The Perfect Time Span and the ‘Present Perfect Puzzle’:

1. Another Advantage of ‘Perfect Time Span’ Semantics: The ‘Present Perfect Puzzle’

(1) The Present Perfect Puzzle (Pancheva & von Stechow 2004)

- In English (and some other languages), the present perfect is not compatible with ‘specific’ past time adverbs (e.g. yesterday).
  
- However, pluperfects and non-finite perfects are.

  a. * Dave has left yesterday.
  b. Dave had left yesterday.
  c. It’s possible for Dave to have left yesterday.
  d. Dave must have left yesterday.

(2) Perfect Time Span Semantics for [PERF]

  a. $\text{PTS}(t', t) = t \text{ is a final subinterval for } t'$
  
  b. $[[ \text{PERF} ]^{w,t,g,c} = [ \lambda t': \exists t'' . \text{PTS}(t'', t') & P(t') ] ]$

(3) Semantics for Yesterday

  $[[ \text{yesterday} ]^{w,t,g,c} = [ \lambda t' : t' \subseteq \text{the day preceding } c(\text{time}) ] ]$

(4) Structure and Interpretation for a Present Perfect

  a. Sentence: Dave has left
  
  b. $\text{LF:}$

  $\text{TP}$

  $\text{PRES}$

  $\text{TP}$

  $\text{PRES}$

  $\text{Asp}_1P <i,t>$

  $\text{PERF}$

  $\text{Asp}_2P <i,t>$

  $\text{PRV}$

  $\text{VP}$

  $\text{Dave leave}$

  c. Truth-Conditions:

  $\exists t'. \text{PTS}(t', c(\text{time})) & \exists e. \text{leave}(e,w) & \text{Ag}(e,w) = \text{Dave} & T(e) \subseteq t'$

(5) Key Observation:

Given the semantics in (2)-(3), there’s nowhere in (4b) that yesterday could be added consistently!
(6) **Semantic Consequences of Modification by Yesterday**

a. \[ \text{Yesterday Modifies Asp}_1 \]
   \[ \exists t'. \text{PTS}(t', \text{c}(\text{time})) \land \exists e. \text{leave}(e, w) \land \text{Ag}(e, w) = \text{Dave} \land T(e) \subseteq t' \land \text{c}(\text{time}) \subseteq \text{the day preceding c}(\text{time}) \]

   • Contribution of yesterday is an internal contradiction

b. \[ \text{Yesterday Modifies Asp}_2 \]
   \[ \exists t'. \text{PTS}(t', \text{c}(\text{time})) \land \exists e. \text{leave}(e, w) \land \text{Ag}(e, w) = \text{Dave} \land T(e) \subseteq t' \land t' \subseteq \text{the day preceding c}(\text{time}) \]

   • Contribution of yesterday contradicts the statement that PTS(t',c(\text{time}))

(7) **Structure and Interpretation for a Past Perfect**

a. **Sentence:** Dave had left

b. **LF:**

   \[
   \begin{array}{c}
   \text{TP} \\
   \text{PAST} \\
   \text{PERF} \\
   \text{PRV} \\
   \text{VP} \\
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{Asp}_1 <i,t> \\
   \text{Asp}_2 <i,t> \\
   \text{Dave leave} \\
   \end{array}
   \]

   \[
   \begin{array}{c}
   t \\
   \text{c}(\text{time}) \\
   \text{t' } \subseteq \text{the day preceding } \text{c}(\text{time}) \\
   \end{array}
   \]

   \[
   \begin{array}{c}
   \text{t'' } \subseteq \text{the day preceding } \text{c}(\text{time}) \\
   \end{array}
   \]

   \[
   \begin{array}{c}
   \exists t'. t' < \text{c}(\text{time}) \land \text{PTS}(t', t') \land \exists e. \text{leave}(e, w) \land \text{Ag}(e, w) = \text{Dave} \land T(e) \subseteq t'' \land t' \subseteq \text{the day preceding } \text{c}(\text{time}) \land \text{t'' } \subseteq \text{the day preceding } \text{c}(\text{time})
   \end{array}
   \]

(8) **Key Observation:**

Given the semantics in (2)-(3), there’s two places in (7b) that yesterday could be added consistently!

(9) **Semantic Consequences of Modification by Yesterday**

a. \[ \text{Yesterday Modifies Asp}_1 \]
   \[ \exists t'. t' < \text{c}(\text{time}) \land \text{PTS}(t', t') \land \exists e. \text{leave}(e, w) \land \text{Ag}(e, w) = \text{Dave} \land T(e) \subseteq t' \land t' \subseteq \text{the day preceding c}(\text{time}) \]

b. \[ \text{Yesterday Modifies Asp}_2 \]
   \[ \exists t'. t' < \text{c}(\text{time}) \land \text{PTS}(t', t') \land \exists e. \text{leave}(e, w) \land \text{Ag}(e, w) = \text{Dave} \land T(e) \subseteq t'' \land t' \subseteq \text{the day preceding c}(\text{time}) \land t'' \subseteq \text{the day preceding c}(\text{time}) \]
Summary

• We correctly predict that sentence (1b) is ambiguous:
  o *Yesterday* can be understood to either identify the topic time (t’) or the
    PTS (t’’), and thus the event time

• This explanation can also be extended to the sentences in (1c) and (1d)
  o What’s key about these cases is that there’s no PRES, and so
    modification by *yesterday* doesn’t induce a contradiction!

2. The Challenge: Variation in ‘Present Perfect Puzzle’ Across Languages

No Present Perfect Puzzle in German!

Sigurd ist gestern angekommen.
Sigurd is yesterday come

*Sigurd came yesterday*
(Lit., ‘*Sigurd has come yesterday’*).

Variation in Semantics of PERF (Pancheva & von Stechow 2004; Rothstein 2008)

a. \( t’ \leq t \) = interval t’ either strictly precedes t or has t as a final subinterval

b. Semantics of PERF in German: \[ \lambda P_{t',t} : [ \lambda t' : \exists t'' . t'' \leq t' & P(t') ] \]

c. Predicted Semantics for Present Perfect in German:

\[ \exists t' . t' \leq t & \exists e. \text{leave}(e,w) & \text{Ag}(e,w) = \text{Dave} & \text{T}(e) \subseteq t' \]

Semantic Consequences of Modification by *Yesterday*

a. *Yesterday* Modifies Asp_1P

\[ \exists t' . t' \leq t & \exists e. \text{come}(e,w) \]

& \text{Ag}(e,w) = \text{Dave} & \text{T}(e) \subseteq t' \& \text{t } \subseteq \text{the day preceding c(time)}

  • Contribution of *yesterday* is an internal contradiction (since t = c(time), in
    matrix clauses)

b. *Yesterday* Modifies Asp_2P

\[ \exists t' . t' \leq t & \exists e. \text{come}(e,w) \]

& \text{Ag}(e,w) = \text{Dave} & \text{T}(e) \subseteq t' \& \text{t}' \subseteq \text{the day preceding c(time)}

  • Contribution of *yesterday* is consistent; it locates the PTS (and so the ET)
    within the day preceding c(time)
3. Further Prediction: Interactions with Always

(14) Present Perfect and Always, in English and in German

a. I always lived in Amherst, until I moved to New Jersey.

b. * I have always lived in Amherst, until I moved to New Jersey.

c. Ich habe immer in Berlin gewohnt, bis ich I have always in Berlin lived until I

\[ \text{I always lived in Berlin, until I moved to Tubingen.} \]

(Lit, ‘I have always lived in Berlin, until I moved to Tubingen’)

(15) Analysis of the English Facts

a. Semantics of I always lived in Amherst
\[ \exists t'. t' < c(\text{time}) \land \forall t'''. t''' \in t' \Rightarrow \exists e. \text{I-live-in-Amherst}(e,w) \land T(e) \subseteq t' \]

• ‘There’s an interval t’ which completely precedes c(time), every subpart of which contains an eventuality of my living in Amherst.’

b. Semantics of I have always lived in Amherst
\[ \exists t'. \text{PTS}(t', c(\text{time})) \land \forall t'''. t''' \in t' \Rightarrow \exists e. \text{I-live-in-Amherst}(e,w) \land T(e) \subseteq t''' \]

• ‘There’s an interval t’ which contains c(time), every subpart of which contains an eventuality of my living in Amherst.’

c. Summary:
• Thus, (14a) does not entail that the speaker lives in Amherst now.
• But, (14b) does entail that the speaker lives in Amherst now.

(16) Analysis of the German Facts

a. Semantics of (14c)
\[ \exists t'. t' \leq t \land \forall t'''. t''' \in t' \Rightarrow \exists e. \text{I-live-in-Berlin}(e,w) \land T(e) \subseteq t' \]

• There’s an interval t’ which could completely precede t (\(= c(\text{time})\)), every subpart of which contains an eventuality of my living in Berlin.

b. Key Consequence: (14c) does not entail that the speaker lives in Berlin now
4. **Relationship Between Present Perfect and Past Perfective in German**

(17) **Some Interesting Observations**

In German, the meaning of Present Perfect is very similar to that of a Past Perfective

a. **German Present Perfect**
   \[ \exists t'. t' \leq t \& \exists e. \text{come}(e,w) \& \text{Ag}(e,w) = \text{Dave} \& T(e) \subseteq t' \]

b. **Past Perfective (in German and English)**
   \[ \exists t'. t' < t \& \exists e. \text{come}(e,w) \& \text{Ag}(e,w) = \text{Dave} \& T(e) \subseteq t' \]

This similarity may accord with an intuition many have voiced that in German there’s very little identifiable difference in meaning between the (matrix) clauses in (17c)

c. **Present Perfect and Past Perfective in German**
   Many German linguists have proposed that (i) has at least one reading where it means simply the same thing as (ii) (Rothstein 2008)

(i) **Present Perfect:** Sigurd ist gestern angekommen.
   Sigurd is yesterday come
   *Sigurd came yesterday.*
   *(Lit., ‘Sigurd has come yesterday’)*

(ii) **Past Perfective:** Sigurd kam gestern an
   Sigurd came yesterday PARTICLE
   *Sigurd came yesterday.*

(18) a. **Question**
   *Could* there be a reading of PRES PERF in German where it simply has the meaning of PST PRV? If so, **that alone would explain the possibility of (11)!*

b. **Answer (von Stechow 1999; Rothstein 2008)**
   No. There are environments – such as embedded clauses – where we can see that the forms in (17c) *are* semantically distinct.

(19) **Simultaneous Readings in German**

a. Fritz dachte, das es 8 uhr war.
   Fritz thought that it eight hour was
   *Fritz thought that it was eight o’clock.* (Simultaneous reading possible)

b. Fritz dachte, das es 8 uhr gewesen ist.
   Fritz thought that it eight hour been is
   *Fritz thought that it has been eight o’clock.* (Simultaneous reading impossible)
20. **Predictions of the Two Theories**

a. If there were a reading of PRES PERF where it meant exactly the same thing as PAST PRV, we’d expect that (19b) should – like (19a) – allow a simultaneous reading…

b. Under our proposed semantics, we predict the contrast in (19), however:

- In (19a), we could get a simultaneous reading via a *de re* PAST tense
- In (19b) – whether or not embedded PRES undergoes *res*-movement – the embedded PERF will place the PTS \( t' \) prior to the evaluation time \( t \)
  
  Therefore, we won’t get the state of being eight o’clock to properly overlap the evaluation time (i.e., the doxastic alternative)

Semantics of Embedded Clause in (19b):
\[
\lambda w' : \left[ \lambda t' : \exists t'' . t'' \leq t' \& \exists e. \text{it-is-8:00}(e,w') \& T(e) \subseteq t'' \right]
\]

5. **Explaining the Variation?**

21. **Big Question**

Why is there this difference between English and German PERF? Could it be reduced to some other, independent difference?

22. **Pancheva & von Stechow (2004)**

a. **Proposal:**

- Ultimately, the difference is due to differences between English and German *present* tense…
- German present tense allows a ‘future’ reading (23bi), English doesn’t (23bii).
- They spell out a pragmatic story whereby this ultimately leads to a difference in the interpretation of PRES + PERF in these languages…

b. **(Pure) Future Readings of PRES**

(i) **German:** Fritz ist in 10 Tagen krank.
Fritz is in 10 days sick

*(Fritz will be sick in ten days.)*

(Lit., ‘Fritz is sick in ten days’)

(ii) **English:** * Fritz is sick in 10 days
(23) **Key Problem (Rothstein 2008, et alia)**

Swedish, like German, allows a ‘future’ reading of Present (23a). However, its present perfect patterns with English, and not with German (23b).

a. I morgon **aker** jag. 
   Tomorrow **leave** I
   \(I will \text{ leave tomorrow} \) (Lit., ‘I leave tomorrow’)

   [NOTE: This could be a ‘scheduled future’ reading, which exists in English. But, there are other, better data that couldn’t be analyzed that way]

b. (i) *Jag** **har** varit pa bio **igar.**
   \(I** have been** to the movies yesterday \)
   *I have been to the movies yesterday.*

(ii) *Jag** **har** alltid bot** bott i Berlin, tills jag har
   \(I** have always** lived in Berlin until I have
   flyttat till Tubingen.
   moved to Tubingen
   *I have always lived in Berlin, until I moved to Tubingen.*