RELATIVE TENSE VS. ASPECT: THE CASE REOPENED

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> "Elegant theories do not necessarily
> meet the reality they might deserve."
> Hubert Haider

I.   REICHENBACH ON RELATIVE TENSE

(1)   *Reichenbach's analysis of the pluperfect (example)*

Eva **had finished** her analysis.   Roberto walked over to her office.

--> time

E (Eva finishes analysis)   <   R (Roberto walks over)   <   S (utterance time)

Category	Temporal relations
Present	E F S
Past	E < S
Future	E > S
Pluperfect	E < R, R < S
Future perfect	E < R, R > S
Future-in-the-past	E > R, R < S

Table 1. *Revision of Reichenbach's analysis according to Comrie (1981)[1]*

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[1]   Decompositions of Reichenbach's arrays have also been proposed by Declerck (1991), Hornstein (1990: 108-111), and Ogihara (1996: 49-55). I'm using the following symbols, here and below: $A < B$ 'A **precedes** B', $A > B$ 'A **follows** B', A ***F*** B 'A and B **overlap**', A δ B 'the time of A is **included** in the time of B', A ε B 'the time of A **includes** the time of B'.

II.   THE TWO READINGS OF THE ENGLISH PERFECT

Adv specifies E ⇒ 'Past in the past'

...and had left again at seven.
The inspector did not get there
until eight. (Comrie 1976: 56)

Pluperfect

Bill had arrived [*at six o'clock*]$_{ADV}$...

...and was sitting at the bar. I
have no idea at what time he got
there.

Adv specifies R ⇒ 'Perfect in the past'
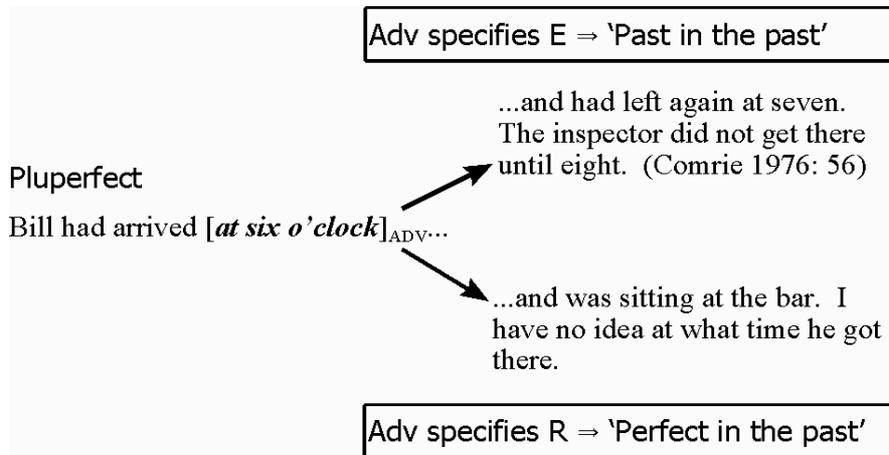
Figure 1. *Two readings of the Pluperfect*

Adv specifies E ⇒ 'Past in the future'

...so I'll be ready when you come
to pick me up at seven.

Future Perfect

I'll have finished [*at six*]$_{ADV}$...

...when you come to pick me up
— I'll do the finishing touches at
five.

Adv specifies R ⇒ 'Perfect in the future'
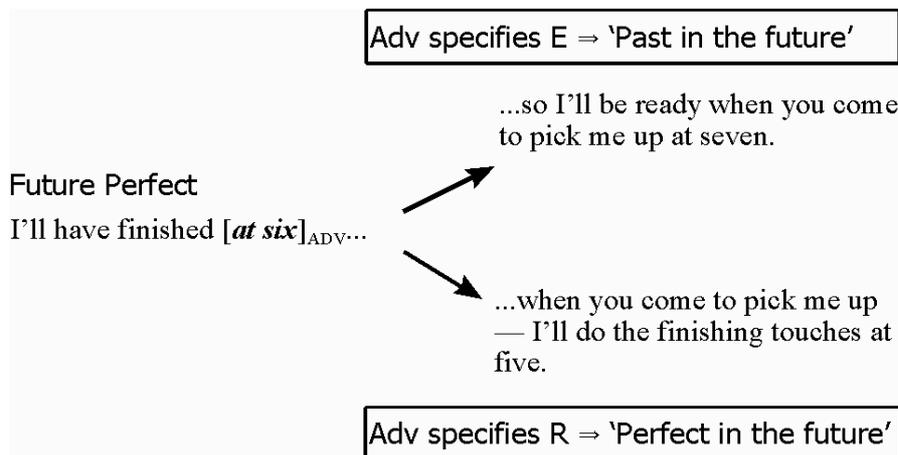
Figure 2. *Two readings of the Future Perfect*

E not accessible to ADV

...**at six*.

Present Perfect

I have finished...

...*now*.

R-ADVs contrained by R ○ S
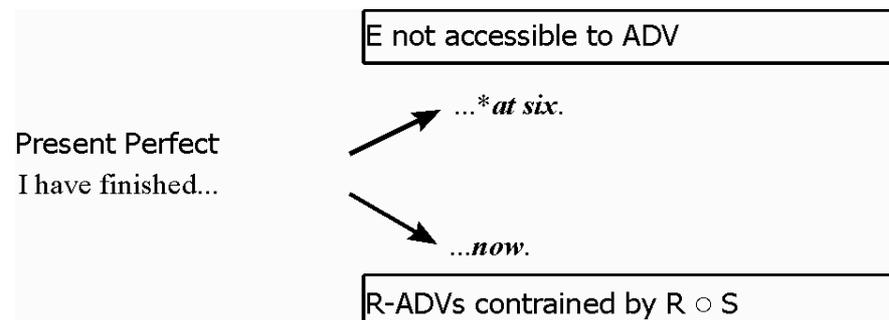
Figure 3. *Only one reading: The Present Perfect*

- Past-in-the-past and perfect-in-the-past have the same analysis in Reichenbachian approaches, as do past-in-the-future and perfect-in-the-future.
- These readings appear to have distinct effects on the discourse representation (which remain unexplained in Reichenbachian accounts) – the perfect-in-the-past and perfect-in-

the-future readings are associated with entailments (or strong implicatures) of persistent result states, as is the present perfect, while the past-in-the-past and past-in-the-future readings are not.

• Traditional analysis (e.g. Comrie 1976; Jespersen 1924):[2]

Deictic component	Aspect (Result focus)	Anterior Tense (Event focus)
Present	Present perfect	*
Past	Perfect in the past	Past in the past
Future	Perfect in the future	Past in the future

(The top-left cell reads "Nondeictic component" above "Deictic component".)

Table 2. *Traditional (Pre-Reichenbachian) analysis of the English perfect tenses*

• That is, the perfect tenses express, in addition to their deictic tense values, resultative aspect. The Past-in-the-past reading of the Pluperfect and the Past-in-the-future reading of the Future Perfect are the products of a grammaticalization process leading from resultative aspect to relative past (or anterior) tense.

III.   KLEIN'S (1994) REANALYSIS
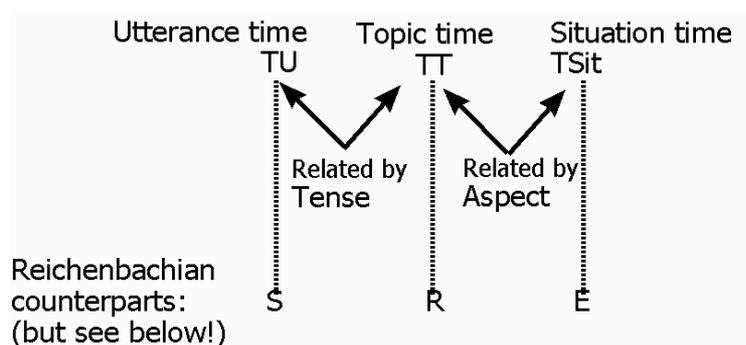
**Figure 4.** *Basic design of Klein's (1994) approach to tense and aspect*

Aspect Relation	Past TT < TU	Present TT ⊃ TU	Future TT > TU
Perfective TT ⊇ TSit	Simple past *I wrote*	Present *I write*	Simple future *I will write*
Imperfective TT ⊂ TSit	Past progressive *I was writing*	Present progressive *I am writing*	Future progressive *I will be writing*
Perfect TT > TSit	Pluperfect *I had written*	Present perfect *I have written*	Future perfect *I will have written*
Prospective TT < TSit	Past prospective *I was going to write*	Present prospective *I am going to write*	Future prospective *I will be going to write*

(The top-left cell reads "Tense Relation" above "Aspect Relation".)

Table 3. *Klein's (1994) analysis of the English tense-aspect system*

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[2]　　　Jespersen's terms are 'Retrospective Past' vs. 'Ante-Preterit' (for Comrie's 'Perfect in the past' vs. 'Past in the past') and 'Retrospective Future' vs. 'Ante-Future' (for Comrie's 'Perfect in the future' vs. 'Past in the future'). The Present Perfect, then, is a 'Retrospective Present' is Jespersen's parlance. Although Jespersen doesn't include the 'retrospective' tenses under his notional 'aspect' categories, he agrees with Comrie in claiming that their core meaning is "the element of result" (1924: 269).

- A major difference wrt. Reichenbachian approaches: Klein's TT is not Reichenbach's R (although it does correspond to Hinrich's (1986) and Partee's (1984) reinterpretations of R in DRT!). R is some time anaphorically traced in discourse wrt. which a temporal relation is expressed. TT, in contrast, is – in first approximation – a time wrt. which the truth of a proposition is (potentially) evaluated (and asserted, questioned, etc.). Compare:

(3)   Eva had finished her analysis.   Roberto walked over to her office.

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--------------------------------------------------------------------------------> time
       E (Eva finishes analysis)  <  R (Roberto walks over)    <  S (utterance time)
           |--------------------------------------------------------------->
                'TT projection range' – the 'posttime' of Eva finishing her analysis
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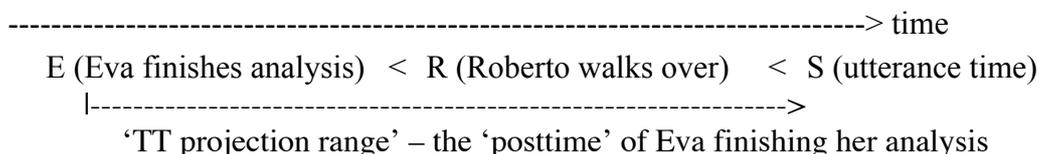
- Strictly speaking, TT in table 3 is short for 'TT projection range', a the maximal interval of possible TTs defined wrt. E/TSit. Any interval that falls after Eva finishing her analysis, and thus potentially the *entire* time up to S/TU, qualifies as TT for the pluperfect in (3). The event described by the second clause falls *in* the pluperfect's TT, rather than to determine it.[3]

- Another major difference: *all* tense markers encode semantic operators of both tense and aspect. Complex tense forms like the pluperfect have only a single semantic analysis; the differences between the readings in Figure 1-2 merely concern the scope of the time adverbials (why the different readings have different effects on the discourse representation remains unexplained). The notion of 'relative tense' is completely replaced with that of 'aspect':

> "I think that relative tenses are a combination of tense and aspect. (...) The notion of relative tense is not necessary to account for the pluperfect nor for the future perfect. We could surely use the label 'relative tense' instead of 'aspect' here. But then, we would also be forced to call the contrast between imperfective and perfective a difference in relative tense, and this does not seem to be a particularly fortunate choice of terms." (Klein 1994: 131)

- The strategy from here: a typological "pincer attack" – show that there are "true" perfect aspects, which are incompatible with E/TSit-specifications, and "true" anterior (i.e. anaphoric) pasts, which are compatible with any aspectual category, and thus do not themselves involve aspect. Argue that the conflation of aspect and relative tense in Klein (1994) must be illicit and propose modifications to the framework that allow for a distinct treatment of both notional categories.

- The argumentation will be restricted to perfect aspects and anterior tenses; but with slight modifications, the same case can be made regarding prospective aspects vs. posterior (relative future) tenses.

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[3]   This fits a lot better with Partee's (1984) adaptation of the notion 'reference point' than does Reichenbach's original proposal: "Reference times are not directly denoted by any part of the sentence; they are more like a part of the necessary context for interpreting tensed sentences (...), akin to the kind of locative frame of reference needed to interpret *left* and *right* and other locative expressions. And like the locative case, they are not bound to the actual context of the utterance but can be 'constructed' and shifted in the course of interpretation." (Partee 1984: 264-265)

IV.   THE TYPOLOGICAL PINCER I: TRUE PERFECT ASPECTS

- The Yukatek aspect marker *ts'o'k* expresses anteriority of E/TSit wrt. R/TT irrespective of whether R is in the present, past, or future of S. Does *ts'o'k* express relative past/anterior tense?

(4)   Pedro=e',   káa=t-u=ts'íib-t-ah   le=kàarta=o',
YUK   Pedro=TOP   CON=PRV-A.3=write-APP-CMP(B.3.SG) DET=letter=D2
         'Pedro, (when/and then) he wrote the letter,'

         ts'o'k   u=ts'u'ts'-ik   hun-p'éel   chamal.
         TERM   A.3=suck-INC(B.3.SG)   one-CL.IN cigarette
         'he had smoked a cigarette.' [Elicited]

- *Ts'o'k* is compatible with adverbials that specify R/TT but don't provide any information about E/TSit:

(5)   Pedro=e'   h-hàan   las sèeys.
YUK   Pedro=TOP   PRV-eat(B.3.SG)   six.o'clock
         'Pedro, he ate at six.'

         Chéen   dyèes   minùuto-s t-u=bis-ah.
         only   ten   minute-PL PRV-A.3=go:CAUS-CMP(B.3.SG)
         'It took him just ten minutes.'

         Las syèete   káa=h   máan   Pablo,
         seven.o'clock CON=PRV pass(B.3.SG) Pablo
         '(At) seven, Pablo came by,'

         káa=t-uy=ohel-t-ah   ts'-u=hàan-al   Pedro.
         CON=PRV-A.3=know-APP-CMP(B.3.SG) TERM-A.3=eat-INC   Pedro.
         '(and then) he learned that Pedro (already) had eaten.'

         Chen ba'l=e',   ma' t-uy=ohel-t-ah
         only thing=TOP   NEG PRV-A.3=know-APP-CMP(B.3.SG)
         'However, he did not come to know'

         ba'x òora káa=h-hàan   Pedro-i'.
         what hour CON=PRV-eat(B.3.SG)   Pedro-D4
         'at what time Pedro had eaten.'

         Las òocho=e'   t-uy=a'l-ah   Pablo   ti'   Juan=e':
         eight.o'clock=TOP PRV-A.3=say-CMP(B.3.SG)   Pablo   LOC Juan=TOP
         'At eight, Pablo said to Juan:'

         "Káa=h-máan-en   t-uy=iknal   Pedro **las syèete=e',**
         CON=PRV-pass-B.1.SG LOC-A.3=at   Pedro **seven.o'clock=TOP**
         '"(When) I went by Pedro's **at seven**,'

ts'o'k   u=hàan-al   leti'; chen ba'l=e',
TERM A.3=eat-INC   it   only thing=TOP
'**he had (already) eaten**; only'

mix   inw=ohel   ba'x òora hàan-ak-i''.
EMPH.NEG A.1=know(B.3.SG)   what hour eat-SUBJ(B.3.SG)-D4
'**I have no idea at what time he had eaten**.'''

- *Ts'o'k* is incompatible with specifications of E/Tsit:

(6)   a. **T–aw=il–ah   in=suku'n   ho'lheak,**
YUK   **PRV–A.2=see–CMP(B.3.SG)   A.1.SG=elder.brother   yesterday**

he'bix   t–a=tukul–ah–e'?
like   PRV–A.2=think–CMP(B.3.SG)–D3

'**Did you meet** my brother **yesterday**, as you had planned?' (Tama 45)

   b. ??**Ts'o'k**   aw=il–ik   in=suku'n   **ho'lheak**?
       TERM A.2=see–CMP(B.3.SG)   A.1.SG=elder.brother   **yesterday**
       (intended: '**Have you met** my brother **yesterday**?')

- The only admissible interpretation of *ho'lheak* 'yesterday' in (6) is that it specifies TT, under which interpretation (6) would have to mean something like 'Were you yesterday in the state of having met my brother?', which is pragmatically strange.

- Similarly, *ts'o'k* is unacceptible in Wh-questions and relative clauses with time focus. For instance, (7a) is illformed; as in the final clause of (5), the terminative has to be replaced by a verbal core inflected for subjunctive status, as in (7b):

(7)   a. Mix   inw=ohel   ***ba'x   òora ts'o'k   u=hàan-al.**
YUK   EMPH.NEG A.1=know(B.3.SG)   **what   hour TERM A.3=eat-INC**
       'I have no idea **at what time he had eaten**.'

   b. Mix   inw=ohel   **ba'x òora hàan-ak-i.**
       EMPH.NEG A.1=know(B.3.SG)   **what hour eat-SUBJ(B.3.SG)-D4**
       'I have no idea **at what time he had eaten**.'

- In being accessible to R/TT-specifications, but not to E/TSit-specifications, *ts'o'k* resembles the Present perfect of English, even though it is not restricted to TT ⊃ TU (i.e. present tense), but covers the domains of the Pluperfect and Future perfect as well.

- These properties are shared by the West-Greenlandic marker –*síma*-, according to Fortescue (1984). –*Sima*- expresses anteriority of E/TSit wrt. R/TT, irrespective whether R/TT is in the present, past, or future of S/TU. So does –*sima*- express anterior tense?

(8)   Angirla-rama   allakkat   **atuar-sima-vai.**
GRE   come.home-1.SG.CAUSE   letter(PL)   **read-PERF-3.SG.3.PL.IND**
           'When I came home he had read the letters.' (Fortescue 1984: 274)

-*Sima*- is incompatible with adverbials modifying E/TSit. Hence, it can occur in (9a), but not in (9b):

(9)   a. Nuum-miis-sima-vunga.
GRE   Nuuk-be.in-PERF-1.SG.IND
         'I have been to Nuuk.' (Fortescue 1984: 272)

       b. Juuli-p   aappa-ani   Nuum-miip-∅-punga.
          July-ERG   second-LOC   Nuuk-be.in-ASP-1.SG.IND
          'I was in Nuuk on the second of July.' (Fortescue 1984: 273)

- How can the inaccessibility of *ts'o'k* and –*sima*- wrt. specifications of E/TSit be explained?
- The most straight-forward account: The meaning of *ts'o'k* and –*sima*- is not merely TT > TSit (TT falls in the 'posttime' of E/TSit), as in Klein's account of perfect aspect (cf. (10)); rather, they denote result states caused by the event encoded by the predicate, similar to Kamp & Reyle's (1993: 566-575), Moens's (1987: 69-75), and Parsons's (1990: ch. 12) accounts of the English perfect tenses (cf. (11)):

(10)   *A model-theoretic formalization of Klein's (1994) analysis of perfect aspects*
       $\text{PERF} := \lambda P \lambda t_{TOP} \exists e[P(e) \wedge t_{TOP} > t_{SIT}(e)]$

(11)   *A model-theoretic formalization of the resultative analysis of perfect aspects*
       $\text{PERF} := \lambda P \lambda t_{TOP} \exists s[\exists e[P(e) \wedge \text{CAUSE}(e,s)] \wedge t_{TOP} \subset t_{SIT}(s)]$

- Here, *e* ranges over a domain of events, *s* over one of states, and *P* is an event predicate. *P* may be encoded not just by a verb, but by an entire verbal projection, minus the finiteness information. The function t_{SIT} assigns to an event or state its 'situation time' TSit (in the sense of a 'temporal trace' function, as in Krifka (1992, 1998)) while t_{TOP} is assigned a suitable 'topic time projection range' (Klein 1994: 108), i.e. a maximal time interval defined by the relation vis-à-vis t_{SIT}, such that a contextually relevant TT may be selected from t_{TOP} in discourse.

- (11) says that instead of locating *e* in the time preceding TT, the function of perfect aspects is to express overlap of a result state caused by *e* with TT. This accounts for the inaccessibility of $t_{SIT}(e)$ for E/TSit-adverbials, since such adverbials would be assigned $t_{SIT}(s)$ (the "run time" adverbial of the result state) instead of $t_{SIT}(e)$. See also Figure 5.

- (11) is only a brute-force approximation; for instance, it doesn't explain by what mechanism the target state of a state change verb gets projected onto *s*; it doesn't deal with perfects of stative predicates; and it leaves the temporal relation between $t_{SIT}(s)$ and $t_{SIT}(e)$ unspecified.[4]

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[4]   This is, in fact, a problem. An event and a state caused by it may well partially overlap; cf. e.g. *Because it was raining, the mall was full of people seeking cover.* Perfects, however, don't license such overlap. Presumably this is why Kamp & Reyle choose to require *e* and *s* to temporally "abut", at the expense of neglecting the causal relation. Moens's (1987) treatment avoids the problem by restricting the result state to that projected by a 'culmination', i.e. a state change (naturally state changes cannot overlap with their own result states). This however has the drawback of forcing Moens to treat perfects of process verbs as having 'coerced' state change meanings.

Target event *e*

Scope of temporal evaluation associated with perfect aspects

Result state *s* caused by *e*

←TT→

Time

Figure 5. *The resultative analysis of perfect aspects*

- There are various pieces of independent evidence suggesting that (11) is a better approximation of the meanings of Yukatek *ts'o'k* and West Greenlandic *–sima-* than is (10). To mention one: *ts'o'k* is not applicable in case the result state – or its 'theme', i.e. the individual it is predicated of – does not persist at TT:

(12) a. **T-**a=k'ahóol-t-ah   in=tàatah,
YUK   **PRV-**A.2=acquaintance-APP-CMP(B.3.SG) A.1.SG=father

    le=máax   h-kim   te=ha'b   h-máan-o'?
    DET=who   PRV-die(B.3.SG) LOC:DET=year PRV-pass(B.3.SG)-D2

    -       Míin chen hun-téen-ili'   **t-**inw=il-ah.
            DUB   only one-time-ID   **PRV-**A.1.SG=see-CMP(B.3.SG)

    'Did you get to know my father who died last year? - I think I only met him once.'
    (Tama 43)

     b. *****Ts'o'k** a=k'ahóol-t-ik   in=tàatah,
         TERM   A.2=acquaintance-APP-INC(B.3.SG)   A.1.SG=father

    le=máax   h-kim   te=ha'b   h-máan-o'?
    DET=who   PRV-die(B.3.SG) LOC:DET=year PRV-pass(B.3.SG)-D2

    -       *Míin   chen hun-téen-ili'   **ts'o'k**   inw=il-ik.
            DUB   only one-time-ID   **TERM**   A.1.SG=see-INC(B.3.SG)

- The speaker's father being dead at TU, the terminative *ts'o'k* is not acceptable in either the question (has the adressee met the speaker's father?) or the answer (b); the perfective aspect marker is used instead in both cases. This is entirely parallel to the famous (13):

(13) a. (Uttered in 1971) *Einstein has visited Princeton.
      b. (Uttered in 1971) ?Princeton has been visited by Einstein.[5]

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[5]   Thus Chomsky (1971: 212-213) and McCawley (1971: 106-108); Comrie (1976: 59 [fn. 4]) disagrees and rejects (13b).

V. THE TYPOLOGICAL PINCER II: TRUE ANTERIOR TENSES

• Ogihara (1996, 1999) argues that Japanese *–ta* marks anterior (relative/anaphoric past) tense, rather than perfect aspect.

(14)   Taroo-wa   [terebi-o**mi-ta**   ato-de]   benkyoo-suru.
JAP   Taro-TOP   TV-ACC   **watch-ANT**   after-LOC   study-PRES
              'Taro will study **after watching** TV.' (Ogihara 1999: 329)

• Indeed, the only possible interpretation of the simple *–ta* form is E/TSit $\subseteq$ TT, i.e. perfect*ive* aspect:

(15)   Taroo-wa   kinoo   hon-o   **yon-da**.
JAP   Taro-TOP   yesterday   book-ACC   **read-ANT**
              1) 'Taro **(had) read** the book yesterday.'
              2) '*As of yesterday, Taro **had read** the book.' (Ogihara 1999: 330)

• An interpretation according to which *kinoo* 'yesterday' specifies a TT that *follows* the reading event, rather than to include it, is excluded in (15). In this sense, *-ta* is a mirror image of Yukatek *ts'o'k* and West Greenlandic *–sima-*!

• In order to shift TT to the "post-time" of TSit, *-ta* is combined with the aspect-marking *-te iru* construction:

(16)   Taro-wa   kinoo-no   jiten-de   sudeni
JAP   Taro-TOP   yesterday-GEN   timepoint-LOC   already

              sono-hon-o   **yon-deita**.
              that-book-Acc   **read-TE IRU:ANT**

              1) 'Taro **(had) read** the book yesterday.'
              2) 'As of yesterday, Taro **had already read** the book.'[6]

• The fact that *–ta* is compatible with a variety of aspect markers suggests that it does not mark aspect itself (although it may implicate perfect*ive* if not combined with any aspect marker).

• A distribution strikingly similar to that of *–ta* has been attested for the suffix *–á(k)a* in the Bantu language Kituba, spoken in the Democratic Republic of Congo. *–Á(k)a* encodes anteriority of E/TSit relative to some R, irrespective of whether R is in the past, present, or future of S/TU:

(17) a. Ntángu   ya   María   kwis-á(k)a,   múna béto   méne di-**áka**.
KIT   time   COMP   María   come-ANT   then   we   PERF   eat-**ANT**
              'When María came, we had already eaten [a long time / quite some time ago].'

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[6]   This example has been kindly provided by S. Kita.

b. Ntángu ya   María   ata[7] kwis,   múna béto méne di-**áka**.
   time   COMP   María   POST come   then we   PERF eat-**ANT**
   'When María comes, we will have already eaten [a long time / quite some time ago].'
   Mufwene 1990: 99-100)

- These examples do show dissociation between TT and E/TSit, as is symptomatic of perfect aspect. However, it turns out that this is due to the presence of the perfect auxiliary *mé(ne)*, which expresses perfect independently of *–á(k)a*. *Mé(ne)* itself, like a true perfect, again only admits specifications of TT (a), whereas *–á(k)a* by itself, just like Japanese *–ta*, does not allow for a dissociation between TSit and TT (b):

(18) a. Béto **mé(ne)** dia   / búbu yáyi / mazóno.
KIT   we   **PERF** eat   / day this / yesterday
       1) *'We ate today/yesterday'
       2) 'As for today/yesterday, we are/were in the state of having eaten.'

   b. Béto di-**á(k)a** / búbu yáyi / mazóno.
      we eat-**ANT** / day this / yesterday
      1) 'We ate today/yesterday'
      2) *'As for today/yesterday, we are/were in the state of having eaten.' (Mufwene 1990: 101)

- Like Japanese *–ta*, *-á(k)a* by itself does not express aspect, although it may implicate perfective in isolation. Hence, there is no reason to consider *–á(k)a* a perfect.

- How can the meaning of *–ta* and *–á(k)a* be captured in Klein's framework? If it is accepted that aspect concerns the relation between TT and TSit, and that TSit is only accessible to external temporal parameters such as TU vía TT, then the meaning of *–ta* and *–á(k)a* must relate TT to some other time, which however cannot be TU, since they are not deictic. My proposal:

(19) *A model-theoretic formalization of anterior tense*
     $ANT := \lambda ASP\lambda P\lambda t_{TOP}\exists e\exists t_R[ASP(P,t_{TOP},e) \wedge t_{TOP}<t_R]$

- Here, *ASP* is an aspectual operator that relates $t_{SIT}(e)$ (such that $P(e)$) to t_{TOP}, and t_R is the reference time interval R. The idea is, quite simply, that (anaphoric) anterior tense has $t_{TOP}<t_R$ wrt. some reference time R the way (deictic) past tense has $t_{TOP}<t_U$ wrt. utterance time TU.
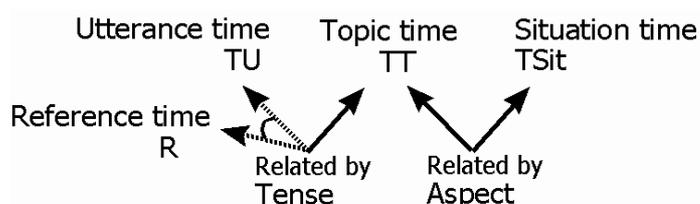
Figure 6. *Expanding Klein (1994) to accommodate relative tense*

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- The need for two (types of!) parameters besides speech times (S/TU) and event times (E/TSit) has also been noted by Kamp & Reyle (1993: 593-601). The details of their proposal need not concern us here. But note that the type of phemonen they are trying to account for can be explained at least as elegantly in the framework sketched in Figure 6:

(20)   Fred arrived at ten. He had got up at 5; he had taken a long shower; had got dressed and had eaten a leisurely breakfast. He had left the house at 6:30.

- The point is that there is "narrative progression" across the pluperfects in (20), i.e. these are aspectually perfective, each being asserted wrt. its own TT, which is "shifted" from clause to clause, even though they all have TTs in the past of Fred's arrival.

VI.   TAKING STOCK

- In order to account for the incompatibility of true perfect aspects, as encoded byYukatek *ts'o'k* and West Greenlandic *–sima-,* with E/Tsit-time adverbials, we had to expand Klein's (1994) treatment of aspect, so that it allows us to talk, instead of the post*time* of TSit, of post*states* (result states) caused by events.

- And in order to account for the aspect neutrality of anterior tenses, as encoded by Japanese *–ta* and Kituba *–á(k)a*, we had to expand Klein's (1994) treatment of tense, so that it allows us to talk of the relation between TT and some anaphorically traced R, in addition to the relation between TT and S/TU.

- The trouble is, we haven't just expanded and upgraded out toolkit – we've also had to underwrite a number of commitments. Thus, we don't have a good excuse anymore not to apply the result state analysis to the English Present Perfect and the Pluperfect and Future Perfect under their aspectual (perfect-in-the-past/future) readings. But there's no way that that analysis could ever be made compatible with the tense-like (past-in-past/future) readings of the Pluperfect and Future Perfect!

- So: Back to the Perfect – back to the past! The traditional analysis, that is, or a fairly complex version thereof:[8]

Nondeictic component Deictic component	Aspect (Result focus)	Anterior Tense (Event focus)
Present	Present perfect $t_{TOP} \subset t_{SIT}(s)$ & $t_{TOP} \supset t_U$	*
Past	Perfect in the past $t_{TOP} \subset t_{SIT}(s)$ & $t_{TOP} < t_U$	Past in the past $t_{TOP} \subset t_{SIT}(e)$ & $t_{TOP} < t_R$ & $t_{TOP} < t_U$
Future	Perfect in the future $t_{TOP} \subset t_{SIT}(s)$ & $t_{TOP} > t_U$	Past in the future $t_{TOP} \subset t_{SIT}(e)$ & $t_{TOP} < t_R$ & $t_{TOP} > t_U$

Table 4. *Traditional (Pre-Reichenbachian) analysis of the English perfect tenses*

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[8]   The cooccurrence of a relative and an absolute tense component in the Pluperfect and Future Perfect presents an extra twist to this analysis: Does TU here still relate to TT, or does it now relate to R? In the latter case, we would get $t_{TOP} \subset t_{SIT}(e)$ & $t_{TOP} < t_R$ & $t_R < t_U$ (Past in the past) and $t_{TOP} \subset t_{SIT}(e)$ & $t_{TOP} < t_R$ & $t_R > t_U$ (Past in the future). Further evidence needed!

- Note that this analysis diagnoses the Perfect as polysemous, where Klein's approach (and Reichenbachian approaches in general) assume monosemy. Yet, this move is motivated not by any new data of English, but rather by a change in the framework, i.e. the metalanguage of analysis, which in turn is motivated by crosslinguistic data! But on the basis of English only, monosemy of course remains defensible within Klein's theory. In any case, the primary concern of this paper is not the best analysis of the English Perfect, but the best "metalanguage" for analysing perfect-like categories crosslinguistically.

- As for Klein's (1994) theory, once the first wedge has been driven into the aspect module – namely the resultative analysis of the perfect – the whole treatment of aspect in terms of ordering relations between TSit and TT unravels. It must be remodelled such that TT has access everywhere to the merological structure of the causal chains that connect events with their pre- and post-states.

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