The illusory scope of French epistemics

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THE PROBLEM: The canonical view of the relationship between modals and tense states that epistemic modals scope above tense, while root modals scope beneath it (Stowell 2004, Hacquard 2006, a.o.). However, Homer (2010) provides evidence that whether or not epistemic modals appear to scope over tense is context-dependent: the existentially-quantifying modal *pouvoir* in (1) can be interpreted as dealing with either past knowledge about a past time (Reading A), or present knowledge about that past time (Reading B). For example, Reading A would be salient in a context where Bill has asked Mary why she just looked through the window to check the weather (which turned out to be sunny), while Reading B might be salient in a context where Bill has asked Mary why Charlie got in a car accident two nights ago.

(1) Il pouvait pleuvoir.   **Reading A:** It was possible (then) that it was raining (then).
     It might.IMP rain.   **Reading B:** It is possible (now) that it was raining (then).

Furthermore, Homer provides semantic and morphosyntactic evidence that *pouvoir* can *never* outscope tense, even at LF. He therefore proposes that epistemic modals carry an extra time argument for the time of modal evaluation, which can be either a variable bound by the reference time (Reading A) or an utterance-time indexical (Reading B). However, this offers no explanation for why Reading B is unavailable for root modals, except by stipulating that either a) this extra time argument is somehow absent in root modals, or b) the indexical interpretation is restricted to epistemics. This problem extends to the raising verb *sembler* ("to seem"), which is syntactically and semantically similar to *pouvoir*, but also does not allow Reading B:

(2) Jean semblait être là.   Jean seemed to be there.
     Jean seem.IMP be.INF there.   #Jean seems to have been there.

The goal, then, is to explain why Reading B is available for epistemic modals, while avoiding the stipulations Homer's theory requires to restrict it to *just* epistemic modals.

EPISTEMICS AS NARRATIVE-BASED: In addressing this, I adopt a situation-relative version of Kratzer's (1981) standard theory of modality:

(3) $[\![pouvoir]\!]^c \equiv \lambda p \lambda s. \exists s' \in \text{BEST}(s, f^c, g^c)[p(s')],$
     where $\text{BEST}(s, f, g) \equiv \{s' \in \cap f(s) : \neg \exists s'' \in \cap f(s)[s'' <_{g(s)} s']\}.$

What I propose is that the epistemic modal base is not, as traditional theories would have it, the summed knowledge of some salient collection of individuals in s (see, e.g., von Fintel & Gillies 2009), but is instead a contextually-determined *realistic narrative* of s ("realistic" in the sense that s itself must be included in the set of ideal situations).

What makes epistemic modals special, then, is the sorts of propositions that can appear in $f^c(s)$ and $g^c(s)$. In particular, root modals and *sembler* are *future-blind*: for example, if I have some obligation or ability in s, nothing that occurs afterwards can change the fact that I had this obligation or ability (though of course we may later realize that my obligations were different from what I had thought).

But narratives are *not* necessarily future-blind: intuitively, in the course of telling a story we frequently hop between times to provide background, explain the consequences of events, etc. As we will see below, the fact that narratives (and thus, epistemic modals) are not necessarily

future-blind will be responsible for their "wide-scope" reading, so naturally, the fact that root modals and *sembler are* future-blind by nature will preclude them from such readings.

FUTURE-BLINDNESS: Our definition of future-blindness includes a context-sensitive function DUE, which takes a proposition and a world (i.e., a maximal situation), and returns a time interval. The intuition behind this is that when one utters a sentence of the form MODAL p, the interpretation of this utterance includes a context-sensitive time interval over which p is permitted or expected to take place. Sometimes this time period is provided explicitly (e.g., *You should leave **before Tuesday***), and sometimes it is gleaned from context (e.g., *You must do your homework assignment*). With this in mind, we define future-blindness as follows:

(4)   A modal construction in context c with reference situation s is...
    a.   ...*outwardly blind* iff for all $p \in f^c(s) \cup g^c(s)$, for all $s' \in p$, $\langle s' \rangle^{\text{id}} \subseteq p$, where $\langle s' \rangle^{\text{id}}$ is the set of all situations spatiotemporally identical to s'.
    b.   ...*future-blind* iff (i) it is outwardly blind, and (ii) for all $s' \in \cap f^c(s)$, s' overlaps with no times after $\text{DUE}^c(p, \text{world}(s'))$, where $\text{world}(s')$ is the world containing s'.

Clause (a) states that a modal construction is outwardly blind iff neither the modal base nor the ordering source can differentiate between two spatiotemporally identical situations. This excludes propositions like $\{s \mid p$ holds in some situation s' after s in world$(s)\}$. Clause (b) states that a modal construction is future-blind iff it is outwardly blind and all the situations in $\cap f^c(s)$ have a cut-off point before or during their worlds' due periods.

BACK TO (1): Looking back at (1), we can now see how Readings A and B arise. Reading A is the result of a future-blind interpretation. In the above-mentioned context, the reference situation s includes Mary just before she opened the blinds, and the due period is simultaneous to this situation. In other words, Mary's utterance can reasonably be paraphrased as *At the time I was about to open the blinds, it was possible that it was raining*. Since Mary's discovery that it was sunny occurred *after* the due period, a future-blind interpretation prevents this fact from having any effect on either the modal base or the ordering source.

Reading B, meanwhile, is the result of a *non*-future-blind interpretation. Let's say that Charlie's car accident was on Monday, and Bill's question to Mary was posed on Wednesday. In this case, the reference situation s is Charlie's accident on Monday, and once again the due period is simultaneous to s. On a non-future-blind interpretation, nothing prevents events after Charlie's accident from affecting the (domain of) modal ordering, so evidence from Tuesday (after the due period) that it wasn't raining on Monday would suffice to falsify (1). Note that a non-future-blind reading is required for this to work: in order for the narrative of s to incorporate post-due-period observations, we must be able to differentiate between two identical Monday situations based on what happens on Tuesday in their respective worlds, violating (4a).

CONCLUSION: Homer (2010) shows that in French, past tense epistemic modals can be evaluated with respect to present knowledge, but that at the same time they cannot actually take scope over tense. However, while his proposed solution to this problem allows for the apparent wide-scope reading of epistemic modals, it does not offer a satisfying explanation for why it is *not* available for root modals or *sembler*. On the other hand, the account offered here makes this distinction strictly based on intuitively plausible semantic distinctions.

von Fintel, K. & A. Gillies. 2009. 'Might' made right. In Egan & Weatherson (eds.), *Epistemic modality*, 108–130. Hacquard, V. 2006. *Aspects of modality*. PhD thesis, MIT. Homer, V. 2010. Epistemic modals: High *ma non troppo*. In *Proceedings of NELS XL*. Kratzer, A. 1981. The notional category of modality. In Eikmeyer & Rieser (eds.), *Words, worlds, and contexts: New approaches in word semantics*, 38–74. Stowell, T. 2004. Tense and modals. Ms.