

# The Semantics of Lexical Aspect in Modern Hebrew

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## 1. Introduction

This paper looks at the ways in which the classification into verbal aspectual classes is relevant to Modern Hebrew in terms of its ability to predict the semantic characteristics of the verbs in the language. It has been claimed by various researchers (Dowty 1979, Smith 1991, Rothstein 2004, among others) that the aspectual classification in English is a reflection of basic semantic notions such as dynamism ('momentary' versus 'interval' predicates) or the ability to denote a predictable end point of an event ('telicity'). As a result, we assumed that Hebrew would be sensitive to such notions as well; that is, that these notions are semantically general enough to lie at the basis of the verbal system of a language other than English. At the same time, we expected that the specific linguistic mechanisms Hebrew offers would influence the way such semantic notions are manifested. This paper, which is part of a larger study on lexical aspect in Modern Hebrew (Yitzhaki, 2003) focuses on two related issues (I) the sensitivity of verbs in Hebrew to the momentary\interval distinction as evidenced in English by the imperfective morphology (the progressive). (II) The sensitivity of accomplishments in Hebrew to 'telicity' tests.

### *1.1 Lexical Aspect- The model adopted in this study*

The term Lexical Aspect is used to refer to the internal properties of a situation, or to the ways in which the lexical properties of a verb reflect distinct types of events. Lexical aspect commonly recognizes four distinct categories of verbs and verb phrases, known as Activities (open-ended process such as *run, laugh*), States (stative eventualities such as *love, have, know*) Achievements (instantaneous change events such as *leave, reach, die*) and Accomplishments (processes with an inherently defined end point such as *draw a circle, record a conversation*). These terms were originally coined by Vendler (1967) and discussed by Dowty (1979). The literature offers a number of models to linguistically characterize the classes. The current study adopts a model based on Rothstein's (2004)

which predicts the four classes based on two features: telicity and momentary/interval<sup>1</sup>. The notion of *telicity* (See for example, Krifka, 1998) predicts whether an event has a ‘goal’ which is intrinsic to the event directing it to a natural ending point, a point which results in a change of state. Achievements and accomplishments are telic events, and therefore naturally appear with time phrases denoting the meaning of an end point such as ‘*in x time*’ and are less natural with time phrases denoting the meaning of ‘how long’ such as ‘*for x time*’. Activities and states are atelic events, meaning they do not denote a goal leading to an end point and therefore behave in the opposite way with these time phrases.

The distinction between *momentary* and *interval* events divides the classes differently: events which can be evaluated at a specific moment in time and events which can be evaluated at a larger ‘portion’ of time Dowty (1979) calls an interval. Activities and accomplishments can be judged true only when observing a ‘long enough’ portion of the event and thus are considered interval predicates. The notion of ‘interval’ is not relevant for states and achievements for two different conceptual reasons. A state such as ‘*believe in God*’ can indeed be understood as something that takes place over a long period of time. However, if this is true over that period it is also true at any moment of that period. Thus we only need a single moment or an instant of that event in order to determine its validity. An achievement such as ‘*open the door*’ is also momentary but that is due to the fact that this type of events are too short to be evaluated over a long period as they are over as soon as they have begun. The test in English which reflects this observation very clearly is the behavior of the different verb classes in the *progressive*. Activities and accomplishments occur very naturally in the progressive while states and achievements do not. The feature model can be summarized as follows:

States	[-telic, - interval]
Activities	[-telic, +interval]
Achievements	[+telic, - interval]
Accomplishments	[+telic, +interval]

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<sup>1</sup> Rothstein names the momentary/interval distinction ‘*stages*’ (following Landman’s 1992 terminology)

	Interval	Telic
States	-	-
Activities	+	-
Achievements	-	+
Accomplishments	+	+

## 2. The sensitivity of verbs in Hebrew to the momentary\interval distinction

### 2.1 The problem

As was stated above, the ability of a verb in English to appear in the progressive distinguishes between momentary and interval verb classes: activities and accomplishments (1a), which are interval predicates, are acceptable in the progressive while states and achievements (1b) which denote momentary predicates are usually not:

(1) a. He was pushing a cart \ writing an article

b. \*He was loving \\*noticing her

Since Hebrew does not mark imperfectiveness morphologically, it seemed at first that this distinction is irrelevant, that is, that grammatical operations in Hebrew are not sensitive to the momentary\interval property of a verb. As there is no progressive operator in Hebrew, the four classes cannot be distinguished:

(2) *hu mašax et ha-agala \ katav et ha-mamar \ ahav ota \ hevxin ba*

‘He pushed the cart \ wrote the article \ loved her \ noticed her’

However, we show that although there is not a ‘morphological progressive’ in Hebrew, there are constructions which convey an ‘imperfective meaning’. These constructions are *beod-o* ‘while-he’ and *Inflected Infinitivals* and they distinguish between momentary and interval predicates in Hebrew.

### 2.2 The proposed solution – two ‘imperfective constructions’

#### 2.2.1 ‘Imperfective construction’ (1) - *Beod-o* (while-he)

- (3) *Beod-o yašen cilcel ha-telefon*  
 While-he sleeps rang the phone  
 ‘The phone rang while he was sleeping’

This structure is the inflected form of the preposition *beod* ‘while’. It has the following properties:

- It is inflected for 3 elements:
  - Gender: *beod-o* ‘while-he’ as oppose to *beod-a* ‘while-she’
  - Number: *beod-o* ‘while-he’ as oppose to *beod-am* ‘while-they’
  - Person: *beod-o* (3<sup>rd</sup> person) as oppose to *beod-i* (1<sup>st</sup> person)
- The verb it combines with to create the prepositional phrase\time adjunct is in the present tense only:

- (4) *Be-oda yoševet* (present tense) \ \**be-oda yašva* (past tense)  
 While-she sits \while-she sat

As was shown, *beod-o* ‘while he’ is attached to a verb to create a temporal adjunct denoting an ongoing action\situation. We claim that when this adjunct is used, the verb in the main clause denotes an event which ‘locates’\ ‘interrupts’ a moment within the interval the *beod-o* adjunct is true of. For instance, the ringing of the phone in example (3) interrupts the sleeping event while it was going on. The event in the main clause *cilcel* ‘ring’ denotes a specific moment in time within the interval of *yašen* ‘sleeps’. In this way we predict that only interval predicates will be acceptable in this construction since they allow an event (denoted by the verb in main clause) to be located while they take place. Momentary events, is predicted, will not be acceptable in this construction since although they too may go on for a period of time, it would be ‘irrelevant’ to locate an event when they take place as all points in time are identical.

- (5) a. *beodo mošex et ha-agala ha-telefon cilcel* (interval predicate –activity)  
 ‘while he was pushing the cart the phone rang’
- b. *beodo kotev et ha-mamar ha-telefon cilcel* (interval predicate –accomplishment)  
 ‘while he was writing the article the phone rang’

- c. \**beodo ohev ota ha-telefon cilcel* (momentary predicate –state)  
 ‘while he loved her the phone rang’
- d. \**beodo mavxin ba ha-telefon cilcel* (momentary predicate –achievement) ‘  
 while he was recognizing her the phone rang’

(5) shows, as was predicated, that the interval predicates (the activity and the accomplishment verbs in 5a and 5b) are acceptable in this construction while the momentary predicates (the state and the achievement verbs in 5c and 5c) are not. Only the (a) and (b) examples denote an ‘interruption’ (a phone ring) to an event (pushing a cart \ writing an article) that was going on. In other words, the ‘interruptions’ point to a specific moment within an interval in which the event is true of.

### 2.2.2 *Imperfective construction (2) – Inflected Infinitival*

- (6) *Be-omdo ba-taxana hu hivxin ba-otobus mitkarev*  
 While-he-was-standing in-the-station he noticed the bus approaching

Inflected Infinitival or I.I<sup>2</sup> in short, is similar to the *beodo* ‘while-he’ in the sense that they are both built morphologically from a temporal preposition. However, in *beodo* ‘while-he’, the preposition *beod* ‘while’ is inflected and in the I.I the preposition *be* ‘while’ is attached to an inflected infinitive form of a verb. This structure has the following properties:

- Its basic construction is the preposition *be* ‘while’<sup>3</sup> + inflected infinitive
- The infinitive is inflected for 3 elements:
  - Gender: *be-omdo* ‘while he was standing’ as oppose to *be-omda* ‘while she was standing’

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<sup>2</sup> This term was made up for the purposes of this study; it is not used anywhere else, as far as I know.

<sup>3</sup> In some specific context, the preposition *be* in this construction may be understood as ‘since/as a result’ as in:

*be-yoda ma holex likrot, rina haita mefuxedet*  
 since-she-knows what is going to happen, rina was scared

I believe that such constructions are compatible with Stump’s (1985) ‘Absolute Constructions’ in English, which according to him, may denote a range of semantic roles including causation. We, however, will only refer to the cases in which these constructions denote the ‘temporal’ meaning – ‘while’.

- Number: *be-omdo* ‘while he was standing’ as oppose to *be-omdam* ‘while they were standing’
- Person: *be-omdo* (3<sup>rd</sup> person) as oppose to *be-omdi* (1<sup>st</sup> person)
- It agrees with the subject of the main verb:

(7) ***Be-omda***                      *ba-taxana*        ***hi*** *hivxina ba-otobus mitkarev*  
**While-she-was-standing** in the station **she** noticed the bus approaching

*be-omda* (the Inflected Infinitival) and *hi* ‘she’ (the subject of the main sentence) are both 3<sup>rd</sup> person feminine.

Similar to the previous construction described above (*beodo* ‘while-he’) the I.I forms a time adjunct which works as a ‘background’ event/situation to an other event that is denoted by the verb in the main clause. Following the same argument we have presented above, we would expect only interval predicates to appear in this construction, allowing the interval to be observed from a specific moment in time:

- (8) a. *bemošxo et ha-agala ha-telefon cilcel* (interval predicate –activity)  
‘while he was pushing the cart the phone rang’
- b. *bekotvo et ha-mamar ha-telefon cilcel* (interval predicate –accomplishment)  
‘while he was writing the article the phone rang’
- c. *\*beohavo ota ha-telefon cilcel* (momentary predicate –state)  
‘while he-loved her the phone rang’
- d. *?behavxino ba ha-telefon cilcel* (momentary predicate –achievement)  
‘while he was recognizing her the phone rang’

(8) reveals a similar picture to the one in (5) in which the *beodo* construction was used. One difference is the achievement verb (8d) which is not necessarily unacceptable. However, we claim that if acceptable, (8d) can only denote that the ringing of the phone took place *at the very same moment* the recognition happened. That is, it too (as the achievement verb in 5d), does not allow the event to be perceived as taking place over an interval which is being observed from a specific moment (the moment a phone rings, for instance) and thus can also be classified as a momentary and not an interval predicate.

### 2.2.3 Further evidence

Further evidence that the constructions are sensitive to the momentary/interval parameter comes from a subclass of states such as *sit* and *stand* which unlike ‘classic states’ (*love* and *know*), are acceptable in English in the progressive:

- (9) a. The socks are lying under the bed  
b. Your glass is sitting near the edge of the table  
c. One corner of the piano is resting on the bottom step (Dowty 1979 p.173)

Based on Carlson’s (1977) Stage-Individual Level theory, Dowty (1979) names these states ‘*interval states*’. According to him, these verbs are states since like other classic states they *hold* at a moment (every single moment within the interval is the same) and not at intervals. However, unlike classic states their ‘static’ property can be reflected only when they are *evaluated* at an interval. In (10) and (11) we show that the corresponding Hebrew verbs are acceptable in the Hebrew ‘imperfective constructions’:

- (10) Interval states – *Beodo* construction

*Beodo šoxev ba-mita \yošev \omed kava ha-or*  
While-he lays in bed sits\ stands went off the light  
‘While he was lying in bed the lights went off’

- (11) Interval states – The Inflected Infinitival construction

*Be-omdo \be-yošvo \ be-šoxvo be-petax ha-bait kava ha-or*  
While-he-was-standing\sitting\lying in the doorway went off the light  
‘While he was standing\sitting\lying in the doorway the lights went off’

The data presented in this section aimed to show that the momentary/interval distinction is indeed apparent in Hebrew. The constructions proposed to demonstrate our claim were *beodo* ‘while-he’ and Inflected Infinitival which are believed to denote a ‘background’ situation in which an event can be located. As predicted, activity and accomplishment verbs which denote interval predicates were compatible with these constructions while achievement and state verbs which are momentary events did not create acceptable

expressions when combined with these tests. A subclass of state verbs, known as interval states behaved as other interval predicates.

### 3. The sensitivity of accomplishments in Hebrew to telicity tests

#### 3.1 The problem

As was described in the introduction, activities and accomplishments are distinguished in English on the basis of telicity. Activities are ongoing\open-ended processes which consist entirely in the process. They do not have a natural end point ('a telic point') and so their terminating point is not predicated. Accomplishments are processes with an inherently defined end point, leading the event to its culmination. The event is completed when the telic point is reached and a change of state has occurred. Accomplishments are dynamic and involve successive stages but are not homogenous as the process is not simply an iteration of some minimal 'activity units' but a progression towards the end point. Hence, activities are atelic and accomplishments are telic 'by nature'. Therefore we would not expect to find verbs which denote both notions. When looking at verbs in Hebrew we do not get such a clear-cut distinction. *'in \ for x time', the test which traditionally differentiates telic and atelic predicates in English (Dowty 1979) and is used to distinguish between activities and accomplishments, does not create the same distinction in Hebrew.* As can be seen, accomplishments in Hebrew are acceptable with both an atelic ('for x time') and a telic ('in x time') adverbial while accomplishments in English are acceptable only with the telic adverbial:

- (12) a. He wrote the article in \\*for an hour
- b. *hu katav et ha-mamar tox \ bemešex ša'a*  
'He wrote the article in \ for an hour'
- c. *Hu mašax et ha-agala bemešex šaa*  
He pushed the cart for an hour

*katav et ha-mamar* 'wrote the article' clearly denotes a telic event. It is very much predicted that an event of writing an article is completed when the article is written.



However, while in English this event cannot appear with the ‘for x time’ adverbial, in Hebrew it is compatible with it. In other words, a telic event which is classified in English as an accomplishment, naturally appears in Hebrew with the ‘for x time’ adverbial which is characteristic of activities. This phenomenon is not specific to this verb. A large number of accomplishment verbs in Hebrew are acceptable with this adverbial either with definite or indefinite arguments (*bišel et ha aruxa* ‘cooked the meal’ \ *hedpis mismax* ‘typed a document’ \ *badak et ha mivxan* ‘corrected the exam’ \ *bemešex šaa* ‘for an hour’). In fact, I do not think we can come up with a single accomplishment verb in Hebrew which would be unacceptable with the ‘for x time’ adverbial.

### *3.2 The proposed solution – Activities and accomplishments create different entailment relations in the ‘imperfective constructions’*

There are two options to look at these data. One is to claim that there is not a real difference in Hebrew between activities and accomplishments as verbs from both classes are acceptable with an adverbial entailing atelicity. In other words, accomplishment verbs in Hebrew are not sensitive to telicity and thus are no different from activities. The other option, which we believe is more plausible, is that this construction works differently in Hebrew and in English and when we ‘neutralize’ the difference the distinction between the two classes becomes apparent. Our suggestion is that the factor which creates the difference between the Hebrew and the English examples is related to the perfective/imperfective aspect of the sentence. In English, the difference between the perfective and imperfective aspect of the event is marked morphologically. While the ‘imperfective’ progressive expression ‘was writing an article’ denotes an incomplete event the perfective form ‘wrote an article’ refers to the completed event. In (12a), ‘wrote the article’ can only be understood as the completed event and thus cannot co occur with the atelic adverbial. In Hebrew, however, both complete and incomplete events are usually referred to by the same form, hence the option that the event was left incomplete is possible. (13) illustrates this point:

- (13) a. *hu cava et ha-xeder etmol ve-siyem \ ve-lo siyem*  
           he painted     the room yesterday and finished \ and did not finish

- b. *Hu katav mixtav bemešex šaa ve-hu adayin kotev oto \ ve- hu sof sof siyem oto*  
 He wrote a letter for an hour and he is still writing it \ and he finally finished it
- c. *Badakti et ha-mivxan bemešex šaa ve-rak axšav siyamti \ ve-adayin lo siyamti*  
 (I) corrected the exam for an hour and only now I finished \ and still not finished  
 ‘I corrected the exam for an hour and just finished / and haven’t finished yet’

As can be seen, the verbs in (13a-c) are perceived as both ‘perfective’ and ‘imperfective’. They allow a context denoting that the event was completed and context implying that the event was left incomplete. The ‘incomplete’ scenarios are much less acceptable in English as can be seen in (14):

- (14) ?He painted the room \wrote a letter \corrected the exam but did not finish

If we accept the observation in (13), we can say that the behavior of the accomplishment verb in (12b) stems from the fact that it can be understood as both complete and incomplete. In order to highlight the difference between activities and accomplishments in Hebrew we need to use the ‘imperfective constructions’ suggested in the previous section. We show that when verbs of these two classes are used in these constructions *they create different entailment relations*, known as the ‘imperfective paradox’ (Dowty 1979). The ‘imperfective paradox’ originated from the traditional characterization of the progressive in English given by Bennet and Partee (1978). They claimed that an expression in the progressive is true in an interval I if there is an interval I’ surrounding it in which the simple expression is true:

- (15) ‘John was painting a picture’ is T in I iff there is I’ s.t. I is a part of I’ (and ends after it) and ‘John painted a picture’ is true in I’.

Dowty (1979) showed that for some verbs (for example activity verbs) applying Bennet and Partee’s model makes the right predictions, that is, the progressive expression entails the simple expression. However, when applying the model to accomplishment verbs which are interrupted we get the wrong predictions. This problem, termed ‘*the imperfective paradox*’<sup>4</sup> is illustrated in (16):

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<sup>4</sup> See also a discussion in Abucsh 1988

- (16) a. John was pushing a cart **entails** John pushed a cart  
 b. John was crossing the road **does not entail** John crossed the road

The progressive expression ‘John was crossing the road’ does not necessarily entail the simple\completed event ‘John crossed the road’ in case John was, for example, interrupted and as a result never ‘crossed the road’. In any case, this scenario should not make the progressive expression false as John was indeed crossing the road even if he never got to the other side. As can be seen from (17), when we use the ‘imperfective constructions’ (*beond-o* ‘while-he’ and *Inflected Infinitival* – see description in the previous section) with the activity and accomplishment verbs the same difference in entailment is apparent:

- (17) a. *Beodo mošex /bemošxo et ha-agala* entails *hu mašax et ha-agala*  
 While-he pushes the cart **entails** he pushed the cart  
 while he was pushing the cart entails he pushed the cart
- b. *Beodo kotev/bekotvo et hamamar* does not entail *hu katav et hamamar*  
 While he was writing the article **does not entail** he wrote the article

What we see from the comparison between (12) and (17) is that when activities and accomplishments in Hebrew appear in a structure which is not sensitive to completion\perfectiveness, as in (12) the difference is not apparent, that is, they both seem to be compatible with an expression denoting atelicity. However, when they are used in constructions implying incompleteness\imperfectiveness, as in (17) they differ with relation to the predictions they make.

The conclusion that can be drawn from the data in (17) is that accomplishments and activities in Hebrew indeed differ with relation to telicity. The imperfective constructions enable us to see the difference in telicity between the two types of events. When activities appear in these constructions the event is perceived as taking place once it has occurred. That is, *beod x rac* ‘while x was running’ entails that *x rac* ‘ran’ since this type of event does not imply a point in which the event naturally ends. However, since accomplishments, by their nature imply events with a telic point, when they appear in imperfective constructions, the prediction made is that the event denoted by the

accomplishment verb did not take place. Thus we see that ‘*beod x kotev ma’amar*’ ‘while x was writing an article’ does not imply that x *katav maamar* ‘wrote an article’.

### 3.2.1 Further evidence

Relevant data which strengthen our conclusion concern the behavior of accomplishment verbs in Mandarin Chinese (MC):

(18) *Wo zuotian xie-le yifeng xin, keshi mei xie-wan*

I wrote a letter yesterday but I didn’t finish it (Smith 1991 p.108)

According to Smith (1991), the acceptability of the verb in the perfective aspect to co occur with an expression denoting incompleteness is explained by the fact that the perfective aspect in MC (marked by *le*) does not necessarily denote completion but may denote termination. We can look at Smith’s explanation as supporting evidence to our claim. The ‘perfective aspect’ in MC and possibly in Hebrew, does not necessarily denote completion and thus accomplishment verbs may seem compatible with expressions denoting atelicity not because they are atelic but because of the properties of the perfective aspect<sup>5</sup>.

Our prediction that the perfective aspect in Hebrew does not necessarily denote completion was exemplified when accomplishments were used with certain expressions denoting incompleteness— *bemešex šaa* ‘for x time’ (12) and *lo siyem* ‘did not finish’ (13). In both cases we claimed that the accomplishments are acceptable with such expressions not because they are atelic but because the perfective aspect in Hebrew allows the event to be seen as incomplete. We have showed that accomplishments are indeed telic since unlike activities they entailed that the complete event did not take place when used in the imperfective constructions. That is, the imperfective constructions reflect the difference between activities and accomplishments on the basis of their telicity.

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<sup>5</sup> Soh & Kuo (2002) claim that the perfective aspect in MC always denotes completion but of two different types depending on the properties of the nominal argument. When the argument is of type ‘*No partial object*’ the perfective marker in MC indicates the completion of the event to the point where the object is created. With arguments which are defined as ‘*Allow Partial Object*’ the perfective aspect indicates the completion of the event to the point where a partial object is created. It will be interesting to see if Soh & Kuo’s (2002) equivalent nominal arguments in Hebrew work in the same way as in MC implying two different types of ‘perfectiveness’ and not necessarily a difference between perfective and imperfective as we’ve claimed.

#### **4. Conclusions**

When applied to Hebrew, the system of lexical aspect can be used to predict various semantic properties of events denoted by verbal predicates. Verbs in Hebrew are semantically organized into the four traditional aspectual classes, which can be characterized in terms of the features [ $\pm$  momentary] and [ $\pm$  telic]. The property of being an interval or a momentary predicate is reflected by the acceptability of the verb appearing in the ‘imperfective constructions’ (*beod-o* and *Inflected Infinitival*). This shows that activities and accomplishments in Hebrew are interval predicates while achievements and states are basically momentary. Within the class of state verbs in Hebrew, there is a subclass of interval states which hold at moments but need to be evaluated at an interval. Telicity distinguishes between activities and accomplishments by the different entailment relations they create in the ‘imperfective constructions’

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