

Aspect, temporal anaphora, and tenseless languages

A new Gricean account

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Overview

- temporal anaphora and tenselessness
- Yucatec as a tenseless language
- the case for a Kleinian semantics
- DRT meets Grice
- back to Yucatec
- conclusions

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Temporal anaphora and tenselessness

- temporal anaphora (TA)** – the contextual determination of reference/*topic* times
 - **topic time** t_{TOP} – time frame wrt which the denotation of utterances is evaluated (Klein 1994)
 - (1.1) (uttered while driving down the freeway)
I didn't turn off the stove (Partee 1984: 244)
 - (1.2) *Sheila had a party last Friday and Sam got drunk*
(Partee 1984: 245)
- factors
 - tense; time adverbials
 - (1.3) *Sheila had a party last Friday and Sam will get drunk*

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Temporal anaphora and tenselessness (Cont.)

- aspect
 - (1.4) a. *Pierre entra. Marie téléphona*
'Pierre entered. Marie made a phone call'
 - b. *Pierre entra. Marie téléphonait*
'Pierre entered. Marie was talking on the phone'
(Kamp & Rohrer 1983: 253)
 - (1.5) a. *Loretta turned around the corner and saw Floyd. He inflated a balloon*
 - b. *Loretta turned around the corner and saw Floyd. He was inflating a balloon*
- lexical and compositional semantics; world knowledge
- (1.6) *Loretta saw Floyd. He was inflating a balloon.*
 - a. ...*He nodded in recognition*
 - b. ...*Suddenly it popped*
 - c. ...*He drank a glass of water*

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Temporal anaphora and tenselessness (Cont.)

- information perspective
- (1.7) Judge: *What did you notice when you entered the room?* – Witness: *A man was lying on the floor...*
(Klein 1994: 39)
- rhetorical structure
- (1.8) *Floyd prepared everything for the party. He inflated a balloon. He put the Champaign in the ice bucket. Finally, he checked his watch*
 - cf. Lascarides & Asher 1992, 1993
- tenselessness
 - what is (deictic = "absolute") tense?
 - traditional answer: an expression of the temporal relation b/w utterance time t_U and event time $\tau(e)$

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Temporal anaphora and tenselessness (Cont.)

- (1.9) Judge: *What did you notice when you entered the room?* – Witness: *A man was lying on the floor. He was Chinese or Japanese. He did not move...*
(Klein 1994: 39)
 - not ∴ the man's being Chinese or Japanese stopped sometime before utterance time
 - Klein 1994: an expression of the temporal relation b/w t_U and t_{TOP} restricting the "topic time projection range"
- adverbials can be used to express the relation between t_U and t_{TOP}
 - but it is unclear whether adverbials are ever *semantically specified* as t_{TOP} modifiers/"restrictors"
– the most exclusive definition possible seems to be (1.10)

(1.10) A language is **tenseless** iff it has no morpheme or construction that as part of its lexical or constructional meaning expresses a relation between utterance time and topic time.

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Temporal anaphora and tenselessness (Cont.)

- some languages that have been claimed to be tenseless in the sense of (1.10)
 - Burmese; Dyirbal (Comrie 1985: 50-53)
 - Igbo; Yoruba (Comrie 1976: 82-84)
 - Kalaallisut (Bittner 2005; Shaer 2003)
 - Mandarin (Li & Thompson 1981: 184, 213-215)
 - Yucatec (Bohnenmeyer 1998a/b, 2000a, 2002, 2003)
- unclear status: languages with only optional tense
 - e.g., Smith, Perkins, & Fernald (2007) on Navajo
- a radicalization: neither deictic nor anaphoric (“relative”) tense

(1.11) A language is **radically tenseless** iff it has no explicit topic time relators (or topic time “restrictors”).

- Bohnemeyer (1998a/b, 2000a, 2002, 2003) claims radical tenselessness for Yucatec

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Temporal anaphora and tenselessness (Cont.)

- **tenselessness and TA**
 - to the extent that tenseless languages lack explicit t_{TOP} restrictors
 - it is reasonable to expect that TA plays a greater role in determining t_{TOP}
- questions
 - are the principles governing TA the same in tensed and tenseless languages?
 - e.g., Partee 1973, 1984, Kamp & Reyle 1993, Kamp, van Genabith, & Reyle ms.: tenses are triggers/expressions of TA
 - » so does TA even *exist* in tenseless languages?
 - is TA involved in the resolution of deictic/absolute time reference in tenseless languages?

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Yucatec as a tenseless language

- **profile**
 - spoken by 759,000 people in the Mexican states of Campeche, Quintana Roo, and Yucatán
 - » <http://www.inegi.gob.mx/est/contenidos/espanol/rutinas/ept.asp?t=mien10&c=3337>
 - and approximately 5,000 people in the Cayo District of Belize (Ethnologue 2005)
 - polysynthetic
 - syntactic relations tend to have morphological reflexes
 - a single content word may – and frequently does – constitute a clause
 - in combination with the necessary function words and inflections
 - mostly head-initial, and in particular verb-initial
 - but topicalizations and focus constructions are extremely prominent in discourse

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Yucatec as a tenseless language (Cont.)

- **aspect-mood marking and status inflection**
 - **status**: an inflectional category of Mayan languages (Kaufman 1990)
 - conflating semantic distinctions of viewpoint aspect, assertive-non-assertive or realis-irrealis modality – and illocution
 - five subcategories in Yucatec: incomplete, complete, subjunctive, imperative, and extra-focal
 - every verb form must be semantically marked for exactly one of these five subcategories
 - in all syntactic environments – there is no finiteness contrast!
 - only verbs are status-marked
 - stative predicates – nouns, adjectives, and derived statives – are incompatible with status inflection
 - status selection is strictly governed by syntax
 - triggers include the preverbal aspect-mood markers, complementation, sentence type, focus constructions, ...

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Yucatec as a tenseless language (Cont.)

–preverbal aspect-mood (AM) markers

- every “verbal core” combines with exactly one AM marker
 - except for certain dependent verbal cores; e.g., true complements
 - every AM marker governs a particular status category
 - it’s not clear that the combinations are always compositional
 - the perfective and imperfective AM markers are prefixes
 - the imperfective is used primarily for habitual/generic reference
 - the perfectives combines perfective and resultative viewpoints
- (2.1) *Morphologically bound AM markers*
- | | | | |
|--------------|----|------------------------------|------------------|
| | a. | K-in=xok-ik | le=periyòdiko=o’ |
| Imperfective | | IMPF-A1SG=read-INC(B3SG) | DEF=newspaper=D2 |
| | | ‘I (used to) read the paper’ | |
| | b. | T-in=xok-ah | le=periyòdiko=o’ |
| Perfective | | PRV-A1SG=read-CMP(B3SG) | DEF=newspaper=D2 |
| | | ‘I read the paper’ | |
- the remaining 13 or so AM markers are stative predicates (not auxiliaries or light verbs)

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Yucatec as a tenseless language (Cont.)

(2.2) *Aspectual AM predicates*

a. **Táan** in=xok-ik le=periyòodiko=o'
Progressive **PROG** A1SG=read-**INC**(B3SG)DEF=newspaper=D2
'I /am/was/will be/ reading the paper'

b. **Ts'o'k** in=xok-ik le=periyòodiko=o'
Terminative **TERM** A1SG=read-**INC**(B3SG)DEF=newspaper=D2
'I /have/had/will have/ read the paper'

c. **Mukah** in=xok-Ø le=periyòodiko=o'
Prospective **PROSP** A1SG=read(**SUBJ**)(B3SG) DEF=newspaper=D2
'I /am/was/will be/ going to read the paper'

(2.3) *Modal AM predicates*

a. **Yan** in=xok-ik le=periyòodiko=o'
Obligative **OBL** A1SG=read-**INC**(B3SG)DEF=newspaper-D2
'I /have/had/will have/ to read the paper', 'I will/would read the paper'

b. **Táak** in=xok-ik le=periyòodiko=o'
Desiderative **DES** A1SG=read-**INC**(B3SG)DEF=newspaper=D2
'I /want/wanted/will want/ to read the paper'

Yucatec as a tenseless language (Cont.)

c. **He'** in=xok-ik le=periyòodiko=o'
Assurative **ASS** A1SG=read-**INC**(B3SG) DEF=newspaper=D2
'I /promise/promised/will promise/ to read the paper'

d. **K'a'náan** in=xok-ik le=periyòodiko=o'
Necessitive **NEC** A1SG=read-**INC**(B3SG)DEF=newspaper=D2
'I /need/needed/will need/ to read the paper'

e. **Biin** in=xok-Ø le=periyòodiko=o'
Predictive **PRED** A1SG=read(**SUBJ**)(B3SG) DEF=newspaper=D2
'I will/would read the paper'

f. **Óolak** in=xok-Ø le=periyòodiko=o'
Penative **PEN** A1SG=read(**SUBJ**)(B3SG) DEF=newspaper=D2
'I (will have) almost read the paper'

(2.4) *Metrical AM predicates*

a. **Ta'itak** in=xok-ik le=periyòodiko=o'
Proximate **PROX** A1SG=read-**INC**(B3SG)DEF=newspaper-D2
future 'I /have/had/will have/ almost read the paper',
'I /am/was/will be/ about to read the paper'

Yucatec as a tenseless language (Cont.)

b. **Táant** in=xok-ik le=periyòodiko=o'
Immediate **IMM** A1SG=read-**INC**(B3SG)DEF=newspaper=D2
past 'I /have/had/will have/ just read the paper'

c. **Sáam** in=xok-Ø le=periyòodiko=o'
Recent **REC** A1SG=read(**SUBJ**)(B3SG) DEF=newspaper=D2
past 'I /need/needed/will need/ to read the paper'

e. **Úuch** in=xok-Ø le=periyòodiko=o'
Remote **PRED** A1SG=read(**SUBJ**)(B3SG) DEF=newspaper=D2
past 'I will/would read the paper'

– other loci of aspectual and modal information

- special AM systems with fewer distinctions and distinct realization
 - under negation; in focus, relativization, and Wh-constructions
- subordinators and connectives
 - e.g., the irrealis subordinator *kéer*; the perfective connective *káa*
- adverbials and particles

Yucatec as a tenseless language (Cont.)

- **tenselessness**
 - deictic tense
 - nothing in the morphosyntactic form of a Yucatec clause restricts its t_{TOP} vis-à-vis t_U
 - e.g., “terminative” AM *ts'o'k* with past (2.5) and future (2.6) time reference

(2.5) K-u=k'uch-ul-o'b=e',
IMPF-A.3=arrive-INC=TOP
ts'o'k u=kim-il le=chàampal=e'.
TERM A.3=die-INC DET=small:child=D3
'(By the time) they arrived, the baby had already died.'

(2.6) Sáamal óok-a'n+k'iin=e'
tomorrow enter-RES+sun=TOP
ts'o'k u=bèet-ik le=túus+bèel=o'.
TERM A.3=do-INC(B.3.S) DET=send+way:REL=D2
'By tomorrow at dusk (the boy) will have done the errand.'
(Andrade 1955: 135-136)

Yucatec as a tenseless language (Cont.)

- this holds even for the metrical AM markers
 - these cardinally quantify over the temporal distance b/w t_{TOP} and some reference point given in context

(2.7) Las sèeys=e', **ta'itak** in=pàax,
six o'clock=TOP **PROX** A1SG=play.music(ATP)
káa=h-tàal Pablo, káa=h-p'áat
káa=PRV-come(B3SG) Pablo káa=PRV-leave(ACAUS(B3SG))
ma' t-in=chúun-s-ah=i'
NEG PRV-A1SG=start(ACAUS-CAUS-CMP(B3SG))=D4
'At six, I was about/close to playing musing (or 'I almost played'), (when/and then) Pablo came, (when/and then) I ended up not starting'

- the only exception is the perfective AM marker
 - which cannot be used with deictic or anaphoric future time reference in most syntactic contexts
 - » it does, however, occur with future time reference in conditional protases!

Yucatec as a tenseless language (Cont.)

(2.8) Wáah t-in=ts'on-ah le=kèeh sáamal=o',
ALT **PRV**-A1SG=shoot-CMP(B3SG) DET=deer tomorrow=D2
he' in=tàas-ik=e!
ASS A1SG=come:CAUS-INC(B3SG)=D3
'If I shoot the deer tomorrow, I agree to bring it!'
– Bohnemeyer (1998): what bars the perfective from future time reference elsewhere is the **Modal Commitment Constraint** (MCC)

(2.9) **Modal Commitment Constraint:** The realization of events in the (deictic or anaphoric) future cannot be asserted or questioned as fact. Assertions and questions regarding the future realization of events require specification of a modal attitude on the part of the speaker.

» the MCC hinges on the notion of **event realization**, a concept akin to Parson's (1990) “culmination”

(2.10) **Event Realization:** A predicate P is realized by event e at topic time t_{TOP} or equivalently, e is realized under P at t_{TOP} if and only if at least the run time of a subevent e' of e that also falls in the denotation of P is included in t_{TOP} :

$$\forall P, t_{TOP}, e \equiv E [REAL_E(P, t_{TOP}, e) \leftrightarrow \exists e' [P(e') \wedge e' \leq_e e \wedge \tau(e') \leq_T t_{TOP}]]$$

(Bohnenmeyer & Swift 2004: 286)

Yucatec as a tenseless language (Cont.)

– problem

- the progressive entails realization in combination with atelic verbal cores
 - so (2.9) predicts, contrary to fact, that the progressive cannot be used with atelic descriptions under future time reference

(2.11) Kéen k'uch-uk-o'n wal=e',
 SR.IRR arrive-SUBJ-B1PL probably=D3
 ts'íib-t-ah+kàarta táan u=mèet-ik
 write-APP-ATP+letter PROG A3=make-INC(B3SG)
 'I guess when we arrive, letter writing is what he'll be doing'

- this problem can be fixed by restricting (2.9) to *complete realization*

(2.12) **Complete Event Realization:** A predicate P is realized completely by event e at topic time t_{TOP} , or equivalently, e is realized completely under P at t_{TOP} if and only if e falls in the denotation of P and the run time of e is included in t_{TOP} :

$$\forall P, t_{TOP} e \in E [CREAL_{t_{TOP}}(P, t_{TOP} e) \leftrightarrow P(e) \wedge \tau(e) \leq t_{TOP}]$$

– but what is really needed here is a proper *modal* treatment of the notion of "realization"!

Yucatec as a tenseless language (Cont.)

– anaphoric tense

- assumption: at least in the most basic case, anaphoric tenses are unspecified for aspectual and modal meanings
 - a given marker denotes either a relation b/w t_{TOP} and $\tau(e)$ (aspect)
 - or one b/w t_{TOP} and some reference time t_R (anaphoric tense)
 - but not both
- it follows that true anaphoric tenses should be compatible with event time adverbials and realization interpretations
 - where either of these two criteria are not fulfilled, Occam's Razor favors a modal/aspectual analysis of the operator in question
 - all else being equal
- realization interpretations may not be available (depending on the telicity of the verbal core) with
 - the imperfective, progressive, and prospective AM markers; the six modal AM markers; and the proximate future AM marker
- event time adverbials are incompatible with
 - the progressive, prospective, and terminative AM markers and the four metrical AM markers

Yucatec as a tenseless language (Cont.)

– (2.13) illustrates incompatibility with event time adverbials for the remote past marker

(2.13) ??Lúunes-ak úuch in=túucht-eh
 Monday-CAL REM A1SG=send-SUBJ(B3SG)
 'Last Monday, it was a long time ago that I sent it'
 #'I sent it last Monday (which is a long time ago)'

- the only AM marker that entails realization and is compatible with event time adverbials is the perfective
- but the topic times of perfective clauses in connected discourse are subject to defeasible TA inferences!

• TA in Yucatec

- despite the apparent tenselessness of Yucatec
 - TA is pervasive in Yucatec discourse
 - so tense markers can't be the necessary triggers of TA
- as the t_{TOP} of Yucatec utterances is not restricted by tense
 - TA and time adverbials are the *only* t_{TOP} determinants!

Yucatec as a tenseless language (Cont.)

– the sequence of perfective clauses in (2.14) is interpreted iconically

- the event described by the second clause is understood to follow the event described by the first

(2.14) Pedro=e' káa=t-u=ts'íib-t-ah
 Pedro=TOP CON=PRV-A.3=write-APP-CMP(B.3.SG)
 hun-p'éel kàarta=e',
 one-CL.IN letter=TOP
 káa=t-u=ts'u'ts'-ah hun-p'éel chamal
 CON=PRV-A.3=suck-CMP(B.3.SG) one-CL.IN cigar
 'Pedro, (when/and then) he wrote a letter,
 (when/and then) he smoked a cigarette'
preferred interpretation: sequential

- if the same two clauses have different subjects, the preferred interpretation changes to overlap
 - similarly, the preferred interpretation of combinations of perfective and progressive clauses is one of overlap

Yucatec as a tenseless language (Cont.)

(2.15) Pedro=e' káa=t-u=ts'íib-t-ah
 Pedro=TOP CON=PRV-A.3=write-APP-CMP(B.3.SG)
 hun-p'éel kàarta=e', Juan=e',
 one-CL.IN letter=TOP Juan=TOP
 káa=t-u=ts'u'ts'-ah hun-p'éel chamal
 CON=PRV-A.3=suck-CMP(B.3.SG) one-CL.IN cigar
 'Pedro, (when/and then) he wrote a letter,
 Juan, (when/and then) he smoked a cigarette'
preferred interpretation: overlap

(2.16) Táan u=bàax-t-ik le=bòola le=x-ch'úup...
 PROG A3=play-APP-INC(B3SG) DET=ball DET=F-female
 káa=h-òok u=àamiga chak u=nòok'=o?
 CON=PRV-enter(B3SG) A3=friend red(B3SG) A3=garment=D2
 'Was the woman... playing with the ball (when/and then) her friend in red entered?'

- the perfective AM marker clearly does not encode a fixed temporal relation b/w t_{TOP} and some t_R
 - as an anaphoric tense would

Yucatec as a tenseless language (Cont.)

- interim conclusions
 - no compelling evidence for tense
 - no compelling evidence to the effect that the topic times of Yucatec utterances are explicitly constrained
 - by expressions of deictic or anaphoric tense
 - tense analyses difficult to reconcile with the data
 - Occam's Razor suggests Yucatec is radically tenseless
 - clear evidence of TA
 - so TA does not seem to be triggered by tense marking!

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The case for a Kleinian semantics

- the question: how best to capture the aspectual meanings TA is sensitive to
 - in terms of lexical aspect or in terms of viewpoint aspect?
- the classical DRT analyses (Kamp 1979; Kamp & Rohrer 1983; Hinrichs 1986)
 - (3.1) a. *Floyd entered. Loretta made a phone call*
 - b. *Floyd entered. Loretta was making a phone call*
 - the second sentence in (3.1a) introduces a new reference time following that of the first sentence
 - with the event time of the phone call included in the new reference time

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The case for a Kleinian semantics (Cont.)

- the progressive in (3.1b) introduces a state whose run time includes the reference time
 - and the latter is unchanged from the first sentence
- the property of “referential shift” is attributed to
 - event as opposed to state descriptions (Kamp & Rohrer)
 - telic as opposed to atelic descriptions (Hinrichs)
- lexical-aspectual approaches to perfectivity are pervasive throughout formal semantics
 - e.g., outside DRT, Bach 1981, Dowty 1986, Parsons 1990, ter Meulen 1995, ...

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The case for a Kleinian semantics (Cont.)

- the alternative – a frame-selection = “Kleinian” semantics (after Klein 1994)
 - viewpoint aspect is independent of and orthogonal to lexical-aspectual classification
 - it selects a particular frame or reference/topic time on the eventuality under description
 - defined either in terms of temporal relations or in terms of the part of the eventuality included in the frame
 - e.g., Chung & Timberlake 1985; Krifka 1992; Klein 1994; Smith 1991
 - the modal analyses of the progressive (Dowty 1979; Landman 1992; Portner 1998) are compatible with either approach
 - e.g., Klein 1994
 - imperfective: $t_{TOP} \subset \tau(e)$; perfective: $\tau(e) \subseteq t_{TOP}$;
 - perfect: $\tau(e) < t_{TOP}$; prospective: $t_{TOP} < \tau(e)$

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The case for a Kleinian semantics (Cont.)

- three arguments against the conflation of lexical and viewpoint aspect semantics
 - I’ll confine myself here to the eventive-stative distinction of Kamp & Rohrer (and, e.g., Kamp, van Genabith, & Reyle ms.)
 - argument I – progressives and imperfectives aren’t (necessarily) stative
 - what is the nature of the state that is assumed to be described by progressives/imperfectives?
 - what is its relation to the eventuality described by the “root VP” in the scope of the aspectual operator?
 - of course we can concoct a mapping of any event into a state of the event “being in progress”
 - but to define a requisite state predicate, we’d need independent truth conditions for the property of “being in progress”
 - let’s assume instead that the state characterizes a *stage* of the event
 - like a snapshot, or a single frame of a film or video clip
 - » cf., e.g., Taylor 1977; Dowty 1979; Landman 1992

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The case for a Kleinian semantics (Cont.)

- one problem: margarita sentences
 - margarita sentences involve iterative or “pluractional” event predicates and non-instantaneous topic times
 - (3.2) *It was a great party. Sally...*
 - a. *...drank margaritas the whole night*
 - b. *...was drinking margaritas the whole night*
 - (3.3) *While I was working out in the yard, the phone...*
 - a. *...rang the whole time*
 - b. *...was ringing the whole time*
 - (3.4) a. *Students asked questions...*
 - b. *Students were asking questions...*
 - ...mostly during the first part of the lecture*
 - it is not clear what motivates the selection b/w the progressive and the simple past in margarita sentences
 - what matters is that the progressive is possible in margarita sentences and has a natural pluractional interpretation
 - » this seems at odds with the idea that the progressive describes a state during which the event is “frozen in time”

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The case for a Kleinian semantics (Cont.)

- argument II: it is not clear that state descriptions are necessarily imperfective
 - state descriptions may seem inherently imperfective b/c it is difficult to “trap” a state in a t_{TOP} interval
- (3.5) *Floyd was sick/cranky/stressed out from Monday through Wednesday*
- (3.5) implicates, but does not entail, that Floyd was not sick/cranky before Monday or after Wednesday
 - but a perfective interpretation can be forced by adding context
- (3.6) *Floyd was in good health until Sunday. He was sick from Monday through Wednesday. By Thursday, he had recovered*
- if states aren't necessarily imperfective
 - then it doesn't seem to make sense to model imperfectives as state descriptions

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The case for a Kleinian semantics (Cont.)

- argument III: typological adequacy
 - approaches to TA in terms of lexical aspect fail to capture the best typological generalization
 - (written) German: viewpoint aspect marking optional, infrequent
 - » viewpoint-aspect interpretations and thus TA inferences are assigned according to telicity by implicature (Bohnenmeyer & Swift 2004)
- (3.7) Was tat dein Bruder als du ihn besuchtest?
 what did(PAST) your brother when you him visited
 'What did your brother do/was your brother doing when you visited him?'
- a. Er **schrieb** Briefe
 he **wrote(PAST)** letters(PL)
 '...he was writing/wrote letters'
atelic description;
imperfective viewpoint implicated ⇒ overlap implicated
- b. Er **schrieb** einen Brief
 he **wrote(PAST)** a letter
 '...he wrote/was writing a letter'
telic description;
perfective viewpoint implicated ⇒ sequential order implicated?

The case for a Kleinian semantics (Cont.)

- Yucatec: every verb clause is overtly marked for viewpoint aspect
 - » thus, lexical-aspectual properties have no influence on TA
- (3.8) Ba'x k-u=bèet-ik a=suku'n
 what IMPF-A3=do-INC(B3SG) A3=older.brother
 káa=h-bin-ech a=ximbat=o'?
 CON=PRV-go-B2SG A2=walk:APP(B3SG)=D2
 'What was your older brother doing when you went to visit him?'
- a. - Táan u=ts'iib-t-ik káarta
 PROG A3=write-APP-INC(B3) letter
 'He was writing letters'
atelic description;
imperfective viewpoint marked ⇒ overlap implicated
- b. - Táan u=ts'iib-t-ik hun-p'éel káarta
 PROG A3=write-APP-INC(B3) one-CL.IN letter
 'He was writing a letter'
telic description;
imperfective viewpoint marked ⇒ overlap implicated

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The case for a Kleinian semantics (Cont.)

- (3.9) Káa=h-tso'k k=hàan-al-o'n y=éetel=e',
 CON=PRV-end(B3SG) A1PL=eat-INC-1PL A3=with=TOP
 Káa=t-u=ts'iib-t-ah káarta
 CON=PRV-A3=write-APP-CMP(B3) letter
 'When we (incl.) finished eating, he wrote letters'
atelic description;
perfective viewpoint marked ⇒ sequence implicated
- approaches to TA in terms of lexical aspect have to assume that TA is sensitive to
 - telicity in German
 - the stative-eventive distinction in Yucatec
 - based on a Kleinian semantics, TA emerges as sensitive to viewpoint aspect in both languages
 - but viewpoint aspect assignment depends on telicity-based implicatures in German
 - whereas it is obligatorily coded in Yucatec

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DRT meets Grice

- precursors
 - Bach 1981 and Dowty 1986 develop Gricean accounts of TA arguing *against* the DRT treatment
 - but just because TA inferences are non-monotonic
 - does not mean they should not be represented in a dynamic framework (cf., e.g., cf. Kadmon 1987)
 - the approach developed here differs from Bach's and Dowty's by
 - *combining* radical pragmatics and dynamic semantics
 - attributing aspect-driven TA to viewpoint aspect rather than lexical aspect

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DRT meets Grice (Cont.)

- the contributions of a Gricean analysis to the treatment of TA in DRT
 - capture the defaults in the anaphoric resolution to the reference time and its relation to t_{TOP}
 - explain the conditions under which these defaults are blocked or canceled
 - represent the non-monotonicity of TA as such
- this is probably as it should be
 - there is ample evidence of Gricean implicatures playing a key role in reference resolution elsewhere
 - cf., e.g., Levinson (2000: 217-236) on definite descriptions and Levinson (2000: 261-365) on sentential anaphora
- I assume the presuppositional DRT framework of Kamp, van Genabith, & Reyle ms. [KvGR]

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DRT meets Grice (Cont.)

- adaptations of the [KvGR] framework
 - a Kleinian semantics for viewpoint aspects
 - this in turn entails replacing both the 'reference time' r and the 'location time' t_i of [KvGR] with t_{TOP}
 - every clause triggers an anaphoric presupposition to topic time resolution
 - tenses are no longer the triggers of TA presuppositions
 - t_{TOP} must be resolved wrt a **Natural Temporal Reference Point (NTRP)**

(4.1) **NTRP:** A time interval t is an NTRP in a given discourse iff t is in that discourse identified as the utterance time of a clause or the run time of an event introduced into the discourse representation or is denoted by an adverbial.

- this constraint accounts for the traditional intuition that only perfectives introduce new reference points

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DRT meets Grice (Cont.)

– non-perfective aspects trigger a **binding implicature**

– to coextensiveness of their t_{TOP} with the NTRP

(4.2) **Binding implicature:** $\neg(\tau(e) \subseteq t_{TOP}) \rightarrow t_{TOP} = \text{NTRP}$

- this is a stereotype implicature which can be blocked or cancelled due to lexical and compositional semantics
 - and world knowledge
- evidence that only non-perfective aspects trigger binding implicatures
 - perfectives can form self-contained stand-alone discourses
 - » in contrast, sentences in non-perfective aspects cannot – unless they are interpreted wrt utterance time!

(4.3) (explicit or implicit topic: *So what's the news today?*)

- a. - *Floyd inflated a balloon!*
- b. - *#Floyd was inflating a balloon!*
- b'. - *Floyd is inflating a balloon!*

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DRT meets Grice (Cont.)

- c. - *#Floyd was going to inflate a balloon!*
- c'. - *Floyd is going to inflate a balloon!*
- d. - *#Floyd had inflated a balloon!*
- d'. - *Floyd has inflated a balloon!*

– the interpretation of adjacent sentences in discourse is subject to coherence relations

- I assume that DRS construction rules have access to these
- when a clause is interpreted under narration, this triggers an **iconicity implicature** to topic time shift
 - i.e., the introduction of a new topic time following the most recently processed NTRP

(4.4) **Iconicity implicature:** Let S_1 and S_2 be adjacent clauses interpreted with respect to topic times t_{TOP1} and t_{TOP2} . Then iff the string $[S_1 S_2]$ is interpreted as a narrative sequence, t_{TOP2} is implicated to follow t_{TOP1} :
 $\text{Narration}(S_1, S_2) \rightarrow t_{TOP1} < t_{TOP2}$

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DRT meets Grice (Cont.)

- this implicature goes through only in case the clause has a perfective viewpoint
 - otherwise, it is overridden by the more specific binding implicature

(4.5) *When Sally turned the corner, she saw Floyd.*

- a. *...He was inflating a balloon*
- b. *...He inflated a balloon*

- in non-narrative discourse, the temporal relation b/w t_{TOP} and the NTRP is determined by the coherence relation
 - overriding the aspectual defaults (Lascarides & Asher 1992, 1993)
- e.g., an elaboration relation can be inferred between the first and the latter clauses in (4.6)
 - resulting in an overlap interpretation of the order of the events

(4.6) *Floyd prepared everything for the party. He inflated a balloon. He put the Champaign in the ice bucket. Finally, he checked his watch*

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DRT meets Grice (Cont.)

– the interpretation of perfective clauses vis-à-vis non-perfective ones already in the discourse

- is governed by a **persistence implicature:**

(4.7) **Persistence implicature:**

$t_{TOP1} \subset \tau(e_1) \ \& \ \tau(e_2) \subseteq t_{TOP2} \rightarrow t_{TOP2} \subset \tau(e_1)$ (for imperfectives)

$t_{TOP1} \subset \tau(e_1) \ \& \ \tau(e_2) \subseteq t_{TOP2} \rightarrow t_{TOP2} < \tau(e_1)$ (for prospectives)

$\tau(e_1) < t_{TOP1} \ \& \ \tau(e_2) \subseteq t_{TOP2} \rightarrow \tau(e_1) < t_{TOP2}$ (for perfects)

(4.8) *When Sally turned the corner, she saw Floyd. He was inflating a balloon. He nodded his head to her*

– the binding, iconicity, and persistence implicatures are added as DRS conditions

- to the presuppositional DRS
- they survive the merger with the context representation
 - only in case they are not blocked, cancelled, or overridden
- they remain cancelable even after contextual verification and are marked as such
 - (cf. Kadmon 1987; Levinson 2000: 248-256; Geurts & Maier ms.)

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DRT meets Grice (Cont.)

(4.9) *Floyd entered. Loretta was making a phone call*

(4.10)

$n f t_{TOP1} e_1$
Floyd(j)
 $t_{TOP1} < n$
 $e_1 \sqsubseteq t_{TOP1}$
 $e_1: \wedge \text{"enter"}(f)$

{

$t_{TOP2} e_1$
 $e_1 = t_{TOP2}$
 $t_{TOP1} < t_{TOP2}$
 t_{TOP2}

}

$n l t_{TOP2} e_2$
Loretta(l)
 $t_{TOP2} < n$
 $t_{TOP2} \sqsubseteq e_2$
 $e_2: \wedge \text{"make-call"}(l)$

– the more specific binding implicature ($e_1 = t_{TOP2}$) overrides the iconicity implicature ($t_{TOP1} < t_{TOP2}$) in (4.10)

– as a result, only the binding implicature makes it into the new merged DRS for the discourse in (4.9)

(4.11)

$n f t_{TOP1} e_1 l t_{TOP2} e_2$
Floyd(j)
 $t_{TOP1} < n$
 $e_1 \sqsubseteq t_{TOP1}$
 $e_1: \wedge \text{"enter"}(f)$
Loretta(l)
 $t_{TOP2} < n$
 $t_{TOP2} \sqsubseteq e_2$
 $e_1 = t_{TOP2}$
 $e_2: \wedge \text{"make-call"}(l)$

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Overview

- temporal anaphora and tenselessness
- Yucatec as a tenseless language
- the case for a Kleinian semantics
- DRT meets Grice
- back to Yucatec
- conclusions

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Back to Yucatec

- Bittner's (in press) treatment of TA in Kalaallisut in the "online update" framework
 - Bittner claims that TA is monotonic in "aspectually fully explicit" languages
 - but, as predicted by the Gricean account, aspect-driven TA is, in fact, defeasible in Yucatec

(5.1) Táan u=bàax-t-ik
 PROG A3=play-APP-INC(B3SG)
 le=bòola le=x-ch'úup...
 DET=ball DET=F-female
 káa=h-òok u=àmiga chak u=nòok'=o?
 CON=PRV-enter(B3SG) A3=friend red(B3SG) A3=garment=D2
 'Was the woman... playing with the ball [when/and then] her friend in red entered?'

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Back to Yucatec (Cont.)

(5.2) Táan u=p'uru's-t-ik=e', káa=h-xiik-ih...
 PROG A3=inflate-APP-INC(B3SG)=D3 CON=PRV-burst-CMP(B3SG)
 'She was inflating [the balloon], [when/and then] it burst...'
persistence implicature cancelled due to lexical semantics and world knowledge

(5.3) Táan u=yèel-el le=nah=o',
 PROG A3=burn-INC DET=house=D2
 (káa=h-tàal Pedro,)
 CON=PRV-come(B3SG) Pedro
 káa=t-u=tup'-ah le=k'áak'=o'
 CON=PRV-A3=extinguish-CMP(B3SG) DET=fire=D2
 A3=garment=D2
 'The house was burning, ((when/and then) Pedro came,)
 (when/and then) he extinguished the fire'
persistence implicature cancelled due to lexical semantics and world knowledge

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Back to Yucatec (Cont.)

- the deictic determination of t_{TOP} vis-à-vis t_U
 - is captured by the Gricean approach by letting t_U assume the role of NTRP
 - e.g., compare (5.4) to (2.5)-(2.6) and (5.5) to (3.8b)

(5.4) Le=rèey=o' ts'o'k u=k'uch-ul
 DET=king=D2 TERM A3=arrive-INC
 'The king has/had/will have) arrived'

(5.5) ...táan in=ts'iib-t-ik hun-p'éeel kàarta
 PROG A1SG=write-APP-INC(B3SG) one-CL.IN letter
 '...I am/(was/will be) writing a letter'

– thus the principles governing deictic reference in Navajo

- according to Smith, Perkins, & Fernald (2007)
- can be reduced to the more general Gricean principles!

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Overview

- temporal anaphora and tenselessness
- Yucatec as a tenseless language
- temporal anaphora in DRT: then and now
- the case for a Kleinian semantics
- DRT meets Grice
- back to Yucatec
- conclusions

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Conclusions

- the locus of temporal anaphora is not tense
 - the contextual determination of topic times is subject to the same principles
 - in tensed and tenseless languages
- the reduction of viewpoint aspect (perfectivity) to lexical aspect is empirically problematic
- temporal anaphora is sensitive to viewpoint aspect, not lexical aspect
 - the strongest defensible crosslinguistic generalizations require a “Kleinian” semantics

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Conclusions (Cont.)

- aspect-driven temporal anaphora inferences are just as defeasible in tenseless languages
 - as they are in tensed languages
 - even if these tensed languages have morphologically “fully explicit” viewpoint aspect systems
- temporal anaphora resolution is governed by generalized conversational implicatures
 - as perhaps all instances of anaphora resolution
- dynamic semantics is not incompatible with radical pragmatics
 - on the contrary, the two are a quite natural match!

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