ON THE PERFECT OF RESULT
GERMAN PREDICATIVE PARTICIPLES AND JAPANESE TE-IR-U
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1. PRELIMINARIES

Most of the Japanese material is taken from Kusumoto’s co-talk on the subject, inserted here for convenience.

The discussion is an addendum to the lecture on tense and modality given in Kyoto. Like Kusumoto I hold the view that the Present denotes the speech time. Temporal adverbs such as seit/kara seem to provide a counterexample:

(1) Die Sonne scheint seit Jahrmillionen. (W. Klein)
the sun shines since year-millions
‘The sun has been shining for millions of years.’

Klein takes this as a proof that the Present denotes a time interval including the speech time. A closer investigation of the semantics of seit/kara shows that the long time span is introduced by the adverb and not denoted by the Present.

Another problem for the theory of tenses is the semantics of participles. We compare the German predicative participle (PP) – “Zustandspassiv” – and the Japanese teiru-construction, more precisely, the te-participle (te-P). The participles are adjectives formed from verbs. The two participles have common features but show also differences. The main difference is that the affix –te is ambiguous in at least 4 ways. We focus on resultative participles. These denote a target state or result state. Most researchers agree that the target state is a property of states or times. The question that has not been settled in a satisfactory way is how this property is obtained in a compositional way.

I start with a lexical analysis of target state verbs in the style of (Kusumoto, 2002) and (Kratzer, 1996), (Kratzer, 2000). I will then point out empirical problems arising for a lexical account with the adverb Germ. wieder/Jap. mata ‘since’. The data point towards two possible solutions: (a) we decompose in the syntax or (b) state verbs have a more complicated type than assumed by most authors. Most of the relevant arguments are stated in (Stechow, 2002); cf. also (Stechow, 1996b) and (Kusumoto, 2001). As far as I can see, the second approach is more promising. I will try to show that target state verbs are semantically more complicated than usually assumed in the literature.

2. SYNTAX OF PPS AND TE-PS

The syntax of the PP/te-P construction is very simple. In fact, it is the same in Germ. and Jap.

(2) Der Wagen ist repariert.
the car is repaired (LF)

The participle morphology is a syntactic affix carrying the RESULT-operator, whose semantics is at issue; cf. (Kratzer, 1996), (Kratzer, 2000), (Rapp, 1997).

The following is a somewhat simplified version of Kusumoto’s syntax cf. (Kusumoto, 2001), (Kusumoto, 2002):

(3) taoru-ga kawai-teiru

‘The towel is dry’ (LF)

3. SOME DATA

Here are some data reminding the properties of the PP/te-P. All Japanese Data are from K. Kusumoto (references cited or pc).

i. The PP can’t be a Perfect, because it cannot be modified by a temporal adverb giving a past time. The te-P has a Perfect reading.

(4) a. Der Wagen ist jetzt/morgen repariert.
   the car is now/tomorrow repaired

b. *Der Wagen ist gestern/vor drei Tagen repariert.
   the car is yesterday/before three days repaired

(5) 彼は昨日マラソンを走っている

ii. Like adjectives, the PP allows for modification by *noch immer* ((Kratzer, 2000)). Combined with the Perfect, a very different meaning is obtained. PPs behave like simple copula constructions.

(6) a. Das Glas ist noch immer voll.
   the glass is still already full
b. Das Glas ist noch immer gefüllt.
   the glass is still already filled
c. Das Glas ist noch immer gefüllt worden.
   the glass is still already filled been

The first sentence means that the glass is still full (in virtue of previous filling event). The second means something like: “Up to now it has always been the case that the glass was filled at any relevant occasion”.1

iii. The PP entails the corresponding target state adjective.

(7) a. #Das Glas ist gefüllt aber leer. (contradictory)
   the glass is filled but empty
b. Das Glas ist gefüllt worden, jetzt aber leer.
   the glass is filled been, now but empty.

iv. The PP is not an eventive passive, because it cannot be modified by an agent-PP.

(9) Der Rasen ist (*von Harald) gemäht. (Rapp, 1997)
   the lawn is (*by the Harald) mown

*Teiru*, when it is given resultative reading, does not allow an agentive-PP either.

(10) mado-ga (*Junko-niyotte) ake-rare-teiru
    window-nom (Junko-by) open(transitive)-pass-tei-pres
    The window is opened (*by Junko)

The sentence with the by-phrase is ok when understood as a progressive sentence, something like the window is being opened by Junko.

iv. The attributive participle shows none of these restrictions, it has a Perfect and a Passive reading. So it is an other construction.

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1 I don’t know of any elaborate semantics of *noch immer*. The locus classicus for relevant data is (Schipporeit, 1971).
(11) The Germ. PP always requires a previous event that brings about the result. According to (Kusumoto, 2002) no such presupposition holds for the teiru-construction:

v. The Germ. PP always requires a previous event that brings about the result. According to (Kusumoto, 2002) no such presupposition holds for the teiru-construction:

(12) a. Die Wäsche ist getrocknet.
    the laundry is dried
b. Die Wäsche ist trocken.
    the laundry is dry.

The two sentences are not synonymous. (12a) entails that the laundry had been wet, (12b) doesn’t. The causing event is an implicature.

In Jap. we get the contrast if we have the choice between a participle and an intransitive verb:

(13) a. kono-suupu-wa atatakai/tumetai
    this-soup-top warm/cool
    This soup is warm/cool
b. kono-suupu-wa atatamat-teiru/same-teiru
    this-soup-top warm(intransitive)-tei-pres/cool(intransitive)-tei-pres
    This soup is warmed/cooled

The (a) sentence implies a previous event of warming/cooling while (b) doesn’t (Kusumoto p.c.).

vi. Like adjectives, the PP combines with durative and positional seit ‘since’. Jap. te-P behaves in the same way.

(14) Die Bibliothek ist seit 9 Uhr geöffnet.
    the library is since 9 o’clock opened

(15) あの店は今朝7時から開いている
    ano-mise-wa kesa siti-ji-kara ai-teiru
    ‘That store has been open since 7 o’clock this morning’

vii. The root restriction for the formation of PPs and resultative te-Ps are very similar in both languages, the input verb should be an accomplishment or achievement with a target state. States, activities are no good roots.

(16) a. *Die Antwort ist gewusst/geglaubt. state root

2 Jap. doesn’t have an adjective ‘dry’. We need the intransitive verb dry with teiru (Kusumoto p.c.).

    sentakumono-ga kawai-teiru
    laundry-nom dry(intransitive)-tei-pres

In these case the distinction between verbs and adjectives seem neutralised and the previous event is not necessarily implied.
the answer is known/believed

the answer is known/believed

Die Antwort wird gewusst/geglaubt. passive

b. *kare-wa heya-ni i-teiru state root
   he-top room-in be-tei-pres
   ‘He has come into the room’

(17) a. *Ich bin gearbeitet activity root
   I am worked
   cf. Ich bin überarbeitet. accomplishment root
   I am overworked

(18) a. Er ist gestorben. achievement root
   he is died
   b. 彼は死んでいる
   kare-wa sin-deiru
   he-top die-tei-pres
   ‘He is dead’, NOT ‘He is dying’

4. THE SEMANTIC FRAMEWORK

The same as in the Kyoto lectures. It is compatible with (Kusumoto, 1999).

(19) Logical types
    Basic types: e (individuals), s (words/situations), t (truth-values), i (times), v (events), d
    (degrees)
    If a and b are types, so is (ab).

(20) Semantic domains
    De = the individuals
    Di = \{0, 1\}
    Ds = the situations/world histories
    Dl = the time intervals
    Dd = degrees, here lengths of times
    Dv = the events
    D_ab = the partial functions from Da into Db

Abbreviations: Outer brackets are omitted; p := (st) former type of propositions

(21) Contexts: c, c’,...
    a_is the speaker of c, t_c the time c etc.

(22) Absolute tense and anaphoric tense
    pres und pasti haben den Typ i.
    a. \[\llbracket t^* \rrbracket^{ge_c} = t_c\text{, if } t^* \text{ is free}; g(t^*_i), \text{ if } t^*_i \text{ is bound}.\]
    b. \[\llbracket \text{past}i \rrbracket^{ge_c*} \text{ is defined only, if } g(i) < t_c; \text{ if defined } \llbracket \text{past}i \rrbracket^{ge_c} = g(i)\]

(23) Relative tenses/tense operators

\footnote{Eine Formulierung dieser Art findet man in (Kusumoto, 1999), aber auch schon in Schriften von I. Heim.}
PRES, PERF (or PAST) and FUT are symbols of type (ip)(ip).

a. $[[\text{PRES}]] = \lambda P \in D_{ip} \cdot t. \lambda w. \exists t'[t' = t \& P(t')(w)]$

b. $[[\text{PERF}]] = \lambda P \in D_{ip} \cdot t. \lambda w. \exists t'[t' \leq t \& P(t')(w)]$

t' \leq t iff no part of t' is later than t;

c. $[[\text{FUT}]] = \lambda P \in D_{ip} \cdot t. \lambda w. \exists t'[t' \geq t \& P(t')(w)]$

t' \geq t iff no part of t' is earlier than t.

(24) Aspect operators have the type (vp)(ip)

a. Perfective: $[[\text{PF}]] = \lambda P \in D_{vp} \cdot \lambda t. \lambda w. \exists e[t(e) \subset t \& s \subset P(e)(w)]$

b. Imperfective: $[[\text{IP}]] = \lambda P \in D_{vp} \cdot \lambda t. \lambda w. \exists e[e(e) \subset t \& s \subset P(e)(w)]$

$\tau(e)$ is the running time of event e

States don't have an aspect! 5

(25) lexical entries for verbs

a. call is of tye e(vp).

$[[\text{call}]] = \lambda x \in D_e \cdot \lambda e \in D_e \cdot \lambda w. \exists e \text{ is a calling of } x \text{ in } w$

b. sick hat den Typ e(ip)

$[[\text{sick}]] = \lambda x \in D_e \cdot \lambda t \in D_t \cdot \lambda w. x \text{ ist sick in } w \text{ at } t$

5. KUSUMOTO’S ANALYSIS OF TE-PS

My simplifications with respect to Kusumoto are these:

- The TP consists of the distinguished variable $t^*$ and the tense operators PRES, PAST, FUT. (Kusumoto, 1999) has an additional bound time variable under the tense operators. 6

- I treat target states as properties of times, not of states. This makes the treatment consistent with the Kyoto lectures.

- I replace the IP-operator by the more realistic PROG-operator of Dowty’s

-te is ambiguous in at least four ways (Kusumoto, pc.)

(26) Progressive

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4 Though everywhere in the literature, this is not a good operator. It should always be replaced by the modal version PROG introduced in (Dowty, 1979: chap. 3)


6 The additional variable is needed in order to account for anaphoric temporal relations in sentence such as John said he would by a fish that was alive. Here the temporal variable of was is bound by the future operator would. I create the bound variable by QR-ing would. Kusumoto has a bound variable under each tense operator. The example is treated in the third Kyoto lecture; cf. (65).
Todd-wa hasi-te-ir-u
Todd-top run-teiru
'Todd is running'

(27) Experiential Perfect
orabda-ni san-kai ryokoo-si-teiru
Holland-to three-time travel-do-teiru
'I have travelled to Holland three times'

(28) Habitual reading
私は大学で英語を教えている
watasi-wa daigaku-de eigo-o osie-teiru
'I teach English at a college'

(29) Perfect of result
taoru-ga kawai-teiru
'The towel is dry'

The parallel LFs should look like this:

(30) TP
   t*
   T
   VP
   PartP
   ip
   PROG
   PERF
   HAB
   RESULT
   te
   PRES
   FUT
   VP
   ip
   \[ \lambda_v \lambda_t \lambda_w. \forall w'[w' \in \text{Inertia}(i,w) \rightarrow \exists e[t \subset \tau(e) \& t \text{ is not a final subinterval of } \tau(e) \& P(e)(w')] \](cf. (Dowty, 1979), (Stechow, 1996b))
   b. \[ \lambda_v \lambda_t \lambda_w. \exists t'[t' \leq t \& P(t')(w)] \]
   c. \[ \lambda_v \lambda_t \lambda_w. \exists e[\exists w'. P(e)(w') \& \text{TARGET}(e)(t)(w)] \]
      (cf. (Kusumoto, 2002))
   d. \[ \lambda_v \lambda_t \lambda_w. \exists t'[t \subset t' \& \text{there are many } e[\tau(e) \subset t' \& P(e)(w)]] \]
      (cf. (Paslawska and Stechow, 2003))

The progressive and the habitual reading have a straightforward analysis.

(32) Progressive & Habitual: Todd-wa hasi-teiru 'Todd is running'
In the Perfect construction, the adverb of quantification is the aspectualizer, i.e., the operation that converts a property of events into a property of times.

(33) **san kai** is of type (vp)(ip).
    
    \[
    \lambda w. \forall w' [w' \in \text{Inertia}(w,t_c) \rightarrow \exists e [t_c \subseteq \tau(e) \& t_c \text{ is not a final subinterval of } \tau(e) \& \text{running}(Todd)(e)(w')] ]
    \]
    
    \[
    \lambda w. \exists [t_c \subseteq t \& \text{there are many } e [\tau(e) \subseteq t \& \text{teach-English}(I)(e)(w) ]
    \]

(34) Experiential: orabda-ni san-kai ryokoo-si-teiru ‘I have travelled to Holland 3 times’

\[
\lambda w. \exists [t \leq t_c \& \text{there are 3 } e [\tau(e) \subseteq t \& \text{travel-to-Holland}(I)(e)(w) ]]
\]

In the following example, the aspectual adverb has to be a covert adverb ONCE.
彼は昨日マラソンを走っている
kare-wa kinoo marason-o hasi-teiru
he-top yesterday marathon-acc run-tei-pres
‘He has run a marathon yesterday’

(36) t* Pres[PERF [yesterday ONCE[he run a marathon]]]

(37) [[ ONCE ]] = λPλPvp.λt.λw.∃e[τ(e) ⊆ t & P(e)(w)] ; cf. (Bäuerle, 1979)

The most interesting construction is the resultative.

(38) Resultative: taoru-ga kawai-teiru
‘The towel is dry’/’Das Handtuch ist getrocknet’

\[ \lambda w. \exists e. \exists w'. [drying(e)(w) & TARGET(e) = \lambda t. \lambda w'. dry(e)(t')(w')] \]
“The towel is dry, possibly as a result of a drying”

TARGET is a function assigning to any event its target state, provided it has one.

An important ingredient of the theory is Kusumoto’s analysis of target state verbs:

(39) [[ kawak ]] = \lambda x. \lambda e. \lambda w. drying(x)(e)(w) & TARGET(e) = \lambda t'. \lambda w'. dry(x)(t')(w').

For convenience, the semantics of the RESULT-operator is repeated:

(40) Resultative ta/te
[[ -ta ]] = λP \in Dvp. \lambda t. \lambda w. \exists e. \exists w'. P(e)(w') & TARGET(e)(t)(w)

The analysis is in the spirit of (Kratzer, 1994), but not exactly the same. See below. The important point is that the causing event is only possible, but its target state holds in the actual world.

Calculation of the truth condition.

[[ toaru kawak ]] = \lambda e. \lambda w. drying(the towel)(e)(w) & TARGET(e) = \lambda t'. \lambda w'. dry(the towel)(t')(w')

\[ the \ towel \ is \ treated \ as \ name \ to \ facilitate \ the \ calculation. \]
[[toaru kawak-ta]] = λt.λw.∃e.∃w'.[[drying(the towel)(e)(w') & TARGET(e) = λt'.λw'.dry(the towel)(t')(w')]] & TARGET(e)(t)(w)

= λt.λw.∃e.∃w.[drying(the towel)(e)(w) & TARGET(e) = λt'.λw'.dry(the towel)(t')(w')]
& dry(the towel)(t)(w)],
because TARGET(e) = λt'.λw'.dry(the towel)(t')(w')

[[t* toaru kawak-ta PRES]] =
∃e.∃w.[drying(the towel)(e)(w) & TARGET(e) = λt'.λw'.dry(the towel)(t')(w')]
& dry(the towel)(tc)(w)]

The analysis can be carried over to German. The difference is that, in German, the causing event occurs in the actual world.

(41) Kusumoto’s RESULT for German
[[RESULT]] = λP ∈ D_v.λt.λw.∃e.∃P(e)(w) & TARGET(e)(t)(w)

(42) a. Das Handtuch ist getrocknet.
the towel is cop dried
b. LF: t* RESULT the towel dry itr
c. ∃e[[drying(the towel)(e)(w) & TARGET(e) = λt'.λw'.dry(the towel)(t')(w')]]
& dry(the towel)(tc)(w)]

This is not quite what we want because the sentence speaks of the target state of a particular event. We can fix this by adding an appropriate condition, e.g., END(τ(e)) = BEG(t), i.e., the last moment of the event is the first moment of the target state.

So far the analysis works.

### 6. PARTICIPLES AND TEMPORAL ADVERBS

The analysis makes the PP and the te-Ps stative predicates. We show this: PPs/te-Ps in present statements

- combine with a frame adverb only if the frame gives a present or a future time.
- combine with seit/kara-adverbials that are not intersective but introduce an Extended Now.

The incompatibility of the present copula with past time temporal adverbs follows immediately from the semantics of the present tense.

(43) *Das Handtuch ist gestern getrocknet.
the towel is yesterday dried
λw.∃e[dry(the towel)(tc)(w) & tc ⊆ yesterday & ….]

The speech time is not in yesterday.

The compatibility with future time temporal adverbs follows from the optionality of FUT-operator for the present both in Japanese and German.

(44) a. Das Geschäft ist morgen geöffnet/offen.
the store is tomorrow opened/open
b. kono-mise-wa asita ai-teiru
this-store-top tomorrow open-tei-pres

**Positional seit/kara**

The combination of PPs and te-Ps with **seit/kara** ‘since’ requires the semantics given in (Stechow, 2002).\(^8\) This adverb introduces an Extended Now (XN) and specifies its length (durative **seit** or its beginning (positional **seit**). Both adverbs require that the property modified is temporally homogeneous. We first treat positional **seit**.

\[(45) \text{Positional } seit_{\text{Germ}}/kara_{\text{Jap}} \text{ have the type } i((ip)(ip))\]
\[\llbracket seit_p \rrbracket = \lambda t \in D_p. \lambda P \in D_{ip}. \text{HOM}(P). \lambda t'. \lambda w. \exists t'' [\text{XN}(t'', t') \land \text{LB}(t'') = t \land P(t'')],\]
\[\text{where} \]
\[\text{XN}(t'', t') \text{ iff } t' \text{ is the right end of } t''; \text{ cf. } (\text{Dowty, 1979, p. 239})\]
\[\text{HOM}(P) \iff \forall w \forall t [XN(t, tc) \land LB(t) = 9AM \land \exists e[[\text{open}((\text{the library})(w)) \land \text{TARGET}(e) = \lambda t'. \lambda w'. \text{open}_A((\text{the library})'(w'))] \land \text{open}((\text{the library})(t)(w))]]\]

This semantics makes it possible to have a **seit**-adverb in a Present-sentence, which is not possible for English, where **since** requires a Perfect or Pluperfect.

\[(46) \text{Die Bibliothek ist seit 9 Uhr geöffnet.} \quad [= 11]\]
\[\text{the library is since 9 o’clock opened}\]
LF: \(t* \textit{seit}_p 9\text{AM RESULT} [\text{the library open}_\text{lit}]\)
TC: \(\lambda w \exists t [\text{XN}(t, t_c) \land \text{LB}(t) = 9\text{AM} \land \exists e[[\text{open}((\text{the library})(e))(w)) \land \text{TARGET}(e) = \lambda t'. \lambda w'. \text{open}_A((\text{the library})'(e'))] \land \text{open}((\text{the library})(t)(w))]]\]

The corresponding English sentence is out:

\[(47) \quad \text{*The library is open/opened since 9 AM.}\]

The HOM-property is illustrated by:

\[(48) \quad \text{*Ich bin seit dem Sommer 3 mal krank.}\]
\[\text{I am since the summer 3 times sick.}\]
\[\text{BUT: OK Ich bin seit dem Sommer 3 mal krank gewesen.}\]
\[\text{I am since the summer 3 times sick been}\]

The contrast is explained below; cf. (55).

Japanese behaves like German:

\[(49) \quad \text{ 彼は一週間前から病気だ} \]

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\(^8\) Perhaps, the semantics given in (Fabricius-Hansen, 1986, chap. 4) is equivalent. The system is so complicated that a comparison is difficult. A similar semantics for **seit** is given in (Musan, 2003), but it is not restrictive enough and makes wrong prediction. It has been discussed in (Stechow, 2002).
kare-wa isyuukan-mae-kara byoki-da
he-top one-week-before-since sick-cop
‘He has been sick since a week ago’

\textit{seit} \textit{t} \alpha is defined only if \textit{t} is before the speech time.\textsuperscript{9} There is no such restriction for Japanese. The Germ. tempora preposition \textit{ab} carries no such presupposition.

\begin{equation}
(50) \quad \begin{array}{l}
a. \quad \text{明日から真面目に勉強する} \\
\text{asita-kara mazimeni benkyoo-suru} \\
\text{tomorrow-since hard study-do-pres} \\
\text{‘(I) will study hard (starting) from tomorrow’}
\end{array}
\end{equation}

\begin{equation}
(51) \quad \begin{array}{l}
a. \quad *\text{Ich werde seit morgen arbeiten.} \\
b. \quad \text{OK Ich werde ab morgen arbeiten.}
\end{array}
\end{equation}

\begin{equation}
(52) \text{\textit{ab} ‘from on’ is intersective:} \\
[\text{\textit{ab}}] = \lambda t \in D_{t}, \lambda P \in D_{ip}, \lambda t'. \lambdaiw. [\text{LB}(t') = t \& P(t')(w)].
\end{equation}

\begin{equation}
(53) \quad \begin{array}{l}
\text{Sie wird \textit{ab} 9 Uhr hier sein.} \\
\text{she will from 9 o’clock be here} \\
\text{\textit{t}^* \text{FUT from 9 IP she is here}} \\
\lambda iw. \exists t [ t \geq t_c \& \text{LB}(t) = 9AM \& \text{be-here}(she)(t)(w)]
\end{array}
\end{equation}

\textit{seit} \textit{t} and \textit{t} \textit{kara} can have an intersective meaning as well. Hence these adverbs can have the \textit{ab}-meaning as well.

\begin{equation}
(54) \quad \begin{array}{l}
a. \quad \text{Ich habe gestern seit 6 Uhr morgens gearbeitet.} \\
\text{I have yesterday since 6 o’clock in the morning worked} \\
\text{‘Yesterday, I was working from 6 AM on.’}
\end{array}
\end{equation}

\begin{equation}
(55) \quad \begin{array}{l}
a. \quad *\text{Ich habe \textit{ab} 9 Uhr dreimal angerufen.} \\
b. \quad \text{Ich war \textit{seitintersective} dem Sommer dreimal krank}
\end{array}
\end{equation}

\textit{ab/seitintersective} doesn’t have the strict HOM-presupposition:

\begin{equation}
(56) \quad \begin{array}{l}
a. \quad *\text{去年から東京に行った} \\
\text{kyonen-kara Tokyo-ni it-ta}
\end{array}
\end{equation}

\textsuperscript{9} Cf. (Fabricius-Hansen, 1986)
last-year-since Tokyo-to go-past
* ‘I went to Tokyo since last year’

Kusumoto: “These sentences slightly improve when adverbials like *four times* are added or become almost perfect further added with *till*-phrases or *already.*”

(57) *去年から東京に行った
kyonen-kara ima-madeni/suden yon-kai Tokyo-ni it-ta
last-year-sincenow-till/already 4-times Tokyo-to go-past

German behaves in the same way:

(58) a. *Ich bin seit dem letzten Jahr nach Tokyo gefahren.
I am since the last year to Tokyo driven
b. Ich bin seit dem letzten Jahr bisher/schon viermal nach Tokyo gefahren.
I am since the last year up-to-now/already four-times to Tokyo driven

**Durational seit**

*seit*$_d$ takes a duration $d$ as argument and introduces an XN of length $d$. Furthermore it requires that the modified temporal property is strictly homogeneous, i.e., it has the subinterval property.

(59) Durational seit

\[
[[\text{seit}_{\text{dur}}]] = \lambda d \in D_d. \lambda P \in D_{ip}. \text{HOM}(P). \lambda t \in D_i. \lambda w \in D_s. \exists t'[\text{XN}(t', t) \land \text{length}(t') = d \land P(t')]
\]

The following example shows that durational seit$_{\text{dur}}$ cannot always be intersective.

<table>
<thead>
<tr>
<th>(60) Wir waren gestern seit 30 Jahren verheiratet. (Stechow, 2002)</th>
</tr>
</thead>
</table>
| we were yesterday since 30 years married
\ne \neq \lambda w. \text{past}, \subseteq \text{yesterday}^c \land \text{length(\text{past}_t)} = 30 \text{ years} \& \text{married(we)(\text{past}_t)(w)}
\ne = \lambda w. \text{past}, \subseteq \text{yesterday}^c \& \exists t[\text{XN}(t, \text{past}_t) \land \text{length(\text{past}_t)} = 30 \text{ years} \& \text{married(we)(t)(w)}]
|

In fact, durative seit is never intersective:

(61) #Ich war gestern seit drei Stunden krank.\textsuperscript{10}
I was yesterday SEIT three hours sick

So seit$_{\text{dur}}$ is not synomymous with Engl. *for*, which is Germ. *lang*.

(62) Ich war gestern drei Stunden lang krank.
I was yesterday three hours long sick
‘Yesterday, I was sick for 3 hours.’

Japanese is like English in this respect. There is no durative kara.

(63) *kare-wa is-syuukan-kara byoki-da

\textsuperscript{10} The XN-reading, where the XN goes up to yesterday, is marginally possible, but pragmatically unplausible.
7. **Empirical Problems: Wieder/Mata**

The target state verb ‘to open’ exhibits the repetitive/restitutive ambiguity, the PP only has the restitutive reading; (Dowty, 1979), (Stechow, 1996b).  

(64) a. Ede öffnete die Tür wieder. repetitive√ restitutive√  
Ede opened the door again  
b. Die Tür ist wieder geöffnet.12 repetitive* restitutive√  
the door is again opened

Repetitive: There was an opening of the door before.  
Restitutive: The door had been open before.

The restitutive reading is a problem for the kind of lexical semantics given. Here an intransitive target state verb:

(65) (Kusumoto, 2001, (13))  
doa-ga mata ai-ta (√restitutive/√repetitive)  
door-NOM again open-TA  
‘The door opened again’ (√restitutive/√repetitive)

The semantics of *wieder/again/mata* is this:

(66) \[ [[\text{mata}]] = \lambda P \in D_{\text{pf}} \lambda e \in D_e, \lambda w \in D_w, P(e)(w) \]  
\[ [[\text{mata}]](P)(e)(w) \text{ is only defined when there is a maximal eventuality } e' \text{ in } w \text{ such that } \tau(e') < \tau(e) \text{ and } P(e')(w) \] (Stechow, 1996b)

(67) \[ [[\text{doa ga ai-}]] = \lambda e \in D_e. \left[ \lambda w \in D_w. \text{opening(the door)(e)(w)} \& \text{TARGET}(e) = \lambda t \in D_t. \left[ \lambda w' \in D_w. \text{open(the door)(t)(w')} \right] \right] \]

The LF cannot be the following:

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11 Actually, the facts are more complicated: even pure stative adjectives have two readings depending on intonation:

a. Die Tür ist wieder AUF.  
the door is again OPEN.  
b. Die Tür ist WIEDER auf.  
the door is AGAIN open.

Both statements presuppose a previous being open. But the first sentence is interpreted with respect to the antecedent utterance ‘The door is closed’, whereas the second sentence is interpreted with respect to the antecedent utterance ‘The door is open’; cf. (Klein, 2001). Hence *wieder* ‘again’ contains an anaphoric variable and has different presuppositions depending on the focus structure. This issue is ignored here, because our semantics cannot make the relevant distinctions. A recent analysis is given in (Beck, 2004). I think that the issue doesn’t affect the points made here.

12 What about the Japanese counterpart doa-ga mata ai-te-ir-u? Is it acceptable? What does it mean?
(68) \[ t^* \{ \text{PF} \{ \text{VP mata} \{ \text{VP doar-ga ai-} \} \} \} \text{PAST} \]

This is obvious from the meaning of \{ VP mata \{ VP doar-ga ai-} \}:

(69) (Kusumoto, 2001), repetitive
\[ \lambda e. \lambda w. \text{opening}(the\ door)(e)(w) \& \ \text{TARGET}(e) = \text{open}(the\ door) \]
Presupp: \[ \exists e'[(e') < \tau(e) \& \text{opening}(e')(w) \& \text{TARGET}(e') = \text{open}(the\ door)] \]

There is no way for the mata/again to have access to the target state. The argument carries over to the PP-construction (64b): it can only have the repetitive reading though, intuitively, it is not available:

(70) \[ t^* \{ \text{PartRESULT} \{ \text{wieder [die Tür öffn-itr]} \} \}^{13} \]
\[ t^* \{ \text{PartRESULT} \{ \text{again [the door openitr]} \} \} \]

The same problem in other lexical approaches:

(71) (Kratzer, 1994), adapted to our ontology\(^{14}\)
\[ [[ \{ \text{VP open the door} \} ]] = \lambda e. \lambda w. \text{open}_A(\text{the door})(f_{\text{result}}(e))(w), \]
where \text{open}_A is a function in \text{D}_p \(^{15}\)

\( f_{\text{result}} \) is a function that assigns its target state to each event. Target states are individual states for Kratzer. We identify them with times. None of the points made her depends on that identification. The resultant state of event may be thought as the time following the event at which a certain property holds, say the property called target state by Kusumoto. (Stechow, 1996b) notices that this representation can only generate the repetitive reading. The reasoning is the same as for Kusumoto's proposal:

(72) The door opened again
\[ [[\text{past_i PF again open the door}]] \]
\[ = \lambda w. \exists e[\tau(e) \subseteq \text{past_i} \& \text{open}_A(\text{the door})(f_{\text{result}}(e))(w)] \]
Presupp: \[ \exists e'[(e') < \tau(e) \& \text{open}_A(\text{the door})(f_{\text{result}}(e'))(w)] \]

Kratzer generates PPs by means of a perfectivizer PERF, which is a RESULT-operator.

(73) \[ \text{PERF}_K = \lambda P \lambda s \exists e. P(e) \& s = f_{\text{res}}(e) \]
Adapted to our frame work:
\[ [[\text{PERF}_K]] = \lambda P \in \text{D}_e. \lambda t. \lambda w. \exists e[P(e)(w) \& t = f_{\text{res}}(e)] \]

We see that this operator cannot help to generate the restitutive reading of the PP. We have two possible adjunction sides for again:

(74) a. die Tür wieder geöffnet ist only repetitive!
    b. \[ \text{[PartP PERF}_K \text{ again [VP open the door]}] \]
    c. again \[ \text{[PartP PERF}_K \text{ [VP open the door]}] \]

We have seen, that (a) is a repetitive reading. (b) is true of a time \( t \) if it is the target time of an

\(^{14}\) For Kratzer, adjectives are properties of individual states not of times. The difference is immaterial.

\(^{15}\) Her actual representation is a bit different, it involves Parsons’ (1990) thematic relation \text{HOLDER}(s)(x), which means that \( x \) is the holder of state \( x \).
opening of the window. The presupposition is that there was an earlier target time of another opening. This means that there was an opening event before. Both readings are repetitive.

(Kratzer, 2000) gives a more complicated type for target state verbs, which cannot give us the restitutive reading either:

\[ \text{open, the door} := \lambda s \lambda e \lambda t \lambda w . [\text{cause}(t)(e)(w) & \text{open}(\text{the door})(t)(w)] \]

The modification by restitutive again should deliver the relation

\[ \lambda e . \lambda t . \lambda w . [\text{cause}(t)(e)(w) & \text{again}(\text{open}(\text{the door}))(t)(w)] \]

There is no operator again* that could generate this result, because the target state “open the door” is not accessible from outside. 17

A very similar approach as Kratzer’s has been made in (Piñón, 1999). Exactly as Kratzer he analyses intransitive open as:

\[ \text{Piñon’s intransitive open} [27] \]
\[ \text{open}_{\text{itr}} := \lambda s \lambda x \lambda e \text{Result}(e, x, s, \text{Be-open}), \text{where} \]
\[ \text{Result}(e, x, s, P) := \text{Theme}(e, x) \& e \text{ abuts } s \& P(s) \& \text{Theme}(s, x) \]

There are other lexical approaches, e.g. (Jäger and Blutner, 1999), which I have discussed elsewhere.

I conclude that none of these lexical theories is correct as it stands.

8. **POSSIBLE SOLUTIONS**

I see two kinds of solutions:

A. Decomposition in the syntax

B. A more complicated logical type of target state verbs and lexical ambiguity of adverbs like again.

A. Decomposition in the syntax

In (Kratzer, 1996: 4.6.) Kratzer introduces a head Affix.

\[ \text{Affix} := \lambda P . \lambda e \exists s . P(s) \& s = f_{\text{result}}(e) \]

Affix is an “eventizer”: it transforms a property of states into a property of events, exactly as my version of Dowty’s BECOME. In fact, Affix means more or less the same as BECOME. The decomposition of the VP *die Türe öffnen* is now the following:

---

16 The idea that an event cause a time seems weird. But why not. The event is one of the many causes of the time.

17 (Dowty, 1979) tried to account for inner modification by means of meaning postulates. The method has been criticised in a number of papers by Ede Zimmermann; cf. (Zimmermann, 1999). While I don’t think that Zimmermann’s arguments actually refute Dowty, his criticism is valid on methodological grounds.
(79) \[ VP \textbf{Affix} [\textit{AP die Tür offen}] \]
\[ = \lambda e \exists s. \text{open}(\text{the door})(s) & s = \text{f}_{\text{result}}(e) \]

Since the decomposition is carried out in the syntax now, we have a docking site for the adverb \textit{again} and can represent the restitutive reading of example (64b) by means of the following VP:

(80) A restitutive VP
\[ [VP \textbf{Affix} [\textit{AP again} [\textit{AP open the door}]]] \]

A consequence of this approach is that the lexical entry (75) cannot be maintained, and at least some transformative verbs have to be decomposed in the syntax.\(^{18}\) So this approach is virtually indistinguishable from the one given in (Stechow, 1996a) for active sentences.

A similar decompositional account is outlined in (Kusumoto, 2001). The LF for the intransitive sentence (72) is something like this:

(81) \[ [32] \]

Kusumoto does not say what the meaning of the abstract verb \( ? \) is. The idea is that the higher \textit{mata} gives the repetitive reading, the lower the restitutive one. If we follow the spirit of Ks semanatics, the verb is perhaps the following \textbf{affix}:

( 82) \[ [[\textbf{affix}]] = \lambda P \in D_{\text{f(at)}}, \lambda e. \lambda w.[\text{occ}(e)(w) & \text{TARGET}(e) = P]^{19} \]

\(^{18}\) Kratzer calls verbs that have that are described via their resultant state “perfective”. Perfectivity in this sense characterises Vendler’s accomplishments/achievements.

\(^{19}\) Note: This is not exactly what we had before; if we want the lexical entry for ‘the door open\(\textit{itr}\)’, the abstract verb \( ? \) must be \( \lambda P \in D_{\text{f(at)}}, \lambda e. \lambda w.\text{opening}(e)(w) & \text{TARGET}(e) = P \). And for every verb of change we would have to specify two different heads, the “action head” and the “result head”.

Verbs of change?

The problem with this is that the syntax is rather abstract. The lexicon entry “opens” must contain the different heads that split in the LF. Obviously, many questions arise for the syntax.
And the XP is a state:

\[(83) \quad [[\text{XP}]] = \lambda t \lambda w. \text{open}_A(\text{the door})(t)(w)\]

Depending on the adjunction site of \textit{mata}, the VP has two readings now, which may be described as:

\[(84) \quad \text{a. repetition: } \lambda e. \lambda w. [\text{occur}(e)(w) \& \text{TARGET}(e) = \text{open}(\text{the door})];
\quad \text{Presupp: } \exists e'[e' < e \& \text{occur}(e)(w) \& \text{TARGET}(e) = \text{open}(\text{the door})]
\]

\[(84) \quad \text{b. restitution: } \lambda e. \lambda w. [\text{occur}(e)(w) \& \text{TARGET}(e) = \text{open}(\text{the door})];
\quad \text{Presupp: } \exists t'[t' < e \& \text{open}(\text{the door})(t')(w)]\]

We have to adapt the type of the inner \textit{mata} to properties of time.

Does this theory predict that the predicative participle only has the restitutive reading?

Three adjunction sites for “again”:

\[(85) \quad \text{die Tür wieder geöffnet ist “the door is opened}_{\text{Part}} \text{ again”}\]

Recall Kusumoto’s meaning of RESULT:

\[(86) \quad [[\text{teRESULT}]] = \lambda P \in D_{vp}. \lambda t. \lambda w. \exists e[\exists w'. P(e)(w') \& \text{TARGET}(e)(t)(w)]\]

I “again” is under RESULT but above “affix” the presupposition is repetitive but under the scope of a modal operator. Therefore there need not be a previous opening in the actual world.

\textbf{Problem 1:} German predicative participles always entail that the process that engenders the target state occurs in the actual world. So \textbf{teRESULT} can’t be the meaning of the Germ. RESULT-operator.

\[(87) \quad \text{RESULT for German?} \\
\quad [[\text{GermRESULT}]] = \lambda P \in D_{vp}. \lambda t. \lambda w. \exists e[P(e)(w) \& \text{TARGET}(e)(t)(w)]\]

Now the two “again” above \textit{affix} generate a repetitive reading! In both cases, an opening of the door must have occurred in the actual world. But how could we bar the unwanted readings?

\textbf{Problem 2:} For Kusumoto and Kratzer target states are essential properties of events, i.e. properties the events have in each world. This is so because an event \textit{e} always has the same target state if it has one. One needs the principle: Whenever event \textit{e} with target state \textit{P} occurs in world \textit{w}, \textit{P} is true in \textit{w} at the end time of event \textit{e}. A problem for this view is counterfactual talk:

\[(88) \quad \text{This opening of the door had almost been an opening of the window.}\]
The scenario is this. I am in a dark French room where doors and windows have the same size and I am looking for the door handle, because I want to leave the room. I touch two handles, one of the door the other of the window. I don’t know which is which. So I turn one by chance. It is the handle of the door and I open it. In this scenario, the sentence is true.

So we want to say something like this:

(89) \( \exists e[\text{open}_n(\text{the door})(I)(e)(w)] \land \exists w'[w' \text{ is almost like } w \land \text{open}_n(\text{the window})(I)(e)(w')] \]

K&K cannot have this because the first conjunct implies the target state \( \text{TARGET}(e) = \text{the door is open} \) and the second conjunct says that \( \text{TARGET}(e) = \text{the the window is open} \). But \( \text{TARGET} \) is a function.

Conclusions: (a) I doubt that the function \( \text{TARGET} \) makes sense for events simpliciter. Its argument must be a property. (b) it is not clear how decomposition along this lines can handle the facts: there are too many adjunction sites.

B. Lexical entries with intensional target states

For the time being, I propose to overcome the difficulty by changing the logical type of states. I will assume that the property which qualifies the result state is an argument of the relation as well. The target state is an intensional property and a state (time), not only a state alone. Thus Kratzer’s entry is changed in the following way:

(90) Verb with result states [official version]

\[
[[ \text{the door open}_\text{Va} ]] = \lambda e.\lambda P_\text{st}(t)\lambda t.\lambda w.([\text{cause}(e)(t)(w)] \land P = [[ \text{the door open}_\text{A} ]] \land P(t)(w)),
\]

\( S \) a property of states/times

The \text{RESULT} operator is existentially binds the process time and the target state:

(91) \text{RESULT} (official version):

\[
[[ \text{RESULT} ]] = \lambda R \in D_{v(\text{st})(\text{st})} \lambda t.\lambda w.\exists P_\text{st}.\exists e. R(e)(P)(t)(w)
\]

(92) die (ist) Tür geöffnet “the door is opened”

Eventive sentence now require an “eventizer”. (Kratzer puts a similar meaning into the head of vP, if I remember well.)

(93) \text{EVENT}

\[
[[ \text{EVENT} ]] = \lambda R \in D_{v(\text{st})(\text{st})} \lambda e.\lambda w.\exists P_\text{st}.\exists t. R(e)(P)(t)(w)
\]

Here is the representation of a minimal pair:

(94) a. Die Tür öffnet sich.

‘The door opened’

b. [[ past, PF EVENT the door open\text{Va} ]] = \lambda w.\exists e[\tau(e) \subseteq \text{past}, \exists t.\exists P.([\text{cause}(e)(t)(w)] \land P = [[ \text{the door open}_\text{A} ]] \land P(t)(w))]

(95) a. Die Tür war geöffnet

‘the door was opened’
We are now in a position to represent the meaning of restitutive again correctly:

\[ \text{again}_{\text{rest}} = \lambda w. \exists e. \exists P. \ [\text{cause}(e)(\text{past}_i)(w) \ & \ P = [\text{the door open}_A]] \ & \ P(\text{past}_i)(w)] \]

The logical type of the adverb requires inner adjunction:

1. For the door open again: `the door is cop opened again`
9. REFERENCES

Stechow, Arnim von. 2002. German seit ‘since’ and the ambiguity of the German Perfect. In