while causing-of-activity (rather than causing-of-a-state or change-of-state) is generally excluded from *pi'el* (or *fa''ala*). There is, to be sure, a class of causing-of-activity verbs in each language realized in *both hif'il* and *pi'el*; in some of them, *hif'il* and *pi'el* are identical in meaning, in others *pi'el* constitutes a marked extension of the

1. As pointed out to me by an anonymous reviewer for *Hebrew Annual Review*.

unmarked causative in *hif'il* (as, for instance, in Hebrew *yise'* 'export' vs. *hosi'* 'make go out', both derived from *yaṣa'* 'go out'). Still, one cannot find causing-of-activity verbs in *pi'el* that are not realized in the unmarked *hif'il* as well, either in Hebrew or in Arabic. One difference between the two languages is in the *colloquial* preference for causatives in *fa''ala* over *'af'ala* in many dialects of Arabic (a tendency already reported in Siba-wayhi and others—cf. references in Ryder 1974), whereas Bolozky's (1978) survey and experiments point to a general preference for *hif'il* in Hebrew causative verb formation. But when Standard Literary Arabic is consid-ered, the tendency for *hif'il* to allow any causatives vs. the *pi'el* preference for causing-of-state or causing-change-of-state is generally valid for both languages.

3. A semantic approach to verb formation

3.1. "Agency," "causation" and "activity" in verb formation

It now appears to me, however, that the verb formation strategy sketched in Bolozky (1978) can be improved upon, and that notions such as "agency,"[2] "causation" and "activity" will more accurately characterize the assign-ment of new verbs to their *binyanim* without reference to syntactic tran-sitivity. The terms are used here in the sense used in Saad and Bolozky (1981) and Bolozky and Saad (1981). A causative verb is one that requires a nominative subject that is semantically an agent, and an object (accu-sative or oblique) which is semantically a patient. The agent is the causer, initiator or instigator of an activity, process or state. (The effects of this activity, process or state may or may not be received by some patient; when they are, the patient must be distinct from the agent.) The patient is the recipient, experiencer or undergoer of an activity, process or state. An active verb refers to activity as opposed to a state (or undergoing change of state). The distribution of the three proposed features in *pi'el*, *hitpa'el* and *hif'il*, the three *binyanim* in which most newly formed verbs are realized, is summarized in (1) below (brackets indicate a *significant* marked case):

(1)

	hif'il	*pi'el*	*hitpa'el*
agent	+	+	−
causative	+	− (+)	−
active patient	+ (−)	−	− (+)

2. The use of the "agency" feature in the description of *binyan* assignment was first suggested to me by Peter Cole.

For recent innovations and productive verbalizations (as reported in Bolozky 1978), absence of an agent is what determines realization in *hitpa'el* (inchoatives, reflexives, etc.) vis-à-vis the other two. For most cases, causation distinguishes *hif'il* from *pi'el* agentive verbs; non-causative agentives are realized in *pi'el*. To the extent that causatives are assigned to *pi'el*, they would involve a non-active patient. For instance, a recent colloquial formation such as *hitpager* 'die' is realized in *hitpa'el* by virtue of its being non-agentive. *Miqed* 'focus' is assigned to *pi'el* as a non-causative agentive; so is the intransitive *nijez* 'nag'. *Hidhir* 'make gallop' is realized in *hif'il* as a causative involving an active patient, but *hif'il* also takes causatives involving non-active patients as well, e.g. *hinsiah* 'eternalize'. A recent *pi'el* causative is *miten* 'moderate', but there are no *pi'el* causatives involving an active patient.

Agency and causation are, of course, properties of the agent. Activity seems to be relevant to the patient only; whether the *agent* is active is largely a function of whether it is animate or not (cf. also Silverstein's (1976) agency hierarchy). The majority of recent and productive non-agentives are inchoatives, which are non-active. Some reflexives are active, but involve no agent that is distinct from the patient, which categorizes them as non-agentives. The same applies to reciprocals. The small class of color and physical-human quality inchoatives assigned to *hif'il* (e.g. *hišhim* 'become brown', *hišmin* 'become fat'), which of course does not fit within the scheme suggested here, is considered to be a *minor* marked case to be treated separately.

Below are short lists of verbs from Bolozky (1978), reclassified in accordance with the new semantic categorization:

I. Non-agentive
  a. Recent innovations
      hit'azreah 'become a citizen'
      hit'axzev 'become disappointed'
      hitpančer 'fail because of mishap'
      hitparheah 'become a hoodlum'
      hityaded 'befriend, become friendly'
      hitpager 'die'
      hištaves 'have a heart attack'
      hithatex 'become handsome'
      hitrakez 'concentrate (int)'
      hitmameš 'be realized, become a reality'
      hitmaqed 'become focused'

hitmaqem 'settle (int)' ⎤
hitkafter 'button up'   ⎦ active reflexive

hitpalmes 'argue with each other' ⎤
hizdayen 'engage in coitus'   ⎦ active reciprocal

 b. Preferred forms in productivity tests
  hištaref 'become a sheriff'
  hitvasel 'become a vassal'
  histalen 'become an armchair revolutionary'
  hitsnobeb 'become snobbish'
  hitmarqses 'become a Marxist'
  hitšmalcec 'become schmaltzy'

II. *Agentive*
 A. Causative
  i. *Active patient*
   a. Recent innovations
    hitrim 'cause to contribute'
    he'eziv 'make leave, make quit'
    hidhir 'make gallop'
    hehtim 'make sign'
   b. Preferred forms in productivity tests
    Context not supplied in tests designed in Bolozky (1978)
  ii. *Non-active patient*
   a. Recent innovations
    hehrif 'sharpen (tr)'
    himhiš 'make real, tangible'
    hinsiah 'eternalize'
    hitpil 'desalinate'
    himhiz 'make (novel etc.) into play'
    hifnim 'internalize'

    šigea' 'make crazy'
    miten 'moderate'
    gidel 'grow (tr)'
    yise' 'export'
    pinčer 'cause a mishap'
    'ixzev 'disappoint'
   b. Preferred forms in productivity tests
    hišrif 'make sheriff'
    hivsil 'make vassal'

hislin 'cause to become armchair revolutionary'
hisnib 'make snobbish'
hišmilc 'make schmaltzy'

mirqses 'Marxicize'
B. Non-causative
  a. Recent innovations
     miqem 'put in place'
     miqed 'focus'
     'imed 'arrange in pages'
     šiveq 'market'
     tiyeq 'file'
     biyem 'stage (play)'
     gišer 'bridge'
     miken 'mechanize'
     viset 'regulate'
     mimen 'finance'
     miqeš 'mine'
     gerez 'grease'
     digel 'present arms'
     yi'er 'cover with trees'
     biyel 'stamp (envelopes)'
     'iyeš 'man'
     pizem 'hum a tune'
     nivet 'navigate'
     nitev 'mark trail, route'
     hiyeg 'dial'
     diveah 'report'
     bilef 'lie'
     kiter 'complain'
     nijez 'nag'
     kifter 'button'
     tifqed 'function'
     tilfen 'phone'
     hintreš 'speak nonsense'
     tirped 'torpedo'
     kitleg 'catalog'
  b. Preferred forms in productivity tests
     širef 'serve as sheriff'
     visel 'live as vassal'
     silen 'speak like armchair revolutionary'

pinel 'cover with panels'
qeres 'fit with a hook'
tilkek 'spray with talcum powder'
pitent 'register as patent'
'isfelt 'cover with asphalt'
sportet 'deal with sport'

3.2. Pi'el reconsidered

As shown in Bolozky (1978), the most productive *binyan* is *pi'el*, and this is due to two facts. Unlike *hif'il* and the future of *pa'al*, *pi'el* can accommodate quadriliteral and longer stems (owing, perhaps, to analogy with geminated stems, which had already admitted some quadriliterals as early as mishnaic Hebrew, and to established canonical extensions such as *pilpel*, *šif'el*, and more recently *'if'el* and *tif'el*). Secondly, it allows both transitive and intransitive realization. It now appears, however, that a semantic consideration plays a role as well: inchoatives/reflexives are a well-defined group, and so are bona fide causatives, which makes the association of the former with *hitpa'el* and the latter with *hif'il* reasonably straightforward.

But the largest number of innovations in the verb are denominative, and denominative verbs almost necessarily involve some causal relationship between the verb and the source noun—a relationship that may be causative, but is normally just agentive. *Pi'el* is the most productive *binyan* because, among other things, it accommodates all these numerous denominative agentives that are not clearly causative. Thus, *hitpa'el* is the unmarked *binyan* for inchoatives/reflexives, *hif'il* is unmarked for causatives, and *pi'el* for other agentives, be they transitive or intransitive. *Pi'el* has a wide semantic range, then, in addition to its syntactic and phonological flexibility. If Ryder (1974), following Götze (1942), is correct in positing a stative/factitive origin for the D-stem (Hebrew *pi'el*, Arabic *fa''ala*) in Semitic, ultimately from a nominal source, then the agentive property of *pi'el* and its ready accessibility to denominative innovations is further supported on historical grounds. In fact, Ryder (1974) hypothesizes, based on Kamil (1956) and other sources, that the transformation of nouns into denominative verbs, whether factitive or other agentive, has *always* been an important factor in the spoken Semitic languages, and has been suppressed in literary language owing to puristic attitudes.

3.3. The "control" continuum in verb formation

Although agency and causation are agent properties, and activity appears to be relevant to the patient only, it might still be possible to describe

the *hif'il-pi'el-hitpa'el* chain in verb formation on a single continuum, placing the causing of activity in another entity at one end of the scale and involuntarily undergoing a process or state at the other, as roughly sketched in (2):

(2)   (i) cause entity to act
       (ii) cause entity to undergo some process, or be in a state
       (iii) initiate some activity with regard to entity
       (iv) initiate one's own activity
       (v) initiate one's own activity upon oneself
       (vi) undergo action, process or change of state

In such a hierarchy, (i) would go to *hif'il* only, (ii) to *hif'il* and to an extent to *pi'el*, (iii) and (iv) to *pi'el*, and (v) and (vi) to *hitpa'el*.

Although activity is involved, this is not an activity hierarchy; activity, as indicated before, appears to be relevant to the patient but not to the agent. Rather, it seems to constitute a variation on the agency continuum, extending the notion of initiation, causation or instigation to a more general concept of degree of "control" which each and all of the arguments concerned have over the activity or process referred to by the predicate. In (i), the agent causes the activity, and although the patient is not the one who initiates the activity (i.e. is not an agent), it still exercises some control over it once it is initiated, as in (3):

(3)   ha-me'amen heric   'oto sviv   ha-migraš hameš pe'am-im
       the-coach   made run him around the-field   five   time-pl.
       'The coach made him run five times around the field'

In (ii), "control" is restricted to the agent, and is of a causative type. The same applies to (iii), but the causality relationship between agent and patient is not as evident. In (iv) there is "control," but controlling one's own activity is less significant than controlling the activity of (or controlling what happens to) another entity. The same holds for (v), in which agent and patient are one. In (vi) the patient, which is the only argument, has no control whatsoever over what it undergoes.

Realizations of (i) in the "control" hierarchy may potentially be ambiguous for the degree of control the patient has over the activity it engages in. For instance, in (4),

(4)   hošav-   ti 'ota 'al ha-kursa
       made sit- I her on the-armchair
       'I had her seated in the armchair'

the normal interpretation would be as suggested above for (i), i.e. that although the agent initiates the activity, the actual act of sitting proper is nevertheless controlled by the patient. Still, it is also possible that the agent physically puts her in the armchair, either forcing her to sit or actually placing her there because she is handicapped or something of the sort. Similarly, feeding normally suggests some control of the eating process by the patient, but it may also apply to situations of forced feeding, fattening of geese, etc. And so on. There are circumstances, then, in which "control" in (i) may diminish, so that it approaches the situation in (ii). No *binyan* change is effected, though—either because (ii) is still most commonly realized in *hif'il*, or simply because morphology does not normally go into that detail in semantic categorization. According to Comrie (1981), some languages (e.g. Hungarian, Japanese, Kannada) do mark the patient for control.

With the concept of "control," is the active/non-active dichotomy still necessary? Apparently not. It should be enough to state that *pi'el* does not take causatives involving patients that exercise control over their activity. One possible advantage, however, is that for cases like (4), with verbs like *he'exil* 'cause to eat' and *hošiv* 'cause to sit down', describing the patient as 'active' would account for *hif'il* realization more simply than stating that eating "with control" can only be assigned to *hif'il*, and that eating "without control" is also assigned to *hif'il* because it allows such causatives just as *pi'el* does. But I can think of no *compelling* reason for keeping the activity notion once "control" is available.

3.4. "Control" and related notions

In Saad and Bolozky (1981), it has been proposed that any verb formation process in Arabic and Hebrew can be characterized in terms of transitivization or detransitivization. Transitivization and detransitivization are claimed to be manifest in either increase/decrease of the number of arguments involved (valency), or in semantic augmentation/weakening, or in both. Causativization, for instance, was shown to be a transitivization process, which increases the valency of an intransitive verb and transitivizes it semantically, or strengthens the semantic transitivity of a basic transitive verb. There is no discrepancy between the 'control' hierarchy and either of these notions. In terms of valency, causing an entity to act, i.e. (i), involves 2-3 arguments, (ii) and (iii) involve two, the rest just one. Also, decrease in control can be conceived of as decrease in semantic transitivity, in terms of the affectedness of the patient. The only problem is (iv), where no patient is involved.

The control continuum is not very different from agency hierarchies or agency continua discussed in the literature (e.g. Silverstein 1976, Dixon 1979, Hopper and Thompson 1980, Comrie 1981) and amply motivated by data from various languages. In fact, Dixon (1979) and Comrie (1981) use the very word "control," more or less interchangeably with "agency." The difference is, of course, in "control" being used here as a cover term for both "agency" and "activity" in a manner that allows placing of causatives, factitives, other agentives and non-agentives on a single continuum, based on their realization in *hif'il*, *pi'el* or *hitpa'el*. Although assignment to morphological verb patterns is not a universal manifestation of the control hierarchy, it is of primary importance for Semitic languages, and ultimately to the general theory of the interaction between semantics and morphology.

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