Quantifiers, pronouns, and cross–linguistic variation
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Background on tense semantics: In the theoretical literature on temporal interpretation, we find two main approaches to the semantics of past tense. Following the tradition of formal logic (e.g. Prior 1967), one approach conceptualizes tenses as quantifiers over time intervals. However, influential works such as Partee (1973, 1984), Heim (1994), Abusch (1997) and Kratzer (1998) present arguments in favor of an alternative analysis which treats tenses as pronominal elements that impose presuppositions on a contextually provided reference time. Despite the popularity of referential/presuppositional analyses, recent works have given new impetus to the quantificational approach (cf. Kusumoto 1999, 2005; von Stechow 2009, von Stechow & Grønn 2013a,b). However, empirical evidence in favor of either theory is sparse. One notable exception is Dickey (2000), where self–paced reading data are presented that support an analysis of the English past tense as ambiguous between a presuppositional past on the one hand, and a combination of present tense and perfect aspect on the other (a proposal made in Kratzer 1998).

German is interesting in this regard because (in some dialects) it overtly resolves the ambiguity between presuppositional past tense and present perfect realized in English past morphology. Kratzer (1998) reports that, as opposed to the English simple past in (1-a), the German simple past in (1-b) is deviant in an out–of–the–blue context that does not provide a salient past reference time. The German perfect in (1-c) is felicitous, however.

(1)   Context: Nana and Marie are standing in front of a church, quietly admiring the masterwork of architecture. Out of the silence, Nana asks:

    a.   Who built this church?   (English simple past)
    b. #Wer baute diese Kirche?   (German simple past)
    c.   Wer hat diese Kirche gebaut?   (German present perfect)

According to Kratzer (1998), these data suggest that the meaning of the German simple past is strictly anaphoric with a semantics as in (2-a) and therefore needs a salient antecedent reference time to be felicitous, while the perfect, which is combined with a present tense in (1-c), has a quantificational, time–shifting semantics as in (2-b). The English simple past in (1-a) is assumed to spell out anaphoric past in some cases and present perfect in others (Kratzer 1998, 107; see also Dickey 2000).

(2)   a. $[\![past]\!]^{g,c}$ is only defined if c provides an interval t that precedes t_0 (the utterance time). If defined, then $[\![past]\!]^{g,c} = $ t.   (Kratzer 1998, 101, 107)
    b. $[\![\text{Perfect}]\!] = \lambda P_{<l,<s,t>>}.\lambda t_i.\lambda w_s.\exists e_l \text{ (time(e)} < \text{t \& P(e)(w) = 1)}$

Offline pilot study: Inspired by the intuitions reported in Kratzer (1998), we presented 33 native speakers of Northern German varieties with sentences in the simple past and the perfect in contexts with (C2) and without (C1) a contextually provided past reference time (given in English below for convenience) in order to test the following hypotheses: i) The German simple past (3-a) is infelicitous without a contextually salient reference time but felicitous if a past reference time is provided in the context, ii) The German perfect (3-b) is felicitous in both cases. This is complemented with a condition in which the context provides a future reference time that clashes with the presupposition of the simple past (C3).

– C1 (no RT): Lea is an excellent climber. Her greatest achievement:
– C2 (past RT): Lea is an excellent climber. <u>Last year</u> she mastered her greatest challenge:
– C3 (future RT): Lea is an excellent climber. <u>Next year</u> she will tackle her greatest challenge:

(3)   a.   Sie bestieg   den Mount Everest.
             she climb.3SG.PST the Mount Everest.
             "She climbed Mount Everest."
    b.   Sie hat   den Mount Everest bestiegen.
             she have.3SG.PRS the Mount Everest PTCP.climb.PTCP
             "She climbed Mount Everest."

Our experiment thus had the factors TENSE (two levels: past and perfect) and CONTEXT (three levels: no RT, past RT, future RT), and the participants were asked to judge the acceptability of the test sentences in the given contexts on a scale from 1 to 7.

Results: Regarding our hypotheses, we found that the simple past was judged significantly better if a contextual past reference time was provided (condition (a) vs. condition (c), p = 0.012), and we found a marginally significant interaction of CONTEXT and TENSE in the predicted direction (p = 0.089).

MEANS	no RT	past RT	future RT
past	(a) **5.8**	(c) **6.2**	(e) 2.8
perfect	(b) 6.3	(d) 6.3	(f) 3.0

As is evident from the means given above, however, the German simple past without a contextual RT is slightly deviant rather than unacceptable, in contrast to the condition in which a clashing future RT is provided by the context (condition (e)). We ran a parallel experiment with the third person pronouns *he/she*, manipulating whether the context provides (a) no salient referent, (b) a referent in the form of a proper name that satisfies the pronoun's gender presupposition or (c) a referent in the form of a proper name that clashes with the pronoun's gender presupposition. We found very similar results, albeit more pronounced:

no referent	referent (right gender)	referent (wrong gender)
(a) 4.7	(b) 6.1	(c) 2.5

Summary: The study presents evidence in favor of a pronominal semantics of the simple past in German. It shows that the German past patterns with third person pronouns in the language in that i) it gets judged significantly better if it is presented in a context which provides a salient antecedent (cf. Kratzer 1998). If no antecedent is provided, both the past tense and the pronouns are significantly more acceptable than in a context that violates their respective presuppositions, pointing to a common accommodation mechanism (see also Partee 1973), which might be more readily available for times than for individuals.

Outlook: The project is progressing in the following directions: i) Methodology: The tendencies reported in the study above will be tested using online methods (e.g. SPR), ii) Languages: German will be compared with languages in which past tense is quantificational or ambiguous between a quantificational and a pronominal semantics. While the latter is true for English according to Kratzer (1998), the Grassfields language Medumba has quantificational past tenses, which, moreover, are optional (Mucha 2015). As expected under this analysis, past marking is licit in out–of–the–blue contexts in Medumba (4-a). In fact, it is even obligatory, although the unmarked sentence in (4-b) is grammatical and receives a past interpretation. This is also expected if the interpretation of (4-b) involves contextual resolution of an unrestricted pronoun.

(4)   Context: Nana and Marie are standing in front of a church, quietly admiring the masterwork of architecture. Out of the silence, Nana asks:

   a.   Wo zə'a   **na'**   yən ndà nsì li?
        who that.s/he REM.PST build house god this
        "Who built this church?"
   b. #Wo zə'a   yən ndà nsì li?
        who that.s/he build house god this
        "Who built this church?"

iii) Domains: Finally, cross–linguistic comparison can be extended to nominal expressions in Medumba, since these show interesting parallels to the verbal domain with respect to optional (in)definiteness and remoteness marking.

Selected references: Dickey (2000). The processing of tense. PhD thesis, UMass. **Heim (1994).** Comments on Abusch's theory of tense. In Kamp (ed.), Ellipsis, tense and questions, Amsterdam. **Kratzer (1998).** More Structural Analogies Between Pronouns and Tenses. Proceedings of SALT 8, 92–110. **Mucha (2015).** Temporal interpretation and cross–linguistic variation. PhD thesis, UP. **Partee (1973).** Some structural analogies between tenses and pronouns in English. The Journal of Philosophy 70. 601–609. **von Stechow (2009).** Tenses in compositional semantics. In Klein & Li (eds.), The expression of time, Mouton de Gruyter, 129–166.