Structuring aspectual and temporal relations with two Hebrew adverbials, and the semantics/pragmatics of *still*

Yael Greenberg
Bar Ilan University

0 Introduction

Yitzhaki (2003) discusses two Hebrew particles which intuitively correspond to the English particle *while,* namely *be-* (literally 'in', as in (1)) and *beodo* (literally 'while-he', as in (2)). In both cases the non-tensed adjunct clauses get their tense marking from the matrix:

(1) <u>be</u>-[xacoto et   ha-kviS]$_{\text{adjunct}}$ [pag'a bo   mexonit]$_{\text{matrix}}$
      in-cross-he ACC. the road   hit   him car

(2) <u>beod</u>[o   xoce et   ha-kviS]$_{\text{adjunct}}$ [pag'a bo   mexonit]$_{\text{matrix}}$
      while-he cross ACC. the road   hit   him car

      Both: 'While he was crossing the road a car hit him'

Yitzhaki proposes an equivalent semantics for *be-* and *beodo* where in both the temporal location of the matrix event (e.g., crossing the road) interrupts / is located within the interval where the adjunct event (e.g. being hit by a car) holds.

In this paper I argue that despite the apparent similarity between the two constructions, exemplified in (1) and (2) their semantics is different. I start in section 1 by pointing out three differences between *be-* and *beodo*. In section 2 I give a brief semantics for *be-* in terms of temporal coincidence. And in section 3, the main part of the paper, I claim that the semantics of *beodo* is composed of that of *be-* (temporal coincidence) plus the semantics/pragmatics of *odo* — an inflected form of the Hebrew word for *still (od/adayin).* I develop an analysis of *odo/still* which is based on both traditional claims about the assertion and presuppositions of sentences with *still,* as well as on some novel claims. Specifically I propose that (a) The reference time of sentences with *still/odo* must be salient/anaphoric (The 'reference time anaphoricity requirement'), and (b) that this 'anaphoricity requirement' is a conversationally triggered presupposition.

1 The data: Three differences between *be-* and *beodo*

Whereas *beodo* can only express temporal inclusion between the matrix and the adjunct interval (i.e., $i_m \subset i_a$), *be-* can express a wider range of temporal relations, namely temporal inclusion, reverse inclusion and temporal identity ($i_m \subset i_a$, $i_a \subset i_m$ and $i_a = i_m$, respectively). For example, the *beodo* version of (3) can only mean that not feeling well is temporally included in writing the paper, whereas the *be-* version can also mean that writing the paper was temporally included in not feeling well, or that the two events have exactly the same temporal locations:

(3) beodo   kotev / be-kotvo   et   ha-maamar hirgiS dani   lo   tov
     while-he write / in-write-he ACC. the-paper   felt   Danny not good
     'Writing the paper Danny didn't feel well'

In addition, the adjective *ca'ir* 'young' is fine in the adjunct of both *be-* and *beodo* (see (4)) whereas *mevugar* 'old' is bad with *beodo* but fine with *be-* (see (5)):

(4) be-heyoto / be-odo ca'ir, haya dani populari meod
     in-he-be / while-he young, was Danny popular very

     'Being young, Danny was very popular'

(5) be-heyoto / [??]beodo mevugar hirvi'ax dani harbe kesef
     in-he-be / while-he old, earned Danny lots-of money

     'Being old, Danny earned lots of money'

Finally, as seen in (6), *be-*, but not *beodo* adjuncts can restrict adverbial quantifiers:

(6) be-holxo / [??]beodo holex la-'avoda, ro'e dani lif'amim et ha-ganan
     in-he-go / while-he go to-the-work, see Danny sometimes ACC. the-gardener

     'Going to work, Danny sometimes sees the gardener'

2 The semantics of *be-*

Despite the range of temporal relations with *be-*, I suggest that $be\text{-}[p_a],[q_m]$ uniformly asserts that i_a temporally coincides with i_m, written as $i_a >< i_m$ (see Stump 1985; Bonomi 1997 semantics for *when*), and defined as in (7). The *be-* version of (3), for example, has the truth conditions in (8), according to which there is a past time where Danny wrote the paper, and a past time where he didn't feel well, and the two time intervals coincide — they have a nonempty intersection:

(7) $i_a >< i_m$ holds iff $i_a \cap i_m \neq \emptyset$ (i.e., iff i_a and i_m have a nonempty intersection)

(8) $\exists e_1, t_1, e_2, t_2 [\text{write}(e_1, \text{dani}, \text{the paper}) \wedge t_1 < t_c \wedge \text{at}(e_1, t_1)] \wedge [\neg \text{feel well}(e_2, \text{dani}) \wedge t_2 < t_c \wedge \text{at}(e_2, t_2)] \wedge t_1 >< t_2]$.

Temporal coincidence is flexible enough to cover temporal inclusion, reversed temporal inclusion and temporal identity. The fact that (1) above expresses only temporal inclusion can be attributed to the well known fact, reported also for *when*-clauses, the progressive and the perfect, that achievements (like car hitting) are taken to be temporally included in accomplishments (like crossing the road).

3 The semantics of *beodo*

3.1 A *still*-based analysis of *beodo*

The proposal I would like to make is that unlike *be-*, *beodo* is not a simple word. Rather it is composed of *be-* plus *odo,* where *be-* expresses temporal coincidence (as just defined above) and *odo* is the inflected form of the Hebrew *od/adayin* 'still', seen in (9):

(9) dani odo / adayin yaSen
     Danny still-he / still asleep

     'Danny is still asleep'

Thus *beodo* p, q is reanalyzed as *be-odo* $p, q,$ i.e., *be- still* $p, q,$ and roughly asserts that the temporal location of *odo p (still-p)* coincides with the temporal location of *q*.

As initial evidence for this proposal notice that adding an explicit *adayin* 'still' to *be-* and *beodo,* as in (10), is fine in the former case, but in the latter it sounds odd and redundant:

(10) be-heyoto / [??]be-odo 'adayin 'al ha-'ec   Sama dani   klavim novxim
      in-be-he   / in-he-still still   on the-tree heard Danny dogs   bark

      'Being still in the tree ([??]when he was still in the tree), Danny heard dogs barking'

To account for the three constraints on *beodo,* reported in section 1, let me start by following previous work on *still,* according to which it has three components: an assertion and two presuppositions. These are summarized in (11) for the example *John is still asleep:*

(11) **Traditional assertions and presuppositions of *John is still asleep***
    a. **Assertion:** $\exists e : \mathrm{asleep}(e, \mathrm{Danny}) \wedge \mathrm{at}(e, t_c)$ (i.e., 'John is asleep at the speech time (t_c), i.e., now', e.g., Löbner 1989; Mittwoch 1993)
    b. **The prior time presupposition:** $\exists t', e : t' \propto t_c \wedge \mathrm{asleep}(e, \mathrm{Danny}) \wedge \mathrm{at}(e, t)$, where $\propto$ stands for the 'abut' relation — i.e., 'John is asleep also at a time prior to (and abuts) the speech time (i.e., before now)' (e.g., Löbner 1989; Mittwoch 1993; Krifka 2000)
    c. **The 'expected cessation' presupposition:** 'It is expected/reasonable that John will stop being asleep at some time after the speech time, i.e., after now' (e.g., Michaelis 1993)[1]

3.2 Explaining the incompatibility of *beodo* with *mevugar* 'old'

Assuming that in the *beodo* construction *odo* has the semantics of *still* we can immediately explain the incompatibility of *beodo* with *mevugar* 'old', seen in (5) above. The 'expected cassation' presupposition of *still* and *odo* is easily met with *ca'ir* 'young' (you can expect someone to stop being young), but not with *mevugar* 'old' (once someone is old, you do not expect him to stop being old). As (12) shows, we find the same difference with English *still:*

(12) Danny is still young/*old.

3.3 Explaining quantification facts with *still* and *beodo*

Let me start with the observation that quantification with the *beodo* construction has parallel manifestations with *when*-clauses with *still* and *adayin.* Compare, for example (13) with and without *adayin/still:*

(13) kSe-dani   (adayin) halax le-beit   ha-sefer   hu tamid haya meduka
      when-Danny (still)   went to-house the-book he always was depressed

---

[1] The 'expected cessation' presupposition can be derived as an implicature from Krifka's (2000) approach to *still* according to which

(a) *still* is focus sensitive and induces a set of alternatives. Specifically it can be associated with the whole sentence. For example, *It is still raining* asserts that 'It is raining' and has as its alternative 'It is not raining';

(b) the alternatives are aligned to the right with respect to time (i.e., we consider alternatives, e.g., 'It is not raining', later than the reference time); and

(c) the implicature that 'the alternative propositions must be considered reasonable, or entertainable' (p. 5).

We thus get the fact that that *John is still asleep* implicates that it is reasonable/entertainable that John is not asleep at some later point — namely exactly the 'expected cessation' implication.

'When Danny (still) went to school, he was always depressed'

Without *adayin/still* (13) is ambiguous between a quantificational reading ('For every event where John went to school there is an event where he was depressed') and a 'temporal background' reading ('In the period where Danny went to school, Danny was depressed in every contextually relevant event/situation'). But crucially, when *adayin/still* are present (13) has the background reading only, and the quantificational reading is lost.

This observation supports an analysis of *beodo* in terms of *still* — neither can restrict adverbial quantification. But why do we get this general constraint on *still* and *odo?*

The reason, I suggest, is that when *still* is present, the reference time of the sentence must be contextually salient or anaphoric. In Heim's (1982) terminology, the reference time of *still p* or *odo p* has to be familiar.[2] I will call this the 'reference time anaphoricity requirement' on *still* and *odo,* and will suggest below that this is what blocks restricting adverbial quantification with *still* and *adayin* (as in (13)) and in the *beodo* construction (as in (6) above).

As a support for the 'reference time anaphoricity requirement' suggestion let us compare first simple past tense sentences with and without *still.* In English simple past tense sentences can be uttered out of the blue, or with no salient past reference time (Kratzer 1998), and can be asserted to hold at an existentially closed time prior to the speech time: a sentence like (14) asserts in the indicated context that $\exists t', e : t' < t_c \wedge$ unemployed(my brother, e) $\wedge$ at(t', e), i.e., that my brother was unemployed at some past time interval:[3]

(14)   (How's your brother?) Well, he was unemployed, (but now he has a job).

But when *still* is present, as in (15) the past tense sentence is bad:

(15)   (How's your brother?) Well, he was (# still) unemployed (but now he has a job).

The example in (15), I suggest, is infelicitous because its reference time is novel — it cannot be anaphoric to anything. This is further supported by the existence of four types of *felicitous* sentences with *still* seen in (16–19), where, unlike (15), in all of them the reference time *can* be anaphoric. Each of these sentences uses a different strategy for satisfying the 'anaphoricity requirement'.

The first strategy is having a contextually salient reference time antecedent, as in (16):

(16)   (How's your brother ?)Well, he is still unemployed.
     a. **Assertion:** $\exists e :$ unemployed(my brother, e) $\wedge$ at(e, t_c)
     b. **Presupposition:** $\exists t', e : t' \propto t_c \wedge$ unemployed(my brother, e) $\wedge$ at(e, t)

The sentence in (16) asserts that my brother is unemployed now, and presupposes that he was unemployed also before now. Importantly, the latter information is not necessarily

---

[2] Ippolito (2004) has already suggested that *still* has an anaphoric, 'familiar', component, but the type of anaphoricity she talks about and the predictions she makes are different from the present ones. Ippolito, for example, is talking about anaphoricity of events. Unlike the predictions in this paper (see below), she predicts that a sentence like *John is still cooking* 'will be felicitous only if the common ground entails that: (a) there is a salient eventuality of cooking by John and (b) the time of this eventuality includes a past time' (p. 6). Below I will follow Ippolito's methodology, however, in illustrating the anaphoricity requirement on *still* by using comparisons from nominal anaphora.

[3] Though this can be thought of as a subinterval of a larger, contextually relevant period, e.g., last year.

present in the common ground, but can be accommodated. The same happens if one hears out of the blue somebody whispering *Be quiet! The baby is still asleep!* Here too the information that the baby was asleep before is easily accommodated. This holds for the presuppositions of (17–19) as well.

What is important in (16) is that the reference time of *He is still unemployed* is indeed familiar — it is anaphoric to the (contextually salient) speech time. The parallel in the nominal domain are cases like *He is really handsome* (pointing to a contextually salient man).

The second strategy is having a referential antecedent, as in (17):

(17) (How's your brother?) Well, last month he was still unemployed, (but now he has a job).
  a. **Assertion:** $\exists e : \mathrm{unemployed}(\mathrm{my\ brother}, e) \wedge \mathrm{at}(e, t) \wedge t = \mathrm{month\ before}\ t_c$
  b. **Presupposition:** $\exists t', e : t' \propto \mathrm{last\ month} \wedge \mathrm{unemployed}(\mathrm{my\ brother}, e) \wedge \mathrm{at}(e, t')$

The sentence in (17) asserts that my brother was unemployed last month and presupposes that he was unemployed also before last month. Here too the reference time of *He was still unemployed* is anaphoric — this time to the explicitly mentioned reference time of the sentence (last month). The parallel in the nominal domain are cases like *John$_i$ came in. He$_i$ sat on the chair.*

The third strategy is having an existentially closed antecedent, as in (18):

(18) John knocked on the door. I was still undressed, so I told him to wait.
  a. **Assertion:** $\exists e_1, e_2, t : \mathrm{knock}(\mathrm{john}, e_1)\mathrm{at}(e_1) \wedge t < t_c\mathrm{undressed}(\mathrm{me}, e_2) \wedge \mathrm{at}(e_2, t)$
  b. **Presupposition:** $\exists t', e : t' \propto t \wedge \mathrm{undressed}(\mathrm{me}, e) \wedge \mathrm{at}(e, t')$

The sentence in (18) asserts that John knocked on the door at some past time t, and that I was undressed at that time t and presupposes that I was undressed also before that time. The anaphoricity requirement is met since the reference time of *I was still undressed* is anaphoric to the existentially closed reference time of the previous sentence. The parallel in the nominal domain are cases like *A man$_i$ came in. He$_i$ sat on the chair,* where the pronoun refers to an existentially closed indefinite.

Finally, the anaphoricity requirement can be met by having a quantified-over antecedent. This happens when *still* appears in the scope of a quantificational structure, as in (19):

(19) Whenever I came to pick up John from school, he was still eating.
  a. **Assertion:** $\forall e_1, t[\mathrm{came\ to\ pick\text{-}up\ j}(\mathrm{me}, e) \wedge t < t_c \wedge \mathrm{at}(e_1, t)] \rightarrow \exists e_2[\mathrm{eating}(\mathrm{j}, e_2) \wedge \mathrm{at}(e_2, t)]$
  b. **Presupposition:** $\exists t', e : t' \propto t \wedge \mathrm{eating}(\mathrm{j}, e) \wedge \mathrm{at}(e, t')$

The sentence in (19) asserts that for every event in every past time t where I come to pick up John, there is an event where John is eating at *that past time t,* and presupposes that John is eating also before the time I come to pick him up. The reference time of *He was still eating* in the scope is anaphoric to the reference time of *I come to pick him up* in the restriction. The parallel in the nominal domain are donkey sentences like *When John owns a donkey$_i$, he always beats it$_i$.*

In contrast to these strategies, *still* clauses are bad when their reference time cannot be anaphoric, as in the past tense (15) above, and crucially, also when *still* appears in the restriction (rather than the scope) of a quantificational structure, as in (20):

(20) # Whenever John was still eating I came to pick him up from school.

    a. **Assertion:** $\forall e_1, t[\text{eating}(j, e) \wedge \text{at}(e_1, t)] \rightarrow$
    $\exists e_2[\text{came to pick-up j}(\text{me}, e_2) \wedge \text{at}(e_2, t)]$

    b. **Presupposition:** $\exists t', e : t' \propto t \wedge \text{eating}(j, e) \wedge \text{at}(e, t')$

Here the reference time of *John was still eating is novel* has no antecedent. Crucially, it cannot be anaphoric to the time variable (t) in the scope *(I come to pick him up)* because not only the scope appears linearly after the restriction, it is also inaccessible to it. The parallel in the nominal domain are things like # *When John owns it, he always beats it/a donkey.*

We can now turn back to the *beodo* construction. We claimed above that *odo* has the semantics of *still,* and that *still* cannot appear in the restriction of a quantificational structure, since the anaphoricity requirement on *still p* cannot be met there. This immediately explains why *beodo* cannot restrict quantification. Here too the reference time cannot be anaphoric.

3.4 Explaining temporal inclusion with *beodo*

In section 1 above we showed that *beodo* constructions express only temporal inclusion. I suggest that this is caused by the combination of the 'prior time' presupposition on *odo,* plus the 'anaphoric reference time' requirement on *odo,* argued for in the previous section.

Notice, however, that there is an apparent problem with assuming the anaphoricity requirement on *odo.* Unlike the good sentences with *still* before, in (16–19), in *be-odo p, q (be-still p, q) odo p* does not seem to have any anteceding reference time — explicit, contextually salient or quantified — before it. Why is *be-odo p, q (be-still p, q)* felicitous, then?

The answer, I suggest, is that *beodo* uses another strategy for satisfying the 'anaphoricity requirement', namely backward anaphora, manifested in the nominal domain by sentences like *When he_i saw me, John_i was really surprised.* In such sentences the reference of the pronoun in the adjunct is anaphoric to that of the linearly later noun in the matrix. Similarly, I suggest, with the *beodo* sentences (as in (21)) the reference time of the adjunct (writing the paper) is anaphoric to the linearly later reference time of the matrix (not feeling well):

(21) be-odo   kotev et   ha-ma'amar hirgiS dani   lo   tov
      in-still-he write ACC. the-paper   felt   Danny not well
      'When he was still writing the paper Danny didn't feel well'

In (21) p (writing the paper) is required to have the same temporal location as q (not feeling well) due to the anaphoricity on *odo p*. In addition, p is presupposed to be temporally located also before q (due to the 'prior time presupposition' on *odo p*). Thus we necessarily get temporal inclusion, as can be seen in (22) (assertion: ——, presupposition: ══):

(22) ══ || ——————— running time of *odo p* (still writing the paper)
              ——————— running time of q (didn't feel well)

Notice that using the traditional definition of *still* cannot guarantee inclusion. If *odo p* is not required to be temporally anaphoric to *q*, the assertion and presupposition of (21) can be easily met as in (23), with no inclusion:

(23)   ═══ || ─────── running time of *odo p* (still writing the paper)
          ─────────── running time of *q* (didn't feel well)
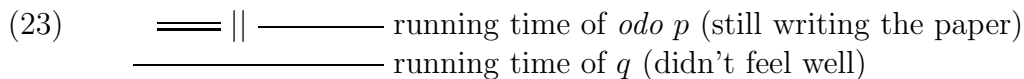
But in reality inclusion *is* expressed by the *beodo* construction (this is what gives it its *while*-like nature, observed by Yitzhaki 2003). This indicates that anaphoricity, which guarantees inclusion, is indeed an integral part of the semantics of *odo.*

3.5 Status and triggering 'anaphoricity' requirement

The anaphoricity requirement on *still* survives in (24a–24c):

(24)   a. Was John still asleep?
       b. It's possible that John was still asleep.
       c. If John was still asleep, his mother was angry at him.

All of these sentences are very odd when no contextually salient time is present in the common ground. The anaphoricity requirement, then, seems to be a presupposition. But if it is indeed the case, what triggers it?

I suggest that without the anaphoricity requirement, the 'prior time' presupposition of *still p* may be trivially met. Suppose, for example that all you know is that John was unemployed, i.e., that there is some past interval (I) where *John is unemployed* is true. This is schematically illustrated in (25):

(25)
$$I$$
───────────────────now
      ──────────
      unemployed
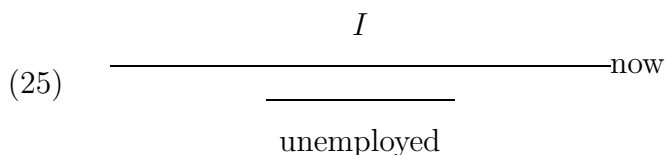
But given (25) one can automatically infer also that (a) there is a subinterval of I, I' where John was unemployed (the assertion of *John is still unemployed*), and (b) that there is another subinterval of I, I'', such that $I'' \propto I'$ where John was unemployed as well, (the presupposition of *John is still unemployed*), as shown in (26):

(26)
$$I$$
───────┼───────now
      ──┼──
   I'' I'
unemployed   unemployed
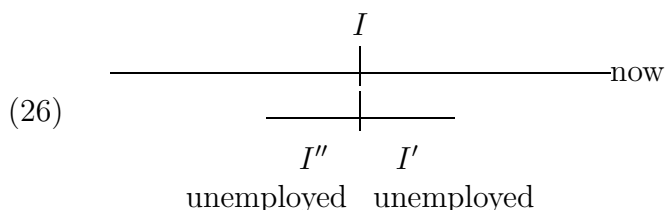
Thus, given the traditional definition of *still,* the paradoxical result is that once you know that *John was unemployed* is true (in (25)), you can automatically infer that *John was still unemployed* is true (in (26)), since both the assertion and the 'prior time presupposition' of this sentence are met in (26). The 'prior time presupposition', then, is trivially met. But this presupposition is the main contribution of *still* to the sentence (remember: the assertion of *still p* is just like that of *p*). If it is trivially met then using *still* is unjustified — it is vacuous.

In contrast, if we require that the reference time be identified with another reference time — i.e., anaphoric — the presupposition cannot be trivially met. Suppose it is known

that John was unemployed at some salient time interval in the past, e.g., between January and April, as in (27):

(27)

$$I$$

————————————————now
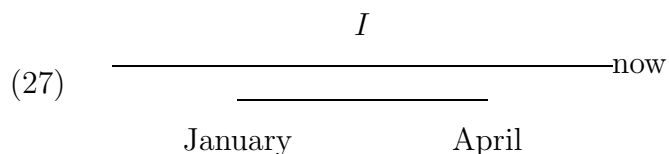
January   April

If we want to utter now *Between January and April John was still unemployed* there should be a time prior to January (and abuts it) where John was unemployed as well. Unlike the previous case, the information about such a prior time cannot be inferred on the basis of (27) — it has to exist in the common ground, or to be accommodated by the listener. Hence, the use of *still* is not trivial, not vacuous, and is thus justified.

We can thus say that the anaphoricity requirement on *still p/odo p* is some sort of conversational presupposition. It is triggered by the need to ensure that the 'prior time presupposition' of *odo p/still p* — i.e., its semantic presupposition — is not trivially met.

4 Conclusion

In this paper I argued that the semantics of the *beodo* construction in Hebrew is composed of that of *be-*, which asserts temporal coincidence, and *odo,* which is the inflected form of *still* in Hebrew. To account for the full range of facts about *beodo* I used both traditional, as well as novel claims about the semantics and pragmatics of *still,* and motivated the latter by comparing felicitous and infelicitous sentences with *still.* The resulting semantics/pragmatics of *still* and *odo* is now summarized in (28):

(28)   **Summary of the semantics/pragmatics of *odo* p/*still* p**
   a. **Assertion:** p holds at reference time t
   b. **'Prior time presupposition'** (semantic/conventional): p holds before t (and abuts t)
   c. **'Anaphoricity presupposition'** (pragmatic/conversational): t is anaphoric to another reference time/familiar
   d. **Expected cessation presupposition/implicature:** p is expected to cease after t.

REFERENCES

Bonomi, A. 1997. Aspect, quantification and when clauses in Italian. Linguistics and Philosophy 20.

Heim, I. 1982. The Semantics of Definite and Indefinite Noun Phrases. Ph.D. thesis. University of Massachusetts, Amherst MA.

Ippolito, M. 2004. An analysis of *still*. In: Proceedings of SALT 14.

Kratzer, A. 1998. More structural analogies between pronouns and tenses. In: Proceedings of SALT 8.

Krifka, M. 2000. Alternatives for aspectual particles: Semantics of *still* and *already*. Paper presented at the Barkeley Linguistics Society.

Löbner, S. 1989. German *schon — erst –âĂŞ noch*: An integrated analysis. Linguistics and Philosophy 12.

Michaelis, L. 1993. Continuity across scalar models: The polysemy of adverbial *still*. Journal of Semantics 10.

Mittwoch, A. 1993. The relationship between *schon/already* and *noch/still*: A reply to Löbner. Natural Language Semantics 2.

Stump, G. 1985. The Semantic Variability of Absolute Constructions. Reidel.

Yitzhaki, D. 2003. The Semantics of Lexical Aspect in Modern Hebrew. Ma thesis. Bar Ilan University.