Future reference in Hungarian

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Introduction: Hungarian has two devices to mark future reference: an inflected auxiliary *fog* (illustrated in (3a)), and the non-past morphology (illustrated in (3b)). While *fog* obligatorily gives rise to future reference, the non-past is compatible with both future and present reference. The goal of this paper is to investigate the relation between aspect and future reference in Hungarian indicative clauses.

The basic facts are as follows. Telic non-past sentences with preverbs typically give rise to a future interpretation (illustrated in (3c)). I take the function of preverbs to be telicizing, following (put citation). Atelic non-past predicates give rise to event-in-progress or ongoing readings (illustrated in (3d)) and require overt temporal adverbs or contextual support for a future interpretation to be available (see (3e)).

The telicity-dependant asymmetry in temporal reference suggests an approach that derives future reference in the non-past via an interaction between aspectual reference and the non-past morphology. The analysis I provide takes this approach.

Analysis: I argue that the non-past has both a modal and a temporal component. The modal component has universal force with a circumstantial modal base that includes only all propositions that are true in the real world. The ordering source can be inertial (3a) or bouletic (3e). For the temporal component, event descriptions and temporal predicates (event descriptions to which temporal adverbs are applied) are inputs to the non-past. The instantiation of predicates with respect to a time is specified in terms of the AT relation defined in 4. I take telicity to be the property of having set endpoints, in the sense that for a telic predicate like 'run a mile', no subevent of the 'running-a-mile' event can itself be an event of running a mile.

The non-past morphology denotes a future-shifting operator, whose meaning is given in (1). The non-past applies to an eventuality description of a temporal predicate P and world and returns true iff every accessible w′ from w relative to *now* instantiates P in a forward-oriented open-ended interval with now as its left boundary. The speech time, *now*, is punctual or at least a very small interval.

(1) $[\![\text{NPAST}]\!] = \lambda P \lambda w. \forall w' [w' \epsilon\, MB(w, now) \longrightarrow w' \epsilon\, \text{AT}(P, [now, \infty))]$

It is crucial that the interval over which the predicate can hold is restricted to the interval starting from the *now* of speech time and extending infinitely into the future. This allows for compatibility with both event-in-progress and future readings of the non-past. A derivation is shown in (2), where NPST is applied to 'john-run'.

(2) a. János fut
john run.NPST.3SG.INDEF
'John runs'

b. $[\![\text{john-run}]\!] = \lambda e.\text{john-run}(e)$

c. $[\![\text{NPAST(john-run)}]\!] = \lambda P \lambda w. \forall w' [w' \epsilon\, \text{MB}(w, now) \longrightarrow w' \epsilon\, \text{AT}(\lambda e[\text{john-run}(e), [now, \infty))]]$
$= \lambda w. \forall w' [w' \epsilon\, \text{MB}(w, now) \longrightarrow w' \epsilon\, \exists e[\text{john-run}(e) \wedge \tau(e) \subseteq [now, \infty)]]$

Telic durative predicates lack the subinterval property. As a result, telic predicates cannot hold of *now*, and they are therefore incompatible with event-in-progress or ongoing readings.

We have seen that this accounts for the tendency of telic predicates to give rise to a future interpretation. We can also account for atelic predicates receiving a future interpretation when they occur with temporal adverbs. Adverbs take properties of eventualities and return properties of times (illustrated in (5)). A sample derivation is given in (6). In (6), the eventuality description 'john-run' is asserted to hold of the intersection between some future interval and tomorrow.

The semantics for atelic non-past predicates with temporal adverbs works for telic predicates in the same way, though as we have seen, durative telic predicates are already restricted to giving rise only to future interpretations because of their internal properties.

I propose that *fog* is an existential quantifier over future intervals (given in (7)), and in the paper I show its interaction with temporal adverbs.

Conclusion: Cross-linguistically, expressions that receive future reference only under certain conditions are common. This analysis contributes to the broader discussion of how future reference is accomplished in these cases, and shows that it can be the sensitivity of future-referring expressions to lexical and aspectual properties of the predicate that gives rise to interpretations. In the case of Hungarian, it is the interaction of telic and atelic predicates with the meaning of the non-past morphology that determines, along with temporal adverbs and contextual support, whether a non-past sentence receives a non-past or future interpretation.

(3) a. Es-ni **fog** az esö
fall-INF *fog*-3SG.INDEF the rain
'It will rain' *Fog construction*

b. A bulí-ba **megy-ünk** ma este
the party-ILL go-NPST.1PL.INDEF today evening
'We will go to the party this evening' *Non-past*

c. János meg-talál-ja a kulc-ok-at
john PV-find-3SG.DEF the key-PL-ACC
'John will find the keys' *Telic Preverbed non-past: future-referring*

d. A könyv-et **olvas-om**
the book-ACC read-NPST.1SG.DEF
'I am reading the book' *atelic non-past: event-in-progress*

e. A könyv-et **olvas-om** ma este
the book-ACC read-NPST.1SG.DEF today evening
'I will read the book this evening' *atelic non-past with adverb: future-referring*

(4) $\text{AT}(P,i) = \begin{cases} \exists e\,[P(e) \wedge \tau(e) \subseteq i] & \textit{Eventive} \\ P(i) & \textit{Temporal} \end{cases}$

(5) $[\![\text{TOMORROW}]\!] = \lambda P \lambda i.\text{AT}(P, i \cap tomorrow)$

(6) a. $[\![\text{john-run}]\!] = \lambda e.\text{john-run}(e)$

b. $[\![\text{TOMORROW(john-run)}]\!] = \lambda P \lambda i.\text{AT}(\lambda e[\text{john-run}(e), i \cap tomorrow)]$
$= \lambda i \exists e[\text{john-run}(e) \wedge \tau(e) \subseteq i \cap tomorrow]$

c. $[\![\text{NPAST(TOMORROW(john-run))}]\!] = \lambda P \lambda w. \forall w'[w' \epsilon\ MB(w, now) \longrightarrow w' \epsilon\ \text{AT}(\lambda i \exists e[\text{john-run}(e) \wedge \tau(e) \subseteq i \cap tomorrow, [now, \infty))]]$
$= \lambda w. \forall w'[w' \epsilon \text{MB}(w, now) \longrightarrow w' \epsilon\, \exists e[\text{john-run}(e) \wedge \tau(e) \subseteq [now, \infty) \cap tomorrow]]$

(7) $[\![\text{FOG}]\!] : \lambda P \lambda w. \forall w'[w' \epsilon \text{MB}(w, now) \longrightarrow w'\, \epsilon\, \exists i[i > now \wedge AT(P, i)]]$

(8) a. $[\![\text{john run}]\!] = \lambda e.\text{john-run}(e)$

b. $[\![\text{FOG(john run)}]\!] = \lambda P \lambda w. \forall w'[w' \epsilon \text{MB}(w, now) \longrightarrow w'\, \epsilon\, \exists i[i > now \wedge AT(P, i)]](\lambda e.\text{john run}(e))$

c. $[\![\text{FOG(john run)}]\!] = \lambda P \lambda w. \forall w'[w' \epsilon \text{MB}(w, now) \longrightarrow w'\, \epsilon\, \exists i[i > now \wedge AT(\lambda e.\text{john run}(e), i)]] = \lambda w. \forall w'[w'\, \epsilon MB(w, now) \longrightarrow w'\, \epsilon\, \exists i[i > now \wedge \exists e.\text{john run}(e) \wedge \tau(e) \subseteq i]]$

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