

No tense: a bi-contextual evaluation approach to temporal reference

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Expressing temporal meanings without tense

- Tense and aspect are the key linguistic resources for the clause-level temporal grounding of eventuality descriptions.
- Under the neo-Reichenbachian approaches (Klein 1994, a.o.),
 - **tense** situates the RT relative to the ST (in matrix clauses),
 - **aspects** situates the ET relative to the RT
- But do all languages have tense?
- = do all languages have a semantic mechanism dedicated to introducing in the logical form an RT in relation to the ST (in matrix clauses)?

Expressing temporal meanings without tense

- Formal semantic approaches so far have maintained that tense is indeed a semantic universal.
- For a language that lacks overt tense morphemes or whose tense morphemes are optional, it is said to
 - have phonologically covert tense in its lexicon, or
 - have a rule that supplies non-lexical tense in the semantic component
- Given that the role of tense is formally distinct from that of aspect, the analytical possibility arises that **a language may lack tense while having aspect.**

Expressing temporal meanings without tense

- This talk focuses on (Hong Kong) Cantonese, which lacks overt tense morphology.
- A matrix sentence is temporally ambiguous:

(1) *ngo zyau hai Hoenggong*

I live at Hong Kong

(i) 'I live in Hong Kong.'

(ii) 'I lived in Hong Kong.' (in reply to "Where did you live **last year**?")

- Our goal is to propose an analysis of temporal reference in Cantonese without an appeal to tense.

Expressing temporal meanings without tense

- Existing approaches presuppose the presence of tense in Chinese.
- The null tense approach** (Sun 2014; He 2020)
there are covert tense morphemes (in addition to aspect morphemes)
e.g. NON-FUT, PRES, PAST, etc.
- The tense-aspect bundling approach** (Lin 2006, 2010)
tense morphemes are bundled with aspect morphemes.
i.e., $\llbracket \text{perfective aspect} \rrbracket = \lambda P_{\langle i, t \rangle} \lambda t_{\text{TOP}} \lambda \mathbf{t}_0 \exists t [P(t) \wedge t \subseteq t_{\text{TOP}} \wedge \mathbf{t}_{\text{TOP}} < \mathbf{t}_0]$

A genuinely tenseless approach

- We pursue an opposite, semantically tenseless approach to temporal reference in Cantonese.
- We propose that temporal meanings can be derived via **evaluation time shift**, which manipulates the temporal parameter of the context of evaluation.
 - In a **present** interpretation, the time of evaluation for matrix clauses (EvalT) is the speech time (ST).
 - In a **past** interpretation, the EvalT is a back-shifted time (preceding the ST).
- The parametric difference between the temporal systems of Cantonese and English is located in
 - (i) the inventory of their functional lexicons: Cantonese lacks tense morphemes;
 - (ii) the wider application of the mechanism of EvalT shift in Cantonese

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An overview

	Statives	Atelic eventives	Telic eventives
Present	✓ _{default}	✓ _{default}	✗
Past	✓	✓	✓
Future	✗	✗	✗

Table 1: Temporal reference of bare episodic sentences in Cantonese

	Imperfective <i>-gan/-zyu</i>	Perfective <i>-zo/-gwo</i>
Present	✓ _{default}	✗
Past	✓	✓
Future	✗	✗

Table 2: Temporal reference of aspectually marked episodic sentences in Cantonese

Statives and atelic eventives

- Sentences with **bare atelic predicates** convey a default present reading, also compatible with a past reading.

(2) a. *ngo zyu hai Hoenggong* = (1)

I live at Hong Kong

Present: 'I live in Hong Kong.'

Past: 'I lived in Hong Kong.'

(in reply to "Where did you live **last year**?")

b. *Aaming jatgojan/ houjingzangaam daa laamkau*

Aaming alone/ seriously play basketball

Present: 'Aaming plays basketball on his own/ seriously.'

Past: 'Aaming played basketball on his own/ seriously.'

(in reply to "What did Aaming do **yesterday**?")

Imperfective marking

- Sentences with **imperfective** (e.g., progressive, durative) marking exhibit a similar pattern.

- (3) a. *ngo se-gan jat-fung seon*
 I write-PROG one-CL letter
 Present: 'I am writing a letter.'
 Past: 'I was writing a letter.' (in reply to "What did you do **at 7am?**")
- b. *ngo daai-zyu hauzaau*
 I wear-DUR mask
 Present: 'I am wearing a mask.'
 Past: 'I was wearing a mask.'
 (in reply to "Why no one recognized you **yesterday?**")

Telic predicates

- Sentences with a **bare telic predicate** can only have a past interpretation.

- (4) a. *ngo zoeng Aaming gon-ceot fosat*
 I DISPOSAL Aaming kick-out classroom
 Past: 'I kicked Aaming out of the classroom.'
- b. *Aaming zoeng ngo bong hai dang dou*
 Aaming DISPOSAL I tie at chair place
 Past: 'Aaming tied me to (a) chair.'

- Note: not all telic predicates can be used without aspect marking (Klein, Li, and Hendriks 2000; Lin 2003a; Sun 2014).
- We focus only on the acceptable cases.

Perfective marking

- Likewise, sentences with **perfective** marking can only convey a past interpretation, even with atelic predicates.

- (5) a. *ngo daa-zo laamkau*
 I play-PERF basketball
 Past: 'I had played basketball.'
- b. *ngo zyu-gwo hai Hoenggong*
 I live-EXP at Hong Kong
 Past: 'I had lived in Hong Kong.'

Interim summary

- Generalizing the pattern,

	Bare atelics & imperfectives	Bare telics & perfectives
Present	✓ default	✗
Past	✓	✓
Future	✗	✗

Table 3: Temporal reference of episodic sentences in Cantonese

- Different from tense approaches, we show that tense is not necessary when deriving the the present-past flexibility and the the perfective-past connection .

(We postpone the restriction on future interpretation to section 6.)

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Assumptions

- We assume Default Viewpoint Aspect (Lin 2003a, 2003b; Bohnemeyer and Swift 2004).
 - **Statives and atelic eventives** describe *homogeneous* situations
 - they combine with null imperfective aspect by default;
 - **Telic eventives** describe *heterogeneous* situations
 - they combine with null perfective aspect by default.
- We assume that aspect morphemes (overt or null) are functions from properties of events to properties of times (of type $\langle\langle v,t\rangle,\langle i,t\rangle\rangle$).
 - i.e., An Aspect Phrase denotes properties of time, of type $\langle i,t\rangle$.

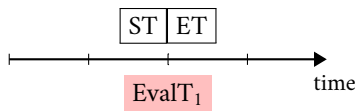
Evaluation time shift

The proposal, following Pancheva and Zubizarreta (2021):

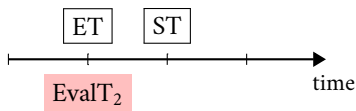
- Every sentence is interpreted w.r.t. an evaluation time, EvalT.
- The EvalT is typically the ST, giving rise to a present time interpretation.
- The EvalT can be a time other than ST.
- If the EvalT is a time back-shifted from the ST, a past time reading obtains.

(6) Past time reading derived via a back-shifted EvalT

Present: default



Past: back-shifted EvalT



An example from English narrative present

- Such a mechanism has been proposed to capture the use of narrative present in English.

(7) From Schiffrin (1981, (2e)-(2l)):

We just **pulled**_{ts} into this lot [...] and all of a sudden the buzzer **sounds**_{tn} [...] So we **asked**_{ts} some guy to come over and help us. So he **opens**_{tn} the car and everyone **gets**_{tn} out except me and my girlfriend. We **were**_{ts} in the front we just didn't feel like getting out. And all of a sudden all these **sparks**_{tn} start to fly.

- The EvalT of these sentences in the narrative is not uniform:
 - Some are evaluated w.r.t. the time of the speech context t_s
 - Some are evaluated w.r.t. the time of the narrative context t_n

Applying evaluation time shift to Cantonese

- As proposed for Paraguayan Gurani in Pancheva and Zubizarreta (2021), we suggest that a similar mechanism can be applied to Cantonese matrix sentences.
- Different from English, the application of such a backward evaluation time shift is **not restricted to narratives**.
- It is **possible in free-standing clauses**.
- Under this conception, there is no need to posit tense in Cantonese.

Implementation

- We implement the idea under a **bi-contextual evaluation approach** (Schlenker 2004; Sharvit 2008; Macfarlane 2014; Pancheva and Zubizarreta 2021, a.o.).
 - (Such bicontextualism has been deployed in domains like Free Indirect Discourse, predicates of personal tastes and epistemic modals.)
- Two evaluation times are provided by two evaluation contexts: i.e., the actual **speech context s** , and **the narrative context n**
 - (Cf. Schlenker's (2004) Context of Utterance and Context of Thought)

Implementation

- We assume that there is an indexical *pro* in the left periphery, presumably in the Spec CP (cf. Huang 2022).
 - It is a time variable (of type *i*), whose value is sensitive to different evaluation contexts
 - It saturates the time argument of the aspect phrase (of type $\langle i, t \rangle$)

(8) a. $\llbracket pro \rrbracket^{s, n} = t_s$

b. $\llbracket pro \rrbracket^{s, n} = t_n$, where $t_n < t_s$ (a back-shifted evaluation time)

(Strictly speaking, the EvalT is not “shifted” or overridden; but an additional, shifted EvalT is introduced.)

Illustration, part 1

- To derive the **present-past flexibility** in stative/atelic predicates, and imperfective sentences,

(9) *ngo zyu hai Hoenggong* = (2a)

I live at Hong Kong

(i) 'I live in Hong Kong.'

(ii) 'I lived in Hong Kong.' (in reply to "Where did you live **last year**?")

- (9) can be evaluated at the speech time, or at a back-shifted time (mediated by the *pro*).

(10) $[_{CP} \textit{pro} \dots \lambda t \exists e [\textit{live-in-HK}(e)(\textit{speaker}) \wedge \tau(e) \textit{AT} t \wedge (t \subseteq \textit{now/last.year})]]$

a. $\llbracket (9i) \rrbracket^{s, n} = 1$ iff I live in Hong Kong AT t_s

b. $\llbracket (9ii) \rrbracket^{s, n} = 1$ iff I live in Hong Kong AT t_n ($\wedge t_n \subseteq$ the year before t_s)

Illustration, part 2

- We now turn to the **perfective-past connection** in telic predicates and perfective sentences.

(11) *ngo zoeng Aaming gon-ceot fosat* = (4a)
 I DISPOSAL Aaming kick-out classroom
 'I kicked Aaming out of the classroom.'

- By default, the sentence should be evaluated at the speech context.
- However, there is a cross-linguistic *present-perfective restriction* (Comrie 1976, a.o.)
- Cantonese is no exception.

Illustration, part 2

- Following Ogihara (2007), we suggest that

- (12) a. The speech event requires an overlapping state/event to hold true **throughout the speech time**.
- b. But this is impossible for a perfective state/event.

- This requires that the sentence in (11) be evaluated at a context different from the speech context.

- (13) $[_{CP} \textit{pro} \dots \lambda t \exists e [\textit{kick-out}(e)(A_{\text{aming}})(\textit{speaker}) \wedge \tau(e) \textit{ AT } t]]$
 $[[(9)]]^{s, n} = 1$ iff I kicked Aaming out of the classroom at t_n ($\wedge t_n < t_s$)

- There is no need to bundle tense with aspect (contra Lin 2006).

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A restriction on matrix temporal reference

- We offer a piece of evidence that distinguishes the EvalT shift approach from other tense approaches.
- EvalT shift is subject to an independently and empirically motivated constraint (Anand and Toosarvandani 2018; Pancheva and Zubizarreta 2021).

(14) A constraint on initial evaluation time shift (in a free-standing clause σ)

Initial EvalT shift in σ may not precede the time of the event in σ :

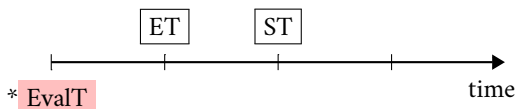
$t_n \not\prec \text{EventT}$.

(= There is an upper bound of the value of a back-shifted EvalT)

A restriction on matrix temporal reference

- In effect, this constraint bans the future-in-the-past reading in sentences where evaluation time shift has come into play.

(15) *EvalT < EventT, under the constraint in (14)



Illustration

- In tense languages like English, a future-in-the-past reading is available, contributed by the past tense morpheme and the prospective marking.

(16) John **was going to** sing yesterday.

- However, free-standing clauses in Paraguayan Guarani, for example, disallow such a reading (Pancheva and Zubizarreta 2021, p.36-37).

(17) #*Kuehe* *Kalo o-purahéi-ta.* Paraguayan Guarani
 yesterday Kalo 3-sing-PROSP
 'Kalo was going to sing yesterday.'

- The unavailability of such a reading follows if the past time reading in (17) is derived via evaluation time shift.

Predictions

- The availability of the future-in-the-past reading can be adopted to diagnose whether evaluation time shift is in effect.
- Predictions
 - ^{OK}future-in-the-past: there is PAST/NON-FUTURE morpheme
 - *future-in-the-past: evaluation time shift is in effect.

No future-in-the-past in Cantonese

- We consider prospective markers like *wui* ‘will’ and *jiu* ‘need’.
- They are incompatible with (clausemate) past time adverbial.

(18) Prospective markers and past time adverbials

a. ??*Aaming camjat wui coenggo*

Aaming yesterday will sing

Int.: ‘Aaming was going to sing yesterday.’

b. ??*po syu camjat zaulai jiu lam*

CL tree yesterday soon need fall

Int.: ‘The tree was going to fall yesterday.’

(They are compatible with non-past time adverbials, such as *tingjat* ‘tomorrow’ and *jigaa* ‘now’.)

... unless the shift is non-initial

- Such a reading is possible if the prospective markers are (i) in the embedded clause or (ii) in a non-initial clause.

(19) Cases where future-in-the-past reading is possible

a. *Aaming camjat waa keoi **wui** coenggo*

Aaming yesterday say he will sing

'Aaming said yesterday that he would sing (but he didn't).'

b. *ngo camjat jindou jat-po daisyu. batgwo po syu zaulai **jiu***

I yesterday see one-CL big.tree but CL tree soon need

lam

fall

'I saw a big tree yesterday. It was going to fall.'

... unless the shift is non-initial

- A reviewer pointed to us that the Mandarin counterpart of the following Q-A pair is acceptable.

(20) Q: What were you doing at 1:20PM?

A: go-go sihau ngo **jiu** heoi caamгаа jat-go jat-dim-bun ge
 that-CL time I need go join one-CL 1.30pm GE
wui

meeting

‘At that time, I was going to join a meeting (to be held) at 1.30pm.’

- We suggest that question answer pairs render the EvalT shift occurring in non-initial clause, hence satisfying (14).

A brief comparison with other approaches

- The null tense approaches (Sun 2014; He 2020)
 - The future-in-the-past reading is predicted to be possible in general (i.e., a past tense morpheme co-occurs with a prospective marker)
 - It does not capture the ban on the reading (in an initial clause).
- The tense-aspect bundling approach (Lin 2006, 2010)
 - The approach focuses on incorporating tense semantics in perfective morphemes.
 - It is silent on the lack of such a reading in an initial clause.

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The ban on backtracking in narrative

- We provide **an argument against covert tense** from temporal reference in narratives.
- There is a ban on backtracking in narratives (Anand and Toosarvandani 2018):
- Compare the use of past tense and narrative present:

(21) Backtracking is disallowed in English *with narrative present*

a. Max fell. John pushed him.

fall → push or push → fall

b. Max falls. John pushes him.

fall → push *only*

No backtracking in narrative in Cantonese

- In a narrative with two bare sentences, the only possible reading is one with temporal progression.

(23) *hai go-go sihau, Aaming ditlok lautai. Aafan tui keoi jat-haa.*
 at that-CL time Aaming fall.down stair Aafan push him once
 ‘At that time, Aaming falls. Aafan pushes him once.’

- ✓ temporal progression: fall → push.
- ✗ backtracking: push → fall
- The lack of backtracking reading is unexpected if Cantonese were to possess null tense.

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Reviewing arguments for tense approaches

- In this section and the next, we review two arguments for tense approaches from
 - (i) complement clauses, and
 - (ii) the restriction on future interpretation.
- The relevant observations can be derived without positing tense.

The back-shifted reading in complement clauses

- It is observed that a complement clause can receive a back-shifted reading (Lin 2006).

- (24) a. *Aafan waa Aaming bik jan duk jyujinhok*
 Aafan say Aaming force person study linguistics
 ‘Aafan **said** that Aaming **had forced** others to study linguistics.’
- b. *Aaming waa Aafan daa-zo laamkau*
 Aaming say Aafan play-PERF basketball
 ‘Aaming **said** that Aafan **had played** basketball.’

Tense approaches

- Tense approaches derive the back-shifted reading by positing multiple past tense morphemes.
 - In null tense approach, both the matrix clause and the embedded clause bear a null PAST morpheme.
 - In a tense-aspect bundling approaches, the perfective morphemes in both clauses bear past tense semantics.
- We argue that this does not necessarily support a tense account.
- In the sentences in (24), the simultaneous reading is unavailable i.e., the back-shifted reading is the only possible reading
 - The forcing event cannot overlap with the saying event in (24a);
 - The playing-basketball event cannot overlap with the saying event in (24b).

An alternative view to derive the back-shifted reading

- This is parallel to the ban on present-perfective in matrix clauses.
- We extend the explanation suggested by Ogihara (2007) to attitude events:

(25) a. The attitude event requires an overlapping state/event to hold true **throughout the attitude time**.

b. But this is impossible for a perfective state/event.

- The back-shifted reading of a perfective complement clause is thus the only possible reading.
- The reading can be derived without assuming tense.

An alternative view to derive the back-shifted reading

- Note that if the complement clause is imperfective, a simultaneous reading obtains.

(26) *Aaming* waa *Aafan* **zyu** *hai* *Hoenggong* *simultaneous*
Aaming say *Aafan* live at Hong Kong
 ‘*Aaming* **said** that *Aafan* **lived** in Hong Kong.’

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Future interpretation requires overt marking

- Reference to future time requires overt marking, even when there is a salient future time (Lin 2006; Sun 2014).

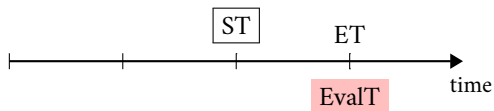
(27) ?? *ngo tingjat cong(-gan) loeng*
 I tomorrow wash(-PROG) bath
 'I will bath/be bathing tomorrow.'

- Sun (2014) takes this to argue for a tense approach with NON-FUTURE, which imposes a restriction on temporal reference.

An explanation under evaluation time shift

- The future restriction can alternatively be explained by suggesting that **forward evaluation time shift is restricted** in free-standing clauses in Cantonese.

(28) **Future:** *forward-shifted EvalT



- There is **an asymmetry in the application domain of evaluation time shift in Cantonese**
- While *backward* evaluation time shift applies to free-standing clauses, *forward* evaluation time shift cannot.

Forward shift in narratives

- Note that forward shift is possible in Cantonese in narratives.

(29) *Tingjat, ngodei heoi gaaisi, jinhau sik faan, gaanzyu faan*
 Tomorrow we go market, then eat rice, then go.back
ukkei
 home
 ‘Tomorrow we go to the market, have meals and then go home.’
 (*describing a plan or a scenario*)

- Positing a restriction on forward shift in Cantonese implicates that languages vary w.r.t. the application domain of evaluation time shift, instead of, e.g., lexical resources.

Language variation

- Narratives seem to be more tolerant to evaluation time shift.
- Free-standing clauses exhibits more variations.

Language	Backward shift	Forward shift
Cantonese	✓	✗
Paraguayan Guarani	✓	✗
English	✗	✗
Hypothetical language 1	✓	✓
Hypothetical language 2	✗	✓

Table 4: Possible typology of the application domain of EvalT time shift in free-standing clauses

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Conclusions

- An evaluation time shift approach adequately derives temporal reference in Cantonese.
 - It handles the restriction on the future-in-the-past reading.
 - It desirably rules out backtracking in narratives.
 - Arguments taken to support a tense approach can be otherwise explained.
- Cantonese lacks not only overt tense morphology, but also semantic tense.
- It follows that **tense is not a semantic universal**.
- On-going investigation on ...
 - Temporal reference in relative clauses
 - Temporal reference in matrix clauses with more than one eventuality (e.g., Newton and Hawking are/were interested in physics.)
 - The “experiential” marker, *-gwo*

Thank you very much!

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We welcome questions and comments from you!

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