

Aspect and evidentiality

Margit Bowler
University of Manchester

Expressing Evidence • University of Konstanz
June 6, 2019

1 Introduction¹

- The empirical observation: Portmanteau temporal and evidential (TE) morphemes are found in a range of typologically diverse languages.²
 - **Evidential meaning:** Encoding a speaker’s “way of knowing” a proposition.
 - **Temporal meaning (tenses/aspects):** Locating events in time relative to some other time (e.g. the utterance time or some other reference time).
- (1) KALAALLISUT (ESKIMO-ALEUT) (modified from Fortescue 2003, 293)
Context: The speaker goes outside and sees a pool of water.
siállir-**sima**-vuq.
rain-SIMA-3SG.INDIC
‘[I have indirect evidence that] It rained.’
Evidential meaning: The speaker has indirect evidence for *p*
Temporal meaning: The event described by *p* happened in the past
- Other languages with portmanteau TE morphemes: Aymara (Aymaran; Klose 2014), Bashkir (Turkic; Poppe 1964), Cherokee (Iroquoian; Pulte 1985), Kalasha (Dardic; Bashir 2006), Khanty (Uralic; Nikolaeva 1999), Kyrgyz (Turkic; Abduldaev and Zakharova 1987), Lhasa Tibetan (Sino-Tibetan; DeLancey 1985), Matsigenka (Panoan; Fleck 2007), Salar (Turkic; Dwyer 2000), Tariana (Arawakan; Aikhenvald 2004), Tsez (Northeast Caucasian; Comrie and Polinsky 2007), Turkish (Turkic; Şener 2011), and Wakhi (Indo-Iranian; Bashir 2006), among many, many others.

¹All of the Tatar data in this handout is based on my original fieldwork; thank you to my wonderful Tatar consultants, especially Sofia Mazgarova! Răxmät! Thank you also to my dissertation adviser Yael Sharvit; Jessica Rett, Roumi Pancheva, Pam Munro, Travis Major, Maura O’Leary, and John Gluckman. Thank you to members of the UCLA Semantics Tea, American Indian Seminar, and the audience of TripleA 5 for their helpful comments.

²In this handout, I bold the relevant morphemes that I am discussing. I indicate the evidential component of the translation in square brackets [].

- This cross-linguistic prevalence of TE morphology suggests that an explanation is needed as to **why** these not obviously related kinds of meanings can be linked.
- I address this topic through a case study of a set of TE verbal suffixes in Kazan Tatar (Turkic, Russia).³
- Tatar TE suffixes encode evidential distinctions in the future as well as the past, unlike the majority of described TE systems.
- I treat Tatar evidentiality as a byproduct of the temporal semantics of the TE suffixes, and propose that the data reflects how we conceptualize and talk about events.

2 Core Tatar data

- Tatar has a set of four verbal suffixes that contribute combinations of temporal and evidential meanings.
- Two of the suffixes locate the event time in the past of the utterance time, and two of the suffixes locate the event time in the future of the utterance time.
- Present tense is evidentially neutral.

Times	TE suffix	Interpretation in matrix clauses
Past	<i>-DI</i>	≈ past, direct evidence
	<i>-GAn</i>	≈ past, indirect evidence
Future	<i>-(y)AçAK</i>	≈ future, “specific” evidence
	<i>-(y)Er</i>	≈ future, “non-specific” evidence

Table 1: Core set of Tatar TE suffixes.

- The TE suffixes *-DI* and *-GAn* descriptively require:⁴
 1. The time of the described event precedes the utterance time
 2. The speaker has direct (*-DI*) or indirect (*-GAn*) evidence for the scope proposition (Willett 1988; Aikhenvald 2004)

³Tatar is spoken by approximately 5 million people, primarily in the republics of Tatarstan and Bashkortostan in western Russia (Simons and Fennig 2018). Tatar has typical Turkic features, including SOV word order, extensive grammatical and semantic case marking, and vowel and consonant harmonies. See Poppe (1961) for more on Tatar.

⁴Following Turkicist convention, I use capital letters to indicate segments that are subject to featural harmony. I use a Latin orthography for Tatar that primarily follows Turkish spelling conventions.

(2) **-DI: Past time + direct evidence**

Context: The speaker saw Mansur get on a train to Moscow.

Mansur Mäskäü-gä {bar-**dı** / #bar-**ğan**}.

Mansur MOSCOW-DAT go-DI / go-GAN

‘[I have direct evidence that] Mansur went to Moscow.’

Evidential meaning: The speaker has direct evidence for *p*

Temporal meaning: The event described by *p* happened in the past

(3) **-GAN: Past time + indirect evidence⁵**

a. **Inferential context:** The speaker found a train ticket in Mansur’s desk that is from Moscow.

b. **Reportative context:** Wäğıyz told the speaker that Mansur went to Moscow.

Mansur Mäskäü-gä {bar-**ğan** / #bar-**dı**}.

Mansur MOSCOW-DAT go-GAN / go-DI

‘[I have indirect evidence that] Mansur went to Moscow.’

Evidential meaning: The speaker has indirect evidence for *p*

Temporal meaning: The event described by *p* happened in the past

- The TE suffixes *-(y)AçAK* and *-(y)Er* descriptively require:

1. The time of the described event follows the utterance time
2. The speaker has “specific” *-(y)AçAK* or “non-specific” *-(y)Er* evidence that the scope proposition will occur

(4) **-(y)AçAK: Future time + “specific” evidence**

Context: You are planning a party, and you have assigned your friends different things to bring. Your friend Güzäl is assigned to bring cookies to the party.

Güzäl peçeniye al-ıp {kil-**äçäk** / #kil-**er**}.

Güzäl cookie take-IP come-AÇAK / come-ER

‘[I have specific evidence that] Güzäl will bring cookies.’

Evidential meaning: The speaker has specific evidence for *p*

Temporal meaning: The event described by *p* will happen in the future

⁵Young and middle-aged Tatar speakers do not permit a mirative interpretation of *-GAN*; I therefore don’t address any mirative usage in my analysis. This might be a point of generational variation; Tatar consultants in their 80s reported that *-GAN* is felicitous in mirative contexts.

(5) **-(y)Er: Future time + “non-specific” evidence**

Context: You are planning a party, and you’ve asked all of your friends to bring things to contribute. Your friend Güzäl has a delicious chocolate chip cookie recipe that she usually brings to parties. (You haven’t specifically asked her to bring the cookies, nor has she told you that she will bring them.)

Güzäl peçeniye al-ıp {kil-er / #kil-äçäk}.

Güzäl cookie take-IP come-ER / come-AÇAK

‘[I have non-specific evidence that] Güzäl will bring cookies.’

Evidential meaning: The speaker has non-specific evidence for p

Temporal meaning: The event described by p will happen in the future

- $-(y)Er(p)$ expressions are the “default” strategy that Tatar speakers use to talk about future events.⁶
- The evidential contribution of the Tatar TE suffixes passes the diagnostics proposed by Korotkova (2016) for subjective content, patterning like Tatar predicates of personal taste, first person pain reports, etc. (Appendix A).
- There is a tradition in the Turkicist literature to refer to these suffixes as “definite” and “indefinite” tenses.

-DI ‘DEFINITE PAST’	-(y)AçAK ‘DEFINITE FUTURE’
-GAn ‘INDEFINITE PAST’	-(y)Er ‘INDEFINITE FUTURE’

Table 2: Traditional Turkicist classification of the Tatar TE suffixes.

- I propose a different classification that cross-cuts these distinctions.

3 Causation and evidentiality

- A number of papers analyze evidential data by invoking a causal relationship between situations/events.
- My proposal is in the spirit of unformalized causation proposals from DeLancey (1985) (Lhasa Tibetan) and Nikolaeva (1999) (Khanty).

⁶My consultants frequently translate $-(y)Er(p)$ expressions into English using epistemic possibility modals. However, $-(y)Er(p)$ and $\diamond p$ expressions are not truth-conditionally equivalent. $-(y)Er(p)$ statements make a stronger claim than $\diamond p$ (for instance, you cannot say $-(y)Er(p)$ & $\neg -(y)Er(p)$ without a contradiction).

- (6) LHASA TIBETAN (SINO-TIBETAN) (DeLancey 1985, 67)

kho-s ŋa-'i deb bkru**s-bzá**g
 he-ERG I-GEN book steal-BZAG

‘[I have indirect evidence that] he stole my book.’

Evidential meaning: The speaker has indirect evidence for p

Temporal meaning: The event described by p happened in the past

“[The direct/indirect evidential contrast] can be neatly described in terms of a simple cause-effect schema, in which events are seen as effecting resultant states. *-song* then codes direct knowledge of the causal event, and *-bzag* direct knowledge of the resulting state, from which the occurrence of the event can be reliably inferred” (DeLancey 1985, 68).

- Davis and Hara (2014) and Hara et al. (2018) give formalized proposals along these lines for Japanese *youda*.⁷

- (7) JAPANESE (modified from Hara et al. 2018, 282)

Ame-ga futta **youda**.
 rain-NOM fell YOUNDA

‘[I have indirect evidence that] it rained.’

- (8) Hara et al. (2018, 284):

EVID(p) is true at w iff $\exists q$ such that the speaker perceives a state q at w and p causes q .

- None of these proposals address future-oriented evidential data like Tatar (4)-(5).
- I propose an analysis intuitively along the lines of these proposals, using tools from the aspect literature.
- Unlike Hara et al. (2018), I am less concerned with formally defining the causal underpinning of evidentiality than I am with asking **why** causality and evidentiality are so intertwined, and what this means for an analysis of TE morphemes like in Tatar.

4 Proposal

- The Tatar data in §2 shows that:
 - We need a way of connecting temporal and evidential meanings.

⁷Other authors who have noted the relationship between causation and evidentiality in passing, but do not formalize it: Koev (2011, 129-130) and Matthewson (2011, 350).

- We need a mechanism for deriving evidential contrasts in the future as well as the past (ideally the same/a similar mechanism).
- I account for this by using previous analyses of event structure and how they can be linguistically referred to (Moens and Steedman 1988).
- I also assume that evidential meaning encodes information that is privileged to the speaker in some way (Korotkova 2016).
- I propose to derive evidential meaning from non-evidential semantics.

4.1 Background assumption: Tripartite event ontology

- Moens and Steedman (1988) give a semantics of temporal categories and their use in multi-clausal expressions.
- They take the data in (9) (from Ritchie 1979) as a point of departure:

- (9) When they built the 39th Street bridge...
- a. ... a local architect drew up the plans.
 - b. ... they used the best materials.
 - c. ... they solved most of their traffic problems.

- Observation:
 - Event described in (9a) precedes the event of bridge-building
 - Event described in (9b) overlaps with the event of bridge-building
 - Event described in (9c) follows the event of bridge-building
- Moens and Steedman (1988) use the term **contingency** to refer to the dependencies between these events.
- Dependency is not **strictly** causal; events stand in a relation of “enablement.”

“(...) if Event A stands in a contingent relation to Event B, then an occurrence of A will not automatically lead to an occurrence of B: John laying the foundations of the house is a prerequisite for or enables him to build the walls and roof, but does not cause it in the more traditional sense of the word and does not automatically or inevitably lead to him building the walls” (Moens and Steedman 1988, 26).

- Rather than positing that *when* is multiply ambiguous, Moens and Steedman (1988) argue that *when*-clauses introduce a temporal referent (“nucleus”):

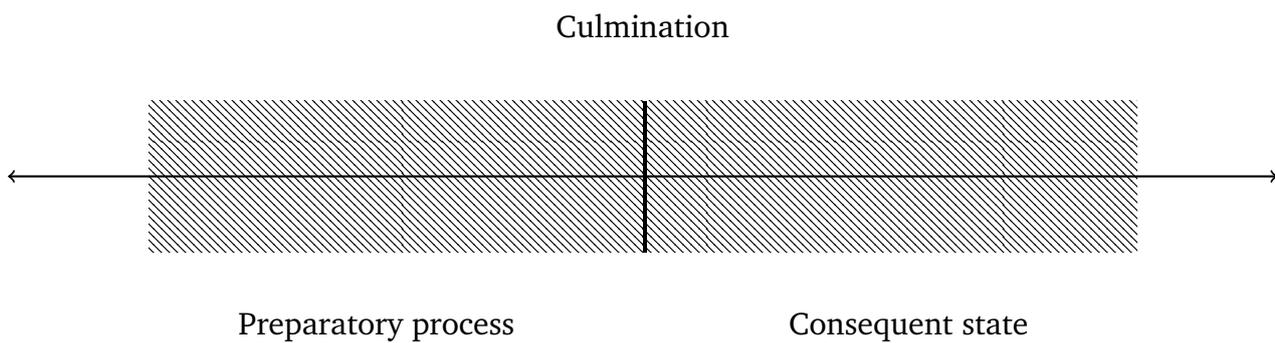


Figure 1: Graphic representation of the temporal ontology (nucleus) proposed by Moens and Steedman (1988, 18).

- The time of the main clause in (9) can then be located in any part of this nucleus (determined contextually).
- Similar ontologies have also been motivated by Bohnemeyer (2014, 2002), Naumann (2001), Passonneau (1987), Comrie (1976), among others.
- Takeaway: Tripartite event ontology that is grounded in contingent relationships is useful for non-evidential data.

4.2 Deriving evidential meaning

- I use this event ontology to account for the observed evidential meanings.
- I assume a tripartite event ontology containing events, event pre-states (= “preparatory processes”), and event post-states (= “consequent states”).
 - The three components temporally abut one another, with no overlap or gaps
 - Event pre-states = closed intervals
 - Event post-states = left-closed, right-open intervals

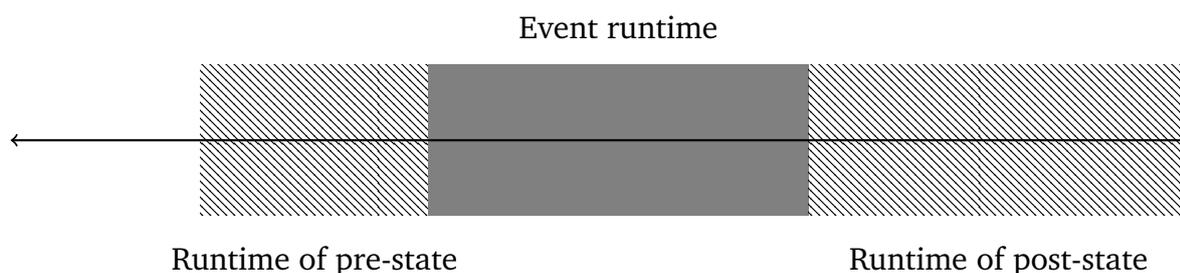


Figure 2: Graphic representation of the event ontology that I assume.

- Intuition: The way that we locate ourselves in time relative to an event can determine what we know about that event.
 - **Event pre-state:** Temporal interval containing events and/or states that stand in a contingent relationship to the event described by the scope proposition; generally speaking, these event/states enable the described event to occur.
- (10) Güzäl peçeniye yas-**açaq**-∅.
Güzäl cookie make-AÇAK-3SG
‘[I have specific evidence that] Güzäl will make cookies.’
- (11) Events or states in the runtime of the pre-state of “Güzäl make cookies”:
- a. Güzäl tells you, “I will make cookies.”
 - b. Güzäl makes a shopping list of ingredients that go into cookies.
 - c. Güzäl’s friend asks her to make cookies to bring to a party.
 - d. All of the ingredients that go into cookies are laid out on Güzäl’s kitchen counter.
- **Event post-state:** Temporal interval containing events and/or states that stand in a contingent relationship to the event described by the scope proposition; generally speaking, these events/states are enabled by the described event.
- (12) Güzäl peçeniye yas-**kan**-∅.
Güzäl cookie make-GAN-3SG
‘[I have indirect evidence that] Güzäl made cookies.’
- (13) Events or states in the runtime of the post-state of “Güzäl make cookies”:
- a. There are cookies in Güzäl’s kitchen.
 - b. Güzäl’s kitchen smells like cookies.
 - c. There is a dirty baking sheet and mixing bowl in Güzäl’s sink.
 - d. Güzäl has cookie batter on her clothes.

- e. Lāylā (Güzāl’s roommate, who hates baking) is eating a freshly baked cookie.
- Tatar speakers offer the kind of propositions in (11) when asked for contexts in which (10) is felicitous; they describe them as “specific evidence” for the scope proposition.
 - Tatar speakers offer the kind of propositions in (13) when asked for contexts in which (12) is felicitous; in evidential terminology, these can be described as “indirect evidence” for the scope proposition.⁸
 - Some of these events/states do not stand in a clearly causal relationship to the event described by the scope proposition.

4.3 Analysis

- Building off the conceptual points in §4.2, I propose that Tatar *-GAN* and *-(y)AçAK* assert the following:
 - The speaker perceives some event or state α at a reference time i
 - α is contingently related to the event e described by the scope proposition (where “contingency” is defined as in Moens and Steedman 1988)
 - * I use \ll to indicate this contingency relation⁹
 - * $\alpha \ll e = e$ is contingent on α , i.e., the runtime of α is contained in the runtime of the event pre-state
 - * $e \ll \alpha = \alpha$ is contingent on e , i.e., the runtime of α is contained in the runtime of the event post-state
 - * Given the assumptions in §4.2, \ll also encodes temporal precedence
 - These expressions are interpreted relative to some agent, a

⁸Nedjalkov (1988) observes that propositions can be trivially or non-trivially true in the post-states of events. Trivially true propositions are linked to the lexical semantics of the verb, whereas non-trivially true propositions are not. I give an example of both trivially and non-trivially true propositions in (14).

- (14) Howard dirtied the kitchen.
- a. Trivially true: The kitchen is dirty.
 - b. Non-trivially true: Howard’s girlfriend is mad at him.

This accounts for the variety of propositions that speakers can take to be evidence.

⁹This notation is inspired by Bohner (2014).

- $-(y)A\check{c}AK(p)$ asserts that the speaker perceives some event/state α that enables e :

(15) *Güzäl peçeniye yas-açaq-∅.*
Güzäl cookie make-AÇAK-3SG
 ‘[I have specific evidence that] *Güzäl* will make cookies.’
 Evidential meaning: The speaker has specific evidence for p
 Temporal meaning: The event described by p will happen in the future

(16) $\llbracket -(y)A\check{c}AK \rrbracket^a = \lambda p_{\langle v,t \rangle} \lambda i. \exists e[\exists \alpha[\text{PERCEIVE}(\alpha)(a,i) \ \& \ \alpha \ll e \ \& \ p(e)]]$
 $(15) = 1$ iff $\exists e[\exists \alpha[\text{PERCEIVE}(\alpha)(a,i) \ \& \ \alpha \ll e \ \& \ \text{make-cookies}(\text{Güzäl})(e)]]$
 where α is an event or state described by one of the propositions in (11a)-(11d)

- $-GAN(p)$ asserts that the speaker perceives some event/state α that is enabled by e :

(17) *Güzäl peçeniye yas-kan-∅.*
Güzäl cookie make-GAN-3SG
 ‘[I have indirect evidence that] *Güzäl* made cookies.’
 Evidential meaning: The speaker has indirect evidence for p
 Temporal meaning: The event described by p happened in the past

(18) $\llbracket -GAN \rrbracket^a = \lambda p_{\langle v,t \rangle} \lambda i. \exists e[\exists \alpha[\text{PERCEIVE}(\alpha)(a,i) \ \& \ e \ll \alpha \ \& \ p(e)]]$
 $(17) = 1$ iff $\exists e[\exists \alpha[\text{PERCEIVE}(\alpha)(a,i) \ \& \ e \ll \alpha \ \& \ \text{make-cookies}(\text{Güzäl})(e)]]$
 where α is an event or state described by one of the propositions in (13a)-(13e)

- The temporal relation encoded by \ll obtains the desired temporal interpretations of (15)-(17).
- The contingent relationship between α and e obtains the desired evidential meanings of $-(y)A\check{c}AK(p)/-GAN(p)$ expressions (i.e., the indirect/specific evidential meanings).
- PERCEIVE encodes the requirement that the agent stand in a privileged relationship to α (i.e., the evidence that they have acquired).
- $-GAN/- (y)A\check{c}AK$ contrast with $-DI/- (y)Er$, which I treat as past and future tenses, respectively.¹⁰

(19) *Güzäl peçeniye yasa-dı-∅.*
Güzäl cookie make-DI-3SG
 ‘*Güzäl* made cookies.’

¹⁰For simplicity, I treat future tense $-(y)Er$ as non-modal; however, see Klecha (2014) for convincing arguments as to why the future tense is modal.

(20) $\llbracket -DI \rrbracket = \lambda p_{\langle v,t \rangle} \lambda i. \exists e[\tau(e) < i \ \& \ p(e)]$

where $\tau(e)$ returns the runtime of e

(19) = 1 iff $\exists e[\tau(e) < i \ \& \ \text{make-cookies}(\text{Güzäl})(e)]$

(21) Güzäl peçeniye yas-ar-Ø.
Güzäl cookie make-ER-3SG
'Güzäl will make cookies.'

(22) $\llbracket -(y)Er \rrbracket = \lambda p_{\langle v,t \rangle} \lambda i. \exists e[i < \tau(e) \ \& \ p(e)]$

(21) = 1 iff $\exists e[i < \tau(e) \ \& \ \text{make-cookies}(\text{Güzäl})(e)]$

- *-DI*/*-(y)Er* differ semantically from *-GAn*/*-(y)AçAK*:
 - No inclusion of a contingency relation
 - No inclusion of a PERCEIVE predicate
- Nonetheless, *-DI* and *-(y)Er* are reported to have direct evidential (2) and non-specific evidential (5) meanings, respectively.
- Their absence in certain contexts suggests that these meanings arise pragmatically.
- The direct evidential meaning of *-DI* is absent in contexts in which the speaker is highly confident in their evidence for the scope proposition.

(23) **High speaker confidence context I:** You are a history professor lecturing your class on WWII.

Germaniya Polşa-nı bas-tı-Ø.
Germany Poland-ACC invade-DI-3SG
'Germany invaded Poland.'

(24) **High speaker confidence context II:** You are discussing the TV schedule.

kiçä Titanik-nı tilivisor-da kürsät-te-lär, läkin min
yesterday Titanic-ACC television-LOC show-DI-3PL but 1SG.NOM
anı qara-ma-dı-m.
3SG.ACC watch-NEG-DI-1SG

'They showed Titanic on TV yesterday, but I didn't watch it.'

(Speaker's comment: "Television is a pre-programmed thing, so you know that they showed it. They have a schedule.")

- Speakers can explicitly cancel the non-specific evidential meaning associated with *-(y)Er*:

(25) **Casino context:**

- a. You and Güzäl are going to a casino in Las Vegas. You know that all the games are run by chance, and that you have no way of predicting whether you will win. You say:

Güzäl irtägä aqça ciñ-er-Ø.

Güzäl tomorrow money win-ER-3SG

‘Güzäl will win some money tomorrow.’

- b. However, Timur knows how to rig the games, and will do so that she wins. He responds by saying:

Güzäl irtägä aqça ciñ-er-Ø... Güzäl älbättä aqça

Güzäl tomorrow money win-ER-3SG Güzäl of.course money

ciñ-eçek-Ø!

win-AÇAK-3SG

‘Güzäl will win some money tomorrow... in fact, [I have specific evidence that] Güzäl will win some money!’

(Alternate translation offered by speaker: ‘Güzäl might win some money tomorrow... in fact, Güzäl will definitely win some money!’)

- This data suggests that evidentiality should not be hardwired into the semantics of *-DI* and *-(y)Er*.
- In sum:
 - *-DI/-(y)Er* locate the event runtime before/after reference time (precedence relation)
 - *-GAN/-(y)AçAK* effectively locate reference time within the event post-/pre-state (inclusion relation)
- I propose the following classification of the TE suffixes (c.f. [Table 2](#)):

<i>-DI</i> ‘PAST’	<i>-(y)Er</i> ‘FUTURE’
<i>-GAN</i> ‘RESULTATIVE’	<i>-(y)AçAK</i> ‘PROSPECTIVE’

Table 3: Proposed classification of the Tatar TE suffixes.

- Cross-linguistically, lexical items glossed as resultative and prospective aspects tend to share the evidential meanings found in Tatar, e.g. Syrian Arabic ([Jarad 2014](#)), Plains Cree ([Wolvengrey 2006](#)), and some North-eastern Neo-Aramaic dialects ([Coghill 2010](#)).
- Only *-GAN/-(y)AçAK* (aspects) are grammatical in verbal nominalizations, in accordance with [Borsley and Kornfilt \(2000\)](#)’s proposal that Turkish verbal nominalizations truncate at a height that includes aspect and excludes tense.

- The proposal to link evidential meaning with event structure is supported by the fact that only eventive Tatar predicates combine with TE suffixes.
- Nominal and adjectival predicates take a zero copula in the present tense (evidentially neutral), or one of a set of free, frozen copula + suffix markers in the past tense (Appendix B).¹¹

5 Conclusion

- **What this proposal accomplishes:**
 - Explains why the Tatar TE suffixes are portmanteau morphemes.
 - Uses the same conceptual grounds to account for the evidential distinctions in the past and the future.
 - Motivates the evidential meanings of the TE suffixes by appealing to their temporal meanings, and explains **why** they have the evidential readings that they do.
 - Appeals to previously motivated machinery from the event literature to derive these meanings.
- **Data this proposal does not account for:**
 - Evidential systems that are distinct from temporal systems, e.g. Cuzco Quechua (Faller 2002) and Cheyenne (Murray 2010).
 - Evidential systems that make fine-grained distinctions between e.g. visual vs. aural evidence, e.g. Foe, Tariana (Aikhenvald 2004).
- We know that evidentials are morphosyntactically heterogenous (Aikhenvald 2018, 2004); I don't see any issue with them being cross-linguistically semantically heterogenous as well.
- Even within a single language, morphemes with evidential meaning can have different semantics.
- Unanswered question: Why don't all aspectual morphemes express evidential meanings?
 - I treat evidential meaning (including non-challengeability) as coming from the PERCEIVE predicate.
 - Possible answer: Not all aspectual morphemes have PERCEIVE/require an acquaintance relationship between the speaker and the relevant portion of the event.

¹¹Future oriented expressions like 'Alsu will be a student' include the eventive verb *bulerğa* 'to become.'

- Why some aspects and not others? How do subjective meanings develop?

Thank you!

References

- Abduldaev, E. and Zakharova, O. (1987). *Grammatika Kigirzskogo Literaturnogo Yazyka*. Frunze.
- Aikhenvald, A. (2004). *Evidentiality*. Oxford University Press.
- Aikhenvald, A., editor (2018). *The Oxford Handbook of Evidentiality*. Oxford Handbooks in Linguistics. Oxford University Press.
- Bashir, E. (2006). Evidentiality in South Asian languages. In Butt, M. and King, T., editors, *Proceedings of the LFG06 Conference, Workshop on South Asian Languages*. CSLI Publications.
- Bohnemeyer, J. (2002). *The Grammar of Time Reference in Yukatek Maya*. LINCOM Studies in Native American Linguistics. LINCOM Europa.
- Bohnemeyer, J. (2014). Aspect vs. relative tense: the case reopened. *Natural Language and Linguistic Theory*, 32:917–954.
- Borsley, R. and Kornfilt, J. (2000). Mixed extended projections. *Syntax and Semantics*, 32:101–131.
- Coghill, E. (2010). The grammaticalization of prospective aspect in a group of Neo-Aramaic dialects. *Diachronica*, 27(3):359–410.
- Comrie, B. (1976). *Aspect: An Introduction to the Study of Verbal Aspect and Related Problems*. Cambridge University Press.
- Comrie, B. and Polinsky, M. (2007). Evidentials in Tsez. In Guentchéva, Z. and Landaburu, J., editors, *L'Enonciation Mediatisee II: Le traitement epistemologique de l'information: illustrations amerindiennes et caucasiennes*, pages 335–350. Éditions Peeters.
- Şener, N. (2011). *Semantics and Pragmatics of Evidentials in Turkish*. PhD thesis, University of Connecticut.
- Davis, C. and Hara, Y. (2014). Evidentiality as a causal relation: A case study from Japanese *youda*. In Piñón, C., editor, *Empirical Issues in Syntax and Semantics*, volume 10, pages 179–196.
- DeLancey, S. (1985). Lhasa Tibetan evidentials and semantics of causation. In *Proceedings of the Eleventh Annual Meeting of the Berkeley Linguistics Society*, pages 65–72.
- Dwyer, A. (2000). Direct and indirect experience in Salar. In Johanson, L. and Utas, B., editors, *Evidentials: Turkic, Iranian, and Neighbouring Languages*. Mouton de Gruyter.
- Faller, M. (2002). *Semantics and Pragmatics of Evidentials in Quzco Quechua*. PhD thesis, Stanford University.
- Fleck, D. (2007). Evidentiality and double tense in Matses. *Language*, 83(3):589–614.

- Fortescue, M. (2003). Evidentiality in West Greenlandic: A case of scattered coding. In Aikhenvald, A. and Dixon, R., editors, *Studies in Evidentiality*, pages 291–306. John Benjamins Publishing Company, Amsterdam/Philadelphia.
- Hara, Y., Orita, N., and Sakai, H. (2018). Evidentials in Causal Premise Semantics: Theoretical and experimental investigation. In *JSAI International Symposium on Artificial Intelligence*, pages 282–298. Springer.
- Jarad, N. (2014). The grammaticalization of the motion verb ‘rah’ as a prospective aspect marker in Syrian Arabic. *Al-Arabiyya: Journal of the American Association of Teachers of Arabic*, 47:101–118.
- Klecha, P. (2014). Diagnosing modality in predictive expressions. *Journal of Semantics*, 31:443–455.
- Klose, C. (2014). A temporal evidential in Aymara. In *Proceedings of ConSOLE XXII*, pages 114–131.
- Koev, T. (2011). Evidentiality and temporal distance learning. In *Proceedings of Semantics and Linguistic Theory 21*, pages 115–134.
- Korotkova, N. (2016). *Heterogeneity and uniformity in the evidential domain*. PhD thesis, University of California, Los Angeles.
- Matthewson, L. (2011). On apparently non-modal evidentials. In Bonami, O. and Hofherr, P., editors, *Empirical Issues in Syntax and Semantics*, volume 8, pages 333–357. Colloque de Syntaxe et Sémantique à Paris.
- Moens, M. and Steedman, M. (1988). Temporal ontology and temporal reference. *Computational Linguistics*, 14(2):15–28.
- Murray, S. (2010). *Evidentiality and Structure of Speech Acts*. PhD thesis, Rutgers, the State University of New Jersey.
- Naumann, R. (2001). Aspects of changes: a Dynamic Event Semantics. *Journal of Semantics*, 18:27–81.
- Nedjalkov, V., editor (1988). *Typology of Resultative Constructions*, volume 12 of *Typological Studies in Language*. John Benjamins Publishing Company.
- Nikolaeva, I. (1999). The semantics of Northern Ostyak evidentials. *Journal de la Société Finno-Ougrienne*, 88:131–159.
- Passonneau, R. (1987). Situations and intervals. In *Proceedings of the 25th Annual Meeting on Association for Computational Linguistics*, pages 16–24. Association for Computational Linguistics.
- Poppe, N. (1961). *Tatar Manual*. Research and Studies in Uralic and Altaic Languages. Indiana University Publications.
- Poppe, N. (1964). *Bashkir Manual*. Indiana University Publications.
- Pulte, W. (1985). The experienced and nonexperienced past in Cherokee. *International Journal of American Linguistics*, 51:543–544.
- Ritchie, G. (1979). Temporal clauses in English. *Theoretical Linguistics*, 6:87–115.
- Simons, G. and Fennig, C., editors (2018). *Ethnologue: Languages of the World, Twenty-first edition*. SIL International, Dallas.
- Willett, T. (1988). A cross-linguistic survey of the grammaticization of evidentiality. *Studies in Language*, 12(1):51–97.
- Wolvengrey, A. (2006). Prospective aspect in the Western dialects of Cree. *International Journal of American Linguistics*, 72(3):397–407.

Appendix A: Tests for subjective status of evidential meaning (Korotkova 2016)

- **Korotkova (2016)**: Subjective content can be differentiated from Not-At-Issue (NAI) content in that NAI content (appositives, presuppositions) can be disagreed with in some ways. However, subjective content cannot.
- The evidential meaning of the Tatar TE suffixes patterns like subjective content. (Following contexts are adapted from **Korotkova 2016**.)
- Challengeability of NAI, appositive content (available with “you’re mistaken” + follow-up):

(26) **Legalization context**: You see the governor of California on TV saying, “Marijuana is legalized in California.” You say:

- a. Kaliforniya, AKŞ-nın in дәү ştatı, marihuana qullanılışın
California USA-GEN most big state marijuana use
zakonlaşır-dı-Ø.
legalize-DI-3SG
‘California, the largest US state, legalized marijuana.’
- b. yuq, döres tügel.
no correct not
 - i. ✓ ‘No, they didn’t legalize marijuana.’
 - ii. # ‘No, California is not the largest state.’
- c. ✓ yalğış-asiñ. AKŞ-nın in дәү ştatı Alaska.
mistake-2SG.POSS USA-GEN most big state Alaska
‘You’re mistaken. Alaska is the largest US state.’

- (Non-)challengeability of first person pain report:

(27) mınem baş-ım bik qatı awur-i-Ø.
1SG.GEN head-1SG.POSS very hard be.sick-PRES-3SG
‘I have a terrible headache.’

- a. # yuq, döres tügel.
no correct not
‘No, that’s not true.’
- b. # yalğış-asiñ.
mistake-2SG.POSS
‘You’re mistaken.’ (# regardless of continuation)

- (Non-)challengeability of evidential meaning:

(28) **Venice Beach context:** You go to Venice Beach. Lots of people are smoking marijuana. You say:

Kaliforniya kindir qullanılışın zakonlaşdır-ğan-Ø.

California marijuana use legalize-GAN-3SG

‘[I have indirect evidence that] California legalized marijuana.’

a. yuq, döres tügel.

no correct not

i. ✓ ‘No, they didn’t legalize marijuana.’

ii. # ‘No, you don’t have indirect evidence for that.’

b. # yalğış-asıñ.

mistake-2SG.POSS

i. ✓ ‘You’re mistaken. They didn’t legalize marijuana.’

ii. # ‘You’re mistaken. You don’t have indirect evidence for that.’ (# regardless of continuation)

Appendix B: Non-eventive predicates

(29) Alsu student.

Alsu student

‘Alsu is a student.’

(30) Alsu student ide.

Alsu student IDE

‘[I have direct evidence that] Alsu was a student.’

(31) Alsu student ikän.

Alsu student IKÄN

‘[I have indirect evidence that] Alsu is/was a student.’¹²

(32) Alsu student imeş.

Alsu student IMEŞ

‘[I doubt that] Alsu is/was a student.’

¹²Young and middle-aged Tatar speakers permit *ikän* to be used as a mirative marker, unlike *-GAN*.