

Modals and perfect morphology*

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Abstract

This paper argues for a correlation between the distribution and interpretation of sequences in which perfect morphology is realized on a modal verb, on the one hand, and the semantics of perfect morphology, more precisely the stage reached by present perfects on the aoristic drift, on the other. Contemporary French, which shows a neat preference for higher perfects, is contrasted with European Spanish, which regularly exhibits epistemic readings for modals bearing perfect morphology without a general preference for higher perfects. Confirmation for the initial correlation is derived from an examination of Classical French and Latin American Spanish varieties.

Keywords: modal verbs; perfect morphology; epistemic readings; counterfactual readings; actuality entailment; aoristic drift; viewpoint aspect; relative tenses

Resum. *Els modals i la morfologia del perfet*

Aquest treball argumenta que existeix una correlació entre la distribució i la interpretació de les seqüències en què la morfologia de perfet apareix realitzada en un verb modal, d'una banda, i la semàntica de la morfologia de perfet, més concretament l'estadi assolit pels presents perfets en la seva evolució cap a l'aorist, de l'altra. El francès contemporani, que mostra una preferència nítida pels perfets alts, es posa en contrast amb l'espanyol europeu, que exhibeix de manera regular lectures epistèmiques dels modals que duen morfologia de perfet sense que hi hagi una preferència general pels perfets alts. Les dades del francès clàssic i de les varietats de l'espanyol latino-americà confirmen la correlació assenyalada.

Paraules clau: verbs modals; morfologia de perfet; lectures epistèmiques; lectures contrafactives; implicació d'actualitat; deriva cap a l'aorist; aspecte de perspectiva; temps relatiu

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1. Introduction

In this paper, I would like to bring together two strands of research, bearing on the question of the semantics of perfect morphology, on the one hand, and on the interactions of modal verbs with tense and aspect categories, on the other, in the hope that they may shed light on one another. Both research areas have been quite well explored in formal linguistics, but the field is far from having reached generally agreed upon analyses and is characterized by a tension between the theoretical desideratum of uniform and simple analyses and the complexity of the data that should be accounted for. Even if the wisdom of bringing together these two strands of research may therefore seem questionable, recent attempts at understanding the interactions between modal verbs and perfect morphology (Condoravdi 2002; Demirdache & Uribe-Etxeberria 2008a, 2008b, 2014; Eide 2011; Mari 2015) have succeeded in making some important patterns emerge. My aim in this paper is to bring to light yet one such pattern, a correlation between the possibility of epistemic readings for modals bearing perfect morphology and the process by which perfect morphology becomes an exponent of Tense. This correlation reinforces the hypothesis that modal verbs –even epistemic ones– are merged below the Tense projection (*pace* Cinque 1999; Hacquard 2006, and in agreement with Demirdache & Uribe-Etxeberria 2008b, 2014; Rullman & Matthewson 2017) and suggests that there is a diachronic process, which I will dub PERFECT RAISING, by which perfect morphology “migrates” from a lower structural position where it contributes an $\langle\langle \epsilon, st \rangle, \langle i, st \rangle\rangle$ operator, an aspect, to higher positions where it contributes either an $\langle\langle i, st \rangle, \langle i, st \rangle\rangle$ operator, a relative tense, or an interval t with certain presuppositions, an absolute “tense-as-pronoun”. The data I will analyse come from different regional varieties of Spanish and from Contemporary and Classical French.

2. Modals and perfects: some puzzles

In English, modal verbs cannot bear perfect morphology, so that the only possible combination of a modal with perfect morphology requires the exponent of perfect morphology to be realized on the infinitival complement of the modal, as in (1a-b):

- (1) a. Mary may have reported the accident to the police.
 b. Mary might have reported the accident to the police.

Whereas (1a) can only have an epistemic reading,¹ (1b) is at least two-way ambiguous between a construal of weak epistemic possibility, paraphrased in (2a), and a counterfactual construal, paraphrased in (2b):

- (2) a. According to the evidence now available, it is possible that Mary reported the accident to the police at some time before now.
- b. At some time before now, it was (still) possible for Mary to report the accident to the police.

In the influential account of this ambiguity developed by Condoravdi (2002), the two readings differ as to the site of interpretation of perfect morphology. In the epistemic construal, perfect morphology is interpreted *in situ*, whereas in the counterfactual construal it covertly raises above the modal. The different temporal configurations involved are held to be ultimately responsible for the emergence of the two construals. When perfect morphology is interpreted *in situ*, it determines temporal orientation (TORIENT), the relationship between the time of the situation described in the complement of the modal and the time of modal evaluation. When it is interpreted above the modal, it determines temporal perspective (TPERSP), the time from which the modal conversational background is accessed which restricts the domain of worlds (set of possibilities) the modal quantifies over. If the anteriority relationship contributed by the perfect results in a past TORIENT, only an epistemic construal is licit, since alternatives in the past can only be the ignorance alternatives of an epistemic agent who does not know the facts of the matter.² If it results in a past TPERSP, backshifting of the time of modal evaluation gives rise to the implicature that the possibility referred to cannot be retrieved from the present—that it has been discarded by the course of events –, hence the counterfactual construal. Table 1 summarizes the account.

By contrast with the situation in English, a number of well-described languages allow perfect morphology to be realized either on the infinitival complement of the modal or on the modal itself, thus having both the MODAL > PERF-INF and the

Table 1. Epistemic and counterfactual construals according to Condoravdi (2002)

| | TPERSP | TORIENT | MODAL BASE | CONSTRUAL |
|------------------|---------|---------|----------------|----------------|
| MODAL > PERF-INF | present | past | epistemic | epistemic |
| PERF > MODAL | past | future | circumstantial | counterfactual |

1. For the time being, we are setting aside future-perfect-like readings anchored to a forward-shifted reference time, as in *Mary must have reported the accident to the police before noon today if she wants to get any insurance payment*. See Demirdache & Uribe-Exteberria (2008a) for the temporal and aspectual configurations involved in such readings.
2. On the pragmatic diversity condition requiring that modals operate against a background of distinct alternatives, see Condoravdi (2002), Laca (2012), Falauts & Laca (to appear), Rullmann & Matthewson (2017).

PERF > MODAL linearisations options. Most of them have been reported to exhibit epistemic readings for the MODAL > PERF-INF option, but not for the PERF > MODAL option (cf. Picallo 1990 on Catalan, Eide 2011 and the literature cited therein on Germanic languages). This is exemplified for Catalan in (3a-b) and for German in (4a-b):

- (3) a. En Joan pot haver anat a Banyoles. ✓EPISTEMIC
 the Joan can.PRES have.INF go.PP to Banyoles
 ‘Joan may have gone to Banyoles’
- b. En Joan ha pogut anar a Banyoles. *EPISTEMIC
 the Joan have.PRES can.PP go.INF to Banyoles
 ‘Joan has managed to go to Banyoles’
- (4) a. Er muss das Zimmer aufgeräumt haben. ✓EPISTEMIC
 he must.PRES the room tidy.PP have.INF
 ‘He must have tidied up the room’
- b. Er hat das Zimmer aufräumen müssen. *EPISTEMIC
 he have.PRES the room tidy.INF must.INF
 ‘He had to tidy up the room’

Against this background, the situation in Contemporary French and European Spanish is unexpected. In both languages, epistemic readings are possible both for the MODAL > PERF-INF and for the PERF > MODAL options:

- (5) a. Il doit avoir fait un gros effort.
 he must.PRES have.INF make.PP a big effort
- b. Il a dû faire un gros effort.
 he have.PRES must.PP make.INF a big effort
 ‘He must have made a great effort’
- (6) a. Debe haber gastado un dineral.
 must.PRES.3SG have.INF spend.PP a fortune
- b. Ha debido gastar un dineral.
 havePRES.3SG must.PP spend.INF a fortune
 ‘He must have spent a fortune’

The sequence MODAL > PERF-INF has –but for few exceptions, cf. footnote 1– the epistemic reading, and it is well attested in Spanish but dispreferred, in fact extremely rare in French.³ The sequence PERF > MODAL is ambiguous between the

3. A sample of the Frantext corpus comprising 148 literary texts published between 1990 and 2000 (total number of words ca. 12 million) gives 1900 examples for PERF > MODAL-*devoir* and only 34 examples for MODAL-*devoir* > PERF-INF. Moreover, the latter, clearly dispreferred order does not have an epistemic reading in about one third of the cases, but a deontic reading in the configuration

epistemic construal and a reading not discussed by Condoravdi (2002),⁴ but well known in the literature on temporal-modal interactions (see Borgonovo & Cummins 2007, Hacquard 2006, 2009) as the actuality-entailment reading. In such a reading, the modal verb is easily paraphrased by implicative predicates,⁵ as in (7a), and the modalized sentence asserts that the situation described in the complement of the modal obtains in the actual world (7b).

- (7) a. Se ha visto obligado a gastar un dineral.
 refl have.PRES.3SG see.PP oblige.PP to spend.INF a fortune
 ‘He’s been forced to spend a fortune’
- b. Ha debido gastar un dineral = Ha gastado un dineral.
 ‘He has had to spend a fortune’ = ‘He has spent a fortune’

Recent work by Matthewson (2011) strongly suggests that the actuality entailment is characterized by a present TORIENT, in which there is simultaneity between the time of the described situation and the time from which the domain of worlds is accessed. TPERSP can be assumed to be free –it is past in examples (5b) and (6b)–, but there are compelling reasons to assume that the aspect scoping above the modal plays a crucial role in the emergence of the actuality entailment (cf. Hacquard 2009; Borgonovo & Cummins 2007).

Notice that the counterfactual reading attributed by Condoravdi (2002) to the (interpretive) PERF > MODAL scope ordering seems to be absent from examples like (5b) and (6b), with an overt PERF > MODAL ordering. Borgonovo & Cummins (2007) and Demirdache & Uribe-Etxeberria (2008a, 2008b) categorically exclude it for French and Spanish. However, as we will see below (cf. sections 5 and 6), there is considerable variation on this point in both languages, diachronic variation in French and regional variation in Spanish. Counterfactual readings with perfect morphology are most prominent in the presence of an additional ingredient, counterfactual (conditional) morphology on the modal verb. This is not unexpected, since the only modal verbs that allow for counterfactual readings in English are those in the series *could*, *might*, *should*, *ought*, weak possibility or weak necessity modals bearing the traces of past/subjunctive morphology, which have been analysed as confluents with counterfactual morphology (von Stechow & Iatridou 2008). What is indeed unexpected is that there should be a clear difference between French and Spanish as to the pre-

classified by Demirdache & Uribe-Etxeberria (2008a) as a future perfect construal (see footnote 1 above). By contrast, the preferred order exhibits epistemic readings in 51 out of the first 100 occurrences. This is a significant proportion, because the preferred order is apt to have any possible reading to the exception of the future perfect construal.

4. Condoravdi (2002) explicitly restricts her analysis to non-root modals, and the actuality entailment reading only arises with root modals.
5. Implicative predicates (Karttunen 1971) are defined as those predicates that entail the truth of their complement, while their negation entails its falsity. Sentences containing implicative predicates such as *manage* or *be forced to* are usually analyzed as asserting the proposition obtained by abstracting from the implicative predicate (this would be their *at-issue* content), while carrying additional pre-suppositions as to the effort required from or the desires and plans entertained by an agent.

ferred order (Laca 2012): whereas in French the dominant order is $PERF_{COND} > MODAL$ (8), in Spanish the dominant order is $MODAL_{COND} > PERF-INF$ (9):

- (8) Le § 92 qui, dans ce partage, aurait dû se trouver au début de la deuxième partie, avait été, par erreur, coupé.
 the § 92 which in this division have.COND must.PP REFL find.INF to+the beginning of the second part have.IMPF be.PP by error cut
 ‘Paragraph §92, which according to this division should have introduced the second part, had been inadvertently left out’

- (9) Su argumentación falla en el camino seguido en la deducción, que debería haber sido el inverso.
 his/her argumentation fails in the path followed in the deduction that must.COND have.INF be.PP the reverse
 ‘His/her argument is flawed in the path of deduction followed, which should have actually proceeded in the reverse order’

Although unexpected from the point of view of Condoravdi’s analysis of the English ambiguity illustrated in (2a-b) above, the respective preferred orders in the counterfactual case confirm the trend discussed for the epistemic readings: in French, the linearisation $PERF > MODAL$ is dominant and may have any reading, in Spanish the linearisation $PERF > MODAL$ may give rise to epistemic readings, but it is under strong competition by the linearisation $MODAL > PERF-INF$. Table 2 summarizes the findings for Contemporary French and European Spanish.

Apart from its clear preference for HIGHER PERFECTS, that is to say, for the linearisation $PERF > MODAL$, Contemporary French differs from Spanish in the fact that

Table 2. Epistemic, counterfactual and actuality entailment construals in Contemporary French and European Spanish

| | CONSTRUAL | |
|---------------------------|-----------------------------------|-----------------------------|
| $MODAL > PERF-INF$ | <i>French (rare)</i> epistemic | <i>Spanish</i> epistemic |
| $PERF > MODAL$ | <i>French</i> epistemic | <i>Spanish</i> epistemic |
| | actuality entailment | actuality entailment |
| $MODAL_{COND} > PERF-INF$ | <i>French (rare)</i> epistemic | <i>Spanish</i> epistemic |
| | | counterfactual |
| $PERF_{COND} > MODAL$ | <i>French</i> epistemic | <i>Spanish</i> |
| | counterfactual | counterfactual |

its PRESENT PERFECT⁶ may function unrestrictedly as an absolute past tense, being the only exponent for a perfective past tense (aoristic past) in the spoken varieties, from which it has ousted the older SIMPLE (PERFECTIVE) PAST. In European Spanish, by contrast, the PRESENT PERFECT exhibits clearly aorist-like uses (see below, Section 2), but these are still confined to hodiernal contexts in a way that signals it unmistakably as a relative tense (aoristic anterior). I would like to claim that there is a double correlation between the distribution and interpretation of perfect morphology with modals and the semantic profile of the PRESENT PERFECT, such that:

- (i) the preference for HIGHER PERFECTS with modal verbs correlates with the possibility for the PRESENT PERFECT to function as an absolute past tense, and
- (ii) the possibility of epistemic readings for the linearisation PERF > MODAL correlates with the possibility for the PRESENT PERFECT to have aorist-like uses.

This correlation will be confirmed first by a comparison with the situation in Classical French, which shows tantalizing similarities with the situation in Contemporary European Spanish, and then with the situation in (most varieties of) Latin American Spanish. The latter differ from European Spanish both in the dearth of aorist-like uses of the PRESENT PERFECT and in the dearth of epistemic readings for the linearisation PERF > MODAL. Before proceeding to these comparisons, however, it is necessary to devote some space to the semantics of perfect morphology and to the question of the position of modal verbs in the architecture of the clause.

3. The semantics of perfect morphology

As has been implicit in the previous section, I'm using the label "perfect morphology" to refer to the construction consisting of a past participle and an auxiliary ('have'/'be'), which will be treated as a grammatical idiom.⁷ The semantics of this construction is known to be subject to considerable cross-linguistic macro- and micro-variation. Even in an ideally homogeneous dialect, the construction is characterized by a cluster of uses which do not have at first blush a uniform semantics. The by now traditional distinction between perfects of persistent situation (or uni-

- 6. Since we are dealing with different languages and with only partially overlapping semantic categories, I adopt small capitals for labels which only take into account the morphological makeup of the forms in question. PRESENT PERFECT means thus perfect morphology with the auxiliary in the present tense, PLUPERFECT perfect morphology with the auxiliary in a (non-perfective) past tense, and so on.
- 7. The implication is that I definitely do not assume that perfect morphology is an exponent of perfect aspect in all of its uses. The aoristic-like uses as an anterior or as a past tense, which are crucial for the correlations introduced in the previous section, are not instantiations of perfect aspect (see, for instance, Schwenter & Torres Cacoullos 2008, who label these uses of the PRESENT PERFECT hodiernal and past *perfective*, respectively). In treating compound perfect morphology as a grammatical idiom, I follow the semantic tradition according to which the whole construction contributes a semantic operator, as opposed to the compositional syntactic tradition inaugurated by Giorgi & Pianesi (1997), in which its semantic contribution is distributed over the participle and the auxiliary (see also Carrasco Gutiérrez 2008).

versal perfects), experiential (or existential) perfects, perfects of result and perfects of recent past (*hot news* and/or hodiernal perfects) bears witness to this variation (cf. Comrie 1976 and much work thereafter).

Most formal work on perfects has concentrated on the search for an analysis that could uniformly account for this array of readings. Such analyses fall into three main families: (i) *(neo)-Reichenbachian theories*, according to which perfect morphology uniformly contributes an anteriority relation between two disjoint intervals, the time of the event and reference time; (ii) *post-state-theories*, according to which perfect morphology contributes an operator mapping the described eventuality onto its post-state; (iii) *XN (perfect time-span)-theories*, according to which perfect morphology contributes an interval whose final subinterval is the reference time (Schaden 2009, 2007; Laca 2010). All existing analyses can be said to share the property of relying on an anteriority relation at some point of the semantic definition, but they differ widely as to the relata of this relation, which may be a relation between two disjoint intervals, a relation between two eventualities (in some post-state-theories), a relation between an eventuality and an interval, or a relation between an interval and its final subinterval.

The account of the interaction of perfect morphology with modals developed in this paper exploits these differences in the relata and will not strive for a monosemous semantics for perfect morphology. To establish the double correlation introduced at the end of the previous section, it is crucial to distinguish between perfect morphology as an exponent of perfect aspect, perfect morphology as an exponent of a relative tense, and (present) perfect morphology as an exponent of an absolute past tense.

In the original Reichenbachian account, perfects are **relative tenses**, and as such, they are conceived of as relations between times (the time of the event precedes R, the time that will be located with regard to Speech Time). But the possibilities of analysis increase exponentially with the (necessary) refinements ensuing both from the introduction of event semantics –according to which v/VPs are predicates of eventualities and not predicates of times– and from the introduction of time-relational or viewpoint aspect as a necessary component which ensures the mapping of properties of eventualities onto properties of intervals (Smith 1991; Klein 1994).

In fact, viewpoint aspect comes with its own interval: the “interval of visibility” which is ordered with regard to the temporal trace of the eventuality (τ (e)). Following Demirdache & Uribe-Etxebarria (2008a,b; 2014) I will note this interval AST-T.⁸ The introduction of AST-T has paved the way for the possibility of treating

8. Labels are attributed in order to keep track of the relevant intervals, so that nothing hinges on the label adopted for the present discussion. The central point that will emerge from this section is the necessary distinction between an interval which is ordered with regard to the temporal trace of the eventuality (noted here AST-T) and an interval which is located with regard to Speech Time (noted here R). If there is, as we believe, a difference between relative tenses and viewpoint aspects, these two intervals do not necessarily coincide. There is a bewildering variation in the relevant literature as to the names attributed to those two intervals when they are kept distinct. See Schaden (2007) for an explicit defense of a four-tiered approach to temporal relations and Rullman & Matthewson (2017) for an implicit four-tiered approach in which relative tenses are identified with “ordering aspects”.

At first sight, these two different analyses are candidates for Ockham's razor, and a number of approaches have pleaded for one or the other as "the semantics" for the perfect (see for instance Klein (1994) in favor of "the perfect" as a time-relational aspect, Schaden (2007) in favor of "the perfect" as a relative tense). However, some researchers acknowledge an actual ambiguity of perfect morphology, which can be evidenced in the case of the PLUPERFECT by (a) the interpretation of punctual time adverbials and (b) the possibility for PLUPERFECTS of establishing narrative sequences.

Thus, García Fernández (2008), Carrasco Gutiérrez (2008) and Böhnemeyer (2014) –in the wake of Comrie (1976)– assume that the different interpretations of the punctual time adverbial in (14a) and (14b) correlate, respectively, with a perfect viewpoint aspect, and with an aoristic anterior relative tense:

- (14) a. Bill had arrived at six o'clock. I arrived at six sharp and he was already half done with his meal, so he must have gotten there a lot earlier.¹⁰
- b. Bill had arrived at six o'clock and had left again at seven. The inspector did not arrive until eight. [examples from Böhnemeyer 2014]

In (14a) the locating adverbial gives a time that is (included in a time) after Bill's arrival, in (14b) it gives a time that coincides with Bill's arrival. Under the assumption that locating time adverbials modify AST-T –or, correspondingly, that only what is made visible by AST-T can be located in time, (14a) exemplifies the configuration in (13b), with AST-T following $\tau(e)$ or, equivalently, included in the post-state of e . By contrast, (13b) exemplifies the aoristic configuration in (14a), in which AST-T is coextensive with $\tau(e)$.

As for narrative uses of the PLUPERFECT, Kamp & Reyle (1993: §5.4) observe that uses of the PLUPERFECT in extended flashbacks as in (15) cannot be accounted for by their theory of perfects as post-states:¹¹ they are "non-perfect" PLUPERFECTS which induce narrative progression.

- (15) Fred arrived at 10. He had gotten up at 5; he had taken a long shower, had got dressed and had eaten a leisurely breakfast. He had left the house at 6:30.

10. A reviewer remarks that (14a) would sound better with *already* and a fronted adverbial: *At six o'clock, Bill had already arrived*. I agree with this judgement, which might be construed in the sense that locating time adverbials favor the aoristic interpretation, so that additional explicit clues are necessary for the perfect interpretation, *already* being an unambiguous indicator of perfect aspect. In the analysis developed by Demirdache & Uribe-Etxebarria (2004), the difference between (14a) and (14b) is attributed to a different site of adjunction for the time adverbial, as a modifier of AST-T or, respectively, of EVENT-T. As stated above, we make a different assumption, namely that locating time adverbials uniformly restrict AST-T.
11. Kamp & Reyle (1993) are writing at a time before the general adoption of time-relational or viewpoint aspects. Therefore, their definition of perfects is formulated in terms of eventuality modification (operators returning the result state of an eventuality). They use this sort of data to split the Reichenbachian R into a Perspective Time (which is located by Tense) and a Reference Time (which accounts for narrative progression). What is relevant for our purposes is that they explicitly acknowledge that the PLUPERFECTS in (15) are not associated with perfect aspect.

Narrative progression, such as the one established among the events reported in (15), involves reference-shift, moving forward of AST-T with each new event. And reference-shift is known to be associated with aoristic viewpoint aspect and incompatible with perfects (see, among many others, Lindstedt 2000; de Swart & Molendijk 2002).

Now, uniform analyses are as a rule to be preferred over analyses positing ambiguities, but in this particular case, a virtue can be made out of necessity. As stated in the first paragraph of this section, the distribution and interpretation of perfect morphology is subject to considerable macro- and microvariation. Grammaticalization theory has claimed for a long time that perfects of the *have/be + past participle*-kind are but an unstable intermediate stage on a diachronic evolution path whose source is a result-state construction and whose final (but in no way necessarily attainable) destination is a past tense (cf. Bybee & Dahl 1989; Bybee, Perkins & Pagliuca 1994; Squartini & Bertinetto 2000). Perfects evolve, and diachronic evolution does not necessarily obliterate previous form-meaning associations. It is thus at least plausible that perfects as viewpoint aspects and perfects as relative tenses, while remaining semantically distinct, coexist synchronically as related stages on a diachronic evolution path.¹²

As a matter of fact, this very same ambiguity is assumed for the PRESENT PERFECT in Catalan and European Spanish by Pérez Saldanya (2002), Curell (2002), Martínez Atienza (2008), Carrasco Gutiérrez (2008), RAE-ASALE (2009). In both languages, this form exhibits the uses that have led to analyse some occurrences of PLUPERFECTS as aoristic anteriors, i.e. as relative tenses: punctual time adverbials apparently locating the time of the eventuality, and narrative progression. (16a-b) illustrates the former for Catalan and Spanish, the Spanish example (17) shows PRESENT PERFECTS in a narrative sequence, one of them occurring moreover in a temporal *when*-clause:

- (16) a. Ha arribat aquest matí a les set.
 have.PRES.3SG arrive.PP this morning to the seven
 ‘S/he arrived this morning at 7 o’clock’
- b. El concejal de cultura se ha marchado a las siete de la
 the councilor of culture REFL have-PRES leave.PP to the seven of the
 tarde.
 evening
 ‘The councilor for Culture left at 7 p.m.’

[examples from Martínez Atienza 2008]

12. The search for uniform semantic analyses is methodologically sound, but it contributes to obscure the existence of such meaning constellations, particularly when one of the meanings involved has less constrained occurrence privileges –and is therefore more general– than the others. It is the merit of Schwenter (1994) to have identified a crucial transitional stage in the semantics of the (PRESENT) PERFECT: the “hot news”/hodiernal uses, which deviate from the semantic profile of perfect aspect and constitute instances of an aoristic anterior (their status as anteriors, i.e. as relative tenses, accounts for the current relevance or limited temporal distance constraint). See also Ritz & Engel (2008) on Australian English, whose (PRESENT) PERFECT seems to have reached this transitional stage.

- (17) Esta mañana cuando **he** **salido** al jardín Gladys me
 this morning when havePRES.1SG go-out.PP to+the garden Gladys me
ha **llamado**, como anoche. Ya estaba fuera,
 havePRES.3SG call.pp like yesternight already was outside
 esperándome. **He** **ido** a su instalación, me **he**
 waiting+me havePRES.1SG go.PP to her installation me havePRES.1SG
asomado a la ventana de su dormitorio y, ¿adivinas lo que
 peek to the window of her bedroom and guess the that
he.PRES.1SG **visto** entre sus patas?
 have.PRES.1SG see.PP between her paws
 ‘This morning, when I went to the garden Gladys called me, as last night. She
 was already outside, waiting for me. I went to her cabin, peeked through her
 bedroom window and guess what I saw between her paws?’
 REAL ACADEMIA ESPAÑOLA: Banco de datos (CREA) [online]. *Corpus*
de referencia del español actual. <<http://www.rae.es>> [11/11/2008]

The same considerations that lead to argue that the PLUPERFECTS in (14b) and (15) are aorists (and not perfects), as far as viewpoint aspect is concerned, apply also to the PRESENT PERFECTS in (16a-b) and (17). But what about their status as relative tenses? Both the Catalan and the European Spanish aoristic PRESENT PERFECTS are reported to be restricted in their uses to a certain temporal distance from Speech Time, they are said to be *hodiernal* tenses subject to the 24-hour rule (cf. Brugger 1998; Martínez Atienza 2008; Curell 2002). Without taking stance as to the exactness of the 24-hour rule,¹³ we assume that the effects it is purported to capture –which involve mainly possible or mandatory combinations with locating adverbials such as *this morning*, *today*, *X hours/minutes ago*– bear witness to the fact that aoristic PRESENT PERFECTS are still related to Speech Time in such a way that the sentences containing them predicate something about Speech Time. As such, they are **anterior presents**, which locate R in the present, just like **anterior pasts** locate R in the past.

The question now arises as to what differentiates the Catalan and European Spanish aoristic PRESENT PERFECTS from the uses of the French PRESENT PERFECT exemplified in (18a-b):

13. The results in Schwenter & Torres Cacoulios (2008) confirm the hodiernal status of the European Spanish PRESENT PERFECT, in as far as it is almost categorical in hodiernal contexts and its rate in such contexts is not affected by the presence of specific temporal adverbials.

- (18) a. Nora et Simon ont quitté le township il y a
 Nora and Simon have.PRES leave.PP the township it LOC-CL has
 quelques mois, d'après ce qu'on m'a dit. La
 some months of after DEM that IMP-CL me have.PRES tell.PP the
 dernière fois que je les ai vus, c'était à l'enterrement
 last time that I them have.PRES see.PP DEM was at the burial
 de Mary.
 of Mary
 'Nora and Simon left the township some months ago, so they tell me. The
 last time I saw them was at Mary's burial'.
 [C. Ferey. *Zulu*, Gallimard 2008]
- b. Quand j'étais jeune, comme on manquait d'argent, je me
 when I was young as IMP-CL lacked of money I me
 suis engagé comme domestique.
 be.PRES engage.PP as servant
 'When I was young, since we needed money, I took a job as a servant'

The French PRESENT PERFECT in contemporary informal language does not necessarily show any privileged relation to Speech Time. Many of its occurrences do not comply with any ascertainable "current relevance" condition. Having successfully evinced the inherited SIMPLE (PERFECTIVE) past, it may function as an **absolute past tense**: sentences containing it may predicate something about a time strictly preceding Speech Time.

According to Partee (1973) and Kratzer (1998), absolute tenses can be modelled as pronouns: they provide a temporal variable for an interval whose value is to be determined from the context and which comes with a presupposition restricting its location with regard to the time of evaluation. This temporal variable is so to say the "subject" to which the temporal property obtained from an eventuality description by means of viewpoint aspect and (optional) relative tense operators is applied. Absolute tenses are not operators, but variables. They close off a temporal derivation, in such a way that the result of applying a temporal property to the variable provided by an absolute tense is a proposition (a property of worlds) and not a property of intervals. (19a-b) gives the definition for an absolute present and for an absolute past, respectively:

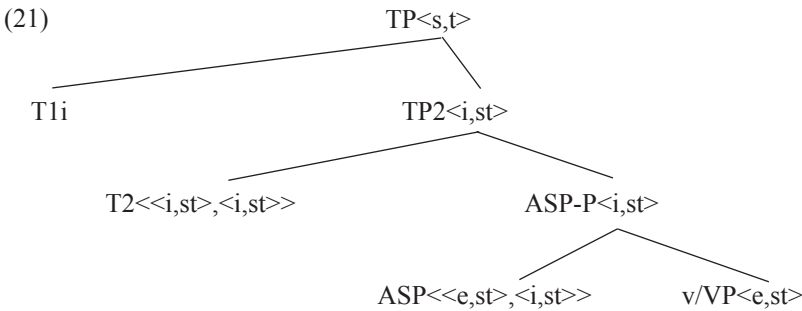
- (19) a. $[[\text{PRES}]] = t [t=t_0]$
 b. $[[\text{PAST}]] = t [t < t_0]$

In these definitions, t_0 is the time of evaluation (which in canonical root clauses coincides with Speech Time), and the condition in square brackets is the presupposition associated with the absolute tense.

The peculiarity of the Contemporary French PRESENT PERFECT is that, in some of its uses, it is an **auristic absolute past**. The temporal configuration it is associated with is schematically represented in (20):

- (20) R [R<t₀>]
 [AST-T]
 [EVT-T]

To summarize, the gist of the previous discussion is that perfect morphology may be associated with three type-logically distinct semantic representations, an <<ε, st>, <i, st>> operator (a viewpoint aspect), an <<i, st>, <i, st>> operator (a relative tense), and a time variable of type i (an absolute tense), the latter possibility being restricted to the PRESENT PERFECT. Because they are type-logically distinct, they are bound to merge each at a certain position in the syntactic structure. (21) gives a skeletal architecture for these positions:



It is conceivable that perfect morphology in a language may be associated with only one type-logical representation, or with more than one of them. In the latter case, we would not be dealing with fortuitous ambiguity –which is, of course, not the type of analysis one should strive for– but with a constellation of meanings arising from diachronic evolution in which the same semantic core, an anteriority relation, is merged at different layers of the structure. This is nothing but one possible application of two of the central ideas put forth by Roberts & Roussou (2003), namely, (i) that, from a formal point of view, grammaticalization amounts to “upward reanalysis”, and (ii) that semantic/syntactic variation of a morphological exponent can often be understood as the merging of the same material at different positions in the architecture of the clause.

In the foregoing discussion, we have addressed some symptoms that indicate which type-logical representations different occurrences of perfect morphology are associated with –and, correspondingly, which layer of structure they are merged at. Thus, lack of any “current relevance” or temporal distance constraints is a symptom that (present) perfect morphology can be merged at T1, as an absolute tense (*past*); narrative progression and punctual time adverbials locating the time of the eventuality are symptoms that perfect morphology is merged at T2, as a relative tense (*anterior*), and so forth. Now, one of the claims I would like to make is that the interactions of modal verbs with perfect morphology may provide further indirect evidence in this regard.

4. Modal verbs in the architecture of the clause

The debate as to the position occupied by modal verbs in the architecture of the clause is inextricably linked to the distinction between different readings of modals introduced in the first section of this paper. Most studies on modals assume a two-fold distinction between epistemic and root interpretations, the traditional claim being that epistemic modals scope high (IP-level) and root modals scope low (VP-level) (Ross 1969; Perlmutter 1971; Jackendoff 1972; Huddleston 1974; Iatridou 1990; Picallo 1990; Brennan 1993; Cinque 1999; Butler 2004; Hacquard 2006).

More often than not, the claim that epistemic modals scope high has been taken to mean that epistemic modals scope above Tense. This claim, which is syntactic in nature, is not always easy to tease apart from the semantic claim according to which epistemic readings can only have a present or simultaneous Tpersp, their time of modal evaluation not being shiftable by Tense. This unclarity is quite perceptible, for instance, in Cinque's (1999) cartographic approach. The relevant part of the hierarchy he postulates is given in (22):

$$(22) \text{Modal}_{\text{Epistemic}} > \text{T(Past)} > \text{T(Future)}$$

Now, according to (22), epistemic modals merge above Tense, but crucially, Tense is specified as *past* (or *future*). Nothing is said about *present* or, for that matter, *zero* tense.

The syntactic claim that epistemic modals merge above Tense has been recently questioned on morphological, syntactic and semantic grounds (cf. Homer 2010; Demirdache & Uribe-Etxeberria 2008a, 2008b; Rullmann & Matthewson 2018). There is in fact a simple argument showing that this assumption cannot be right. In Sequence of Tense contexts there are clear indications for an interpretable morphological contrast between (deictic) present and zero tenses with epistemic modals (cf. also Stowell 2004; Boogaart 2007). Thus, whereas (23a) allows for an interpretation in which the time of the (inferred) situation MARY-LIVING-IN-ROME is fully in the past, (23b) gives rise to a double access reading, in which the situation is inferred to obtain also at Speech Time. This explains the awkwardness of (23c):

- (23) a. Hace un año me dijeron que María debía estar viviendo en
 makes a year me tell.SP.3PL that Maria must.IMPF be living in
 Roma.
 Rome
 'A year ago I was told that Maria must (had to) be living in Rome'
- b. Hace un año me dijeron que María debe estar viviendo en
 makes a year me tell.SP.3PL that Maria must.PRES be living in
 Roma.
 Rome
 'A year ago I was told that Maria must (has to) be living in Rome'
- c. #Hace un año me dijeron que María debe estar embarazada.
 makes a year me tell.SP.3PL that Maria must.PRES be pregnant
 'A year ago I was told that Maria must (has to) be pregnant'

Under the reasonable assumption that the contrast between deictic and zero tenses is hosted by a Tense projection, the claim that epistemic modals necessarily scope above this projection is falsified by examples such as (23a-c).

Both Demirdache & Uribe-Etxeberria (2008a, 2008b) and Rullman & Matthewson (2017) propose structures in which modals merge below Tense, but above Aspect. There are very important differences between the two approaches, which it is impossible to discuss within the limits of this paper. But there is one crucial difference which bears directly on the issue we are addressing. Whereas the general architecture proposed by Rullman & Matthewson (2017) is meant to account for all modals, Demirdache & Uribe-Etxeberria (2008b) restrict it explicitly to non-root modals (those giving rise to the epistemic and arguably also to the counterfactual reading), and imply that root modals may merge below Aspect (Demirdache & Uribe-Etxeberria 2008b: 485). The structural difference between epistemic and root interpretations of modals is thus preserved, but it is the position of the modal with regard to Aspect, not with regard to Tense, that becomes criterial.¹⁴

The idea that root modals may merge below Aspect has been defended mainly on semantic grounds by Hacquard (2006, 2009), Borgonovo & Cummins (2007) and Homer (2010), who concentrate on the interpretive effects of Romance aspectual past tenses on modals and assume that such aspectual tenses introduce a viewpoint aspect in the configuration. It can be further substantiated by cases in which progressive morphology –which is undoubtedly an expression of viewpoint aspect– is overtly realized above a modal, as in the Spanish example (24):

- (24) Sólo los periodistas acreditados en Marruecos estamos pudiendo
 only the journalists accredited in Morocco be.PRES.1PL can.GER
 entrar estos días en el país, y con muchas dificultades.
 enter.INF these days in the country and with many difficulties
 ‘These days, only those journalists among us who have an accreditation in Morocco are managing to get into the country, and this with a lot of difficulties’

Corpus del español [20/07/2017]

Interestingly enough, such combinations invariably give rise to the actuality entailment readings discussed in Section 2. (24) entails that the journalists are actually getting into the country, and the possibility modal can be paraphrased by the implicative verbs *conseguir/lograr* ‘manage’.

In sum, making the difference between non-root and root modals hinges on their relative position with regard to Aspect makes it possible to maintain the original intuition of a difference between IP-level and VP-level modals without endorsing the problematic claim that epistemic modals merge above Tense. The proposal we are adopting, which is the one implied in Demirdache & Uribe-Etxeberria (2008b),

14. Homer (2010) also argues explicitly that epistemic modals merge below Tense and above viewpoint Aspect, whereas root modals merge below viewpoint Aspect.

sides with Rullmann & Matthewson (2018) and against Hacquard (2006, 2009) in assuming that all modals –even epistemic ones– merge below Tense, and with Hacquard (2006, 2009) and against Rullmann & Matthewson (2018), in assuming that root modals, by contrast with non-root modals, merge below Aspect.

The question now arises as to the semantic type of modals. The skeletal structure proposed in (21) is built on type-logical considerations by taking at face-value what viewpoint aspects, relative tenses and absolute tenses are generally supposed to contribute when deriving the temporal configuration of a clause. It is easy to see that modals merging into the structure above Aspect are most simply represented as $\langle\langle i, st \rangle, \langle i, st \rangle\rangle$ operators, as modifiers of properties of intervals, and this is precisely the type attributed to them by Rullman & Matthewson (2017). As such, they may take either the denotation of ASP-P or that of TP2 as their input:¹⁵

(25) $[_{MOD-P} MODAL_{non-root} [_{ASP-P} ASP VP]]$

(26) $[_{MOD-P} MODAL_{non-root} [_{TP2} T2 [_{ASP-P} ASP VP]]]$

On its turn, the output of the application of such a modal, MOD-P, may be the input for T2 or T1:

(27) $[_{TP2} T2 MOD-P]$

(28) $[_{TP1} T1 MOD-P]$

But what about the type of modals merging below Aspect? Since they apply to v/VP, which is a predicate of eventualities, they should be represented as $\langle\langle \epsilon, st \rangle, \langle \epsilon, st \rangle\rangle$ operators, i.e. as modifiers of eventuality descriptions.¹⁶ In fact, this is the type of denotation for root modals proposed by Hacquard (2006, 2009) in order to deal with the actuality entailment. Root modals could thus only be merged between ASP and VP:

(29) $[_{ASP-P} ASP [_{MOD-P} MODAL_{root} VP]]$

Recall now that according to the discussion in the previous section, perfect morphology so to say starts its functional life as an exponent of ASP, but may come through diachronic evolution to span the Tense projections above it. From (25-28) it follows that perfect morphology combining with a modal in a non-root interpreta-

15. The difference between (25) and (26) might be exploitable, but this is a line of thought that we will not pursue in this paper. We assume that perfect morphology on infinitives may be an exponent of ASP or of T2. In fact, the difference between perfect (ASP) and aoristic (T2) profiles for perfect morphology extends to perfect infinitives and, arguably, to absolute participles (see the discussion in Carrasco Gutiérrez 2008).

16. The same intuition underlies Picallo's (1990) original proposal, in which root modals are treated as VP-adjuncts, and Borgonovo & Cummins (2007) analysis of the actuality entailment readings, in which according to them the modal contributes a VP-modifier.

tion can only be in T2 or T1. By contrast, if modals consistently exhibit actuality entailment readings when combined with perfect morphology, this strongly suggests that perfect morphology is confined to ASP. We now turn to the two case studies supporting the correlations introduced at the end of Section 2.

5. Perfect and modals in Classical French

Our examination of Classical French is based on a sample of the Frantext corpus comprising 607 texts dated between 1600 and 1700 with a total number of words of 24.380.000. In it, the ordering PERF > MODAL-*devoir* has 289 occurrences, against 168 occurrences for the ordering MODAL-*devoir* > PERF-INF. The distribution is thus much more balanced than the corresponding 1900/34 ratio we had found for the contemporary sample (cf. footnote 3). The sheer force of numbers indicates that, as far as linear position with regard to modals is concerned, a process of PERFECT RAISING must have taken place between Classical and Contemporary French, by which the canonical, almost exclusive site of realization of perfect morphology becomes the position above the modal verb in the latter. This explains also why the ordering MODAL > PERF-INF is sometimes taken to be a syntactic characteristic of Classical French (Fournier 1998), even if it is not clearly dominant.

As for its possible interpretations, the ordering MODAL-*devoir* > PERF-INF entirely lacks actuality entailment readings, as it is to be expected if these readings arise when the modal merges below ASP. All the other construals are represented, depending to a certain extent on the tense of the modal.

Counterfactual construals arise when the modal bears conditional or past morphology, as illustrated by the following examples:¹⁷

- (30) a. Il devroit avoir parlé d' Erasme, lorsqu' il parle de
 he must.COND have.INF speak.PP of Erasmus when he speak.PRES of
 l' institution des professeurs du roy,
 the institution of+the teachers of+the king
 mais comme il est cagot et trop scrupuleux pour un philosophe, il ne l'
 aime pas
 'He should have mentioned Erasmus when he speaks about the education
 of the king's teachers, but being a bigot and too filled with scruples for a
 philosopher, he doesn't like him' [399]
- b. puis que vous voulez que ce soit moy qui vous die
 ce que vous me deviez avoir dit il y a long
 DEM that you me must.IMPF have.INF tell.PP it LOC-CL have.PRES long
 temps...[188]
 time
 'Since you want me to be the one to tell you what you should have told me
 a long time ago...'

17. Unless otherwise stated, all the examples are taken from Frantext, version December 2016, [14/10/2017].

Epistemic construals arise when the modal bears conditional, past or present morphology:

- (31) a. et l' on se moqueroit d' un homme, qui supposeroit des lettres
 qui devroient avoir été écrites il n' y a pas
 which must.COND have.INF be.PP write.PP it NEG LOC-CL have.PRES NEG
 long-tems à des sociétés entières, des epistres qui devroient se
 long-time to ART societies whole ART epistles which must.COND REFL
 trouver entre les mains d' une infinité de personnes, [815]
 find between the hands of a infinity of persons
 'and a man would be laughed at who imagined letters which would have
 supposedly been written not long ago to whole societies, epistles which
 would be in the hands of a great number of people'
- b. elle se douta bien que ce lieu devoit avoir autrefois été
 she REFL doubt.SP well that this place must.IMPF have.INF formerly be.PP
 la retraite de quelque druide. [208]
 the retreat of some druid
 'She suspected that that place must have been in ancient times the retreat
 of some druid'
- c. C'était votre recteur de Saint-Andiol ?
 Vous devez avoir eu de grandes conversations avec lui ;
 you must.PRES have.INF have.PP ART great conversations with him
 rien n' est plus curieux que de savoir d' original ce qui se passe dans cette
 maison. [769]
 'Was he your Rector at Saint-Andiol? You must have had great conversa-
 tions with him, nothing is more interesting than to learn from the original
 source what happens in that house'

Finally, we find deontic construals in which the anteriority relation contributed by the perfect infinitive is computed with regard to a temporal adverbial or adverbial clause. These construals exhibit the same temporal configuration as the future-perfect construals identified by Demirdache & Uribe-Etxeberria (2008a), but for the fact that the anchor for anteriority is not a future reference time, but, due to the generic nature of the context, a recurrent one:

- (32) et il pretend contr' eux, qu' il faut expliquer les lieux, et ce qui regarde
 l' invention avant que de traiter de ces règles. La raison de Ramus est que
 l' on doit avoir trouvé la matière avant que de songer
 PART IMP-PR must.PRES have.INF find.PP the matter before that of care
 à la disposer.
 to it dispose
 'and he pretends against them that one must detail the topoi and all matters of
 invention before treating these rules. Ramus' reason is that one should have
 found the subject matter before thinking about its disposition'

The main categorical difference with Contemporary French concerns the possibility for the sequence MODAL-*devoir*_{IMPF} > PERF-INF (cf. (30b) above) to have counterfactual readings. Well attested in Classical French, such readings are impossible in Contemporary French. Recall, however, that in the latter the sequence MODAL-*devoir* > PERF-INF is extremely infrequent as compared to the sequence PERF > MODAL-*devoir*. Even if the former ordering exhibits epistemic readings in Contemporary French, they are quantitatively negligible.

In Classical French, the ordering PERF > MODAL-*devoir* lacks the future perfect-like configuration exemplified in (32). This is to be expected, since computing the anteriority of the eventuality described in the complement of the modal with regard to a temporal adverbial requires a low perfect in ASP (cf. Demirdache & Uribe-Etxeberria 2008a). Apart from this, all the other readings are attested. Firstly, actuality entailment readings are attested with this ordering, as predicted by the hypothesis that they arise when root-modals merge below ASP (see above Section 4):

- (33) a. Et qu'il seroit honteux d'attendre aucun salaire
 Alors que l' on n' a fait que ce qu' on
 while that PART IMP-PRO NEG have.PRES do.PP that DEM that IMP-PRO
 a dû faire. [171]
 have.PRES must.PP do.INF
 'And that it would be shameful to expect any reward
 when one has done only what one had to do'
- b. [je] lui témoignai ce qui étoit de la vérité, qui étoit en effet que
 j' avois toujours parlé comme j' avois dû sur son
 I have.IMPF always speak.PP as I have.IMPF must.PP on his
 sujet. [114]
 subject
 'I told him the truth, which was in fact that I had always spoken about him
 as I had to'

But the vast majority of the examples have epistemic or counterfactual construals. As for epistemic construals, they arise with PRESENT PERFECTS (PERF_{PRES} > MODAL-*devoir*), cf. (34a), PLUPERFECTS (PERF_{IMPF} > MODAL-*devoir*), cf. (34b) and occasionally with PERFECT CONDITIONALS (PERF_{COND} > MODAL-*devoir*), cf. (34c):

- (34) a. mais ayant donné remède à ce mal, je vous écrivis une grande lettre,
 que vous avez dû recevoir présentement [259]
 that you have.PRES must.PP receive.INF at-present
 'but having provided a cure for this ill, I wrote you a long letter, which you
 must have received by now'

- b. En suite il la pria de se souvenir du tems qu' ils étoient destinez l' un pour l'autre, et de considerer
 quelle impression une esperance si charmante avoit dû
 which impression a hope so enchanting have.IMPV must.PP
 faire sur son coeur. [85]
 make.INF on his heart
 'Upon that he asked her to remember the time when they were destined to each other, and to consider the impression that such an enchanting hope must have made on his heart'
- c. que dirons-nous des étoiles qui disparaissent, et ne se remontent pas après le temps, pendant lequel
 elles auroient dû assurément achever de tourner sur
 they have.COND must.PP certainly finish.INF of revolve on
 elles-mesmes ? [220]
 them-selves
 'what shall we say about those stars which disappear and fail to come back into sight after the period of time in which they must have certainly completed their revolution?'

Most instances of perfect conditionals ($\text{PERF}_{\text{COND}} > \text{MODAL-}devoir$), however, have counterfactual construals:

- (35) a. et l' image de la Sainte Vierge n' y estant pas tenuë
 avec le respect qu' elle l' auroit dû estre [65]
 with the respect that she it have.COND must.PP be.INF
 'and since Our Lady's image was not held there with the respect she should have deserved'
- b. il m' a fait trouver des dégoûts, poursuivit-elle, dans un mariage
 qui auroit dû faire toute ma felicité [95]
 which have.COND must.PP make.INF all my happiness
 'he made me find disgust, she resumed, in a marriage that should have made all my happiness'

Interestingly enough, and by contrast with the situation in Contemporary French, counterfactual construals arise also quite regularly with PRESENT PERFECTS ($\text{PERF}_{\text{PRES}} > \text{MODAL-}devoir$), cf. (36a-b), and PLUPERFECTS ($\text{PERF}_{\text{IMPF}} > \text{MODAL-}devoir$), cf. (37):

- (36) a. Vous avez dû premièrement
 you have.PRES must.PP firstly
 Garder votre gouvernement;
 keep.INF your government
 Mais ne l'ayant pas fait, il vous devait suffire
 Que votre premier Roi fût débonnaire et doux [57]
 'You should have kept your own government in the first place, but since you didn't, it should have been enough for you that your first king was easy-going and sweet'
- b. on a blâmé monsieur le prince d' avoir donné dans ce panneau, et,
 à mon opinion, l' on l' en a dû
 to my opinion PART IMP-CL him GEN-CL have.PRES must.PP
 plaindre [115]
 regret.INF
 'People have blamed the prince for having fallen in this trap, but in my opinion they should have felt sorry for him'
- (37) Ils ne dissimuloient pas même que dans les règles
 cette affaire avait dû être discutée par les évêques de France
 this matter have.IMPF must.PP be.INF discussed.PP by the bishops of France
 avant que d' être portée à sa sainteté [294]
 'They didn't even hide the fact that, according to the rules, this matter should have been treated by the French bishops before being brought before His Sanctity'

Summing up, Classical French behaves like Contemporary French in allowing epistemic readings for the sequence PERF > MODAL. According to the results of the discussion in Section 4, this is an indication that perfect morphology may merge at the level of T2, as a relative tense, or at the level of T1, as an absolute tense. Classical French differs from Contemporary French first and foremost in that in it, the sequence MODAL > PERF is still well represented. It also differs from Contemporary French in allowing counterfactual readings for the sequence MODAL-*devoir*_{IMPF} > PERF-INF and for the sequences PERF_{IMPF} > MODAL-*devoir* (PLUPERFECTS) and PERF_{PRES} > MODAL-*devoir* (PRESENT PERFECTS), i.e. in the absence of conditional (counterfactual) morphology.

Recall now that, on the basis of our observations for Contemporary French and European Spanish (cf. Section 2), we claimed that there is a correlation between the linearisation and interpretation of modals and perfects, on the one hand, and the status of the PRESENT PERFECT, on the other, such that:

- (i) the preference for HIGHER PERFECTS with modal verbs correlates with the possibility for the PRESENT PERFECT to function as an absolute past tense, and
- (ii) the possibility of epistemic readings for the linearisation PERF > MODAL correlates with the possibility for the PRESENT PERFECT to have aorist-like uses.

In comparison with Contemporary French, Classical French shows no marked preference for HIGHER PERFECTS, but epistemic readings for the linearisation

PERF > MODAL are well attested. What about the status of its PRESENT PERFECT? According to Caudal & Veters (2007), whose results parallel those of Fournier (1998), the PRESENT PERFECT in the 17th Century has clearly aorist-like uses – actually, as far as its occurrence in narrative sequences is concerned, it has had them at least since the *Chanson de Roland*. But it is at the same time confined to temporal modification by adverbials containing Speech Time, in a way that characterizes it as a relative tense, an *anterior present* with similar occurrence restrictions as those discussed for Catalan and European Spanish in Section 3 above. As a matter of fact, the 24-hour-rule describing the functioning of an hodiernal perfect was first formulated by the Classical grammarians regimenting literary usage in the first half of the 17th Century. For Caudal & Veters (2007), it is not until the second half of the 17th Century that the PRESENT PERFECT enters the decisive phase of development towards an absolute past tense, by gradually losing all restrictions as to temporal distance and type of locating adverbials in a process that extends all over the 18th Century. The correlation we advanced is thus confirmed in this case. As European Spanish, Classical French has a PRESENT PERFECT that may function as a relative, but not as an absolute tense. Correspondingly, epistemic readings for the sequence PERF > MODAL are possible, but higher perfects have not dislodged the sequence MODAL > PERF-INF.

Both with regard to the status of its PRESENT PERFECT and with regard to the interaction between modals and perfect morphology, Classical French appears to be remarkably similar to European Spanish. Let us now turn to other varieties of Spanish which are known to differ from European Spanish in the status of the PRESENT PERFECT.

6. Perfect modals across Spanish dialects

In a recent study which confirms and refines observations that have been repeatedly formulated in the growing body of literature on the competition between the SIMPLE PAST and the PRESENT PERFECT in Spanish, Howe (2013) argues for the existence of two distinct dialectal groups, differing in the distribution and interpretation of the PRESENT PERFECT. The groups are identified by the criterial properties summarized in Table 3.

With all due allowance for the necessary degree of simplification it involves, the partition proposed by Howe (2013) is indeed a robust generalization. Group II dialects correspond to the PRESENT PERFECT of European Spanish, which we described in Section 3 as having acquired the possibility of functioning as aoristic anterior presents, i.e. as relative tenses. As for Group I dialects, they lack the criterial properties for aoristic anterior tenses (cf. Features 2 and 3) and prominently display the universal reading (cf. Feature 4) which seems to be clearly associated with the functioning of perfect morphology as a viewpoint aspect.¹⁸ Argentinian,

18. As discussed in Laca (2010), the universal reading is mandatory in the appropriate configuration in dialects lacking aoristic readings, whereas it is merely optional in European Spanish. See also RAE-ASALE (2009: §23.8.p).

Table 3. Cross-dialectal comparison of simple past and present perfect in Spanish (adapted from Howe 2013: 65, Table 3.6)

| Features | Dialects by form preference | |
|--|---------------------------------------|--|
| | Group I (e.g., Mexican Spanish) | Group II (e.g., Peninsular Spanish) |
| 1. Overall frequency | SIMPLE PAST preferred | PRESENT PERFECT preferred |
| 2. Compatibility with definite past adverbials | Dispreferred with the PRESENT PERFECT | Limited compatibility with the PRESENT PERFECT |
| 3. Use in sequenced narratives | Only with SIMPLE PAST | Limited compatibility with the PRESENT PERFECT |
| 4. Continuative uses | PRESENT PERFECT and PRESENT TENSE | PRESENT TENSE |
| 5. Hot News uses | SIMPLE PAST preferred | PRESENT PERFECT preferred |

Chilean, Uruguayan and Mexican Spanish are known to be clear instances of Group I dialects, but we have less information concerning other Latin American varieties.¹⁹

Now, according to the results of the discussion in Sections 3 and 4, Group I dialects should not exhibit epistemic readings for the sequence $PERF_{PRES} > MODAL$. If (present) perfect morphology is necessarily an exponent of ASP in such dialects, which have an exclusively aspectual PRESENT PERFECT, and if a modal merging below ASP is necessarily a root modal, it follows that a modal in the PRESENT PERFECT cannot but be a root modal. Moreover, if the correlation we claim between the possibility of epistemic readings for modals bearing perfect morphology and the aoristic-like uses of the PRESENT PERFECT does hold, epistemic readings should be generally unavailable for the $PERF > MODAL$ ordering in such dialects.

In order to test these predictions, we conducted a search for occurrences of $PERF > MODAL$ -*deber* on a section of CORPES XXI comprising the period 2001-2004. Although the results do not validate the predictions in absolute terms –epistemic readings are actually attested in most varieties–, quantitative differences are very important, and they hold between European Spanish and Latin American varieties as a whole.²⁰ The main results are given in Table 4.

First of all, the total number of occurrences of the pattern is almost identical (184 and 183 respectively). But the sampling for CORPES XXI is said to have a

19. The Academy Grammar (cf. RAE-ASALE 2009, §§23.7-8, especially §23.8.p), which devotes great attention to regional variation on this point, suggests that Peruvian, Bolivian and Paraguayan Spanish may exhibit the hodiernal uses characteristic of a relative tense.

20. A confirmation in absolute terms for any hypothesis discriminating geographic varieties with this sort of material is not to be expected. In fact, we are dealing with written varieties reflecting mostly formal usage, and these are known to converge much more than spontaneous, informal usage.

Table 4. The pattern PERF > MODAL-*deber* across dialects (absolute frequencies)

| Total | Region | PRES-PERFECT | | | PLUPERFECT | | COND-PERFECT | PLUPERFECT SUBJUNCTIVE |
|-------|------------|----------------|------------|-----------|----------------|------------|--------------|------------------------|
| | | <i>act-ent</i> | <i>epi</i> | <i>cf</i> | <i>act-ent</i> | <i>epi</i> | <i>cf</i> | <i>cf</i> |
| 184 | European | <i>act-ent</i> | <i>epi</i> | <i>cf</i> | <i>act-ent</i> | <i>epi</i> | <i>cf</i> | <i>cf</i> |
| nc2 | Spanish | 31 | 106 | 2 | 0 | 5 | 4 | 34 |
| 183 | Lat. Amer. | <i>act-ent</i> | <i>epi</i> | <i>cf</i> | <i>act-ent</i> | <i>epi</i> | <i>cf</i> | <i>cf</i> |
| nc6 | Spanish | 71 | 17 | 60 | 1 | 0 | 6 | 17 |

distribution of 30% for European Spanish and of 70% for Latin American Spanish, so that the relative frequency of the pattern in European Spanish must be about twice as high as in Latin American Spanish.

Second, epistemic readings (*epi*) for the pattern are abundantly attested in European Spanish for the PRESENT PERFECT (106 out of 139 occurrences) and for the PLUPERFECT (5 out of 5 occurrences). (38a) and (38b) exemplify such readings:²¹

- (38) a. He debido ser una carga molesta
 have.PRES.1SG must.PP be.INF a burden annoying
 por cuantas veces me presenté a destiempo para que me ayudase [329]
 ‘I must have been an annoying burden for you, because of the many times
 I came to you at the wrong moment asking for help’
- b. Isabel daba por supuesto que decir la misa y escuchar las confesiones
 de los cristeros había debido de conmocionarle [340]
 of the cristeros have.IMPF must.PP of move.INF+him
 ‘Isabel took for granted that saying Mass and listening to the confessions
 of the *cristeros* must have deeply affected him’

In Latin American Spanish such readings are infrequent for the PRESENT PERFECT (17 out of 148 occurrences)²² and not attested at all for the PLUPERFECT. One example from each area in which the former are attested is given below:

21. Unless otherwise stated, all examples from this point on are taken from Real Academia Española: Banco de datos (CORPES XXI) [on line]. Corpus del Español del Siglo XXI (CORPES). <http://www.rae.es> [01/11/2017]

22. These results are comparable to those found by Vázquez Laslop (2007), who contrasts the sequence PERF > MODAL-*deber* and MODAL-*deber* > PERF-INF in samples from Mexico and Spain.

- (39) a. Para Manuela Sáenz [...] las cosas han debido suceder así,
for Manuela Sáenz the things have.PRES must.PP happen.INF so
puesto que él se lo dice, ARG [20]
'For Manuela Sáenz [...] things must have so happened, because that's
what he says'
- b. Eso ocurre en China,
un pueblo que ha debido sufrir tanta hambre
a people that have.PRES must.PP suffer.INF such hunger
que hasta hoy el saludo diario es: "¿Has comido hoy?" BOL [35]
'This happens in China, a people that must have so much suffered from
hunger that even nowadays their usual greeting is: "Have you eaten today?"
- c. Cabe, pues, imaginar lo que han debido de sufrir aquellas
fit then imagine the that have.PRES must.PP of suffer.INF those
personas
persons
que no disponían de teléfonos, televisores, radio, helicópteros, HOND [374]
'One can imagine, then, how much those people must have suffered, not
having telephones, TV sets, radios, helicopters'
- d. circunstancia que en cierta medida ha debido contribuir a
circumstance that in certain measure have.PRES must.PP contribute.INF to
sensibilizar a los alumnos con respecto a las corrientes constructivistas
VEN [430]
'a circumstance that to a certain extent must have contributed to raise
awareness among the students for constructivist approaches'

Three surprising facts emerge from the data in Table 4: the existence of counterfactual readings (*cf*) for the sequence $\text{PERF}_{\text{PRES}} > \text{MODAL}$, the comparative scarcity of actuality entailment readings (*act-ent*), and the fact that PLUPERFECTS are clearly underrepresented.

As for the first phenomenon, it is definitely an areally restricted one: the bulk of the 60 occurrences found (49) comes from Colombia and Venezuela, with further 7 occurrences in Peru and single occurrences in Panama, Guatemala and the Dominican Republic. Examples are given below:

- (40) a. La llamé Sabrina, como el barco que comandaba, aunque
he debido bautizarla con el nombre de una santa
have.PRES.1SG must.PP christen.INF +her with the name of a saint
o de una región de mi país, como recomienda la costumbre COL [69]
'I called her Sabrina, for the ship I commanded, although I should have
christened her with the name of a saint, or of one of my country's regions,
as tradition dictates'

- b. ¡Lo de anoche fue un error!
 ¡No ha debido suceder! VEN [431]
 not have.PRES.3SG must.PP happen.INF
 ‘Last night’s affair was a mistake ! It shouldn’t have happened’
- c. Creo que el juez Vargas
 ha debido hacer una investigación mucho más cuidadosa
 have.PRES must.PP do.INF a investigation much more careful
 y no lanzar una acusación que deslegitimaría la labor de la subcomisión
 PER[401]
 ‘I think Judge Vargas should have conducted a much more thorough investigation, instead of venturing an accusation that could make the subcommittee’s work appear illegitimate’

The other two phenomena seem to be related. The relatively low figures for the actuality entailment readings come as a surprise. Actuality entailments are predicted to occur whenever perfect morphology is an exponent of ASP merging above a root modal, a possibility that is open to all varieties. Examples are given in (41):

- (41) a. muchos pescadores locales han debido emigrar o
 many fishermen local have.PRES must.PP emigrate.INF or
 cambiar de actividad
 change.INF of activity
 ‘Many local fishermen have had to emigrate or to change jobs’ ESP [155]
- b. La ciencia de la Computación ha debido desarrollar
 the science of the computation have.PRES must.PP develop.INF
 un lenguaje propio para expresar sus ideas CHIL [54]
 ‘Computer science has had to develop a language of its own in order to express its ideas’
- c. En nuestro Teatro todos han debido ganarse el aplauso
 in our theater all have.PRES must.PP win.INF+refl the applause
 con el sudor de sus gargantas ARG [10]
 ‘In our theater, everybody has had to win applause with the sweat of their throats’

However, it is unexpected that root modal readings should be so poorly represented. As for PLUPERFECTS, even if they may turn out to be overall less frequent than PRESENT PERFECTS, the ratios found in Table 4 (5/139 and 1/148 respectively) are quite unusual.

I believe that the explanation for both phenomena lies in the fact that *deber* is not the only –actually it is by far not the most frequent– expression for necessity in Spanish. It is under heavy competition from the periphrastic expression *tener que* + INF, roughly corresponding to the *have-to* semimodal in English. Interestingly enough, *tener que* + INF seems to follow the cross-linguistic pattern with which we started this discussion (cf. above, Section 2, examples (3a-b) and (4a-b)), that is to

say, the PERF > MODAL ordering only has root readings, so that epistemic readings exclusively arise for the MODAL > PERF-INF option:

- (42) a. Ha tenido que marcharse temprano
 have.PRES.3SG have.PP that leave.INF+REFL early
 ‘S/he’s had to leave early’
- b. Tiene que haberse marchado temprano.
 have.PRES.3SG that have.INF+REFL leave.PP early
 ‘S/he must have left early’

It is to be surmised that the low figures for actuality entailment readings and for combinations with the PLUPERFECT are due to the fact that these are predominantly realized not by *deber*, but by *tener que* + INF. This is confirmed by a cursory search for the sequence PERF > MODAL-*tener que*, which gives –for the single year 2010– 236 occurrences for America and 520 for Spain.²³ The overwhelming majority of the examples have actuality entailment readings, and pluperfects are well represented among them.

Summing up, even if epistemic readings for the sequence PERF > MODAL-*deber* are occasionally attested in Latin American Spanish, their frequency in European and Latin American Spanish is different enough to support the idea of two dialectal groups. These two dialectal groups correspond to the ones identified by Howe (2013) on the basis of the characteristics of the PRESENT PERFECT.

A mystery remains as to the role of counterfactual readings for the sequence PERF_{PRES} > MODAL, which we detected in the Continental Caribbean area for Spanish, but also in Classical French (cf. section 5, ex. (36) and (37) above). Demirdache & Uribe-Etxeberria (2008b) follow the lead of Stowell (2004) in assuming that these readings arise when perfect morphology is interpreted as a tense, determining a past TPERSP in English. They seek support for this assumption in the fact that, in European Spanish, a modal in the PRESENT PERFECT cannot have a counterfactual reading, whereas this reading is available for modals in the SIMPLE (PERFECTIVE) PAST:

- (43) a. Pedro debió ganar la carrera. ✓epistemic ✓counterfactual
 Pedro must win the race
 ‘Pedro must have won the race/ Pedro should have won the race’
- b. Pedro ha debido ganar la carrera. ✓epistemic *counterfactual
 Pedro have must win the race
 ‘Pedro must have won the race’
 (examples from Demirdache & Uribe-Etxeberria 2008b: 480)

23. Real Academia Española: Banco de datos (CORPES XXI) [on line]. Corpus del Español del Siglo XXI (CORPES). <<http://www.rae.es>> [11/12/2017]

However, there is no indication that the PRESENT PERFECT in the relevant Spanish varieties is more “tense-like” than in European Spanish, nor that it is more “tense-like” in Classical than in Contemporary French. Actually, the reverse is true, as we have argued above. The emergence of counterfactual readings in less advanced stages of the aoristic drift of the PRESENT PERFECT calls for an explanation.

7. Conclusions and outlook

Starting from the observations (i) that Contemporary French and European Spanish deviate from what has been described as the canonical pattern of interpretation for combinations of modals with perfect morphology, in as far as both exhibit epistemic readings for the sequences PERF > MODAL, and (ii) that unlike European Spanish, Contemporary French shows an overwhelming preference for the linearisation PERF > MODAL, I have tried to correlate these properties with the stage reached by their PRESENT PERFECTS in the diachronic process known as “aoristic drift”. Acknowledging the existence of such a process, and giving a type-logical interpretation for perfects-as-viewpoint-aspects, for perfects-as-relative-tenses and for perfects-as-absolute-tenses, I have proposed that perfect morphology may merge at different levels of structure, thus siding with those researchers who adopt ambiguity solutions for its semantics. As for modal verbs, we have seen that letting the difference between non-root and root modals hinge on the relative position of the modal with regard to ASP allows us to preserve the original intuition of a structural difference without assuming that epistemic modals merge above Tense. On the one hand, this idea forces us to admit that root modals are modifiers of eventuality descriptions, a proposal already advanced by Hacquard (2006, 2009) in order to account for actuality entailment readings. On the other hand, it makes some predictions as to the logical type of perfect morphology, which should be $\langle\langle i, st \rangle\rangle$ or $\langle i \rangle$ when it combines with a non-root modal.

The initial correlations we established have been partially confirmed by an examination of Classical French and Latin American Spanish. Classical French has a PRESENT PERFECT that may function as a relative tense, and it has epistemic readings for the linearisation PERF > MODAL. However, it shows no clear preference for the ordering PERF > MODAL, and its PRESENT PERFECT cannot function as an absolute tense. In this, its situation parallels that of European Spanish. As for Latin American Spanish, the dearth of epistemic readings for the linearisation PERF > MODAL goes hand in hand with the fact that its PRESENT PERFECT does not function as a relative tense.

Now, establishing a correlation is not equal to providing an explanation, and I do not claim to have provided one. At most, we can explain on type-logical grounds why the sequence PERF_{PRES} > MODAL lacks epistemic readings when the PRESENT PERFECT does not function as a relative tense. But why should epistemic readings also be absent for PLUPERFECTS or, for that matter, for PERFECT CONDITIONALS? And why should the process we have dubbed PERFECT RAISING, which clearly distinguishes Contemporary from Classical French, be associated with the ability

of a PRESENT PERFECT to function as an absolute tense? These matters have to be left for future research.

Throughout the paper, I have concentrated on the question of the site where perfect morphology and modals merge, and I have remained silent as to their respective site of interpretation. Most of the literature on the interaction between modals and tense-aspect morphology of the past twenty years introduces scope-reversal mechanisms of a more or less elaborate kind in order to account for apparent mismatches between syntactic and semantic scope (Condoravdi 2002; Demirdache & Uribe-Etxebarria 2008a, 2008b, 2014; Hacquard 2006, 2009; Borgonovo & Cummins 2007, among many others, cf. Falaut & Laca to appear). Although I have assumed that nothing prevents epistemic modals from merging below Tense, I still believe that scope reversal is needed in order to account for a subset of epistemic readings, in which Tense seems to determine TORIENT and not TPERSP (cf. Laca 2018). The crucial question to be explored in this regard concerns the factors that contribute to giving modal and tense-aspect combinations their templatic appearance, i.e. linear orderings that do not determine semantic scope. In the case of inflectional tense morphology, an obvious factor seems to be that inflectional tenses are finite, and finiteness cannot be expressed on the infinitival complement of modals. But why perfect morphology—which is not associated with finiteness—should as it were follow the lead of inflectional tenses in PERFECT RAISING diachronic processes is a question that deserves to be explored in detail.

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List of abbreviations

| | |
|--------|------------------------------|
| ART | partitive/indefinite article |
| COND | conditional |
| DEM | demonstrative |
| GEN-CL | genitive clitic |
| IMP-PR | impersonal pronoun |
| IMPF | imperfective past |
| INF | infinitive |
| LOC-CL | locative clitic |

| | |
|------|--------------------------|
| NEG | negation |
| PART | particle |
| PP | past participle |
| PRES | present |
| REFL | reflexive clitic |
| SP | simple (perfective) past |

List of notations for types and variables

type ε , variable e : eventualities

type i , variable t : times (intervals)

type s , variable w : worlds

type t : truth values