

Nonactive Voice in Hebrew and Elsewhere: Between Unaccusativity and Agentivity

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1 Introduction

A central distinction in studies of argument structure is that between transitive and intransitive verbs. A related distinction is that between active and nonactive morphology, meaning morphological marking that signals the existence or lack of an external argument. This paper addresses a number of questions relating to nonactive morphology by examining two verbal templates in Modern Hebrew. At the paper's core lies a distinction between what is often described as “middle” or “reflexive” morphology—as with Romance SE, Latin *-r-* and Russian *-sja*—and the underlying syntactic structure. The claim is that a certain “middle” affix does not necessarily entail that the verb is unaccusative, lacking an external argument. Instead, the affix indicates the presence of a functional head which manipulates arguments in a systematic way.

The empirical domain departs from the well-studied affixes and clitics in the languages mentioned above and focuses on the two Hebrew verbal templates *niXYaZ* and *hitXaYeZ*. Verbs in these templates are never transitive, in that they do not have a direct object. But it is not the case that these verbs are nonactive: some are agentive and volitional. The *hitXaYeZ* template is also unique in that it is the only template that houses reflexive and reciprocal verbs. We will see how the possible interpretations of different Hebrew roots result under this morphology.

We begin in Section 2 by surveying the relevant verb classes and sketching out an analysis. Section 3 lays out the assumptions and architecture of the system, providing an implementation. Section 4 then discusses a possible alternative and some loose ends, before Section 5 concludes.

2 Active Templates and Nonactive Templates

In Hebrew, as in other Central Semitic languages, verbs are comprised of an abstract consonantal *root* (notated \sqrt{XYZ} ; most roots are triconsonantal) instantiated in a prosodic *template*. Descriptively, the template inserts certain vowels between the consonants and might add a prefix.

The focus of this paper is on two of the seven verbal templates of Hebrew, the “middle” template *niXYaZ* (as instantiated in verbs such as *nišbar* ‘broke’) and the “intensive middle” template *hitXaYeZ* (as instantiated in verbs such as *hitparek* ‘fell apart’).¹ Throughout the discussion, I will use the term “middle” as a morphological term to refer to verbs in the *niXYaZ* (“middle”) and *hitXaYeZ* (“intensive middle”) templates. To distinguish among underlying syntactic structures, I reserve the term *active verbs* for verbs with an external argument and possible internal arguments, and the term *nonactive verbs* for verbs without an external argument, i.e., unaccusatives. We will next see that both of the two middle templates occur with both active and nonactive verbs. Crucially, none of the constructions listed in this section allow for a transitive verb, viz. a subject and a direct object.

2.1 Nonactive: Anticausatives

The basic intuition behind middle verbs as nonactive is that they are the anticausative counterparts of a causative verb in another template. For instance, it is often the case that an unaccusative change-of-state verb in *hitXaYeZ* is derived from an active counterpart in the “intensive” *XiYeZ* template, as in (1a). Similarly, some *niXYaZ* verbs are derived from active counterparts in the “simple” *XaYaZ*

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¹Abbreviations used: ACC accusative, INTNS “intensive” template, MID “middle” template, PL plural, SMPL “simple” template. \bar{X} indicates morphologically conditioned de-spirantization of the consonant X.

2.4 Active: Figure Reflexives

Among the active middle verbs, there are some that are volitional in nature and take an indirect object (prepositional phrase) as their obligatory complement. These constructions are called *figure reflexives* by Wood (2014) in his study of Icelandic *-st*.

- (5) a. *hitXaYeZ*: *hitparec le-* ‘stormed into’, *histare’a al-* ‘stretched out over’, *hit’aqeš al-* ‘insisted on’, *hitnageš be-* ‘collided with’.
 b. *niXYaZ*: *nixnas le-* ‘entered (into)’, *nidxaf derex/le-* ‘pushed his way through/into’, *niršam le-* ‘signed up for’, *nilxam be-* ‘fought (with)’, *ne’exaz be-* ‘held on to’.

Figure reflexives might denote an action (*hitmared neged* ‘rebelled against’), motion (*histare’a al-* ‘sprawled over’) or coming into being of an emotional state (*hit’acben al-* ‘got mad at’). In all cases, a prepositional phrase is the obligatory complement of the verb. To account for these, I will propose that a functional head licenses the prepositional phrase. Since no direct objects are allowed, this functional head must head a projection that is the complement to the verb; in other words, these verbs select for a certain kind of indirect object but not for an ordinary DP object.

2.5 Active: Reciprocals

Lastly, *hitXaYeZ* can also host reciprocal verbs. Reciprocal constructions require two distinct arguments; this cannot be achieved in a nonactive structure but only in an active one (Siloni 2012). The syntax will thus be essentially the same as with figure reflexives: the complement to the verb is a prepositional phrase. This analysis captures the fact that arguments of reciprocal verbs are introduced by a preposition in Hebrew, namely *im-* ‘with’.

- (6) a. *hitXaYeZ*: *hitnašek im-* ‘kissed (with)’, *hitxabek im-* ‘hugged (with)’, *hitkatev im-* ‘corresponded (with)’, *hitvakeax im-* ‘argued (with)’.
 b. *niXYaZ*: —

The indirect object is obligatory, as in (7). Nevertheless, when both arguments are expressed as a collective subject, the pP need not be expressed, (8). The structure is still non-transitive, in that a direct object is not licensed, (9):

- (7) dani hitnašek *(im yosi)
 Dani kissed.INTNS.MID with Yossi
 ‘Danny and Yossi kissed’
 (8) dani ve-yosi hitnašk-u
 Dani and-Yossi kissed.INTNS.MID-3PL
 ‘Danny and Yossi kissed’
 (9) *dani ve-yosi hitnašk-u et {dina / ha-klavlav}
 Dani and-Yossi kissed.INTNS.MID-3PL ACC Dina the-puppy
 (int. ‘Danny and Yossi kissed each other and also Dina/the puppy’)

In the analysis, I assume that reciprocals are constructed similarly to figure reflexives. However, the extra agentive semantics of *hitXaYeZ* will be the reason that this template allows for reciprocal verbs whereas *niXYaZ* does not.

To recap, the middle templates host anticausative and inchoative verbs, as well as a type of unergative I call the figure reflexive, but never transitive verbs.² *hitXaYeZ* is especially interesting because it is the only template that allows reflexives and reciprocals. This is a puzzling state of affairs: if internal arguments and external arguments are both possible, only not together, what is the morphology signaling? To derive the middle templates and answer this question, we will next posit a number of functional heads as alluded to above.

²There is one established counterexample to this generalization, transitive *hictarex* ‘needed’. Any theory of *hitXaYeZ*, including mine, must treat this verb as a genuine exception which must be learned independently.

3 Analysis

3.1 The System

My analysis is set in Distributed Morphology (Halle and Marantz 1993), with vocabulary insertion proceeding outwards from the root (Bobaljik 2000, Embick 2010). A functional head *v* introduces an event and categorizes a root as a verb. The higher functional head Voice introduces the external argument (Kratzer 1996, Pytkäinen 2008, Marantz 2013). The functional head *p* introduces the external argument of a preposition, also called its Figure (Svenonius 2003, 2007, Wood 2014). This is a system in which the syntax limits possible interpretations of the verb, leaving the lexical semantics to the root (Schäfer 2008, Myler 2014, Wood 2015): in Hebrew as in English there is no difference between the functional heads that make up the verb *buy* and those that make up the verb *dance*. The former is transitive simply because the root $\sqrt{\text{BUY}}$ is compatible with Voice and an internal argument, and the latter is intransitive simply because $\sqrt{\text{DANCE}}$ is incompatible with most types of internal arguments (save for cognate objects); the syntax is identical.

A root denotes in a general semantic field though the interpretation of a root in a template is idiosyncratic: there is no way to predict what the root $\sqrt{\text{ršm}}$, which has to do with writing down, will mean when it is instantiated in a given template. In the “simple” template, *rašam* means ‘wrote down’. In the “middle” template, *niršam le-* means ‘signed up for’. In the “intensive middle”, *hitrašem me-* means ‘was impressed by’. What the syntax does in this approach is constrain the possible interpretations, as in the middle templates where verbs are never transitive. See Arad (2005) for discussion of these morphologically-conditioned meanings.

The three functional heads—Voice, *v* and *p*—are by default covert and place no restrictions on the resulting verb. To derive the full range of verbs in Hebrew, I use a number of overt variants of these heads.

First, **v heads** introduce an event. Alongside default, silent *v*, I posit v_{ACT} . In the semantics, this head types the event as an Action (Doron 2003) or self-propelled (Folli and Harley 2008). In the phonology, v_{ACT} is spelled out as a predictable set of vowels slotting between the root consonants. v_{ACT} also blocks intervocalic spirantization of the middle consonant (though see Adam 2002, Martínez 2008 and Gouskova 2012 for finer details).³

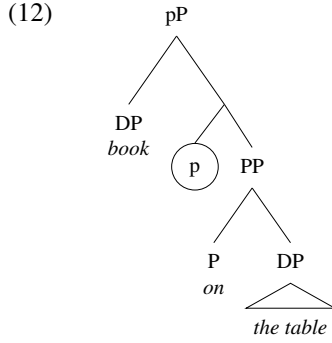
The head v_{ACT} is attested elsewhere in the verbal system, namely in the “intensive” template *XiYeZ*. In (10) both agent and cause are possible with a “simple” verb, but in (11) only the agent is available with an “intensive” verb that is analyzed as containing v_{ACT} . Note also the lack of spirantization ([*v*]~[*b*]) and the different vowel patterns in the latter example.

- (10) {✓ ha-yeladim / ✓ ha-tiltulim ba-argaz} **šayr**-u et ha-kosot
 the-children the-shaking in.the-box **broke.SMPL-PL** ACC the-glasses
 ‘{The children / Shaking around in the box} broke the glasses.’

- (11) {✓ ha-yeladim / ✗ ha-tiltulim ba-argaz} **šibr**-u et ha-kosot
 the-children the-shaking in.the-box **broke.INTNS-PL** ACC the-glasses
 ‘{The children / *Shaking around in the box} broke the glasses to bits.’ (Doron 2003:20)

Next, **Voice and p heads** introduce a DP in their specifier. In a regular, unmarked active clause, default (silent) Voice introduces the external argument. The head *p* was proposed by Svenonius (2003, 2007) to act in similar fashion to Voice or Chomskyan little *v*: it merges above the PP, introducing the Figure (subject) of the preposition. In (12), the Figure is the DP *book* and *p*, which introduces it, is circled for ease of reference.

³Another possibility is that what I call v_{ACT} is not a *v* head at all, but rather an action root $\sqrt{\text{ACTION}}$. This possibility is called for since the morpheme has an interpretation in the phonology and semantics but does not manipulate the syntax, just as roots do in this theory. Further, there is little crosslinguistic support at this time for semantic “flavors” of *v* like the one I am proposing here. Since this issue does not bear on the phenomena discussed in the paper, I set it aside.



To these heads I add nonactive counterparts, namely Voice_\emptyset and p_\emptyset . These two heads dictate that nothing may be merged in their specifiers. Voice_\emptyset blocks the introduction of an external argument (Doron 2003, Alexiadou and Doron 2012, Alexiadou 2014b, Wood 2014, 2015, Spathas et al. 2015) and p_\emptyset blocks merger of a DP in the specifier of pP (Wood 2015). The different kinds of Voice/p manipulate the syntax: they only dictate whether a DP may or may not be merged in their specifier. As mentioned above, default Voice and p are silent. But Voice_\emptyset and p_\emptyset are spelled out by adding a prefix and certain vowels.

Table 1 summarizes the syntactic, semantic and morphophonological effects of these heads, deriving a subset of the verbal system of Modern Hebrew. Special Voice/p heads are underlined; see their effects on the external argument (EA) under “Syntax” and as a prefix under “Phonology.” The special v head v_{ACT} head is boldfaced; see its effects under “Semantics” and “Phonology.” Note in particular that the *hitXaYeZ* template is morphologically complex. It is prefixed, indicating the existence of an overt $\text{Voice}_\emptyset/p_\emptyset$ head, and de-spirantized, indicating the existence of v_{ACT} .

Heads		Syntax	Semantics	Phonology	
Voice	v	(underspecified)	(underspecified)	SMPL	<i>XaYaZ</i>
Voice	v_{ACT}	(underspecified)	Action	INTNS	<i>XiYeZ</i>
<u>Voice$_\emptyset$</u>	v	<u>No EA</u>	(underspecified)	MID	<i>ni-XYaZ</i>
<u>Voice</u>	v <u>p_\emptyset</u>	<u>EA = Figure</u>	(underspecified)	MID	<i>ni-XYaZ</i>
<u>Voice$_\emptyset$</u>	v_{ACT}	<u>No EA</u>	Action	MID INTNS	<i>hit-XaYeZ</i>
<u>Voice</u>	v_{ACT} <u>p_\emptyset</u>	<u>EA = Figure</u>	Action	MID INTNS	<i>hit-XaYeZ</i>

Table 1: The requirements of some functional heads in the Hebrew verb.

In what follows I suggest two main structures for middle verbs. Section 3.2 argues that nonactive middle verbs are unaccusative, built using Voice_\emptyset . Conversely, Section 3.3 argues that active middle verbs always take a prepositional phrase complement, built using p_\emptyset . The basic intuition behind this analysis is that some middle verbs seem more volitional than others, just like in English unaccusative *break* is less volitional than unaccusative *arrive*.⁴

The structure alone will not be enough to derive the full typology of middle verbs: functional heads interact with the lexical semantics of the root so that they constrain the meaning of the resulting verb but do not dictate it. For example, the difference between a reciprocal verb and a figure reflexive is not in the structure but in the type of root: *kissing* is inherently reciprocal whereas *charging* is inherently disjoint, though the structure of the two is identical.

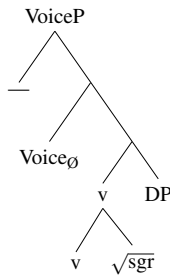
3.2 Nonactive Structures

Nonactive middles are derived using the head Voice_\emptyset . As this head does not allow anything to be merged in its specifier, no external argument can be introduced into the structure. The difference

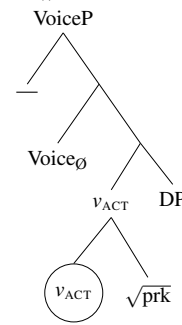
⁴A number of authors have posited different structures for change-of-state unaccusatives like *break* and movement unaccusatives like *arrive*. See Irwin (2012) for one such approach and Alexiadou (2014a) for a brief overview.

between *niXYaZ* in (13a) and *hitXaYeZ* in (13b) is that *hitXaYeZ* utilizes the special v head v_{ACT} (circled for ease of reference).

(13) a. *niXYaZ nisgar* ‘closed’:



b. *hitXaYeZ hitparek* ‘fell apart’:



The spell-out of these heads is as follows: VoiceØ provides the prefix *ni-*, or its allomorph *hit-* in the environment of v_{ACT} . Templates differ from each other also in the vowels that appear between the root consonants, so I assume for now that each of the overt functional heads used in this system triggers readjustment rules that insert the right vowels (Embick and Halle 2005).

- (14) a. VoiceØ ↔ *hit-* + READJUSTMENT / ____ v_{ACT}
 b. VoiceØ ↔ *ni-* + READJUSTMENT

The head v_{ACT} triggers readjustment rules and blocks postvocalic spirantization of the medial root consonant. This phonological effect may be notated as a floating mora docking onto a particular consonant, in a nod to the original gemination from which the modern de-spirantization arose. See Wallace (2013) for an analysis of gemination in Akkadian and Arabic using a similar mechanism.

- (15) v_{ACT} ↔ μ + READJUSTMENT

Exact implementation of the phonological component, in particular the readjustment rules, is left to future work.

In terms of syntax and semantics, these structures produce the desired results. **Anticausatives** are derived by taking an existing active vP (either vP *XaYaZ* or v_{ACT} P *XiYeZ*) and merging VoiceØ, thereby detransitivizing the verb. This results in causative alternations as in (16).

- (16) a. “Simple” template, [v [v √šbr] DP]: *šavar* ‘broke’ (transitive)
 “Middle” template, [VoiceØ [v [v √šbr] DP]]: *nišbar* ‘got broken’
 b. “Intensive” template, [v_{ACT} [v_{ACT} √prk] DP]: *pirek* ‘dismantled’ (transitive)
 “Intensive middle” template, [VoiceØ [v_{ACT} [v_{ACT} √prk] DP]]: *hitparek* ‘fell apart’

Turning to **inchoatives** (nonactive middles not derived from causative counterparts, e.g., *nir-dam* ‘fell asleep’), not much needs to be said about *niXYaZ* since default v is not active in the syntax or the phonology. More interesting is the case of *hitXaYeZ*, in which v_{ACT} is still doing its morphophonological work but does not create the “intensive” *XiYeZ* verb in (18).

- (17) *hit’alef*
 √’LF.INTNS.MID.Past
 ‘fainted’

- (18) *’ilef
 √’LF.INTNS.Past
 (int. ‘made someone faint’)

Our analysis leaves open the possibility of the nonexistent *XiYeZ* form arising as an innovation. This seems to be the case: for some young speakers it is possible to say *’ilef* to mean ‘amazed’, though this coinage is substandard (Laks 2014).

As noted above, **reflexives** are possible only in *hitXaYeZ*, which differs from *niXYaZ* in having added agentive semantics. If the basic reflexive structure in Hebrew is nonactive (with VoiceØ), adding v_{ACT} licenses an interpretation in which there is an agent but the only argument in the structure

is the internal argument, thereby forcing the internal argument to be interpreted as the agent. While we do not have space to develop this idea here, I believe it falls along the same lines as the analysis of Kannada reflexives in Lidz (2001) and especially Greek *afro*-reflexives in Spathas et al. (2015).

We have now accounted for three kinds of nonactive verbs. In effect, I proposed that anticausatives, inchoatives and reflexives are all unaccusative verbs. The important point is that the sole argument is the internal argument and that there is no agentive external argument. Whether or not the resulting verb is construed as volitional depends on the root: reflexive verbs are more volitional than anticausatives. The analysis implies that anticausatives, inchoatives and reflexives ought to pass unaccusativity diagnostics. This is true for the first two but not for the last. I return to this point in Section 4.2, after discussing the active middle verbs.

3.3 Active Structures

Just as nonactive middles are derived using Voice_{\emptyset} , active middles are derived using p_{\emptyset} . The two main consequences of this configuration are that an external argument may be merged in Spec,VoiceP and that the obligatory prepositional phrase does not have a subject of its own. Since p_{\emptyset} does not allow anything to be merged in its specifier, the preposition introduced by p does not have an immediate subject. Instead, the predicate p_{\emptyset} “waits” until the external argument is merged in Spec,VoiceP and this DP is then interpreted as the subject of the preposition. Wood (2014, 2015) gives a detailed semantics of this phenomenon in Icelandic. Under his analysis, p_{\emptyset} needs to assign a semantic role (Figure) to a DP, but there is no DP in its specifier. The predicate remains unsaturated, and the denotation passed on up in the derivation, until a DP is merged in Spec,VoiceP and saturates Voice and p_{\emptyset} at the same time. Our analysis follows Wood’s lead.

Figure reflexives (e.g., *hitnapel al-* ‘charged’, *nixnas le-* ‘entered’) can be seen as unergative verbs with an obligatory pP complement. Since there is an external argument in Spec,VoiceP, Agent-oriented adverbs are possible:

- (19) a. ha-kelev hitnapel [_{pP} al ha-davar] **be-za’am**
 the-dog charged.INTNS.MID on the-mailman **in-rage**
 ‘The dog attacked the mailman in a fit of rage’
 b. dani nixnas [_{pP} la-kita] **be-bitaxon**
 Danny entered.MID to.the-classroom **in-confidence**
 ‘Danny confidently entered the classroom.’

We aim to account for **reciprocals**, which are possible only in *hitXaYeZ* (e.g., *hitnašek im-‘kissed’*), in similar fashion: the internal argument is merged as the complement of P and the external argument in Spec,VoiceP, then interpreted as coreferential with the subject of p_{\emptyset} P (the Figure). The analysis of reciprocal *hitXaYeZ* verbs as a kind of figure reflexive captures two fundamental facts about them: that they are volitional (agentive external argument with v_{ACT}) and that they require an indirect object (complement of p_{\emptyset}). As with reflexives, a detailed working out of the compositional semantics will wait for future work. Spathas et al. (2015) have argued that dedicated reflexivizers are not necessary for deriving reflexives in Greek. I go one step further, claiming that neither dedicated reflexivizers nor dedicated reciprocalizers are necessary in Hebrew, and that the same functional head can be used to derive both.

4 Alternatives and Lingering Issues

4.1 A Lexicalist Alternative

A lexicalist account of causative alternations in Hebrew was proposed by Reinhart and Siloni (2005) and Laks (2011, 2014), who argue that a process of decausativization creates valency reduction in the language. Under such a view, causative verbs are the basic verbal forms in the language, from which the speaker derives reflexives, anticausatives and reciprocals in other templates. Each template thus has its own role in the lexicon.

The question then arises of how to account for nonactive verbs that have no active alternation in another template. This is exactly the case of inchoative middle verbs such as *nirdam* ‘fell asleep’: if there is no active base, how can an alternation arise? The proposed solution is that the causative verb exists in the lexicon as a *frozen* entry, a verb that cannot be used in the syntactic derivation but can be used in the lexicon to derive other forms.

Two additional questions now arise. First, this theory does not explain why a given template has whatever morphosyntactic behavior it has, e.g., transitive or intransitive, reflexive or not. This behavior is simply stipulated on a template-by-template basis. The second problem has to do with the notion of a “frozen” lexical entry. According to Laks (2014:116), “[F]rozen entries lack phonological matrix and morphological properties [...] but they are assumed to be conceptually represented in the lexicon. The frozen entry, which is not accessible for syntactic derivations, can nonetheless serve as input for lexical operations.” It is unclear how this notion of abstract lexical material is different from what other lines of research call a root. Fadlon (2012) presents experimental results that are claimed to provide evidence against a root-based approach and for an anticausativization approach, although the results seem consistent with a root-based analysis as well.

4.2 Between Unaccusativity and Agentivity

Finally, I have suggested that reflexives in Hebrew are underlying unaccusative (contra Reinhart and Siloni 2005). There are two accepted tests for unaccusativity in Hebrew, the possessive dative and verb fronting. Whereas anticausatives and inchoatives pass both tests, reflexives fail them.

The possessive dative was proposed as an unaccusativity diagnostic by Borer and Grodzinsky (1986), but has recently been recharacterized by Gafter (2014) and Linzen (2014, to appear) as a diagnostic of saliency or animacy. Verb fronting has gone unchallenged as a diagnostic (Shlonsky 1987), and as just mentioned, is not possible with reflexives. On the face of it, the analysis of reflexives as underlying unaccusatives cannot be correct if reflexives fail unaccusativity diagnostics. I would like to argue instead that the consequence is unclear. In the analysis of reflexives proposed here, as in the one proposed for Greek by Spathas et al. (2015), the internal argument undergoes A-movement and ends up higher than its original position. Verb fronting in Hebrew might only diagnose *surface unaccusativity*, that is, a structure in which the internal argument remains in its base-generated position (Levin and Rappaport Hovav 1995). For Greek, Alexiadou and Schäfer (2013) and Alexiadou (2014b) run through different diagnostics and conclude that reflexives do not unambiguously pass or fail them. That is, reflexives pass some unergativity diagnostics and some unaccusativity diagnostics. The authors interpret these results as indicating that Greek reflexives do have an internal argument that undergoes some change of state. As put by Embick (2004:142), “[T]he unaccusative analysis of reflexives holds that reflexives and unaccusatives have some properties in common; not that they are identical.” It could be that the broad notion of “unaccusativity” is not enough to describe reflexives in Hebrew and Greek. If unaccusativity means that the surface subject started off as the internal argument, then surface unaccusativity diagnostics might not identify reflexive structures in which the internal argument raised to subject.

5 Conclusion

The main issue addressed here was the following: how is the argument structure of active and non-active predicates derived, and how does this tie into the causative-anticausative alternation. I argued for a system in which neither θ -roles nor valency-reducing operations are necessary. Instead, an active syntactic structure and a nonactive syntactic structure—that is, one with an external argument and one without—can both result in the same “middle” or “nonactive” morphological marking. The correct interpretation of the verb is a result of composing functional heads with a lexical root.

The analysis presented here attempted to answer one general question and one specific question relating to the morphology of Modern Hebrew. Generally, it is the case that one cannot predict the meaning of a verb from its morphophonological form (its template), nor can one predict what template a verb will have based on its meaning. The solution to this mapping problem was implemented

in a system that builds syntactic structure and then interprets said structure at PF and LF. A more specific question relating to Hebrew verbs is that of middle verbs, which never take direct objects. Furthermore, only of the two middle templates allows for reflexives and reciprocals. The theory developed here provides an explanation for this behavior: these templates have specific functional heads, with their own predictable phonology and semantics, that can lead compositionally to all and only the correct interpretations. Reflexive interpretations are then possible when embedded in a nonactive structure and reciprocal interpretations – when embedded in an active structure. The wide variation in meanings of middle verbs can be achieved by using specific heads that manipulate arguments in the syntax, rather than using dedicated reflexivizers, decausativizers and reciprocalizers.

References

- Adam, Galit. 2002. From Variable to Optimal Grammar: Evidence from Language Acquisition and Language Change. Doctoral dissertation, Tel Aviv University.
- Alexiadou, Artemis. 2014a. Roots don't take complements. *Theoretical Linguistics* 40:287–297.
- Alexiadou, Artemis. 2014b. Roots in transitivity alternations: *afto/auto* reflexives. In *The Syntax of Roots and the Roots of Syntax*, ed. Artemis Alexiadou, Hagit Borer, and Florian Schäfer, 57–80. Oxford: Oxford University Press.
- Alexiadou, Artemis, and Edit Doron. 2012. The syntactic construction of two non-active voices: Passive and middle. *Journal of Linguistics* 48:1–34.
- Alexiadou, Artemis, and Florian Schäfer. 2013. Towards a non-uniform analysis of naturally reflexive verbs. In *Proceedings of the 31st West Coast Conference on Formal Linguistics (WCCFL 31)*, ed. Robert E. Santana-LaBarge, 1–10. Somerville, MA: Cascadia Proceedings Project.
- Arad, Maya. 2005. *Roots and Patterns: Hebrew Morpho-syntax*. Dordrecht: Springer.
- Bobaljik, Jonathan. 2000. The ins and outs of contextual allomorphy. In *University of Maryland Working Papers in Linguistics* 10, ed. K. Grohmann and C. Struijke, 35–71.
- Borer, Hagit, and Yosef Grodzinsky. 1986. Syntactic cliticization and lexical cliticization: The case of Hebrew dative clitics. In *Syntax and semantics* 19, ed. Hagit Borer, 175–217. New York: Academic Press.
- Doron, Edit. 2003. Agency and voice: The semantics of the Semitic templates. *Natural Language Semantics* 11:1–67.
- Embick, David. 2004. Unaccusative syntax and verbal alternations. In *The Unaccusativity Puzzle: Explorations of the Syntax-Lexicon Interface*, ed. Artemis Alexiadou, Elena Anagnostopoulou, and Martin Everaert, 137–158. Oxford: Oxford University Press.
- Embick, David. 2010. *Localism versus Globalism in Morphology and Phonology*. Cambridge, MA: MIT Press.
- Embick, David, and Morris Halle. 2005. On the status of stems in morphological theory. In *Proceedings of Going Romance 2003*, ed. T. Geerts and H. Jacobs, 59–88. Amsterdam/Philadelphia: Benjamins.
- Fadlon, Julie. 2012. Hidden entries: A psycholinguistic study of derivational gaps. In *The Theta System: Argument Structure at the Interface*, ed. Martin Everaert, Marijana Marelj, and Tal Siloni, 200–226. Oxford: Oxford University Press.
- Folli, Raffaella, and Heidi Harley. 2008. Teleology and animacy in external arguments. *Lingua* 118:190–202.
- Gafer, Roey. 2014. The distribution of the Hebrew possessive dative construction: Guided by unaccusativity or prominence? *Linguistic Inquiry* 45:482–500.
- Gouskova, Maria. 2012. Unexceptional segments. *Natural Language and Linguistic Theory* 30:79–133.
- Halle, Morris, and Alec Marantz. 1993. Distributed Morphology and the Pieces of Inflection. In *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, ed. Ken Hale and Samuel Jay Keyser, 111–176. Cambridge, MA: MIT Press.
- Irwin, Patricia. 2012. Unaccusativity at the Interfaces. Doctoral dissertation, New York University.
- Kratzer, Angelika. 1996. Severing the External Argument from its Verb. In *Phrase Structure and the Lexicon*, ed. J. Rooryck and L. Zaring, 109–137. Dordrecht: Kluwer.
- Laks, Lior. 2011. Morpho-phonological and Morpho-thematic Relations in Hebrew and Arabic Verb Formation. Doctoral dissertation, Tel Aviv University.
- Laks, Lior. 2014. Morpho-thematic mismatches in Hebrew: What happens when morphological and thematic criteria collide? *Lingua* 138:107–127.
- Levin, Beth, and Malka Rappaport Hovav. 1995. *Unaccusativity: At the Syntax–Lexical Semantics Interface*. Cambridge, MA: MIT Press.

- Lidz, Jeffrey. 2001. The Argument Structure of Verbal Reflexives. *Natural Language and Linguistic Theory* 19:311–353.
- Linzen, Tal. 2014. Parallels between cross-linguistic and language-internal variation in Hebrew possessive constructions. *Linguistics* 52:759–792.
- Linzen, Tal. To appear. The diminishing role of inalienability in the Hebrew Possessive Dative. *Corpus Linguistics and Linguistic Theory*.
- Marantz, Alec. 2013. Verbal argument structure: Events and participants. *Lingua* 130:152–168.
- Martínez, Michal Temkin. 2008. Exceptions encoded at the segmental level. In *Proceedings of WCCFL 27*, ed. Charles B. Chang and Hannah J. Haynie, 463–470. Somerville, MA: Cascadia Press.
- Myler, Neil. 2014. Building and Interpreting Possession Sentences. Doctoral dissertation, New York University.
- Pylkkänen, Liina. 2008. *Introducing Arguments*. Cambridge, MA: MIT Press.
- Reinhart, Tanya, and Tal Siloni. 2005. The lexicon-syntax parameter: Reflexivization and other arity operations. *Linguistic Inquiry* 36:389–436.
- Schäfer, Florian. 2008. *The Syntax of (Anti-)Causatives*. Amsterdam/Philadelphia: John Benjamins.
- Shlonsky, Ur. 1987. Null and displaced pronouns. Doctoral dissertation, Massachusetts Institute of Technology.
- Siloni, Tal. 2012. Reciprocal verbs and symmetry. *Natural Language and Linguistic Theory* 30:261–320.
- Spathas, Giorgos, Artemis Alexiadou, and Florian Schäfer. 2015. Middle Voice and reflexive interpretations: *af-to*-prefixation in Greek. *Natural Language and Linguistic Theory* 33:1293–1350.
- Svenonius, Peter. 2003. Limits on P: Filling in holes vs. falling in holes. *Nordlyd* 31:431–445.
- Svenonius, Peter. 2007. Adpositions, particles and the arguments they introduce. In *Argument Structure*, ed. Eric Reuland, Tanmoy Bhattacharya, and Giorgos Spathas, 63–103. Philadelphia: John Benjamins.
- Wallace, Katherine. 2013. A Concatenative Approach to Semitic Templatic Morphology. Ms., NYU. URL <http://ling.auf.net/lingbuzz/002299>.
- Wood, Jim. 2014. Reflexive *-st* verbs in Icelandic. *Natural Language and Linguistic Theory* 32:1387–1425.
- Wood, Jim. 2015. *Icelandic Morphosyntax and Argument Structure*, volume 90 of *Studies in Natural Language and Linguistic Theory*. Springer.

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