

Inferential evidentials in Tatar (and possibly some other languages)

Phenomenon. Recent studies in evidentiality (Willett 1988, Faller 2002, Mattheson et al. 2007, McCready, Ogata 2008, Speas 2010, Şener 2011, Murray 2012, Lau & Rooryck 2017 a.m.o) have recognized three basic types of evidential grammatical elements: direct evidentials, whereby the source of information about an asserted proposition is immediate perceptual evidence, reportative evidentials involving second-hand information, and **inferential**, or conjectural **evidentials**, (1), which indicate that a proposition in its scope is inferred from world knowledge and/or more specific facts that are part of the common ground.

- (1) plan **k'a** tu7 wa7 tsu7c na máq7-a
 already INFER then IMPF melt(INCH) DET snow-EXIS
 'The snow must have melted already.' (Matthewson et al. 2007)

Anderson (1986) separates a cross-linguistically recurrent type of inferential evidentials he labels as **experiential inferentials** (see also McCready & Ogata 2008, Matthewson et al. 2007). Unlike in (1), which can be felicitously uttered on the basis of world knowledge alone ('It's mid-July. The snow in the mountains must have melted already'), experiential inferentials, (2), are only available if the speaker has a direct evidence of a certain state of affairs that can be conceived of as a consequence of a scope proposition.

- (2) Context: You had five pieces of ts'wan (wind-dried salmon) left when you checked yesterday. Today, you notice they are all gone. You are not sure who took them, but you know that John is the person in your household who really loves ts'wan and see the ts'wan skins in his room.
 ts'aqw-an'-ás-an' i ts'wán-a kw s-John
 eat-DIR-3ERG-PERC.EVID DET.PL wind-dr.salmon-EXIS DET NOM-John
 'John apparently ate the ts'wan.' (Matthewson et al. 2007)

The goal of this paper is two-fold. First, I will identify further constraints on the distribution of experiential inferentials attested in Tatar (Altaic, Turkic). Secondly, I will propose that those constraints fall out naturally if experiential inferentials are analyzed as involving **abduction**.

Data. The example in (3) shows the –gan form in Tatar and identifies it as an experiential inferential.

- (3) Context₁: The speaker comes home and sees his girlfriend's jacket in the cloakroom:
 Context₂: X: — Do you think Zuxra is at home already? Y: — It is 7 pm. Her workday is over, so ...
 zEhrA kat^j-kan.
 Z. return-PFCT
 1. Zuxra returned {I gather}.
 2. Zuxra must have returned (home).

The mere fact that the speaker has first-hand knowledge about a state of affairs resulting from an asserted proposition is not sufficient, (4). While both q', falling of the ground (Context₁), and q'', being dead (Context₂), are causally related to p, getting killed, the inference from q' to p fails.

- (4) ??Context₁: The speaker watches a battle. The commander of those who attack falls on the ground.
 Ccontext₂: The speaker approaches the commander, checks his pulse and realizes that he is dead.
 b. kamander-ne UtEr-gAn.
 commander-ACC kill-PFCT
 'The commander has been killed {I gather}.'

One can suggest that the difference between Context₁ and Context₂ has to do with the fact that q'' is a target state of p (Kratzer 2000), but q' is not. This is not the case, however: in (5), Context₁ and Context₂ do not contrast as to whether the target state of killing is part of the observed state of affairs, but the sentence is only appropriate under Context₂:

- (5) *C₁: The speaker knows that X, Y, and Z went hunting. Later the speaker meets the group of hunters and sees X is cutting a bear/elk.
 C₂: The speaker knows that X went hunting alone. Some time later he meets X who is cutting a bear/elk.
 daut poSej-ne UtEr-gAn.
 Daut elk-ACC kill-PFCT
 '{I see} Mohammed / Daut / Ivan killed a bear / elk.'

What (4) and (5) seem to have in common is that in both cases the scope proposition is too strong with respect to Context₁. Speakers' intuitions about (4)-(5) are very consistent: it is awkward to assert a scope proposition on the basis of evidence available in Context₁, since this evidence is equally compatible with alternative explanations. In (4), for example, the commander might have fallen because he had been wounded or broke his ankle. Similarly, any of the three hunters could have killed the bear/elk in (5). These alternatives are not available under the Context₂, however, where the scope proposition is the most reasonable explanation for the observed state of affairs.

Analysis. The generalization that emerges from (4)-(5) and similar examples is: an experiential inferential is used to assert a proposition *p* if *p* is the best for a proposition *q*, of which the speaker has direct evidence. The inference of this type is based on **abductive reasoning** (Josephson & Josephson 1996, Hobbs 2004, Douven 2016) whereby, given the knowledge that *p* entails *q*, from *q*, one abduces that *p*. The main hypothesis I want to advance is that constraints on the distribution of experiential inferentials can be reduced to the constraints on abductive reasoning, hence accounted for.

I assume the following (quasi-formal) semantics for an experiential inferential (EI):

- (6) $\| \text{EI } p \|^{w,c}$ is only defined if *c* provides a conversational background CB (of type $\langle s, \langle \langle s, t \rangle, t \rangle \rangle$) such that for every *w'*, $w' \in \cap \text{CB}(w)$ iff
- there is *q* such that *q* holds in *w'* and
 - the speaker has direct evidence for *q* in *w'* and
 - ABDUCT(*p*, *q*, CB(*w*))
- When defined $\| \text{EI } p \|^{w,c} = 1$ iff $\forall w' [w' \in \cap \text{CB}(w) \rightarrow p(w')]$

In (6), experiential inferentials are assigned the meaning of a universal modal. Following Matthewson *et al.* 2007 and much further literature, I assume that the contribution of an evidential element is to supply information about the modal base. (I believe, however, that what I need to say about experiential inferentials is not incompatible with the alternatives discussed in the literature, e.g., with Murray's (2012) analysis where evidentials provide a non-negotiable update to the common ground or with McCready & Ogata's (2007) treatment in terms of updates of probability measures.) The crucial component of (6) is the ABDUCT relation between two propositions and a set of propositions. We say that ABDUCT(*p*, *q*, *P*) holds, or that *p* is abduced from *q* given the set of propositions *P*, iff the conditions in (7) (stated in non-quantified form) are met (cf. Brachman & Levesque 2004):

- (7)
1. *P* does not entail *q*
 2. $P \cup \{p\}$ entails *q*
 3. $P \cup \{p\}$ is consistent, that is, *P* does not entail $\neg p$
 4. for any *p'* satisfying (6.1)-(6.3), the likelihood of *p* causing *q* exceeds the likelihood of *p'* causing *q*

There can be multiple propositions satisfying (7.1)-(7.3); intuitively, a state of affairs can in general be explained in different ways. (7.4) implies an ordering of such propositions with respect to their likelihood to enter the causal relation with the observed state of affairs; it requires that the abduced proposition be the topmost element in this ordering. If this suggestion is right, asymmetries between Context₁ and Context₂ in (4)-(5) fall out with no additional stipulations.

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