Tense-aspect particles or not: The lesson from the comparison between tensed and tenseless languages

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1. Introduction Mandarin perfective aspect markers are claimed to be tense-aspect particles that encode perfectivity and past 'tense', based on the generalization that sentences with perfective aspects denote past readings (Smith 1991, Lin 2003,2006 a.o.). For example, the denotation of default perfective aspect in Lin (2006) below encodes the perfective component $t \subseteq t_{\text{Top}}$ and the past 'tense' component $t_{\text{Top}} < t_0$.

(1) $\quad [\![\text{PERF}]\!] = \lambda P_{\langle i,t \rangle} \lambda t_{\text{Top}} \lambda t_0 \exists t [t \subseteq t_{\text{Top}} \wedge P(t) \wedge t_{\text{Top}} < t_0]$ $\hfill$ Lin (2006: 6)

This talk focuses on the Mandarin perfective aspect marker *le*. I will show that the pattern of perfective aspect on eventives (non-statives) being compatible with past 'tense' instead of present 'tense', is not specific to tenseless languages like Mandarin. English, a tensed language also shares this pattern. Based on such a similarity, we suggest that the account of instantaneous present tense in English (Bennet & Partee 1978) can also extend to Mandarin. This opens the possibility of treating Mandarin perfective aspect *le* with the standard template of aspect, without building the 'tense' component into its semantics. Besides the aforementioned similarity, however, Mandarin *le* does differ from the English perfective aspect because *le* on accomplishments allows non-culminating readings (Iljic 1990, Demirdache & Martin 2015 a.o.). For instance, the English sentence in (2a) is odd when the culmination of the accomplishment is denied. But the Mandarin equivalent in (2b) is natural. Following Altshuler (2014), I encode a modal operator in the semantics of *le* so that the culmination locates in the continuation branch (Landman 1992) of the activity in the actual world.

(2) a. Mary read a book yesterday, # but she has not finished it.

b. Mali zuotian du-le yi-ben shu, keshi mei-you du-wan.
   Mary yesterday read-PERF one-CL book but NEG read-finish
   Lit.: 'Mary read a book yesterday, but she has not finished. '

2. Similarity: the incompatibility between the perfective and present 'tense' The word 'tense' throughout this abstract is a label that stands for present and past interpretation of sentences, without commitment to a tensed analysis. We investigate if the four Vendler classes of predicates are able to obtain the perfective reading (PERF) exhibiting event culmination ($\tau(e) \subseteq t_{\text{Top}}$) in present and past 'tense' in the two languages. The present and past context in Mandarin is specified by the temporal adverbial *xianzai* 'now' (a short interval that the utterance time occupies), *zuotian* 'yesterday' or *yiqian* 'in the past', respectively. The data are collected from native speakers of both languages, illustrated in Table 1. Mandarin statives in general cannot be marked by aspect markers while eventives in a sentence denoting episodic readings are obligatorily marked by aspects (Sun 2014). As summarized in Table 1, eventives (activity 'smoke', accomplishment 'read a book', achievement 'wake-up') and statives (stage-level stative 'busy' and individual-level stative 'tall') fail to gain an event culmination reading in present 'tense' in English and Mandarin. For example, 'John smokes' in English and '*Yuehan chou-le yan*' in Mandarin cannot denote an episodic reading which means John finishes smoking right within the utterance time. For statives in present 'tensed' sentences, the most natural interpretation is that the state holds at the utterance time and continues.

3. Instantaneous present 'tense' The similarity between Mandarin and English motivates us to propose a unified analysis for the two languages. We adopt the classic theoretical framework to tense and aspect by Klein (1994). A Kleinian style of perfective aspect requires the runtime of an event $\tau(e)$ to be included in the reference time t_{Top}, illustrated in (3a). Bennett & Partee (1978) propose that in English the present tense locates the situation at the moment of utterance s^*, which is instantaneous. Therefore perfective aspect in present tense means that the runtime is included within the instantaneous utterance time, shown in (3b). Eventives are dynamic, thus

describe events that cannot have instantaneous runtimes. Therefore eventives cannot satisfy $\tau(e) \subseteq s^*$ in present perfective. Statives have fully homogeneous reference so that the runtime of statives can be a single moment small enough to satisfy the requirement of present perfective. But we usually have a continuous reading of statives in present tense. We capture this intuition by assuming a maximality constraint as defined in (4). It claims that for any state that the *max* operator applies to, it returns the state that satisfy $P_{\langle v,t \rangle}$ and bears the longest runtime in a given context. A state generally lasts longer than a single moment, thus the continuous reading is available and preferred when statives are in present 'tense'.

(3) a. $[\![\text{PERF}]\!] = \lambda P_{\langle v,t \rangle} \lambda t_{\text{Top}} \exists e[\tau(e) \subseteq t_{\text{Top}} \wedge P(e)]$
     b. $[\![\text{ PRES PERF}(P)]\!] = \exists e[\tau(e) \subseteq s^* \wedge P(e)]$

(4) $[\![max(P)]\!]^c = \lambda e_{\langle v \rangle}[P(e) \wedge \iota t.\tau(e) = t \wedge \forall t' \forall e'[P(e') \wedge \tau(e') = t' \rightarrow t' \leq t]]$

Table 1: Perfective readings in present and past 'tense'

English Present	PERF: Is 'event culminated in s^*' possible?		Mandarin Present
	English	Mandarin	
John smokes.	*	*	Yuehan chou-le-yan. John smoke-PERF-tobacco.
John reads a book.	*	*	Yuehan du-le yi-ben shu. John read-PERF one-CL book
John wakes up.	*	*	*Yuehan xing-le. John wake-up-PERF
John is busy.	*	*	Yuehan hen mang. John very busy
John is tall.	*	*	Yuehan hen gao. John very tall
English Past	PERF: Is 'event culminated in a past time' possible?		Mandarin Past
John smoked.	✓	✓	Yuehan chou-le-yan. John smoke-PERF-tobacco
John read a book.	✓	✓(incomplete)	Yuehan du-le yi-ben shu John read PERF one-CL book
John woke up.	✓	✓	*Yuehan xing-le. John wake-up-PERF
John was busy.	✓	✓	Yuehan hen mang. John very busy
John was tall.	✓	✓	Yuehan hen gao. John very tall

Table 2: PERF, PAST and morphological realizations

Language	Past Tense	Perfective Aspect
Mandarin	∅	✓
English	✓	∅
Russian	✓	✓

The current analysis does not assume the existence of a present tense operator. The generalization is born out as long as the two assumptions hold: present interpretations requires $t_{\text{Top}} = s^*$ and s^* is instantaneous. Hence the temporal precedence relation can be removed from the semantics of *le*. Moreover, the previous discussion indicates that languages morphologically realize the correlation between two semantic building blocks (past 'tense' and perfective aspect) in different ways, shown in Table 2.

4. Non-culminating accomplishments and perfective aspect To capture the non-culminating reading in (2b), I propose that the semantics of *le* as in (5), adopting Altshuler's (2014) proposal of partitive operators. *Le* takes an intensional property of event P and an interval t_{Top} as arguments. It returns true if there is an event e in the actual world w_0 whose runtime is included in t_{Top} and is a stage of an event e' that bears the property P in a world w in which e continues and culminates. As Landman (1992) claims, the 'stage-of' relation is a specific type of 'part-of' relation in the sense that to be a stage, a part has to be big enough and share enough with an event so that it is recognized as a less developed version. What *le* evaluates in the actual world is a stage of the accomplishment, it does not necessarily culminate since the culmination is realized in the continuation branch.

(5) a. $[\![le]\!] = \lambda P_{\langle s, \langle v,t \rangle \rangle} \lambda t_{\text{Top}} \exists e \text{ in } w_0[\tau(e) \subseteq t_{\text{Top}} \wedge \exists e' \exists w : \langle e', w \rangle \in \text{CON}(e, w_0)[P(w)(e')]]$
     b. $\text{CON}(e, w_0)$ is the continuation branch of e in w_0 iff $\text{CON}(e, w_0)$ is the smallest set of pairs of events and worlds $\langle e', w \rangle$ such that:
        (i) the history of w is the same as the history of w_0 up to and including $\tau(e)$
        (ii) w is a reasonable option for e in w_0
        (iii) e is a stage of e'