Non-future Tense vs. Two Null Tenses: A Reconsideration of Plural Eventualities in Different Temporal Locations

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1. Introduction Some superficially tenseless languages are analyzed to bear covert tense(s). For example, languages such as St'át'imcets (Matthewson 2006) and Mandarin (Sun 2014) are argued to bear a covert non-future tense (NONFUT) that constrains the reference time to be non-future intervals. Languages such as Blackfoot (Reis Silva & Matthewson 2007) are proposed to possess a null version of the English tense system: a covert present and a covert past. Previous studies suggest that the NONFUT is superior to two null tenses in accounting for plural eventualities in different temporal locations (PEDT henceforth). For instance, the St'át'imcets sentence in (1) is feasible in a context where John was starving in the past and Fred is starving now (Matthewson 2006). The Mandarin example in (2) is natural to describe a past state of the dead (Hawking) and a present state of the living (Yang) (Sun 2014). To capture PEDT, NONFUT succeeds in providing an interval that covers past and present while the latter fails to offer two different temporal locations.

(1) (wa7) zúqw-cen s-John   múta7 s-Fred
     (IMPF) die-foot   NOM-John and   NOM-Fred
     'John and Fred were/are starving.' (not at the same time).   (St'át'imcets, Matthewson 2006)

(2) Huojin   he Yang Zhenning dou dui wuli   ganxingqu.
     Hawking and Yang Zhenning DOU to   physics interest
     'Hawking and Zhenning Yang were/are interested in physics.'   (Mandarin, adapted from Sun 2014)

We argue that PEDT in a superficially tenseless language does not necessarily rule out a two-null-tenses analysis. A non-future tense is preferred if PEDT mostly occurs in perfective constructions like St'át'imcets. But for languages like Mandarin in which PEDT is only observed in some imperfective constructions but is blocked in others, they are not committed to a NONFUT tense.

2. The mixed pattern in Mandarin: blocking effect of stage-level statives Though Mandarin allows PEDT in (2) in which the stative is individual-level (i-stative), PEDT is blocked when the predicate is stage-level (s-stative), a pattern unattested in St'át'imcets. In the same context for the St'át'imcets sentence in (1), the Mandarin counterpart in (3) only allows either a past or a present interpretation. Similarly, a sentence in (4) with exactly the same structure as the one in (2) but with a s-stative prohibits PEDT. With a dead experiencer in the coordinated subject, only the past reading is available. The data in (2)-(4) pose a challenge for analyses extending a St'át'imcets-type NONFUT to Mandarin (cf. Sun 2014). If NONFUT is compatible with PEDT, it is unclear what blocks it in (3)-(4).

(3) John he   Fred dou hen e.
     John and Fred DOU very hungry
     'John and Fred are/were very hungry.' /'#John was very hungry and Fred is very hungry.'

(4) Huojin   he Yang Zhenning dou hen lei.
     Hawking and Yang Zhenning DOU very tired
     'Hawking and Zhenning Yang were/ #are tired.'/ '#Hawking was tired and Zhenning Yang is tired.'

3. The two-null-tense account for Mandarin A two-null-tense account also correctly captures (2)-(4). Following Partee (1973), we assume tense to be referential. A tense operator carries a numerical index to pick out a context salient time $g(7)$ via the assignment function g, iff $g(7)$ satisfies some prepositional constraints. The English-like PRES and PAST are shown below.

(5) $[\![\text{PRES}_7]\!]^{c,w,g} = g(7)$, iff $g(7) = t_c$.   (6) $[\![\text{PAST}_7]\!]^{c,w,g} = g(7)$, iff $g(7) < t_c$.

The instantaneous PRES (Bennett & Partee 1978) in (5) returns t_c and the PAST in (6) requires $g(7)$ to precede t_c (t_c is often the instantaneous utterance time s^* in a matrix clause). We assume that though (3)-(4) are morphologically unmarked by aspect markers, they possess a covert imperfective aspect IPFV (Lin 2006), with a standard semantics in (7). Following Liu (2018) and Xiang (2020), we propose that the distributive reading comes from a covert distributive operator (Schwarzschild 1996) with the semantics in (8). *Dist* requires a given property P to hold for any atom of a plural entity x. *Dou* in (2)-(4) is a focus particle whose contribution is irrelevant here.

(7) $[\![\text{IPFV}]\!] = \lambda P \lambda t \lambda w \exists e[P(e)(w) \wedge t \subseteq \tau(e)(w)]$ (8) $[\![\text{Dist}]\!] = \lambda P \lambda x \forall y[(y \sqsubseteq x \wedge \text{Atom}(y)) \rightarrow P(y)]$

With the structure in (9a) for (3)-(4), the denotations in (9b-c) require $g(7)$ to be in the runtime of two states by different experiencers, which can only be satisfied when the two states overlap. Therefore, PEDT is excluded. Either present or past reading is available depending on the tense. S-statives like 'hungry' and 'tired' presuppose that the experiencer is alive if the state holds (Musan 1997, Magri 2009), hence the present reading is infelicitous if one of the experiencer is dead in (4).

(9) a. [$_{\text{FocP}}$ *dou* [coordinated subject [$_{\text{DistP}}$ Dist [λx [$_{\text{TP}}$ TENSE$_7$ [$_{\text{AspP}}$ IPFV [$_{\text{AdjP}}$]]]]]]

   b. $\forall x[(x \sqsubseteq j \oplus f \wedge \text{Atom}(x)) \rightarrow \exists s[\text{hungry}(s,x,w) \wedge g(7) \subseteq \tau(s)]]$

   c. $\forall x[(x \sqsubseteq h \oplus y \wedge \text{Atom}(x)) \rightarrow \exists s[\text{tired}(s,x,w) \wedge g(7) \subseteq \tau(s)]]$

The sentence in (2) is compatible with two null tenses, too. The argumentation favoring NONFUT makes two assumptions: i. the temporal projection of a noun referring to the dead must be in the past; ii. the temporal projection of the nominal domain is the same as the verbal domain. The second assumption is not necessarily true (Enç 1981, Tonhauser 2006). Moreover, English apparently possesses two tenses and it allows a dead subject to go with present tense, as shown in (10). Other than that, English allows the 'historical present' usage in which present tense is compatible with a past narration. Hence an account for English is possible to extend to Mandarin.

(10) a. Mammoths first appeared in Africa 3 million to 4 million years ago...But while they ***have*** 58 chromosomes and elephants 56...   (Mittwoch 2008: 168 footnote 1)

   b. Dinosaurs ***are*** a group of reptiles that dominated the land for over 140 million years...
                    (google: https://www.nhm.ac.uk/discover/what-are-dinosaurs.html)

4. St'át'imcets: imperfectivity and the *Split* operator The imperfective aspect marker *wa7* in (1) is optional. According to Matthewson (2006), predicates not overtly marked by *wa7* is assumed to bear a null perfective aspect PFV. With the definitions of PFV and NONFUT in (11) and (12), *Dist* correctly captures PEDT in perfective sentences: (13b) says that for any atomic subpart y of the plural subject 'John and Fred', there is a starving state of y in a non-future time $g(7)$. However, the imperfective version of (1) would exclude PEDT according to (9b), contrary to facts.

(11) $[\![\text{PFV}]\!] = \lambda P \lambda t \lambda w \exists e[P(e)(w) \wedge \tau(e) \subseteq t]$ (12) $[\![\text{NONFUT}_7]\!]^{c,w,g} = g(7)$, iff $g(7) \leq t_c$.

(13) a. [$_{\text{S}}$ s-John múta7 s-Fred [$_{\text{DistP}}$ Dist [λx [$_{\text{TP}}$ NONFUT$_7$ [$_{\text{AspP}}$ PFV [$_{\text{vP}}$ zúqw-cen]]]]]]

   b. $\forall y[(y \sqsubseteq j \oplus f \wedge \text{Atom}(y)) \rightarrow \exists s[\text{be starving}(s,y,w) \wedge \tau(s) \subseteq g(7)]]$, iff $g(7) \leq t_c$

One possible way to capture the St'át'imcets data is to assmue that St'át'imcets imperfective sentences possess a covert operator *Split* to license PEDT. In (14a), *Split* takes a property P, an argument x and returns true if P holds for a contextually-split subpart of x. With the structure in (14b), (14c) correctly predicts that there is a contextually partitioned part of g(7) within each runtime of the states for John and Fred.

(14) a. $[\![\text{Split}]\!]^c = \lambda P \lambda x \exists y [y \sqsubseteq x \wedge \text{Part}_{c,x}(y) \wedge P(y)]$

  b. [$_S$ s-John múta7 s-Fred [$_{\text{DistP}}$ Dist [λx [$_{\text{TP}}$ NONFUT$_7$ [$_{\text{SplitP}}$ Split [$_{\text{AspP}}$ wa7 [$_{vP}$ zúqw-cen]]]]]]]

  c. $\forall y [y \sqsubseteq j \oplus f \wedge \text{Atom}(y) \rightarrow \exists t \exists s [t \sqsubseteq g(7) \wedge \text{Part}_{c,g(7)}(t) \wedge \text{be starving}(s,y,w) \wedge t \subseteq \tau(s)]]$

5. Conclusions This talk offers an analysis to derive the different patterns of PEDT in Mandarin and St'át'imcets. For Mandarin in which PEDT occurs with imperfectivity, the two-null-tense approach works equally well with no worries about the blocking effect of s-statives. St'át'imcets imperfective sentences perform a different PEDT pattern because it bears a *Split* operator.

Selected references **Bennett & Partee 1978**. Toward the logic of tense and aspect in English, **Enç 1986**. Towards a referential analysis of temporal expressions, **Lin 2006**. Time in a language without tense, **Liu 2017**. Varieties of alternatives: Mandarin focus particles. **Magri 2009**. A theory of individual-level predicates based on blind mandatory scalar implicatures, **Matthewson 2006**. Temporal semantics in a superficially tenseless language, **Mittwoch 2008**. Tenses for the living and the dead: Lifetime inferences reconsidered, **Partee 1973**. Some structural analogies between tenses and pronouns in English, **Reis Silva & Matthewson 2007**. An instantaneous present tense in Blackfoot, **Schwardzchild 1996**. *Pluarities*, **Sun 2014**. *Temporal construals of bare predicates in Mandarin Chinese*, **Tonhauser 2006**. *The temporal semantics of noun phrases: Evidence from Guaraní*. **Xiang 2020**. Function alternations of the Mandarin particle *dou*: Distributor, free choice licensor, and 'even'.