Epistemic Modals and Past Tenses

1. Introduction. It is generally assumed that on the epistemic reading of modal verbs, the evaluation time of the modal (MOD-T) is the utterance time (u-T), cf. e.g. Stowell 2004. In languages like French, where, contrary to English, modals can be fully inflected and bear tense/aspect morphology, it is often assumed that the past or perfect(ive) morphology on the epistemic modal originates between the modal and the verbal projection, raises to combine with the modal, but is interpreted in its original position (PAST/PERF > MOD > P) as in MOD > P. Thus, the French translations (3)-(4) of (1) below are supposed to be equivalent.

(1) Il pouvait y avoir de la glace au frigo. OK C1, OK C2, OK C3
Il-IMPERSONAL can-PAST-IMPERF. PRN have of the ice-cream in-the freezer.
'There might have been ice cream in the freezer.'

(2) Il a pu y avoir de la glace au frigo. #C1, #C2, OK C3
Il-IMPERSONAL can-PRETERT-IMPERF. PRN have of the ice-cream in-the freezer.
'There might have been ice cream in the freezer.'

(3) Il peut y avoir eu de la glace au frigo.#C1, OK C2, OK C3
Il-IMPERSONAL can-PRETERT-IMPERSONAL have of the ice-cream in-the freezer.
'There might have been ice cream in the freezer.'

(4) Il y avait de la glace au frigo. #C1, OK C2, OK C3
Il-IMPERSONAL can-PRETERT-IMPERSONAL have of the ice-cream in-the freezer.
'There might have been ice cream in the freezer.'

2. Against Synonymy. We present several new pieces of data challenging the claim that HAVE mod epistemic sentences (henceforth ESs), cf. (3), are equivalent to MOD HAVE ones, cf. (4). Firstly, while MOD HAVE-ESs can have a generic reading, HAVE MOD ones cannot, cf. (5)-(6):

(5) On peut être membre du parti communiste sans avoir été véritablement communiste.
One might very well have been a member of the communist party without having really been a communist.

(6) #On a pu être membre du parti communiste sans être véritablement communiste.
One might very well have been a member of the communist party without being truly a communist.

The contrast is easy to explain if one assumes that tense/aspect morphology is interpreted in situ: (5) is blocked because a perfective sentence cannot have a generic interpretation (cf. Carlson 1980, Dahl 1985). Secondly, while ESs are incompatible with future adverbials when PERF is on the modal, it is not the case when it is on the infinitive, cf. (7)-(8). Again, this contrast remains unexplained if the perfect is interpreted below the modal in (8). Note that (8) is acceptable if the present perfect on the modal is replaced by a past imperfective (the imperfect form 'pouvaient').

Thirdly, different epistemic contexts are allowed by each translation of (1). In the original context of von Fintel & Gillies (2008), Sophie is looking for some ice cream, and checks the freezer in t. There is none in there. She is then asked why she opened the freezer in t, and replies (1) (Context 1, or C1). In C1, (2) is acceptable, but (3) and (4) are not. In our variant Context 2, Sophie wants to check the freezer in t, but Paul stands in her way, and asks why Sophie wanted to open it. In C2, (3) is still unacceptable, but (4) is perfect. In a variant Context 3 of Context 2, Paul takes something from the freezer that Sophie cannot see before asking his question. This time, (3) is as acceptable as (4). The facts are summarized at the right of examples (2)-(4).

Proposal (0). Scope and temporal intervals. In view of these facts and in line with Eide 2003, Boogaart 2007 and von Fintel & Gillies 2008, we admit that epistemic modals can be in the scope of Tense/Aspect, which is thus interpreted in situ in (2)-(4). Besides, with Boogaart 2007, we admit that the evaluation point of epistemic modals is provided by the aspectual point of view. In the scope of Tense/Aspect is thus not the evaluation point (contra von Fintel & Gillies), but only the alethic/metaphysical possibility contributed by the 'epistemic' modal (cf. Cantwell 2009), cf. our paraphrases of (3) in (10) compared to the one one can attribute to von Fintel & Gillies in (9).

(9) 'Based on the evidence I had in the past, it was possible that there was some ice cream in the freezer.'
PAST > EPISTERMAL EVAL + POSSE
von Fintel & Gillies

(10) 'Based on the evidence I have now [cf. present view point provided by Present perfect, cf. below], it was possible that there was some ice cream in the freezer.'
PAST > POSSE
EPISTERMAL = PRESENT VIEW POINT ASPECT

To explain the facts just described, we propose to differentiate three temporal intervals instead of two: MOD-T (the interval during which the possibility takes place), ADJ-T (the interval during which the adjacent P takes place in the world where might P is true) and EVAL-T (the time of the modal evaluation). Thus, epistemic modals describe a possibility in MOD-T, evaluated in EVAL-T, that the adjacent P is verified in ADJ-T. MOD-T and EVAL-T are both given by aspect/tense on the modal and are most of the time simultaneous, but interestingly disjoint with the present perfect, because of its concomitant present and perfect values. ADJ-T is determined by adverbials or temporal clauses in the adjacent if some are present (like in 7), or, if there is none, by an interaction between tense/aspect on the infinitive and tense/aspect on the modal, too complex to be fully modelised here, but see below for some insights.

3. Proposal (I). Why not a perfective? It has been largely ignored that replacing the passé composé by a passé
simple (a perfective tense) in (3) blocks the epistemic reading of pouvoir. Thus, the fact that the passé composé has a present perfect reading (besides its derived perfective reading, cf. e.g. de Swart 2007) is crucial to generate the epistemic reading of the modal, and the claim often made that the aspect on the modal in sentences like (3) is a perfective is an oversimplification. We claim that the present perfect and the past imperfective (cf. (2) and the pouvoir-version of (8)) are compatible with ess because they introduce a point of view which can serve as the evaluation point EVAL-P required by the modal, and the perfective incompatible with ess because it cannot do so. A. The imperfective. Boogaart 2005 convincingly argued that the (past) point of view introduced by the imperfective, which conveys simultaneity with a past act of perceiving or thinking, may function as the EVAL-T required by epistemic modal (a past possibility taking place in MOD-T is thus evaluated from the ‘present of the past’ EVAL-T). B. The present perfect vs the perfective. According to its classical analysis, the passé composé differ from the passé simple in that it presents the past fact as viewed from the present. The ut-c can thus function as the EVAL-P required by the modal. On the other hand, the passé simple is an ‘objective past tense’ (Imbs 1960, Wagner & Pinchon 1960), i.e. does not relate the past eventuality to a past or present point of view, and is thus unable to provide the EVAL-T required by the modal.

4. Proposal (II). Imperfect vs present perfect on epistemic modals (ex. (2) vs (3)). We claim that the differences in the epistemic contexts allowed in (2) and (3) come from the following semantic differences. (3) describes a past possibility in MOD-T (‘pu’), contemplated from ut-T (‘a’), that P is verified in ADJ-T. The infelicity of (3) in C1 has two grounds:

i. Since the passé composé describes bounded events (cf. e.g. de Swart id.), the possibility denoted in (3) has gone out of existence in ut-T (it is non persistent). This is unplausible in C1, since the state of the freezer has not changed between Sophie’s attempt and Paul’s question (why would it be possible that some ice-cream is on the freezer before Paul’s question and not possible after it if the freezer’s state didn’t change in the meantime?). C3 (contrary to C2) solves this problem: since Paul took something out of the freezer after Sophie’s attempt, the possibility to find some ice-cream might be over in ut-T.

ii. Given the conditions of assertability of epistemic sentences, the Assessor of epistemic modals cannot be sure that ♢P is false at EVAL-T – one does not say ‘it might rain’ if one is sure it doesn’t rain, cf. e.g. von Fintel 2005. With the passé composé, EVAL-T>ut-T. This is problematic, since in C1, Sophie knows that P is false in ut-T (she knows there is no ice cream in ut-T). C2 and C3 solve this problem: in these contexts, Sophie has not checked the freezer in ut-T, and is thus still ignorant about the truth of P at that time.

(2) does not raise problem [ii.] in C1, since with the imparfait on mod, EVAL-T>ut-T (Sophie only has to be ‘ignorant in the present of the past’). Besides, the past possibility described by imparfait being unbounded, it may very well persist until and after ut-T; (2) is thus acceptable even the state of the freezer has not changed (problem [i.] is not raised either).

5. Proposal (III). Present perfect vs present on epistemic modals (7) vs (8) and (2) vs (4)). The contrast between (7) and (8) as follows. In (8), given the present perfect, the possibility that P is verified is presented as over at ut-T (i.e. MOD-T totally precedes ut-T); it is thus contradictory to locate ADJ-T after ut-T by the adverbial demain. Indeed, locating the possibility that P in the past, but P in the future generates a contradiction: at any interval P is true, ♢P should be true too. On the other hand, the present and the imparfait describing unbounded events, (8) describes an unbounded possibility, either located in the present, or in the past (with the pouvoir-version). In both cases, the unbounded possibility can perpetuate after ut-T, and consequently, the aforementioned contradiction vanishes. Besides, we can explain the (in)felicity of (4) in our 3 contexts. (4) is unfelicitous in C1 for the same reason [i] above than (3) (in (4) as in (3), EVAL-T>ut-T). However, contrary to (4), (3) is acceptable in C2. If the ‘perfect infinitival’ was always a perfect, this should be problematic: (4) would then mean ‘from what I [=Sophie] knows now, it is now possible that there has been (perfect) in the past some ice cream in the freezer’. But then, Sophie would justify her attempt to open the freezer by (4) expressing the belief that the freezer might contain no ice-cream anymore, which is not rational. If (4) is a rational answer in C2, it is because the ‘infinitival perfect’ being the only way to express a past under a (present) modal (cf. Hofmann 1976, Eide 2003, Zwarte 2007), it does not systematically have a perfect value. Thus, (4) rather means ‘from what I [=Sophie] knows now, it is now possible that there was (imperfect) [and still is] some ice cream in the freezer’.

To conclude, the subtle distribution of tense/aspect morphology on French modals suggests that the reason that past modals resist an epistemic reading is not so much that epistemic modality cannot be in the scope of the past, but rather that epistemic modality is incompatible with perfective aspect (Boogaart 2007), and present perfect forms are in principle compatible with this modality because they have non perfective readings.