Contradictory (Forward) Lifetime Effects and the Non-Future Tense in Mandarin Chinese

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The Debate: Tense in Chinese?

It is a well-established view that Chinese has no (past) tense morphology:
- In an out of the blue context, (1) can be interpreted as either a past or a present event.
  (1) mali zai xue-xi.
     Mary PROG study
     'Mary *was/is* studying.'

But whether or not Chinese has a syntactic tense with a phonologically empty T node remains an unsettled debate. There are three hypotheses on the market:
- 1. Tenseless: J. W. Lin (2006), Smith & Erbaugh (2005), Grano (2017)
  - There is no need to resort to a covert T node in Chinese; a purely aspectual system can account for temporal interpretations in this language.
  - Perf = $\lambda P_{<i,t>}\lambda t_{Top}\lambda t_0 \exists t[t \subseteq t_{Top} \wedge t_{Top} < t_0 \wedge P(t)]$, Imperf = $\lambda P_{<i,t>}\lambda t_{Top}\exists t[t_{Top} \subseteq t \wedge P(t)]$
  - [CP . . . [IP . . . [ModalP … [AspP … [VP …]]]]]
  - Problem: Little evidence has been raised *against* a T node.
- 2. Covert tense: There is a T node in Chinese but it is not morpho-phonologically realised; the finiteness property in Chinese stems from a TP.
  - 2.1 Covert past tense: Sybesma (2007)
    - Syntactic past tense in Chinese has covert agreement with temporal adverbials. (Compare: overt agreement in Dutch)
    - Problem: Erroneously taking the (phonologically empty version of) English past tense as the only model for the Chinese tense system.
  - 2.2 Future/Non-Future tenses: Sun (2014), Huang (2015), Li (2016)
    - The bare predicates in Chinese have a phonologically null tense that restricts possible reference times to non-future times.

Question: Is there syntactic tense in Chinese?
- What different predictions do these hypotheses make?
- What evidence do we need to pin down the details of the Chinese tense system?

The Current Study

Tense is an element at the syntax-semantics interface; the most convincing evidence must involve both syntactic and semantic evidence.
- Structural evidence: Finiteness → T node (T. H. Lin, 2015)
  - Insufficient; difficult to make a connection (Grano, 2017)
- Semantically, tense encodes temporal meaning.
  - "In view of […] involvement in temporal interpretation, it seems reasonable to identify it as the T we already know from other languages." (Sybesma, 2017, p.7)

We focus on a linguistic phenomenon called "Lifetime Effects"
- Lifetime effects refer to the inferences about the life/death of the individual in sentences like '*Mary is/was blue-eyed*':
  - Clausal tense interacts with temporal information in the nominals.
- Contradictory effects: one living and one dead individual in the subject position
  - In principle, neither tense is appropriate in English (Mittwoch, 2008)
    (2) Saussure_dead and Chomsky_living #*are/??were* both linguists.
  - This temporal phenomenon has the potential of shedding light on the syntactic structure of Tense.

Processing Lifetime Effects

Context: This house was built for Bill Stevens, the actor, who died last year. The one over there belongs to his brother, John Stevens; he now lives in America.
- English: (3) They #*are/??were* both very handsome.
- Chinese: (4) ta-men dou *shi* hen yingjun de nanren.
  3PL both BE very handsome DE man
  'They both BE very handsome man.'

Four experiments hosted on Amazon Mechanical Turk
- *Acceptability judgements*:
  - **Prediction**: A covert past tense analysis predicts that contradictory lifetime inferences would arise in Chinese just as in English.
  - **Result**: Sentences with contradictory lifetime effects were judged as significantly less acceptable in English but not in Chinese (Fig. 1 vs Fig. 2), potentially undermining the hypothesis that Chinese has a covert tense specified for [±PAST].
- *Self-paced reading*:
  - **Results**: English and Chinese participants showed similar reading time disruption in sentence wrap-up effects.
  - *Suggestive* that Chinese is unlikely to be completely tenseless.
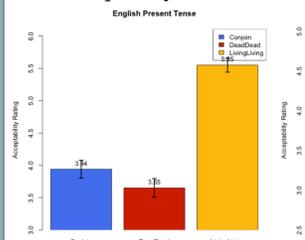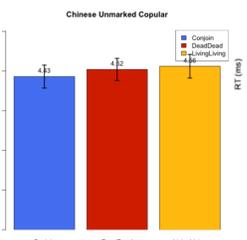
Fig. 1: Acceptability judgement in English (N=24)

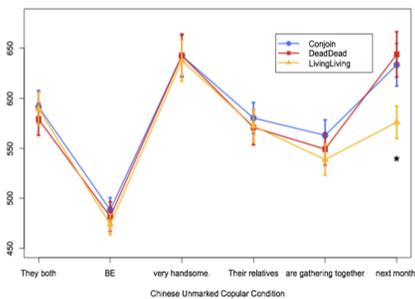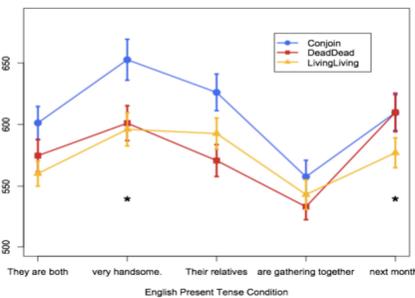Fig. 2: Acceptability judgement in Chinese (N=24)

Fig. 3: Self-paced reading in English (N=96) and Chinese (N=60)

Forward Lifetime Effects

Forward lifetime effects: one living and one to-be-born individual (Arche, 2006).
- Context: Holly, a British actress, will give birth to her first baby in New York. Her assistant, Georgia, had her baby in California last month.
  (5) ta-men de haizi dou #*shi* meiguo gongmin
  3PL DE child both BE America citizen
  Intended: 'Their babies both BE American citizens.'
- No difference should be expected between (4) and (5) under a tenseless approach, a prediction that is not borne out empirically.
- Suggesting that *shi* may project a T node but with the [-FUTURE] value.

Caveat: an alternative explanation?
- Maybe this conflict of (tense) features can be resolved at the morpho-phonological level, i.e. *shi* is a neutralised form of the two tense features (Pullum & Zwicky, 1986).
  - English example: John thinks that *you*, and Mary is sure that *they*, *are* late.
  - But this could be analysed as a right node raising construction (Larson, 2012).

Non-Future Tense in and beyond Chinese

Recent research on the Future/Non-Future tense distinction in Chinese:
- A phonologically null non-future tense in the bare predicates (Chen, 2017; Li, 2016; Sun, 2014).
- A future morpheme *jiang* which projects a T node and alternates with the covert non-future morpheme (Huang, 2015).

Several predictions made in Matthewson's (2006) proposal, which are further fleshed out in Mucha (2013), are borne out in Chinese:
- Prediction #1: If there is a covert, underspecified tense morpheme, superficially tenseless sentences can refer to present and past events *at the same time*.
  (7) Suoxu'er he Qiaomusiji dou shi yuyanxuejia
     Saussure and Chomsky both BE linguist
     'Saussure and Chomsky both BE linguists.'
- Prediction #2: Future time reference requires overt grammatical marking.
  (8) shi nian hou, ta #(jiang) shi yige yishujia
     ten year later 3SG FUT BE one-CL artist
     'Ten years later, (s)he will become an artist.'

Toward a new typology of tense:
- The morpho-syntactic features of tense can be schematized below: the interval NOW has two boundaries: Past/Non-Past, Future/Non-Future.
- Languages grammaticalise (at least) one boundary, and the relevant temporal features are held in a TP.
  - Tense is a universal category with binary feature distinction, with parametric choices between either [±PAST] or [±FUTURE].
- These features may be encoded overtly or covertly; some languages can lack the overt morpho-phonological marking of the values of these features.
  - Many Future/Non-Future languages may have been misanalysed as tenseless.
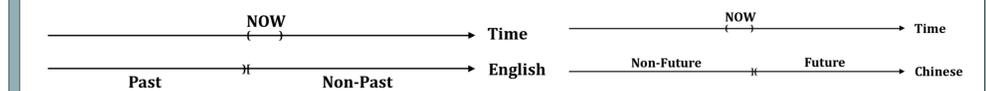
General Discussion

Summary:
- Evidence from the online processing of contradictory lifetime inferences and empirical observations about "forward lifetime effects" suggest that both covert past tense and tenseless accounts of Chinese are inadequate.
- Chinese bare predicates possess a phonologically null tense with the [-FUTURE] feature. This non-future tense, together with the potential a future tense morpheme *jiang*, suggests that Chinese does have a syntactic T node.

Future directions:
- Similar (forward) lifetime effects are expected to be found in other languages that lack overt tense morphology.
- All superficially "tenseless" languages may be alternatively analysed as possessing a covert tense (e.g. Tonhauser, 2011).
- Present/Non-Present is not a possible tense distinction.
  - Comrie (1985): a tense must be "a continuity".
  - This is because the temporal reference of each tense cannot be separated by the NOW interval.

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