The Future and Epistemic Modality in Hindi

In Hindi, adding the suffix *gaa* to a subjunctive-marked verb (main or auxiliary) yields a future reading, as in (1). One way of expressing epistemic modality, shown in (2), is to use an auxiliary verb *ho-gaa* that bears a suffix form-identical to the future-marker. Future orientation in (2) is, however, impossible.

(1)   Abe kaam kar-e-gaa
      Abe work do-Subj-gaa

      'Abe will do work.'

(2)   Abe kaam kar-taa   ho-∅-gaa
      Abe work do-IMPF AUX.Subj-gaa

      'Abe must$_{EPIST}$ do work.'

Despite the formal similarity, some recent work (Sharma 2008 - following the established tradition of traditional grammarians) has treated the future marker and the 'epistemic auxiliary' in (2) as lexically distinct. My account goes against this view.

I present a unified analysis of *gaa* that covers both the future and epistemic readings. I argue that *gaa* in (1) is not a semantic tense on par with *present* or *past*. Instead, I treat *gaa* as a necessity modal in the Kratzerian tradition with an under-specified modal base (MB).

My account differs from Kratzer's (1991) take on MB-determination in the following regard: Rather than contextually-determined, I take *gaa*'s MB to be determined by the semantic type of its sister. I argue that *gaa* has a flexible type, which allows it to merge in one of two positions: either above TP (heading its own ModP), or above AspP (as a T head).

(3) $[\![gaa]\!] = \begin{cases} \lambda p_{\langle wt \rangle}.\ \lambda w.\ \forall(w') \in MB(w, \textbf{NOW}) \rightarrow p(w') & \text{(when sister is TP)} \\ \lambda P_{\langle i, wt \rangle}.\ \lambda w.\ \forall(w', t') \in MB(w, \textbf{NOW}) \rightarrow P(w', t') & \text{(when sister is AspP)} \end{cases}$

Epistemic readings arise when *gaa* quantifies over *worlds* in an epistemic/doxastic MB. With future readings, on the other hand, *gaa* quantifies over the *world-time pairs, (w,t)*, that constitute the *metaphysical* MB (Condoravdi 2002, Thomason 1974). Forward-shifting is not a property of the modal *per se* on my account (as it is in Condoravdi 2003 and Matthewson 2005), but rather of the metaphysical MB. Because Epistemic MBs only range over worlds, they are incompatible with the second denotation in (3), the opposite is true of metaphysical MBs.

Because Tense is present in Epistemic readings, the account can explain why the instantiation time of the modal in (4) can be back-shifted with a temporal adverbial.

(4)   Raamu {pichle saal | aajkal}   bahut aam   khaa-taa ho-gaa
      Raamu {last   year | nowadays} many mango eat-IMPF AUX-gaa

      'Ramu must have eaten many mangoes (habitually) last year/ Ramu must eat many mangoes nowadays.' (from Sharma 2008)

In addition, taking the observation from Anand & Nevins (2006) that auxiliary *ho* is the spell-out of tense-features, we can explain why the epistemic reading is unavailable without *ho*, as it is in (1). That is, we can explain why (1) cannot mean (2). In the absence of *Present* or *Past* features, *gaa* must head T and must therefore combine with AspP. To do so, its type must be $\langle \langle i, wt \rangle, wt \rangle$, which is incompatible with the epistemic MB.