Futurity as modality: Evidence from Kalmyk

Introduction. This paper describes some modal-temporal interactions in Kalmyk Hoshyd, an endangered variety of Oirad Mongolian spoken in Kalmykia (an autonomous region of the Russian Federation) and in several diaspora communities in the United States. In this language, the form *-xə*, called the "future-infinitive" (Bläsing 2003, Rákos 2015, Birtalan 2020), participates in the construction of modal meanings of different temporal orientations as well as in future meanings: it appears both to encode possibility and provide future temporal orientation (Rullmann & Matthewson 2018). We reanalyze *-xə* as a future-oriented modal operator, arguing that it introduces quantification over possible worlds without specifying an ordering source for the modal (Bochnak 2019).

Background. In Kalmyk, a robustly head-final language, future reference is achieved in two ways. In a few cases, the present tense *-nA* is future-shifted (cf. Knick 2025). In other cases, the "future-infinitive" *-xə* appears. This form is described as having a "modal dimension" (Bläsing 2003). It behaves like a "putative future" in notionally realis contexts, as in (1), and in modal contexts appears to encode possibility (as does its cognate *-x* in Khalkha Mongolian; cf. Binnick 2011). The contrast in (2) illustrates that *-xə* cannot on its own obtain a past temporal orientation: it must recruit other morphology.

(1) *chamagə* *ger-tä-n* *tsagtan* *Bajn* *gern* *daalghvr-an* *ke-xə*
2PRO.ACC home-COM-GEN already B. house task-GEN do-IRR
"When you get home, Bajn will be doing homework."

(2a) *mangdr* *xurə* *or-xə*
tomorrow rain come-IRR
'It will / might rain tomorrow.'

(2b) * *öchkldr* *xurə* *or-xə*
yesterday rain come-IRR
Intended: 'It might have rained yesterday.'

In order to obtain past temporal orientation, *-xə* selects the perfective participle *-sn* (3): given the crosslinguistic null hypothesis that (inclusion) aspect provides temporal orientation, this is predicted for the aspect-contributing participle that scopes below a modal (Rullmann & Matthewson 2018). We assume that a null allomorph of the present tense *-nA* provides temporal perspective (cf. Lim 2025).

(3) *öchkldr* *xurə* *or-sn* *bol-xə* (*bää-nä*)
yesterday rain come-PFV.PART COP2-IRR (COP1-PRS)
'It might have rained yesterday.'

In order to obtain a future-oriented modal interpretation, *-xə* again scopes below tense; however, rather than selecting another aspect-contributing morpheme to provide future orientation (one in the same category as *-sn*, say), *-xə* itself appears to provide it (4). This obtains regardless of modal strength: when an additional modal adverb (*kergtä*) is present, the modal force is strong; when absent, a weak modal interpretation obtains, just as in (3a).

(4) You stole our blackberries and your wife has already made jam with them.
bi *mana* *zergnä-r* *pie* *ke-xə* (*kergtä*) *bi-lä-v*
1PRO 1P.POSS blackberry-INS pie make-IRR (BOUL) COP1-PFV.PST-1S

'I might (would) have made a pie with our blackberries.'

Generalization. The data across (1–4), as we argue, typify a future-oriented modal operator of unspecified ordering source, not unlike English "will" (Bochnak 2019). In (3), *-xə* composes last, where it introduces modal quantification over a perfective (past-oriented) predicate; in (4), *-xə* composes first, where the worlds over which it introduces quntification are restricted to times provided by the tense (and ordered to sets of worlds provided by the modal adverb) that scope(s) over it. We propose a semantics for *-xə* like that for English ⟦WOLL⟧ (cf. Abusch 1997) and for Khalkha Mongolian ⟦*-x*⟧ (Knick 2025).

(5) $[\![\text{-}xə]\!] = [\![\text{IRR}]\!] = \lambda P\, \lambda t\, \lambda w\, .\, \forall w' \in \text{ACC}(w, t)\, [\, P(t')(w')\,]$

Discussion. As we argue, *-xə* is a weak modal of unspecified ordering source responsible for encoding possibility, as well as for encoding futurity in "putative" contexts. *-xə* selects *-sn*, the "perfective participle," in past-oriented modal contexts (3), but appears to provide its own future-oriented reading when no aspectual morphology scopes under it (4). We reserve the conclusion that in future-oriented modal contexts *-xə* selects a covert aspect, either imperfective or nonperfect (in contrastive distribution to the perfective *-sn*)—by analogy with specifying aspectual morphology available in present-orientation modals, as in (6)—until further study of the large inventory of temporal-aspectual morphology in Kalmyk conducted.

(6) Your wife sings throughout the house on weekends. You are at the park with your children, and they ask you what their mother is doing.

ter	*kyn*	*duul-dg*	*bol-xə*
DIST	women	sing-HAB	COP2-IRR

"She could be singing."

This paper offers primary data of an endangered and understudied language as a contribution to ongoing discussion of the nature of futurity and modality and on the question of inherent modality in future reference

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