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Universal/Existential Ambiguities in German

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1 The Data

German Perfect sentences containing durative adverbs like *seit* 'since' or *bis* 'until' are ambiguous between a universal (or 'u') and an existential (or 'e') reading.

Perfect sentences containing *seit* 'since' combined with a point of time as in (1) are u/e-ambiguous. The u-reading of (1) is: there is a time that starts in yesterday, and John was in the garden throughout that time. The e-reading of (1) is: there is a time that starts in yesterday, and John was in the garden at least once during that time.

Bis 'until' only combines with a point of time. (2) is ambiguous between a u- and an e-reading.

- (1) John ist seit gestern im Garten gewesen
John has since yesterday in-the garden been
'John was in the garden since yesterday'
- (2) John ist bis gestern im Garten gewesen
John is until yesterday in-the garden been
'John was in the garden until yesterday'

For many speakers, u-readings are easier to get than e-readings. But e-readings are salient with continuations like (3–4). With these continuations, u-readings are impossible. Thus, we have a test for e-readings.

- (3) und zwar dreimal
and actually three-times
'Actually, this was three times'
- (4) und zwar um eins
and actually at one
'Actually, this was at one'

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2 Questions to be Addressed

Several intriguing questions come up with the data from the last section.

First, what is the meaning of the adverbs *bis* and *seit*?

Second, are the u/e-ambiguities true semantic ambiguities?

Third, have the u/e-ambiguities anything to do with the meaning of the Perfect?

But before I present my answers to these questions, I will have a look at previous analyses.

3 Previous Analyses

The only studies treating u/e-ambiguities are, to my knowledge, Anagnostopoulou et al. (1999) and Fabricius-Hansen (1986). Let us look at Anagnostopoulou et al. (1999) first.

3.1 Anagnostopoulou et al. (1999)

In the analysis of Anagnostopoulou et al. (1999), the u/e-ambiguity of (5) is due to a lexical ambiguity of *since*.

(5) Since 1990 I have been sick

Durational *since* yields the u-, and inclusive *since* yields the e-reading. This is illustrated by the following LFs:

(6) u-reading: $\exists i$ [$\text{begin}(i)=1990 \ \& \ \text{end}(i)=\text{Now} \ \& \ \forall t \in i \ (\text{VP}(t))$]

(7) e-reading: $\exists i$ [$\text{begin}(i)=1990 \ \& \ \text{end}(i)=\text{Now} \ \& \ \exists t \in i \ (\text{VP}(t))$]

My objection against Anagnostopoulou et al. (1999) is the following. In German, all so-called *Grenzadverbien* 'border-adverbs' display the u/e-ambiguity: *bis* 'until', *seit* 'since', *von...bis* 'from...until', *von...an* 'from...on', and *ab* 'as from'. It is not desirable to make a whole class of adverbs simply lexically ambiguous. Moreover, if the adverbs mentioned were lexically ambiguous as Anagnostopoulou et al. claim, one would expect to find the u/e-ambiguity with all tenses. But compare:

(8) Preterite: Er rannte seit gestern
 he ran since yesterday
 'He ran since yesterday'

- (9) Future: Dann wird er seit 1980 hier arbeiten
 then will he since 1980 here work
 'At that time, he will have worked here since 1980'
- (10) Present: Er rennt seit gestern
 he runs since yesterday
 'He runs since yesterday'

The data in (8–10) do not display the u/e-ambiguity. There is always only the u-reading. Thus, the adverbs cannot be lexically ambiguous.

3.2 Fabricius-Hansen (1986)

Fabricius-Hansen (1986) offers a scope solution for the following u/e-ambiguous sentence.

- (11) Es hat seit gestern geregnet
 it has since yesterday rained
 'It has rained since yesterday'.

In the case of the e-reading of (11), *seit gestern* 'since yesterday' has wide scope, cf. the LF in (12).

- (12) seit gestern (PRES (PERF (es regnen)))
 since yesterday (PRES (PERF (it rain)))

But in the case of the u-reading of (11), *seit gestern* 'since yesterday' has narrow scope, cf.:

- (13) PRES (PERF (seit gestern (es regnen)))
 PRES (PERF (since yesterday (it rain)))

Obviously, there is also a third possibility. *Seit gestern* 'since yesterday' could be inserted between PRES and PERF. In Fabricius-Hansen's system, however, this does not result in a third reading, but in the e-reading again.

To interpret the formulas above, we need Fabricius-Hansen's rules for PRES, PERF and *seit* 'since'. Cf.:

- (14) PRES:
 (a) PRES ϕ is true at (t_0, T_0, T_K)
 iff ϕ is true at (t_0, T_{G_0}, T_K) . T_{G_0} is a superinterval of t_0 .

- (b) PRES ϕ is true at (t_0, T_j, T_K)
 iff (i) or (ii) is true:
- (i) t_j is a co-time t_k , which is an event-time of a proposition,
 and ϕ is true at (t_k, T_k, T_K)
 - (ii) t_j is no co-time, and ϕ is true at (t_0, T_j, T_K)
- (15) PERF:
- (a) PERF ϕ is true at (t_j, T_j, T_K) , $j \neq 0$,
 iff ϕ is true at (t_j, T_+, T_K) . T_+ stretches backward from t_j
 and includes t_j .
 (T_+ is called *unechter Vergangenheitsbereich* 'unreal past' of t_j)
 - (b) PERF ϕ is true at (t_i, T_j, T_K)
 iff (i) or (ii) is true:
 - (i) ϕ is true at (t_i, T_+, T_K) .
 T_+ is that part of *unechter Vergangenheitsbereich*
 'unreal past' of t_i which elements are subintervals of t_j .
 - (ii) ϕ is true at (t_j, T_+, T_K) .
 T_+ is that part of *unechter Vergangenheitsbereich* 'unreal
 past' of t_i which elements are subintervals of t_{k^*} .
 T_{k^*} is an interval provided by the context.
 T_{k^*} reaches over the left boundary of t_j .
- (16) *seit* 'since':
- (a) 'seit 1972 ϕ ' is true at (t_i, T_i, T_K) iff 1972 is before t_i
 and ϕ is true at (t_i, T_b, T_K) .
 T_b is the set of all superintervals of t_i that follow 1972
 - (b) 'seit 1972 ϕ ' is true at (t_i, T_j, T_K) iff 1972 is before t_i
 and ϕ is true at (t_i, T_b, T_K) .
 T_b is the set of intervals following 1972
 and standing in the very same relationship to t_i as t_j does.

Within this system, propositions are to be evaluated at the triple (t, T_B, T_K) . That is to say, there are three indices; we are dealing with a complex intension.

The first index t is the reference time. At the beginning of recursion, t is identical with speech time t_0 . But in the course of evaluation, t may denote other times (e.g. it may denote a contextually given time of another event or it may denote the time of a sentence-internal temporal adverb).

T_B is the set of times to be considered (or, in Fabricius-Hansen's terms, *Betrachtzeitmenge*). Often, T_B is the temporal adverb of the proposition. But in other cases, T_B is an event time or a time delivered by the evaluation process. In rule (a) for PRES, T_{G0} is a time delivered by the evaluation process.

The time T_0 in the triple (t_0, T_0, T_K) of rule (a) for the Present is (just as t_0 for the first index t) the default. At the beginning of recursion, T_B gets the value T_0 (but only if the sentence contains no temporal adverb and there is no context).

T_K is a store for times which have already (i.e. up to the time of evaluation) occurred in discourse. Times of temporal adverbs and times of events are stored, but times delivered by the evaluation process are stored as well.

The interpretation of (12), i.e. the e-reading, goes as follows. *Seit gestern* 'since yesterday' is the set of intervals starting in *yesterday* and overlapping S at the same time. PRES is redundant here. PERF establishes a set of intervals that are in the *Extended Now* (defined as in McCoard 1978) and that are part of a *since-yesterday*-interval. One of these is a raining-interval.

The calculation of the u-reading in (13) goes as follows. PRES establishes an interval including S. PERF establishes a set of intervals that are in the *Extended Now* and that are part of a PRES-interval. *Seit gestern* 'since yesterday' selects intervals starting in *yesterday* and continuing up to S. One of these is a raining-interval.

My objection against Fabricius-Hansen (1986) is that she makes use of too many semantic distinctions. There are three different rules for PERF in Fabricius-Hansen (1986), cf. (15). Three distinct rules for PRES are used, cf. (14). Even *seit* 'since' is ambiguous in meaning, cf. (16).

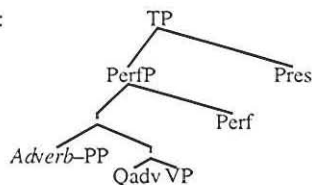
4 My Proposal

To account for the u/e-ambiguity occurring with *seit* 'since' and *bis* 'until', I make the following assumption. Every sentence has exactly one adverb of quantification (Qadv), the default being \exists_c (*einmal* 'once') (Bäuerle 1979, Stechow 1991).

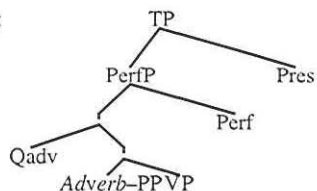
It is my thesis that durative adverbs like *seit* 'since' and *bis* 'until' have scope with respect to Qadv. The u/e-ambiguity thus receives a scope solution:

(17)

e-reading:



u-reading:



4.1 *seit* 'since'

To tackle the u/e-ambiguity of (1) (repeated here as (18)), we need the rules in (19). Pres denotes S' which is a superinterval of S.

- (18) John ist seit gestern im Garten gewesen
 John has since yesterday in-the garden been
 'John has been in the garden since yesterday'
- (19) a. $\|\exists_{\subseteq}\|(p)(t)=1$ iff $\exists t'[t' \subseteq t \ \& \ p(t')=1]$
 b. Perf: $=\lambda P\lambda t\exists u[u \supseteq t \ \& \ P(u)=1]$
 c. $\|\text{seit}_{\text{plus point-of-time}}\|(z)(p)(t)=1$ iff
 $\exists t'[\text{begin}(t') \subseteq z \ \& \ \text{end}(t') \leq S \ \& \ S \subseteq z \ \& \ p(t')=1]$

The Perfect denotes the *Extended Now*, but the reference point is excluded. See Rathert (2000) for an argument for this meaning of the Perfect.

One may wonder about the condition 'end(t') ≤ S' in the meaning rule for *seit* 'since'. Usually, the interval established by *seit* 'since' reaches up to S. But this need not always be the case, as Latzel (1977:159f.) and Fabricius-Hansen (1986:212f.) have shown. The *seit*-interval may stop before S. Compare:

- (20) a. Schopenhauer hat seit 1831 in Frankfurt gewohnt¹
 Schopenhauer has since 1831 in Frankfurt lived
 'Since 1831, Schopenhauer lived in Frankfurt'
- b. Seit 1935 wurde Hitlers Phantasie von einem
 since 1935 was Hitler's phantasy of a
 Magenleiden beherrscht
 stomach-complaint occupied
 'Since 1935, Hitler's phantasy was occupied by a stomach
 complaint'

Now we can calculate the meanings of (18):

- (21) e-reading of (18): Pres(Perf(seit gestern(\exists_{\subseteq} (VP)))) =
 $\exists u[u \supseteq S' \ \& \ \exists t[\text{begin}(t) \subseteq \text{yesterday} \ \& \ \text{end}(t) \leq S \ \& \ S \subseteq u \ \& \ \exists t'[t' \subseteq t \ \& \ \text{VP}(t')=1]]]$

¹ This example is taken from Latzel (1977:159), the following is from Fabricius-Hansen (1986:212).

- (22) u-reading of (18): $\text{Pres}(\text{Perf}(\exists_{\subseteq}(\text{seit gestern}(\text{VP})))) =$
 $\exists u[u \supseteq S' \ \&]$
 $\exists t[t \subseteq u \ \&]$
 $\exists t'[\text{begin}(t') \subseteq \text{yesterday} \ \& \ \text{end}(t') \leq S \ \& \ S \subseteq t' \ \& \ \text{VP}(t')=1]]]$

Arnim von Stechow suggested that the Qadv \exists_{\subseteq} may be omitted in the case of the u-reading (cf. also Paslawska & Stechow 1999). He argued that we get a true u-reading also without \exists_{\subseteq} . Furthermore, he argued that using \exists_{\subseteq} only for the e-reading correctly models our intuition that the e-reading is hard to get. It is hard to get because we need something complicated, something which we do not need elsewhere, namely \exists_{\subseteq} . I do not agree that \exists_{\subseteq} may be omitted in case of the u-reading, because you can say something like (23).

- (23) Charly ist dreimal seit drei gerannt
 Charly is three-times since three run
 'Charly has run three times since three'

\exists_{\subseteq} means 'once', but its place in the tree is the general slot for quantificational adverbs. (23) means that there are three different times 'three' from each of which Charly starts to run. That is to say: you can count u-readings. It is obvious that the place of \exists_{\subseteq} in the tree is the general slot for quantificational adverbs also in case of e-readings, as you can say something like (24).

- (24) Charly ist seit drei dreimal gerannt
 Charly is since three three-times run
 'Charly has run three times until three'

Thus, overt quantificational adverbs provide additional support for my analysis.

4.2 *bis* 'until'

To tackle the ambiguous sentence in (2) (repeated here as (25)), we need the rule in (26). The calculations are in (27–28).

- (25) John ist bis gestern im Garten gewesen
 John is until yesterday in-the garden been
 'John was in the garden until yesterday'

- (26) $\| \text{bis} \| (z)(p)(t)=1$ iff $\exists t'[\text{end}(t') \subseteq z \ \& \ z \subseteq t' \ \& \ p(t')=1]$

- (27) e-reading of (25): $\text{Pres}(\text{Perf}(\text{bis gestern}(\exists_{\subseteq}(\text{VP})))) =$
 $\exists u[u \supset \subseteq S' \ \&$
 $\exists t[\text{end}(t) \subseteq \text{yesterday} \ \& \ \text{yesterday} \subseteq u \ \& \ \exists t'[t' \subseteq t \ \& \ \text{VP}(t')=1]]]$
- (28) u-reading of (25): $\text{Pres}(\text{Perf}(\exists_{\subseteq}(\text{bis gestern}(\text{VP})))) =$
 $\exists u[u \supset \subseteq S' \ \&$
 $\exists t[t \subseteq u \ \& \exists t'[\text{end}(t') \subseteq \text{yesterday} \ \& \ \text{yesterday} \subseteq t' \ \& \ \text{VP}(t')=1]]]$

Back to the trees in (17). Qadv and Adverb-PP interact, but there is no scope interaction with Perf. The u/e-ambiguity thus has nothing to do with the meaning of the Perfect. This is contrary to what is said in the literature on the topic. But if this is true, the u/e-ambiguity should also be found with other tenses. This is indeed the case (to my knowledge, this has not been noticed before):

- (29) Future: Charly wird bis morgen rennen
 Charly will until tomorrow run
 'Charly will run until tomorrow'
- (30) Present: Charly rennt bis morgen
 Charly runs until tomorrow
 'Charly runs until tomorrow'

The trees for (29) would look exactly like the trees in (17), the only difference being that there is no Perf and no PerfP for (29) but a Fut and a FutP instead. This in turn would mean that the Perfect and the Future are analyzed on a par, which is in accordance with Stechow (1999). We need a Pres above Perf and above Fut for the embedded cases. In the embedded cases, Perf and Fut are deleted and Pres remains.

The only tense with which the complex u/e-ambiguity does not occur is the Preterite. Something like

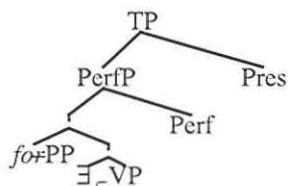
- (31) Charly rannte bis drei
 Charly ran until three
 'Charly ran until three'

never has an e-reading. (31) always means that there is a time that ended at three, and Charly ran throughout that time. That is to say, you only get the u-reading. I suggest the following analysis.

First, quantifying adverbs are incompatible with the Preterite. This has been shown by Latzel (1977) and Schipporeit (1971). Thus I suppose that \exists_{\square} is not present in Preterite sentences either.

Second, the Preterite is an anaphorical tense, i.e., it either demands a sentence-internal adverb or a context that makes the time of the event clear. In (31), there is a sentence-internal adverb, the LF could therefore be like (32), with the adverb being lambda-dad-in as an argument of the Preterite:

(32)



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