

Actualistic interpretations in French*

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Abstract Actuality Entailments (AEs), which are standardly described in relation to modal predicates, are known to only occur in the perfective. This article argues that modal predicates are stative and, for that reason, only compatible with the perfective if coerced. Being the reflex of an aspectual coercion, which I label ‘actualistic’, the AE phenomenon is broader than usually assumed: it obtains with modal and non-modal predicates alike. At the core of the actualistic coercion is a presupposition, in the form of a necessary and sufficient condition, whose effects can be detected, for example, under negation.

Keywords: actuality entailments, French, aspectual coercion, presupposition, modality, stativity

Word count: 18,190

Introduction

In languages which distinguish the perfective and the imperfective aspects morphologically, whenever an ability or a circumstantial modal appears in the perfective in a positive matrix clause, it is possible to infer the truth of its complement in the actual world (Bhatt 1999, 2006, Borgonovo & Cummins 2007, Mari & Martin 2009, Hacquard 2006, 2009 among others).¹ This article discusses one such language, French. Sentence (1a) features present perfect morphology; in the indicative mood, this morphology correlates with the perfective aspect. The sentence not only says that at a past interval Olga had the capacity to lift a fridge, it also entails that she did: it is infelicitous to contradict this inference, called an actuality entailment (henceforth AE), as in (1b), the continuation of the sentence:

- (1) a. Olga a pu_{abil} soulever un frigo.
Olga has can.PP lift.INF a fridge

* Thanks to . . .

¹ Earlier versions of some of the material presented here can be found in Homer 2011, 2013.

- ‘Olga was able to lift a fridge.’
 → Olga lifted a fridge.
- b. #Mais elle ne l’ a pas fait.
 but she NEG it has NEG done
 ‘But she didn’t do so.’

In addition to the contradiction test, one can use another test (from [Homer 2011](#)), which consists in enforcing the actuality of the complement in order to satisfy the presupposition triggered by *aussi* ‘too’ in the continuation (presuppositions triggered by *aussi* are notoriously hard to accommodate):

- (2) a. Olga a pu_{abil} soulever un frigo, et [Marie]_F aussi en a soulevé un.
 Olga has can.PP lift.INF a fridge and Marie too of.it has lifted one
 ‘Olga was able to lift a fridge, and [Marie]_F lifted one too.’
- b. *Presupposition*: Someone other than Marie lifted a fridge.

The fact that the presupposition of *aussi* is satisfied by the inference triggered in the first conjunct is compatible with it being an entailment. We can easily eliminate another candidate, namely a scalar implicature (SI), by placing the first conjunct in a downward-entailing environment, which blocks direct SIs, while an entailment triggered in the antecedent of a conditional satisfies the presupposition of *aussi* triggered in the consequent (3b).

- (3) a. Si Olga a pu_{abil} soulever un frigo, [Marie]_F aussi en a soulevé un.
 if Olga has can.PP lift.INF a fridge Marie too of.it has lifted one
 The presupposition ‘Someone other than Marie lifted a fridge’ is satisfied locally and doesn’t project.
- b. If Olga lives in Paris, [Marie]_F lives in France too.
 The presupposition ‘Someone other than Marie lives in France’ is satisfied locally and doesn’t project.

Generalizing, AEs can occur with all root modals, including deontic ones (as argued by [Borgonovo & Cummins 2007](#) and [Hacquard 2009](#)), as shown by (4):

- (4) #Avec l’ autorisation de son nutritionniste, Olga a pu_{deon} manger des pommes de terre, mais ne l’ a pas fait.
 with the authorization of her dietician Olga has can.PP eat of.the potatoes but NEG it has NEG done

‘Authorized by her dietician, Olga was allowed to eat potatoes, but she didn’t do so.’

With the imperfective aspect (which correlates with simple past morphology, a.k.a. *imparfait*), AEs are not possible, as shown by the contradiction test (5a) and the *aussi*-test (5b) (the # sign in the latter indicates a presupposition failure):²

- (5) a. Olga pouvait_{abil} soulever un frigo, mais ne l’ a pas fait.
 Olga can.PST lift.INF a fridge but NEG it has NEG done
- b. #Si Olga pouvait_{abil} soulever un frigo, [Marie]_F aussi en a
 if Olga can.PST lift.INF a fridge Marie too of.it has
 soulevé un.
 lifted one

The phenomenon cannot be described as modal suppression. If this were the case, then (6a) and (6b) would have the same meaning. They both yield an AE, but the quantificational force of the modal is different:

- (6) a. Cet après-midi, Olga a pu jouer du violon.
 this afternoon Olga has can.PP play of.the violin
 ‘This afternoon, Olga was able to play the violin.’
 → Olga played the violin.
 → Olga was able to play the violin. (∃)
- b. Cet après-midi, Olga a dû jouer du violon.
 this afternoon Olga has have.to.PP play of.the violin
 ‘This afternoon, Olga had to play the violin.’
 → Olga played the violin.
 → Olga was forced to play the violin. (∀)

Furthermore, under the modal suppression hypothesis, it should be possible, keeping the accessibility relation of the modals constant, to say (7) felicitously, but it is in fact a contradiction:

- (7) #Elle pouvait_{circ} jouer du violon, mais elle n’ a pas pu_{circ} le faire.
 she can.PST play of.the violin but she NEG has NEG can.PP it do

² It is important to emphasize the contrast between (3a) and (5b): it shows the validity of the *aussi* test. One could in principle argue that (i.) *aussi* requires the presence of an antecedent in the discourse; (ii.) this antecedent must entail the presupposition triggered by *aussi*; (iii.) global accommodation can be appealed to to ensure that the entailment goes through. Suppose indeed that one accommodates: $\Diamond p \rightarrow p$: then the presupposition triggered by *too* in the consequent of the conditional (3a) is satisfied, and the test doesn’t reveal the existence of an AE (i.e., the presence of a coercion operator, see below). It is the deviance of (5b) which shows that such a pragmatic line is not promising. I owe Philippe Schlenker (p.c.) this important comment.

Intended: ‘She was able to play the violin, but she didn’t.’

In their descriptions of AEs, previous researchers focus on modal verbs or so-called modal auxiliaries. Hacquard (2006, 2009, 2014) insists that the *lexical status* of the modal is important. But contrary to this claim, we find AEs triggered by nouns and adjectives,³ in a variety of syntactic configurations (the *imparfait* counterparts do not yield an AE):⁴

- (8) a. Olga a été capable de/ apte à traduire l’ article.
Olga has be.PP capable of fit to translate.INF the article
b. Olga a été en mesure de traduire l’ article.
Olga has be.PP in condition of translate.INF the article
‘Olga was able to translate the article.’
→ Olga translated the article.
- (9) Il a été possible de convaincre le directeur.
it has be.PP possible of convince.INF the director
‘It was possible to convince the director.’
→ The director was convinced.

³ Note however that certain modal adjectives resist being placed in the perfective, which means, according to the principles of this article, that they cannot be coerced. This is, for example, the case of *fragile* ‘fragile’ and *cassable* ‘breakable’:

- (i) #Le verre a été cassable.
the glass has be.PP breakable

At this point, I do not know what sets these adjectives apart. The following sentence, with a modal verb, can be felicitous, provided that the context supports the existence of a plan to break the glass; the AE says that it succeeded (I discuss such conditions placed on the context of utterance in Section 3):

- (ii) Le verre a pu être cassé.
the glass has can.PP be broken
‘It was possible to break the glass.’
→ The glass was broken.

⁴ The claim is based on the failure of the contradiction test with the noun *possibilité* ‘possibility’:

- (i) Olga a eu la possibilité_{circ} de prendre le train de sept heures, mais ne l’
Olga has have.PP the possibility of take.INF the train of seven hours but NEG it
a pas fait.
has NEG done
‘Olga had the possibility to take the 7 o’clock train but she didn’t do so.’

I show in Section 4 that the auxiliary *avoir* ‘have’ is the culprit for the apparent unavailability of an AE.

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- (10) Olga a été dans l' obligation de déménager.
Olga has be.PP in the obligation of move.out.INF
'Olga had to move out.'
→ Olga moved out.
- (11) Notre premier devoir a été de renvoyer le directeur.
our first duty has be.PP of dismiss.INF the director
'Our first duty was to dismiss the director.'
→ We dismissed the director.

Under what conditions do AEs obtain? Previous researchers, especially [Hacquard \(2006, 2009\)](#), have proposed that AEs obtain if and only if a root modal⁵ appears in the perfective (in a positive matrix clause). The main goal of this article is to show that this criterion is not warranted, for it is both too strong (AEs occur even when the predicate is not a modal) and too weak (the perfective doesn't suffice). Focusing for the time being on its excessive weakness, the standard criterion faces an immediate problem: AEs are not always mandatory under the perfective. It is possible, under certain conditions, to deny that the complement of the modal is true in the actual world, as [Mari & Martin \(2009\)](#) were first to show (they propose an explanation to AEs which, like the one defended here, relies on a clash between the perfective and the stativity of root modals). Quantificational temporal modifiers, for example, *une fois* 'once', *toujours* 'always', *souvent* 'often', *chaque fois* 'each time' (both in its restrictor and nuclear scope) are responsible for a subclass of exceptions to obligatory AEs. For example, the only difference between (12a) and (1a) is the presence in the former of the modifier *à plusieurs reprises* 'on several occasions'. Locational temporal adverbials such as *cet après-midi* 'this afternoon' do not have the same effect (12b).

- (12) a. À plusieurs reprises, Olga a pu_{abil} soulever un frigo, mais ne l'a pas fait.
b. #Cet après-midi, Olga a pu_{abil} soulever un frigo, mais ne l'a pas fait.

AEs should be impervious to temporal modification if the presence of a root modal under the perfective were a sufficient condition for them (assuming that aspect is preserved under temporal modification). Therefore examples like (12a) are genuine counterexamples to any theory that relies on the aforementioned criterion. Now, if the perfective is not sufficient, something else must come into play: I therefore submit that AEs result from some enrichment of the meaning of sentences in the perfective. In order to capture the nature of the process, I propose that we look

⁵ In view of what I just said about the lack of lexical requirement, 'root modal' should be taken in a broad sense.

for a meaning-enrichment mechanism that applies specifically in the perfective. Aspectual coercion just fits the bill: it enriches the meaning of sentences where the perfective, in contravention of its need for a quantized predicate argument, is confronted with a stative one; this article shows that AEs are the result of a certain kind of aspectual coercion, which I name ‘actualistic’.

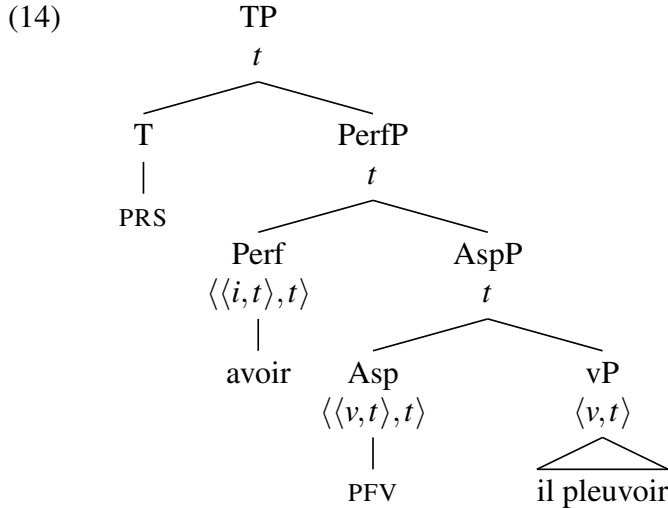
The article is structured as follows. In Section 1, I lay out my assumptions about the tense and aspect system of French, and explain the notion of aspectual coercion: I show how stative predicates in the perfective need to be reinterpreted, and define covert coercion operators that carry out the reinterpretation. Section 2 establishes that predicates formed by root modals are stative; therefore they need to be coerced in the perfective. I then show how coercion applies uniformly to modal and non-modal predicates alike and analyze AEs as instances of a hitherto undocumented kind of aspectual coercion, the actualistic one. Section 3 investigates AEs triggered under negation, and explains away apparent discrepancies between modal and non-modal predicates as resulting from a presupposition, in the form of a necessary and sufficient condition; this presupposition is the source of the inferences of effort or goal-orientedness often documented in relation to AEs. Section 4 compares my approach to Hacquard’s (2006, 2009).

1 Background

1.1 Tense and aspect

In this subsection, I spell out my assumptions about the parts of the clausal functional structure relevant for temporal and aspectual information in French. I assume that each clause has a Viewpoint aspect head *Asp*, located below *T* and above *vP*. The exponent of *Asp* is either perfective (PFV) or imperfective (IMPFV). A perfect head can intervene between *T* and *Asp*: it is only found in the perfect, which combines an auxiliary (the PERF head) and a participle. In the indicative, the perfect requires a perfective Viewpoint aspect. Tree (14) fleshes out these syntactic assumptions; it is a representation of sentence (13), an example of an indicative *passé composé* (present perfect), with the auxiliary *avoir* ‘have’ and the participle *plu* ‘rained’:

- (13) *Passé composé:*
Il a plu.
it has rain.PP
‘It has rained.’



I use a (mostly) intensional system, with a time and world parameters and intensional operators which shift these parameters. The (implicit) time argument of a predicate is controlled by the closest c-commanding time operator, or the original value of the time parameter, which is normally the time of utterance. I treat vPs, for example, *John bake a cake*, as denoting predicates of eventualities (type $\langle v, t \rangle$; v is the type of eventualities). For example, the vP *John bake a cake* denotes a predicate that holds of an eventuality e if and only if e is an eventuality of baking located in the world and time of evaluation, whose agent is John and whose theme is some cake (assuming a neo-Davidsonian framework):

$$(15) \quad \llbracket \text{John bake a cake} \rrbracket^{c,s,w,t} = \lambda e_v. \text{bake}'(e) \wedge \text{Agent}(e)=\text{John} \wedge \\ [\exists x: \text{cake}'(x) \wedge \text{Theme}(e)=x] \wedge \\ \tau(e)_{ot} \wedge e \text{ in } w$$

(the τ function maps an eventuality to its runtime and ‘o’ designates temporal overlap)

This semantics provides information about the runtime and the world location of eventualities in the denotation of vP. Asp takes a property of eventualities (the denotation of vP) and returns a truth value.⁶ It quantifies over eventualities whose temporal trace it locates w.r.t. an interval called ‘topic time’ by Klein (1994) (this is also Gerö & von Stechow’s (2003) and Paslawska & von Stechow’s (2003) reference time). For example, PFV includes the runtime of some eventuality in the denotation of vP in the topic interval (the latter is provided by the time parameter,

⁶ This system is thus a two-component one, to use Smith’s (1991) terminology, that is, a system in which the perfective-imperfective difference is not reduced to the telic-atelic difference, as in Kamp & Rohrer 1983, Krifka 1989, 1998 or de Swart 1998.

a variable that ends up being bound by Perf):⁷

$$(16) \quad \llbracket \text{PFV} \rrbracket^{c,s,w,t} = \lambda P_{\langle v,t \rangle}. \exists e_v: P(e) \wedge \tau(e) \subseteq t$$

In the case of a perfect (the *passé composé* is a present perfect), the relation between T and Asp is mediated by a perfect head, realized as an auxiliary. Perf turns a predicate of times or intervals ($\langle i, t \rangle$, with i the type of times) into a truth value: in order to compose the denotation of Perf with that of AspP, we need to turn the latter into a predicate of times, using Intensional Functional Application:

$$(17) \quad \textbf{Intensional Functional Application (Heim \& Kratzer 1998: 308):}$$

If α is a branching node and $\{\beta, \gamma\}$ is the set of its daughters, then for any context c , any assignment function s , any world w and any time t , if $\llbracket \beta \rrbracket^{c,s,w,t}$ is a function whose domain contains $\lambda t'_i$. $\llbracket \gamma \rrbracket^{c,s,w,t'}$, then

$$\llbracket \alpha \rrbracket^{c,s,w,t} = \llbracket \beta \rrbracket^{c,s,w,t} (\lambda t'_i. \llbracket \gamma \rrbracket^{c,s,w,t'})$$

The effect of Perf is to backward shift the time parameter for expressions in its scope:

$$(18) \quad \llbracket \text{Perf} \rrbracket^{c,s,w,t} = \lambda p_{\langle i,t \rangle}. \exists t'_i: t' < t \wedge p(t')$$

In a present perfect, we find PRS under T; I assume PRS to be semantically idle. The time parameter at the top of the clause is set by default to the time of utterance. The meaning that we derive for the LF in (19) (corresponding to sentence (13)) is thus as in (20):

$$(19) \quad \text{LF of (13): } [\text{TP PRS } [\text{PerfP Perf } [\text{AspP PFV } [\text{vP il pleuvoir }]]]]$$

$$(20) \quad \llbracket (19) \rrbracket^{c,s,w,t} = \text{True iff } \exists t'_i: t' < t \wedge \exists e_v: \tau(e) \subseteq t' \wedge \text{rain}'(e) \wedge e \text{ is in } w$$

The information that the eventualities quantified over are located in the world of evaluation is inherited from the denotation of the vP (see (15)).

In the *imparfait*, Aspect is IMPFV, that is, imperfective:

$$(21) \quad \textit{Imparfait:}$$

Il pleuvait.
it rain.PST
'It was raining.'

With IMPFV, the topic time is said to be included in the runtime of an eventuality in the extension of vP: IMPFV and PFV operate temporal inclusions which are inverses

⁷ The lexical entries in this subsection are inspired by Kratzer 1998 and Pancheva & von Stechow 2004.

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of each other.

$$(22) \quad \llbracket \text{IMPFV} \rrbracket^{c,s,w,t} = \lambda P_{\langle v,t \rangle}. \exists e_v: P(e) \wedge t \subseteq \tau(e)$$

There is no perfect head in the *imparfait*, but backward shifting is carried out by PST (which I assume has the same semantics as Perf) under T.

We derive the meaning of (21):

$$(23) \quad \text{LF of (21): } [\text{TP PST } [\text{AspP IMPFV } [\text{VP il pleuvoir }]]]$$

$$(24) \quad \llbracket (23) \rrbracket^{c,s,w,t} = \text{True iff } \exists t'_i: t' < t \wedge \exists e_v: t' \subseteq \tau(e) \wedge \text{rain}'(e) \wedge e \text{ is in } w$$

I will not discuss here the *passé simple* (illustrated in (25)) which is limited to written French. It combines past tense and perfective without a perfect head.

$$(25) \quad \begin{array}{l} \text{Il plut.} \\ \text{it rain.PST.PFV} \\ \text{'It rained.'} \end{array}$$

Inasmuch as judgments about the *passé simple* are reliable, we find the same actuality entailments with the *passé simple* as with the *passé composé*. The *plus que parfait*, which combines past tense, perfect and perfective, also patterns like the *passé composé* as far as actuality entailments are concerned.

In this temporal-aspectual system with three independent components, Tense, Aspect and Perfect, many possible combinations are not in fact attested, but I will not attempt to explain why this is so. For example, I do not offer an explanation for why perfects require perfective in the indicative mood.⁸

1.2 Aspectual classes

The temporal-aspectual system presented above is one where viewpoint aspect combines with predicates of eventualities (type $\langle v, t \rangle$). These predicates belong to aspectual classes, in the *Aktionsart* sense of the term (Ryle 1949, Vendler 1957, Kenny 1963 a.o.). For example, the predicate *Peter bake the cake* is a telic predicate (I will refer to predicates of eventualities in this non-finite form). And the predicate *Peter be in the kitchen* is an atelic predicate (more precisely a stative one). Following Krifka 1989, 1998 and many subsequent work, I take telicity and atelicity to be properties of predicates of eventualities rather than properties of eventualities (as in Kamp & Rohrer 1983 and Kamp & Reyle 1993). Krifka structures the domain of eventualities D_v as a join semi-lattice (with no bottom) partially ordered by the part-of relation ' \sqsubseteq ' (on the model of Link's (1983) lattice-theoretical analysis of

⁸ Interestingly this restriction does not hold in the subjunctive.

plurals and mass nouns):

$$(26) \quad \text{'Part of' ('}\sqsubseteq\text{')}: \forall e, e' \in D_v: e \sqsubseteq e' \leftrightarrow e \sqcup e' = e'$$

The proper part relation is defined as follows:

$$(27) \quad \text{'Proper part of' ('}\sqsubset\text{')}: \forall e, e' \in D_v: e \sqsubset e' \leftrightarrow [e \sqsubseteq e' \wedge e \neq e']$$

Telicity and atelicity are defined by Krifka using the proper-part relation in (27). A telic or quantized⁹ predicate of eventualities, for example, *Peter bake the cake*, is only true of eventualities that have no proper parts to which the predicate also applies:

$$(28) \quad \text{A property } P \text{ is quantized iff } \forall e, e': \text{ if } P(e) \wedge e' \sqsubset e \text{ then } \neg P(e')$$

No proper part of an eventuality of Peter baking the cake (e.g., an eventuality of Peter making a well in the dry ingredients) is an eventuality *homogeneous* to the whole, that is, an eventuality of Peter baking the cake.

By this definition, atelic predicates such as *Peter be in the kitchen* and *Peter walk in the park* are non-quantized (or homogeneous):¹⁰ eventualities in their extensions do have proper parts homogeneous to the whole. Among atelic predicates, a further distinction is usually made: *Peter be in the kitchen* is stative while *Peter walk in the park* isn't (it denotes an *activity*). Stative predicates are only true of eventualities that have proper parts, each of which is homogenous to the whole (they have the subinterval property):

$$(29) \quad \text{A property } P \text{ is stative iff } \forall e: \text{ if } P(e) \text{ then (i) } \exists e': e' \sqsubset e \text{ and (ii) } \forall e'': \text{ if } e'' \sqsubset e \text{ then } P(e'')$$

The predicate *Peter walk in the park* is not true of eventualities in which Peter moves forward but doesn't make at least one step: activities are only homogeneous down to small parts (they are neither quantized nor stative).

1.3 Coercion

As explained in Section 1.1, the perfective locates within the topic time the runtime of an eventuality in the denotation of vP. Consider (30) for example, a sentence in

⁹ I do not distinguish the terms 'telic' and 'quantized' although they are not in fact synonymous: 'telic' applies to predicates and 'quantized' to properties.
¹⁰ Krifka in fact requires that they also be cumulative:

$$(i) \quad \text{A property } P \text{ is cumulative iff } \forall e, e': \text{ if } P(e) \text{ and } P(e') \text{ then } P(e \sqcup e')$$

non-quantized	stative	<i>Pierre be angry</i>
	non-stative	<i>Pierre walk in the park</i>
quantized		<i>Pierre bake the cake</i>
		<i>Pierre arrive</i>

Table 1 Aspectual classes of predicates after Bary (2009)

the *passé composé* (hence in the perfective), with a telic predicate of eventualities: it is true just in case there was an eventuality of Pierre baking the cake fully included in the topic time, which is set by the frame adverbial *cet après-midi* ‘this afternoon’:

- (30) Pierre a fait le gâteau cet après-midi.
 Pierre has made the cake this afternoon
 ‘Pierre baked the cake this afternoon.’

Combining the perfective with an atelic predicate comes with some notable effect: it results in some semantic enrichment.

1.3.1 Complexive interpretation

For example, the predicate of eventualities *Pierre run in the park*, an activity, is interpreted as temporally bounded in (31):

- (31) Pierre a couru dans le parc cet après-midi.
 Pierre has run.PP in the park this afternoon
 ‘Pierre ran in the park this afternoon.’

The interpretation of an atelic predicate as bounded is what Bary (2009) calls a *complexive* interpretation.¹¹ In principle, the semantics that we gave for the perfective should lead us to expect that (31) can be verified by an eventuality e_1 of Pierre running in the park even if it is a proper part of an eventuality e_2 of Pierre running in the park whose runtime includes the topic time (contributed by the frame adverbial *this afternoon*). But instead, we observe that the eventuality whose runtime is located in the topic time is locally maximal. The following dialogue is thus odd, because B’s reply contradicts the boundedness inference:

- (32) A: Pierre a couru dans le parc cet après-midi.
 Pierre has run.PP in the park this afternoon

¹¹ The term is to be distinguished from *completive*, which Bary uses about completed telic predicates of eventualities in the perfective.

B: #Je sais, je l' ai vu courir dans le parc sans discontinuer
 I know I him have seen run.INF in the park without stop.INF
 toute la journée.
 all the day
 'A: Pierre ran in the park this afternoon.
 B: #I know, I saw him run in the park without interruption all day.'

No such boundedness inference arises in the *imparfait* (i.e., the imperfective), that is, the following dialogue is natural:

(33) A: Pierre courait dans le parc cet après-midi.
 Pierre run.PST in the park this afternoon
 B: Je sais, je l' ai vu courir dans le parc sans discontinuer
 I know I him have seen run.INF in the park without stop.INF
 toute la journée.
 all the day

1.3.2 Inchoative interpretation

By changing the temporal adverbial (by making it punctual) we observe another enrichment in the perfective: an *inchoative* interpretation obtains, that is, it is the inception of an activity which is located in the topic time:

(34) *Passé composé (perfective):*
 Pierre a couru dans le parc à midi pile.
 Pierre has run.PP in the park at noon sharp
 ↗ Pierre began running at noon.

The *imparfait* variant doesn't carry a similar inference:

(35) *Imparfait (imperfective):*
 Pierre courait dans le parc à midi pile.
 Pierre run.PST in the park at noon sharp
 'Pierre was running in the park at noon sharp.'
 Doesn't say anything about the beginning of the eventuality of Pierre running.

1.3.3 Complexive and inchoative interpretations with statives

Stative predicates can also give rise to a complexive or an inchoative interpretation in the perfective. But help from certain adverbials is usually needed. Out of the blue, the following sentence is infelicitous:

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- (36) #Pierre a été assis/ en colère cet après-midi.
Pierre has be.PP sitting/ angry this afternoon

Compare with *imparfait* (imperfective), which combines with all statives without a glitch:

- (37) Pierre était assis/ en colère cet après-midi.
Pierre be.PST sitting/ angry this afternoon
'Pierre was sitting/angry this afternoon.'

Inchoative reading The adverbials *soudain* 'suddenly' and *tout à coup* 'all of a sudden' can remedy the infelicity, under an inchoative reading:

- (38) Pierre a soudain été assis/ en colère (cet après-midi).
Pierre has suddenly been sitting/ angry this afternoon
'Suddenly, Pierre was seated/got angry this afternoon.'

A possible continuation would be:

- (39) Il n' a pas cessé de l' être depuis.
he NEG has NEG stopped of it be since.then
'He has been sitting/angry nonstop ever since.'

Notice that with a quantized predicate, we do not get an inchoative interpretation with *soudain* (instead the topic time must include an eventuality in the denotation of vP, which leads to pragmatic oddity in (40)):

- (40) #Soudain cet après-midi, Pierre a écrit une thèse sur les
suddenly this afternoon Pierre has write.PP a dissertation on the
batraciens.
batrachians
Intended: 'Suddenly this afternoon, Pierre started writing a dissertation on batrachians.'

Complexive reading A complexive interpretation becomes available with quantificational adverbials, for example, *à plusieurs reprises* 'on several occasions', *une fois* 'once', *chaque fois* 'each time', *à un moment* 'at some point', as well as durational ones, for example, *pendant n heures* 'for n hours', *entre 14h et 15h* 'between 2pm and 3pm'... (as opposed to locational ones, e.g., *cet après-midi* 'this afternoon', *en 2016* 'in 2016'): that is, the predicate of eventualities is interpreted as being temporally *bounded*.

- (41) Pierre a été assis/ en colère à plusieurs reprises (cet après-midi).
 Pierre has be.PP sitting/ angry at several occasions this afternoon
 ‘Pierre has been sitting/angry on several occasions (this afternoon).’
- (42) Il y a un moment (cet après-midi) où Pierre a été assis/
 there.is a moment this afternoon where Pierre has been sitting/
 en colère.
 angry
 ‘There was a time (this afternoon) at which Pierre was sitting/angry.’
- (43) Pierre a été assis/ en colère pendant une heure (cet après-midi).
 Pierre has be.PP sitting/ angry for an hour this afternoon
 ‘Pierre has been sitting/angry for an hour (this afternoon).’

From the infelicity of (36) above, it is possible to infer that stative predicates are incompatible with the perfective. But then what about (38) and (41)-(43)? They are indeed felicitous, but note that they also come with a special interpretation (complexive or inchoative), which amounts to semantic enrichment. One can thus maintain that the incompatibility is real but a repair is possible, which is tied to semantic enrichment. What can be the role of the semantic enrichment? Of the two interpretations which appear in the perfective, the complexive one probably offers the best insight. We said that a predicate of eventualities is temporally bounded when the eventualities in its denotation are locally maximal. Here is a formal definition:

- (44) A property P is maximal iff $\forall e, e' : \text{if } P(e) \text{ and } e \sqsubset e' \text{ then } \neg P(e')$

A stative property like *Pierre be sitting* is, by definition, not maximal. But it can be turned into a maximal property. The result is no longer stative, in fact it is quantized (or telic): if a property P is maximal then if P holds of e then no proper subpart e' of e is maximal, hence a P eventuality. So if P is maximal, then it is quantized (per (28)).

1.3.4 Aspectual mismatch and coercion operators

To sum up then, the examination of stative predicates suggests that they can only compose with the perfective if they are turned into quantized (telic) predicates. This is the gist of the *aspectual coercion* view:¹² after de Swart (1998), Gerö & von Stechow (2003) and Bary (2009), I assume that PFV imposes a restriction on

¹² The notion of aspectual coercion was first introduced by Moens & Steedman (1988). I side with de Swart (1998), Rothstein (2004), Egg (2005) and Bary (2009) in seeing coercion as a sentence-internal mechanism, triggered as a response to a semantic mismatch between two expressions; for a different view, see Dölling 2014.

its complement, which must be a quantized predicate of eventualities;¹³ the semantic enrichment, a *reinterpretation* process, comes down to the transformation of a homogeneous property into a quantized (telic) one. Reinterpretation is a way of avoiding an impending mismatch; furthermore it is a last resort, since the complexive and the inchoative interpretations, as we saw in (33) and (35), are not available in the imperfective. The reader will probably wonder: the need for coercion might be attested with stative predicates, for they are (for the most part) infelicitous in the absence of appropriate adverbials, but activities (e.g., *Pierre run in the park*) seem to dovetail with the perfective effortlessly; so do these need to be coerced as well? The fact that activities in the perfective mandatorily come with semantic enrichment (see (32) and (34) above) indicates that they too need to be coerced; but a complete answer to the query would require understanding the role of adverbials. I do not know why coercion seems to necessitate the presence of appropriate adverbials in the case of statives.

But I note that this statement is too strong anyway, as certain statives can be coerced with no appropriate adverbial, for example, *Pierre être ministre des affaires étrangères* ‘Pierre be minister of foreign affairs’. The reading that obtains is a complexive one:

- (45) Pierre a été ministre des affaires étrangères.
 Pierre has be.PP minister of.the affairs foreign
 ‘Pierre once was minister of foreign affairs.’

The boundedness of the resulting predicate is evidenced by the following test (with the locational adverbial *en 2016* ‘in 2016’, which doesn’t by itself trigger coercion):

- (46) *Passé composé (perfective); uttered in 2019:*
 #Il est ministre depuis 2015, donc il a été ministre en 2016.
 he is minister since 2015 therefore he has be.PP minister in 2016
 Intended: ‘He has been a minister since 2015, therefore he was a minister

13 The reason for the restriction is not well understood. Bary (2009) and Bary & Egg (2012) offer an explanation in terms of competition and pragmatic strengthening. In a nutshell, the proposal is the following. Let *S* be an imperfective sentence with a non-quantized vP predicate; the imperfective locates the topic interval within the runtime of an eventuality in the denotation of vP; if *S* is true, there is an eventuality e_1 which verifies this inclusion, and S' , which only differs from *S* in having PFV instead of IMPFV, is also true: the property denoted by vP has the subinterval property, at least down to a minimal threshold, and the topic interval thus contains the runtime of e_2 , an eventuality in the denotation of vP, and a part of e_1 . The selectional restriction of PFV can thus be seen as rooted in a semantic overlap, which Bary and Egg claim to be unwanted. These authors use Egg’s (2005) Duration Principle, a principle which holds that ‘properties of eventualities must be compatible with respect to the duration they attribute to an eventuality’, to explain how the choice of a particular coercion operator is determined by the temporal modifiers present in the clause.

in 2016.’

(47) *Imparfait (imperfective); uttered in 2019:*

Il est ministre depuis 2015, donc il était ministre en 2016.

he is minister since 2015 therefore he be.PST minister in 2016

‘He has been a minister since 2015, therefore he was a minister in 2016.’

Another example of a stative predicate which is easy to coerce is *x connaître quelqu’un* ‘x know someone’:

(48) Quand j’ ai connu ton père, il était étudiant.

when I have know.PP your father he was student

‘When I met your father, he was in college.’

The predicate *connaître ton père* can thus be turned into a quantized predicate, whose meaning is inchoative and can be paraphrased approximately as *become acquainted with your father*, or *meet your father*. This is a telic (change of state) predicate: it is not available in the imperfective, as shown by the oddity of the following dialogue:

(49) A: C’ est triste, je ne fais plus de rencontres.

it is sad I NEG do anymore of encounters

B: #C’ est vrai, autrefois tu connaissais plein de gens.

it is true once you know.PST plenty of people

‘A: It’s sad that I don’t meet people anymore.

B: #That’s right, you used to know lots of people.’

B’s reply would be felicitous if *connaître* could be taken to mean *meet*. The fact that it doesn’t is an indication that the change of state interpretation is a product of coercion in the perfective.

It bears saying that the *imparfait* in B’s reply has a habitual interpretation: such an interpretation results from the combination of a telic predicate of eventualities with the imperfective. Another illustration of this phenomenon is provided in (50):

(50) Autrefois, Pierre courait le marathon de Paris.

once Pierre run.PST the marathon of Paris

‘Pierre used to run the Paris marathon.’

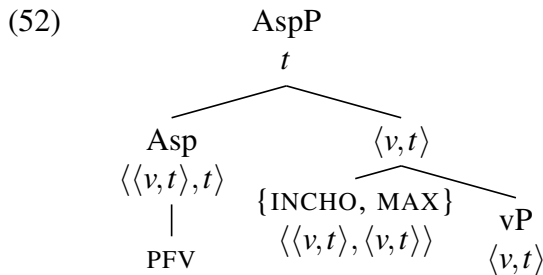
Quantized predicates can give rise to a habitual interpretation in the imperfective; another option is the progressive interpretation. Is this aspectual coercion as well? Probably not, if we follow the logic outlined above, adopted from [Bary 2009](#) (but see [de Swart 1998](#) and [Bary & Egg 2012](#) for a different view): the habitual and the progressive interpretations are available with all aspectual classes (see e.g., the

habitual reading with the stative *I be young* and the activity *I sleep well* in (51)), not just with telic predicates. Therefore if coercion is a last resort, this is not coercion.

- (51) Quand j' étais petit, je ne dormais pas bien.
 when I be.PST young I NEG sleep.PST NEG well
 'When I was young I didn't sleep well.' [Bary 2009, ex. (78)]

Going back to the issue of adverbials, we can dismiss a possible hypothesis about their role in coercion: one could imagine that they apply to predicates of eventualities and make them telic (as suggested to me by Ana Arregui); the fact that aspectual coercion can happen without adverbials (witness activities and *connaître*), shows that they do not effect coercion by themselves or are not the only coercion agents.¹⁴

Coercion operators I will assume, with Bary, that coercion is performed by covert operators, present in the syntax. These operators intervene between vP and PFV:¹⁵



There isn't just one coercion operator. Bary describes four of them in her study of Ancient Greek: in this language, in addition to the complexive and inchoative ('ingressive' in Bary's terms) interpretations, two more can be found, namely the *tragic* and the *generic* interpretations. For French we only need two (for the time being), labelled 'INCHO' (for the inchoative reading; Bary calls it 'INGR') and 'MAX' (for the complexive reading). Let's consider MAX first: its input is, in set talk, a set of eventualities *P* and its output is a subset thereof, namely a set of *P* eventualities with a maximal span, that is, *P* eventualities not properly contained in other *P* eventualities. The following entry delivers the desired meaning:¹⁶

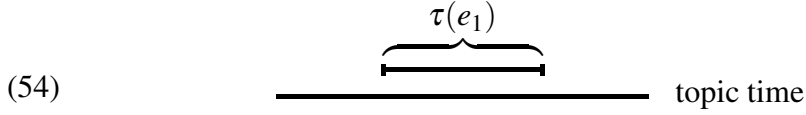
14 It is also plausible that not all adverbials are alike. It seems quite clear, for example, that durational adverbials, which can attach as low as vP, might suffice to turn an atelic predicate into a quantized one, by imposing temporal boundaries (it is harder to make the same case about quantificational adverbials). For example, while *John run* is atelic (and as such can be modified by *for five hours*), *John run for five hours* is quantized (under an *exactly* interpretation of the numeral).

15 In Section 2.3, I provide a gapping test to show that coercion operators are present in the syntax.

16 In this entry maximality is presented as at-issue content. It might be or also be a non at-issue

$$(53) \quad \llbracket \text{MAX} \rrbracket^{c,s,w,t} = \lambda P_{\langle v,t \rangle} . \lambda e_v . P(e) \wedge \forall e' : e \sqsubset e' \rightarrow \neg P(e') \quad [\text{from Bary 2009}]$$

In the picture below (54), e_1 is an eventuality which is locally maximal and whose runtime $\tau(e_1)$ is located within the topic time: so if it is an eventuality of Pierre running in the park, it will verify (55):



(55) Pierre a couru dans le parc cet après-midi. [= (31)]

(56) LF of (55) under a complexive reading:¹⁷

$[\text{TP PRS } [\text{PerfP Perf } [\text{AspP PFV } [\text{MAX } [\text{vP Pierre courir dans le parc }]]] \text{ cet après-midi}]]]$

$$(57) \quad \llbracket (56) \rrbracket^{c,s,w,t} = \text{True iff} \\ \exists t'_i : t' < t \wedge t' \subseteq \text{this_afternoon}' \wedge [\exists e_v : \tau(e) \subseteq t' \\ \wedge \llbracket \text{vP} \rrbracket^{c,s,w,t'}(e) \wedge [\forall e' : e \sqsubset e' \rightarrow \neg \llbracket \text{vP} \rrbracket^{c,s,w,t'}(e')]]]$$

Now, how does the inchoative operator INCHO output a quantized property? Bary proposes that it returns (in set talk) a set of punctual eventualities. A predicate of punctual eventualities is vacuously quantized, because a punctual eventuality has no proper parts. Recall the definition:

$$(58) \quad \text{A property } P \text{ is quantized iff } \forall e, e' : \text{if } P(e) \wedge e' \sqsubset e \text{ then } \neg P(e') \quad [\text{= (28)}]$$

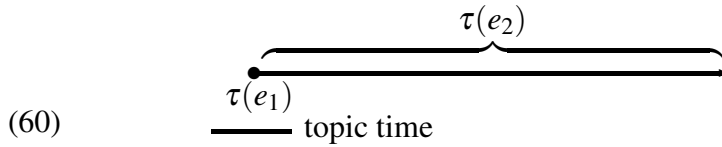
The instantaneous eventualities in the output of INCHO about the runtime of an eventuality in the denotation of the vP argument:

$$(59) \quad \llbracket \text{INCHO} \rrbracket^{c,s,w,t} = \lambda P_{\langle v,t \rangle} . \lambda e_v . \exists t'_i \exists e'_v : \tau(e) = \text{IB}(t') \wedge \tau(e') = t' \wedge P(e') \wedge \\ \neg [\exists t'' \exists e'' : t' \subset t'' \wedge t'' = \tau(e'') \wedge P(e'')] \\ \text{where the initial bound function IB maps an interval } t' \text{ to} \\ \text{the latest moment just before } t'. \quad [\text{from Bary 2009}]$$

The negative condition on the second line ensures that no eventuality in the denotation of vP starts before an eventuality in the output of the coercion operator. In the picture below, e_1 is an eventuality in the output of INCHO and its runtime (an instant) is located within the topic time; the eventuality e_2 , whose runtime begins right after the runtime of e_1 , is an eventuality in the denotation of vP:

inference. I leave this question for future research.

17 Following Pancheva & von Stechow (2004), I attach the frame adverbial *cet après-midi* at AspP.



Unlike e_2 , which is an eventuality in the denotation of vP, the nature of the eventuality e_1 , which is targeted by the inclusion performed by PFV, is left unspecified.

In the next section, I argue that root modals, which take front stage in standard descriptions of the actuality entailment phenomenon, form (i.) predicates of eventualities (ii.) which are atelic, specifically stative. My goal is to show that aspectual coercion, which targets atelic predicates in the perfective (Section 1.3), applies to them too.

2 Root modals and coercion

2.1 Root modals form stative predicates of eventualities

The semantics that we gave for Viewpoint aspect heads in Section 1.1 leads us to assume that in the sentences that interest us, for example, (1a), Asp combines with a predicate of eventualities of type $\langle v, t \rangle$.

- (61) Olga a pu_{abil} soulever un frigo.
 Olga has can.PP lift.INF a fridge
 ‘Olga was able to lift a fridge.’ [=(1a)]

The root modal is the head of the complement of Asp,¹⁸ and as such it forms a predicate of eventualities, for example, the predicate *Olga can lift a fridge*. If a predicate formed with a modal is indeed a predicate of eventualities, it should be possible to locate the eventualities it is true of in space and time, using appropriate modifiers. Let’s verify that this is so. As for a time coordinate, in sentence (62) the adjunct *hier* ‘yesterday’ sets the time of Pierre’s obligation to turn in his homework, while *la semaine prochaine* ‘next week’ sets the time of the turning-in itself.

- (62) *Context:* The rules have just changed: Pierre now has to turn in his homework tomorrow...
 Hier encore, il devait_{deon} rendre son devoir la semaine
 yesterday still he must.PST turn.in his homework the week
 prochaine.
 next

¹⁸ That root modals are generated below Asp is a claim that is also defended by [Hacquard \(2009, 2010\)](#), and [Homer \(2013\)](#) a.o. Epistemic modals are higher than Asp, and are thus not involved in actuality entailments.

‘Yesterday, he still had to turn in his homework next week.’

We see that Viewpoint Aspect (IMPFV in (62)) locates the runtime of a legal situation (now over and superseded by a new one) w.r.t. the topic interval. It doesn’t have access to eventualities in the denotation of the complement of the modal, that is, eventualities of Pierre turning in his homework (these are located in a time interval set by the modifier *la semaine prochaine* ‘next week’). We can generalize: eventualities in the denotation of the complement of a root modal are never quantified over by matrix Viewpoint Aspect (despite appearances to the contrary, when an actuality entailment occurs); this is a point of contention with [Hacquard \(2009, 2010\)](#), see Section 4.

In the next sentence, the matrix adverbial fixes the space coordinate of a legal situation (*Pierre being allowed to have received his surgeon degree abroad*), which is not the same as the spatial location of the eventuality of Pierre receiving his surgeon degree.

- (63) *Context:* Where he lives now, is Pierre allowed to practice as a surgeon with his French degree?
 Non, dans ce pays Pierre ne peut_{deon} pas avoir obtenu son
 no in this country Pierre NEG can.PRS NEG have gotten his
 diplôme de chirurgien à l’étranger.
 degree of surgeon abroad
 ‘No, in this country, Pierre is not allowed to have received his surgeon degree abroad.’

The fact that spatial modifiers can be used to locate a legal situation is consonant with an analysis of the main vP headed by the root modal as a predicate of eventualities.

I propose a (simplified) semantics for root modals,¹⁹ whereby they take as arguments a proposition (they create biclausal structures) and an eventuality:

$$(64) \quad \llbracket \text{pouvoir}_{\text{root}} \rrbracket^{c,s,w,t} = \lambda \Phi_{\langle s,t \rangle} . \lambda e_v . \exists w'_s \in \text{Acc}(e) : \Phi(w')$$

The accessibility relation *Acc* takes as input an eventuality, for example, the existence of certain conditions, rules or circumstances (I draw on situation semantics when I say that accessibility is not relative to a world but to an eventuality), and the modal domain is projected from this eventuality.²⁰ The same lexical entry holds,

19 Simplified because I ignore the Kratzerian distinction ([Kratzer 1981, 1991](#)) between two conversational backgrounds, and because I do not specify how the accessibility relation is determined.

20 The notion of projection is taken from [Hacquard 2010](#) and [Kratzer 2013](#), and it has roots in [Arregui 2005, 2007, 2009](#). A modal has an anchor, which is a part of the evaluation world; modal alternatives are fashioned according to the anchor. I use as anchor certain conditions of the world of evaluation,

mutatis mutandis, for *devoir_{root}* ‘must’.

Second, if root modals form predicates of eventualities, what aspectual class do these belong to? A conceptual argument can be made. The predicates of eventualities headed by root modals are expected to be stative, since our definition of stative predicates applies to them: any *P* eventuality described as the accessibility of worlds from certain conditions, rules or circumstances, has proper parts, each of which is itself a *P* eventuality.

A standard test confirms that predicates formed by root modals are non-quantized. They can be modified by *for* α *time*-adverbials, and cannot be modified by *in* α *time*-adverbials:

- (65) a. pouvoir renvoyer les épreuves du manuscrit pendant trois
 can.INF send.back.INF the proofs of.the manuscript for three
 mois
 months
- b. #pouvoir regarder la télévision en une heure
 can.INF watch.INF the television in an hour

For the test in (65), I use a simple modified vP, not a tensed structure, to stay away from the interference created by coercion when Asp is introduced; furthermore, to control for attachment ambiguity, I choose, in the complement of the modal, a predicate that cannot be modified by the relevant adverbial (hence the non-minimality of the pair). In (65a), the embedded predicate *send back the proofs of the manuscript* is quantized; in (65b), *watch television* is atelic.

There is another aspect under which predicates headed by root modals pattern with atelic predicates. Unlike quantized predicates, they do not yield an obligatory future orientation in antecedents of subjunctive conditionals. (66a) feels odd because it is hard to see how a future event of meeting with Michael Jordan would lead to the person in question playing professional basketball right now; in (66b) this oddity vanishes because the meeting is located in the past w.r.t. the playing thanks to the perfect, and one can easily imagine some causal relation between the two eventualities.

(66) *Quantized predicates:*

- a. #S’ il rencontrait M. Jordan, il jouerait en ce moment au
 if he meet.PST M. Jordan he play.COND in this moment at.the
 basket au niveau professionnel.
 basketball at.the level professional
 ‘If he met M. Jordan, he would currently be playing as a professional

and I feed this anchor to the Acc function.

- basketball player.’
- b. S’ il avait rencontré M. Jordan, il jouerait en ce moment
 if he have.PST meet.PP M. Jordan he play.COND in this moment
 au basket au niveau professionnel.
 at.the basketball at.the level professional
 ‘If he had met M. Jordan, he would currently be playing as a profes-
 sional basketball player.’

(67) is a natural sentence: a current state of being tall motivates a current activity. Likewise in (68), it is a current capacity which motivates a current activity.²¹ Both conditionals have a simple past in their antecedent:

(67) *Stative predicates:*

S’ il était plus grand, il jouerait en ce moment au basket
 if he be.PST more tall he play.COND in this moment at.the basketball
 au niveau professionnel.
 at.the level professional
 ‘If he were taller, he would currently be playing as a professional basketball
 player.’

(68) *Root modals:*

S’ il pouvait marquer des paniers comme M. Jordan, il jouerait
 if he can.PST score of.the baskets like M. Jordan he play.COND
 en ce moment au basket au niveau professionnel.
 in this moment at.the basketball at.the level professional
 ‘If he could score points like M. Jordan, he would currently be playing as
 a professional basketball player.’

Note that this test shows that predicates formed by root modals *can* be stative, not that they have to be (one could imagine that they are ambiguously stative or non-stative). Another test, specific to stativity, can be applied, which uses the incompatibility of the periphrastic progressive *être en train de* ‘be in the process of’ with stative predicates, as illustrated in (69)-(70) (French doesn’t have a dedicated progressive, like English *be + -ing*):

(69) *Non-statives (quantized properties and activities):*

- a. être en train d’arriver/ faire le gâteau
 be.INF in process of arrive.INF make.INF the cake
- b. être en train de courir
 be.INF in process of run.INF

²¹ On aspect in subjunctive conditionals, see Arregui 2005, 2009 and Ippolito 2013.

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(70) *Statives:*

#être en train d' être en colère/ assis
be.INF in process of be.INF angry sitting

(71) *Root modals:*

#être en train de pouvoir faire le gâteau/ courir
be.INF in process of can.INF make.INF the cake run.INF

As expected, the modal predicate *x pouvoir faire le gâteau* 'x can bake the cake' is infelicitous under the periphrastic progressive. It bears saying that the aspectual properties of the complement of the modal are not 'visible' to the periphrastic progressive above the modal; thus the aspectual class of the predicate headed by the root modal does not depend on the complement (a point which is ignored by Hacquard (2009, 2010), see Section 4).

Another point needs to be emphasized: a modal predicate of eventualities is stative, and as such it should be incompatible with the perfective, barring coercion. In the next subsection, I show that the complexive and inchoative interpretations, which are reflexes of coercion, are available with root modals. Establishing this point is crucial, for if modal predicates of eventualities *can* be coerced, then they *must* be, given that coercion is a repair for a mismatch.

2.2 Aspectual coercion and modals

2.2.1 Inchoative interpretation

Recall that statives can receive an inchoative interpretation in the perfective (Section 1.3.2). The inchoative interpretation illustrated in (38) comes about with modal predicates as well, with the right adverbial. Suppose that Olga's wish was granted by a genie; she dreamt of being able to lift heavy objects:

(72) Olga a soudain pu_{abil} soulever un frigo, et elle en est encore
Olga has suddenly can.PP lift a fridge and she of.it is still
capable.
capable
'Olga suddenly became able to lift a fridge, and she's still able to do so.'

Olga a soudain pu soulever un frigo can mean, as the continuation in (72) shows, that a state of Olga being able to lift a fridge came into existence at some point. This reading is a reflex of the inchoative coercion (only available in the perfective), brought about by the covert operator INCHO. Under this particular reading, there is no inference that she actually lifted a fridge, as shown by this test:

- (73) Olga a soudain pu_{abil} soulever un frigo, mais ne l' a pas fait.
 Olga has suddenly can.PP lift a fridge but NEG it has NEG done
 'Olga suddenly became able to lift a fridge, but she didn't do so.'

This is not to say that the only reading available for *Olga a soudain pu soulever un frigo* is one where an ability came to exist. Using the *too*-test, it is possible to detect another reading, with an actuality entailment:

- (74) Olga a soudain pu_{abil} soulever un frigo, et [Marie]_F aussi en a soulevé un.
 Olga has suddenly can.PP lift a fridge and Marie too of.it has lifted one
 'Olga has suddenly been able to lift a fridge, and Marie lifted one too.'
 → Olga lifted a fridge.

This time, *soudain* indicates that an event of Olga lifting a fridge happened suddenly, not that the ability came to exist suddenly. As will become clearer in Section 2.3, the optionality of the AE under *soudain* is a case of ambiguity between two kinds of coercion, the inchoative one in (73) and the 'actualistic' one (which yields AEs) in (74).

2.2.2 Complexive interpretation

The second kind of special interpretation that arises when the perfective is confronted with an atelic predicate is a complexive interpretation, whereby the existence of a locally maximal state is asserted (42). Modal predicates pattern with non-modal ones in being subject to the same kind of coercion. (75) merely says that at some point in the past, there was a temporally maximal capacity:

- (75) Il y a un moment où/ À plusieurs reprises Olga a pu_{abil}
 there.is a moment where at several occasions Olga has can.PP
 soulever un frigo, mais ne l' a pas fait.
 lift a fridge but NEG it has NEG done
 'At some point/On several occasions, Olga was able to lift a fridge, but didn't do so.'

Another reading is possible, with an actuality entailment, detected by the *too*-test; with the adverbials, we quantify over intervals containing an event of Olga lifting a fridge:

- (76) Il y a un moment où/ À plusieurs reprises Olga a pu_{abil}
 there.is a moment where at several occasions Olga has can.PP

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soulever un frigo, et [Marie]_F aussi en a soulevé un.
lift a fridge and Marie too of.it has lifted one
'At some point/on several occasions, Olga was able to lift a fridge, and Marie lifted one too.'
→ Olga lifted a fridge.

The continuations in (75) and (76) show again an ambiguity, this time between a complexive reading in the former, and an actualistic one (a.k.a. AE) in the latter.

The fact that modal predicates are amenable to at least two kinds of aspectual coercion in the perfective suffices to show that they are not suitable under the perfective, and that they need to be coerced, because coercion is a last resort. Another point must be made: the so-called exceptions to AEs in French follow a clear pattern:

- (77) **Generalization:** The very same adverbials that allow for the complexive and inchoative interpretations with non-modal predicates license a complexive or an inchoative reading, hence a reading without AE, with modal predicates.

This is another indication that modal predicates form a natural class with non-modal stative predicates.

An actuality entailment is, like the complexive and the inchoative interpretations, a semantic enrichment: since modal predicates need to be coerced, as we have just shown, it stands to reason that an actuality entailment is a reflex of a hitherto unnoticed coercion mechanism. It is now time (i.) to show that there exists a kind of coercion with non-modal stative predicates which gives rise to an entailment about the occurrence of an event and (ii.) to propose that canonical AEs (with modals) are nothing but the result of this coercion. The next subsection is devoted to the exploration of the third way of coercing stative predicates.

2.2.3 Actualistic interpretation

I first illustrate this mode of coercion, which has gone unnoticed so far, with non-modal predicates; I define a dedicated coercion operator ACT. And I then propose that it is the culprit in the triggering of canonical AEs.

Non-modal predicates When placed in the scope of PFV, a number of stative predicates (importantly, not all predicates are eligible) give rise to a reading whereby the existence of some pragmatically determined event is entailed; no adverbial is needed to license this reading. We find it, for example, with predicates formed with the verb *coûter* 'cost': (78a) not only says what the price of the house was, it also

entails that the house was bought (or sold) for that price. No such entailment occurs if we substitute the *imparfait* (hence imperfective aspect) for the *passé composé* (which correlates with the perfective aspect), as in (78b):

- (78) a. La maison a coûté 100 000 €. (Perfective)
 the house has cost.PP €100,000
 ‘The house cost €100,000.’
 → The house was bought.
- b. La maison coûtait 100 000 €. (Imperfective)
 the house cost.PST €100,000
 ↗ The house was bought.

I submit that the entailment is a reflex of an aspectual coercion, which is neither complexive nor inchoative; I label this coercion ‘actualistic’; note that no adverbial is needed for it. The stative *la maison coûter 100 000 €* is also amenable to the inchoative or the complexive coercion, brought up by the relevant adverbials:

- (79) *Inchoative interpretation* (suppose that the price of the house changes suddenly due to a crash of the real estate market):
 Soudain, la maison a coûté 100 000 €.
 suddenly the house has cost.PP €100,000
 ‘Suddenly the house was priced at €100,000.’
- (80) *Complexive interpretation* (suppose that the price of the house fluctuates a lot):
 Il y a un moment où la maison a coûté 100 000 €.
 there.is a moment where the house has cost.PP €100,000
 ‘At some point the house was priced at €100,000.’

Here are more examples of the actualistic interpretation. An entailment occurs in the following perfective sentences, which all contain a stative predicate, not in their imperfective counterparts:²²

- (81) a. L’ obstacle a été facile/ agréable/ difficile à franchir.
 the obstacle has be.PP easy/ pleasant/ difficult to overcome.INF
 ‘The obstacle was easy/pleasant/hard to overcome.’
 → The obstacle was overcome.
- b. L’ obstacle était facile/ agréable/ difficile à franchir.
 the obstacle be.PST easy/ pleasant/ difficult to overcome.INF
 ↗ The obstacle was overcome.

²² Among the stative predicates of the (non-exhaustive) list presented here, there are individual-level as well as stage-level predicates.

Actualistic interpretations

- (82) a. Pierre a été heureux de vous rencontrer.
Pierre has be.PP happy of you meet.INF
'Pierre was happy to meet you.'
→ Pierre met you.
- b. Pierre était heureux de vous rencontrer.
Pierre be.PST happy of you meet.INF
↯ Pierre met you.

Note in passing that in examples (81) and (82), the entailment is derived from an infinitival complement (which is reminiscent of canonical AEs with modal verbs; the commonality is not an accident, see Section 3).

- (83) a. Pierre a été intelligent/ eu du tact.
Pierre has be.PP intelligent/ have.PP of.the tact
'Pierre was smart/tactful.'
→ Pierre acted in a certain way.
- b. Pierre était intelligent/ avait du tact.
Pierre be.PST intelligent/ have.PST of.the tact
↯ Pierre acted in a certain way.
- (84) a. Sa voix a porté loin.
his voice has carry.PP far
'His voice reached far.'
→ He made use of his voice.
- b. Sa voix portait loin.
his voice carry.PST far
↯ He made use of his voice.
- (85) a. Pierre a aimé/ détesté la pièce.
Pierre has like.PP/ hate.PP the play
'Pierre liked/hated the play.'
→ Pierre saw (also possible: heard, read, or wrote) the play.²³
- b. Pierre aimait/ détestait la pièce.
Pierre like.PST/ hate.PST the play
↯ Pierre saw (heard, read, or wrote) the play.
- (86) a. Les Français ont préféré le candidat de droite.
the Frenchmen have prefer.PP the candidate of right
'The French preferred the right-wing candidate.'

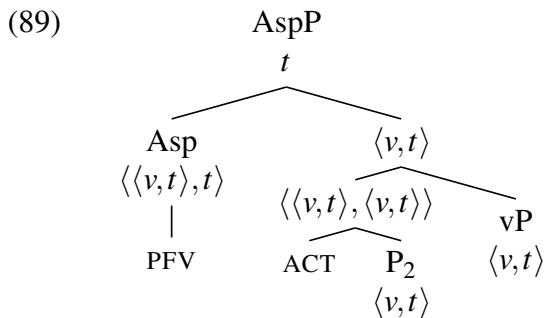
²³ It seems plausible that in this case, aspectual coercion coexists with another kind of coercion, which supplies a verb under *like/hate* such as *read, see*, etc., the same way that *finish a book* can be interpreted as 'finish reading/writing a book' (Pustejovsky 1995). The output of the latter coercion is part of the entailment.

- A candidate was chosen.
- b. Les Français préféraient le candidat de droite.
 the Frenchmen prefer.PST the candidate of right
 ↗ A candidate was chosen.

It bears saying that the entailments depend on the meanings of the predicates of eventualities, not on their particular linguistic form (a point that was already made in the Introduction, about standard AEs). For example, we can replace *the house cost €100,000* with *the price of the house be €100,000*, or undo the *tough*-construction of (81), without changing the entailment pattern:

- (87) a. Le coût de la maison a été de 100 000 €.
 the price of the house has be.PP of €100,000
 ‘The price of the house was €100,000.’
 → The house was bought.
- b. Le coût de la maison était de 100 000 €.
 the price of the house be.PST of €100,000
 ↗ The house was bought.
- (88) a. Il a été facile/ agréable/ difficile de franchir l’ obstacle.
 it has be.PP easy/ pleasant/ difficult to overcome the obstacle
 ‘It was easy/pleasant/hard to overcome the obstacle.’
 → The obstacle was overcome.
- b. Il était facile/ agréable/ difficile de franchir l’ obstacle.
 it be.PST easy/ pleasant/ difficult to overcome the obstacle
 ↗ The obstacle was overcome.

The fact that these entailments only occur when a stative predicate is in the perfective strongly suggests that they result from aspectual coercion. This coercion doesn’t require particular adverbials. I posit a coercion operator, which I call ‘ACT’:



ACT takes two $\langle v,t \rangle$ arguments: the first one is provided by a variable which ranges

over predicates of eventualities (P_2 in the above tree);²⁴ the value of this variable is fixed by the utterance context²⁵ and it is the property of eventualities that is existentially closed in the entailment. Let's encode the dependency on the utterance context as a presupposition of the variable:

$$(90) \quad \llbracket P_n \rrbracket^{c,s,w,t}: \text{only defined if } s(P_n) \text{ is fixed by the utterance context;} \\ \text{if defined, } \llbracket P_n \rrbracket^{c,s,w,t} = s(P_n)$$

The second $\langle v, t \rangle$ argument is provided by vP . Here is a provisional entry for ACT:

$$(91) \quad \llbracket \text{ACT} \rrbracket^{c,s,w,t} = \lambda P_{\langle v,t \rangle} . \lambda Q_{\langle v,t \rangle} . \lambda e_v . P(e) \wedge [\forall e'_v : e' \sqsubseteq e \rightarrow \neg P(e')] \wedge \\ \exists e''_v : Q(e'') \quad \text{[to be revised]}$$

Note that this coercion operator, like MAX (53) and INCHO (59), yields a conjunctive meaning. Unlike the former but like the latter, it yields (in set talk) a set of eventualities of a different nature than the set of eventualities denoted by vP . INCHO yields a set of instantaneous eventualities, whose nature is unspecified; ACT yields a set of eventualities whose nature is context-dependent. In order to satisfy the selectional requirement of PFV, the property returned by ACT is quantized: this is the role of the second conjunct in (91) (per (28) on p. 10). We can rewrite this denotation more simply, using the abbreviation ' P_{Qu} ' to mean that P is quantized:

$$(92) \quad \llbracket \text{ACT} \rrbracket^{c,s,w,t} = \lambda P_{\langle v,t \rangle} . \lambda Q_{\langle v,t \rangle} . \lambda e_v . P_{Qu}(e) \wedge \exists e''_v : Q(e'') \quad \text{[to be revised]}$$

Let's look at an example.

$$(93) \quad \text{La maison a coûté 100 000 €.} \quad \text{[=(78a)]} \\ \text{'The house cost €100,000.'} \\ \rightarrow \text{The house was bought.}$$

$$(94) \quad \text{LF of (93):} \\ \llbracket_{\text{TP}} \text{PRS} \llbracket_{\text{PerfP}} \text{Perf} \llbracket_{\text{AspP}} \text{PFV} \llbracket \text{ACT } P_2 \llbracket_{vP} \text{la maison coûter 100 000 €} \rrbracket \rrbracket \rrbracket \rrbracket$$

24 The variable assignment function s is defined as thus: for each $f \in \{x, P\}$, for each $k \geq 0$, $s(f_k) \in D_f$. Variables with 'high'-types represented in the syntax are not unheard of, witness for example, variables over (Skolemized) choice functions.

25 Another example of expressions whose meaning depends on the utterance context is provided by non-intersective adjectives in Heim & Kratzer 1998, p. 82. In the sentence *Jumbo is a small elephant*, it is not said that Jumbo is absolutely small, only that he is small for an elephant: a standard of size is determined by the noun *elephant*, present in the sentence. The denotation of *small* is defined as an $\langle e, t \rangle$ function (which combines with the noun denotation by Predicate Modification):

(i) $\llbracket \text{small} \rrbracket^{c,s,w,t} = \lambda x_e . x$'s size is below d , where d is the size standard made salient by the utterance context.

- (95) $\llbracket (94) \rrbracket^{c,s,w,t}$: only defined if $s(P_2)$ is fixed by the utterance context;
 if defined, $\llbracket (94) \rrbracket^{c,s,w,t} = \text{True}$ iff
 $\exists t'_i: t' < t \wedge [\exists e_v: \tau(e) \subseteq t' \wedge s(P_2)(e)$
 $\wedge [\forall e'_v: e' \sqsubseteq e \rightarrow \neg s(P_2)(e')]$
 $\wedge \exists e''_v: \llbracket vP \rrbracket^{c,s,w,t'}(e'')]$

With $s(P_2)$ the property *the house be bought*, we derive that the sentence asserts that there was an event of selling the house in a past interval in the world of evaluation, while its price was €100,000, as desired; the quantization condition applies vacuously since the property *the house be bought* is intrinsically quantized. This seems to be a fairly good approximation of the intuitive meaning. The output of ACT is fed to Asp. We verify that PFV quantifies over eventualities taken from the first argument, as shown by the clash in (96b): here the value of the first argument of ACT is determined by the complement of the matrix adjective, which contains a predicate true of eventualities located after the time of utterance:

- (96) *Context*: A yachtsman talks about a round-the-world non-stop race in which he took part several times, and in which he is currently engaged. . .
- a. La dernière fois, la ligne d'arrivée a été difficile à atteindre.
 the last time the finish line has be.PP difficult to reach
 Intended: 'Last time, the finish line was hard to reach.'
 → The finish line was reached.
- b. #Hier la ligne d'arrivée a été difficile à atteindre
 yesterday the finish line has be.PP difficult to reach
 demain.
 tomorrow
 Intended: 'Yesterday, the finish line was hard to reach tomorrow.'

We said that the utterance context determines the property of eventualities used in the actualistic coercion. Can we say a bit more? We have shown that *x coûter y* 'x cost y' can easily give rise to an actualistic interpretation (78a). Its near synonym *x valoir y* 'x be worth y' cannot, and in the absence of appropriate adverbials which could license an inchoative or complexive reading, it gives rise to an odd sentence:

- (97) #La maison a valu 100 000 €.
 the house has be.worth.PP €100,000

There is a crucial difference in the lexical semantics of *cost* and *be worth*. The *value* of an object is independent of a monetary transaction: even without being for sale, or after being sold, an object can retain its value, but not its price. Only objects that are up for sale have a price, and lose it once they have been purchased.

This difference, which is rooted in the lexical entry of the two verbs, illuminates the workings of ACT: it is sensitive to the inference *x can be bought* triggered by the vP *x coûter y*. As shown in (98a), it is an inference that is preserved in questions, as evidenced by a clash with world knowledge (it is notorious that the *Mona Lisa* is not for sale):

- (98) a. #Combien coûte *La Joconde* ?
 how.much cost.PRS La Joconde
 ‘How much does the *Mona Lisa* cost?’
 b. Combien vaut *La Joconde* ?²⁶
 how.much be.worth.PRS La Joconde
 ‘How much is the *Mona Lisa* worth?’

The inference passes the S-family test and the *Hey! Wait a minute!* test (not reproduced here); therefore it is a presupposition.

- (99) La maison coûte 100 000 €.
 the house cost.PRS €100,000
Presupposition: The house can be bought.

In fact, for each of the predicates that are amenable to the actualistic interpretation ((81)-(86)), we can show that it yields a similar modalized presupposition, for example, the presupposition that the obstacle can be overcome in the case of *the obstacle be easy to overcome*, etc. The presupposition that we detect throughout the paradigm thus plays a role in deriving the actualistic interpretation; more will be said about this in Section 3.

Modal predicates We can now put the pieces together and address the standard examples of actuality entailments. We have shown root modals to be coercible and thus obligatorily coerced in the perfective (Section 2.1 and 2.2); they give rise to what seems to be an actualistic interpretation, in the absence of adverbials that license other reinterpretations. I thus propose that AEs with root modals, for example (1), (3a), (12b), (74) and (76), are mere instances of the actualistic coercion. Let’s thus derive a simple case:

- (100) Olga a pu_{abil} soulever un frigo. [=(1a)]
 (101) LF of (100):
 [_{TP} PRS [_{PerfP} Perf [_{AspP} PFV [ACT P₆ [_{vP} pouvoir [_{CP} [_{vP} Olga soulever un frigo]]]]]]]]

²⁶ It has the highest insurance value for a painting, assessed at \$100 million in 1962, according to *Wikipedia*, https://en.wikipedia.org/wiki/List_of_most_expensive_paintings.

- (102) $\llbracket (101) \rrbracket^{c,s,w,t}$: only defined if $s(P_6)$ is fixed by the utterance context;
 if defined, $\llbracket (101) \rrbracket^{c,s,w,t} = \text{True}$ iff there is a past interval t'
 s.t. there is an eventuality e of $s(P_6)$ in w in t' s.t. no proper
 part of e is an eventuality of $s(P_6)$, and there is a state of
 Olga being able to lift a fridge in w whose runtime overlaps
 with t'

The value of variable P_6 , determined by the complement of the modal verb, is *Olga lift a fridge* (an inherently quantized property). The perfective locates an eventuality of Olga lifting a fridge in the topic interval in the actual world (the world parameter, which is not shifted); it is also asserted that a state of Olga being able to lift a fridge existed in the actual world, and its runtime overlaps the topic time (this information comes from the denotation of vP , cf. (15)). We verify that the eventuality whose existence is determined contextually cannot be temporally ordered after the topic time (cf. (96b)):

- (103) a. Hier Pierre a pu rendre son devoir.
 yesterday Pierre has can.PP turn.in his homework
 ‘Yesterday, Pierre was able to turn in his homework.’
 → Pierre turned in his homework yesterday.
- b. #Hier Pierre a pu rendre son devoir demain.
 yesterday Pierre has can.PP turn.in his homework tomorrow
 Intended: ‘Yesterday, Pierre was able to turn in his homework tomorrow.’

Note that for an AE interpretation to obtain, it is not necessary that the complement of the modal contain a quantized predicate of eventualities:

- (104) *Context*: When I was young, I did an internship in a tech company...
 C’ est ainsi que j’ ai pu vivre à Los Angeles.
 it is thus that I have can.PP live in Los Angeles
 ‘This is how I was able to live in Los Angeles.’

The result of coercion is a temporally bounded property of living in L.A. (ACT outputs a quantized property), which is then fed to PFV.

2.3 Ambiguity

All stative predicates need to be coerced in the perfective (Section 1.3). Temporal adverbials support certain types of coercion (as summarized in Table 2). For the predicates that are amenable to the actualistic one, temporal modifiers are not necessary to get the interpretation: therefore in the presence of temporal modifiers,

ambiguity ensues (cf. (73) & (74) and (75) & (76), the latter two repeated below for convenience), and in their absence, only the actualistic interpretation is available.

- (105) a. Il y a un moment où/À plusieurs reprises Olga a pu_{abil} soulever un frigo, mais ne l’a pas fait. (Compl^{ve})
 b. Il y a un moment où/À plusieurs reprises Olga a pu_{abil} soulever un frigo, [Marie]_F aussi en a soulevé un. (Act^{ic})

(105a) and (105b) taken together show that in the presence of a quantificational or durational adverbial, an AE is not mandatory (contradiction test) but possible (*too*-test). As for predicates that are not amenable to the actualistic interpretation, the only way they can be made acceptable in the perfective is through the inchoative and the complexive interpretations, supported by the appropriate modifiers (they are otherwise generally excluded, cf. (36) on page 13).

Predicates↓	Modification→	No modifier	‘Soudain’	Quantificational & durational modifiers
<i>John be angry, John be sitting</i>		No coercion	Inch ^{ve} (no AE)	Compl ^{ve} (no AE)
<i>John can p, John must p, the house cost n, m be difficult to p</i>		Act ^{ic} (AE)	Inch ^{ve} (no AE) or Act ^{ic} (AE)	Compl ^{ve} (no AE) or Act ^{ic} (AE)

Table 2 Stative predicates and their coercion potentials

A hallmark of the actualistic coercion is the location of the pragmatically salient event in the topic interval. If we make the inclusion of the inferred event in the topic interval impossible, then we force a complexive reading and the continuation which contains the anaphoric presupposition trigger *aussi* ‘too’ is infelicitous (106) (in the absence of a temporal mismatch, the continuation is impeccable (105b)).

- (106) Il y a un moment où Olga a pu soulever un frigo lors de la foire qui a lieu demain. # [Marie]_F aussi a soulevé un frigo.
 there.is a moment where Olga has can.PP lift a fridge during the fair that takes place tomorrow Marie also has lifted a fridge
 Intended: ‘At some point, Olga was able to lift a fridge during tomorrow’s fair. [Marie]_F also lifted a fridge.’

This confirms that our analysis of AEs as stemming from the actualistic coercion is on the right track, and that quantificational temporal modifiers do not block AEs: they simply make them optional, by licensing another interpretation. It also bears saying that ambiguity shows that temporal adverbials are not per se the agents of coercion: therefore covert coercion operators are needed.²⁷

I would like to close this section by showing that the coercion operators that I posited are indeed present in the syntax (the demonstration is about MAX and ACT). To do so, I use a gapping test. First of all, I show that MAX is syntactically represented when a complexive interpretation obtains.

(107) *Context:* A group of ten French people are being held hostage by rebels in the Amazon rainforest. Every hostage that ever managed to escape and got caught was immediately killed. . .

- a. Pierre a pu_{circ} s' évader chaque fois qu' il était seul avec
 Pierre has can.PP REFL escape each time that he was alone with
 son gardien et Marie, mardi matin. #[Jean]_F aussi s' est
 his guard and Marie Tuesday morning Jean also REFL is
 évadé mardi.
 escaped Tuesday
 Intended: 'Pierre had an opportunity to escape each time he was alone
 with his guard, and Marie, on Tuesday morning. [Jean]_F also escaped
 on Tuesday.'
- b. Pierre a pu_{circ} s' évader chaque fois qu' il était seul avec
 Pierre has can.PP REFL escape each time that he was alone with
 son gardien et Marie a pu_{circ} s' évader mardi matin.
 his guard and Marie has can.PP REFL escape Tuesday morning
 [Jean]_F aussi s' est évadé mardi.
 Jean also REFL is escaped Tuesday
 'Pierre had an opportunity to escape each time he was alone with his
 guard, and Marie was able to escape on Tuesday morning. [Jean]_F
 also escaped on Tuesday.'

The first conjunct of the first sentence of (107a) mandates a complexive interpretation (since no prisoner escaped more than once), which the temporal modifier licenses; the constituent that is gapped in the second conjunct is identical with some constituent of the first conjunct which is at least as large as AspP. Importantly, there is no quantificational temporal modifier in the second conjunct, but a complexive interpretation obtains nonetheless: it is forced by syntactic means (i.e., copying).

²⁷ If we follow Hacquard's (2009, 2014) suggestion, temporal adverbials optionally remove the perfective, that is, a key ingredient of AE. I discuss this option in Section 4.

The continuation with *aussi* ‘too’ yields a presupposition failure: the AE is unavailable. The gapped constituent contains MAX — instead of ACT — because its antecedent does too. We have evidence that the complexive interpretation — i.e., MAX insertion — obtains through at least two routes: either MAX is licensed by certain quantificational temporal modifiers, or it is copied from another clause. In (107b), which is a control and where no copying takes place, the AE in the second conjunct is possible (the *too*-test is successful) and in fact necessary (in the absence of modification or copying).

We can apply the same strategy to show that ACT is syntactically represented when an actualistic interpretation obtains.

(108) *Context:* Same as in (107)...

- a. #Pierre a pu_{circ} s’ évader mardi matin, et Marie, chaque
 Pierre has can.PP REFL escape Tuesday morning and Marie each
 fois qu’ elle était seule avec son gardien.
 time that she was alone with her guard
 ‘Pierre was able to escape on Tuesday morning, and Marie, each time
 she was alone with her guard.’
- b. Pierre a pu_{circ} s’ évader mardi matin et Marie a
 Pierre has can.PP REFL escape Tuesday morning and Marie has
 pu s’ évader chaque fois qu’ elle était seule avec son
 can.PP REFL escape each time that she was alone with her
 gardien.
 guard
 ‘Pierre was able to escape on Tuesday morning, and Marie was able
 to escape each time she was alone with her guard.’

The first conjunct of (108a) has an actualistic interpretation (i.e., an AE) because it lacks a quantificational temporal modifier. Copying of AspP — including the ACT operator it contains — into the second conjunct ruins the coherence of the discourse (in the context, no prisoner ever escaped more than once) but it is syntactically forced, hence the incoherence marked with the # sign. In the control sentence (108b), the first conjunct receives an actualistic interpretation and the second conjunct a complexive interpretation, and no incoherence ensues (the asymmetry is possible because no copying is involved).

To sum up, we have shown that AEs are instances of a kind of aspectual coercion which targets modal and non-modal predicates alike (the actualistic coercion). We have shown that syntactically represented coercion operators are operative in satisfying the need of the perfective to combine with a quantized predicate of eventualities.

3 The negation problem and a new definition of ACT

As it stands, the foregoing theory makes no distinction between modal and non-modal predicates w.r.t. the actualistic interpretation: the same coercion mechanism is said to apply to both kinds of predicates. There is however a striking asymmetry, which might cast doubt on the unified picture proposed here: the actuality inference is a presupposition in the case of non-modal predicates, while it is a ‘simple’ entailment in the case of modal predicates.

- (109) *Non-modal predicate in an antecedent of a conditional:*
Si la maison a coûté cher, les prix de l’immobilier n’
if the house has cost.PP expensive the prices of the real.estate NEG
ont plus aucun sens.
have anymore any sense
‘If the house cost a lot, sales prices make no sense anymore.’
→ The house was bought.
- (110) *Non-modal predicate in a question:*
La maison a-t-elle coûté cher ?
the house has she cost.PP expensive
‘Did the house cost a lot?’
→ The house was bought.
- (111) *Non-modal predicate under negation:*
La maison n’a pas coûté cher.
the house NEG has NEG cost.PP expensive
‘The house didn’t cost much.’
→ The house was bought.
→ The price of the house wasn’t much.
- (112) *Modal predicate in an antecedent of a conditional:*
Si Olga a pu soulever un frigo, elle a gagné son pari.
if Olga has can.PP lift a fridge she has won her bet
‘If Olga was able to lift a fridge, she won her bet.’
↗ Olga lifted a fridge.
- (113) *Modal predicate in a question:*
Olga a-t-elle pu soulever un frigo ?
Olga has she can.PP lift a fridge
‘Has Olga been able to lift a fridge?’
↗ Olga lifted a fridge.

The preservation of the inference in (109)-(111) shows that it is a presupposition. Under negation, a ‘negative’ entailment obtains with modal predicates, whether the

modal has existential or universal force (as already observed by Hacquard (2009)), and the modal is negated as well:

- (114) *Existential modal and negation:*
 Olga n' a pas pu soulever un frigo.
 Olga NEG has NEG can.PP lift a fridge
 'Olga wasn't able to lift a fridge.'
 → Olga didn't lift a fridge.
 → Olga didn't have the ability to lift a fridge.
- (115) *Universal modal and negation:*
 Olga n' a pas dû soulever un frigo.
 Olga NEG has NEG have.to.PP lift a fridge
 'Olga didn't have to lift a fridge.'
 → Olga didn't lift a fridge.
 → Olga didn't have the obligation to lift a fridge.

We are now faced with two challenges. First, the asymmetry seems to suggest that either standard AEs are not the result of coercion, or if they are, modal predicates get coerced by a different operator than the one that applies to non-modal predicates. The first option is inconsistent with the evidence adduced here, and the second option is implausible, as it is hard to conceive of operators with a selectional restriction for or against modal predicates of eventualities. I actually think we can reject the alternative. And in doing so, we will also address the second challenge: our semantics for ACT yields a conjunction of two statements, a modal one and a non-modal one (91), but we observed that under negation the second component always gets negated; our account is *a priori* not well suited to explain why we get this 'negative' entailment (and worse yet, there are two negative entailments in the case of modal predicates, see (114)-(115)).

The solution to the two challenges is inspired by the observation of the presuppositions triggered by the non-modal predicates involved in actualistic coercion (81)-(86): we noticed (Section 2.2.3 on p. 31) that they all come with a modal presupposition. For example, *the house cost €100,000/a lot* presupposes that *the house can/could be bought*. Now suppose that ACT triggers a 'necessary and sufficient condition' presupposition, which holds that the house was bought just in case it could be bought. Combining these two inferences results in the simple presupposition that the house was bought. And this is precisely the outcome we observed: the actuality entailment is presupposed. With modal predicates, we also find a modal inference, for example, that Olga can lift a fridge, contributed by the modal predicate itself. But this inference is not a presupposition; consequently, despite the 'necessary and sufficient condition' presupposition of ACT, the actuality inference

will not be presupposed; and because of the necessary and sufficient condition, the entailment will be a negative one.

Let's now implement this idea in a revised definition of ACT. The only change is the addition of a presupposition, the 'necessary and sufficient condition'. I use the ∂ -notation, borrowed from [Beaver & Krahmer 2001](#): $\partial(p)$ is defined iff p is true. I also use the ' P_{Qu} ' abbreviation introduced in (92) for quantized predicates:

$$(116) \quad \llbracket \text{ACT} \rrbracket^{c,s,w,t} = \lambda P_{\langle v,t \rangle} . \lambda Q_{\langle v,t \rangle} . \lambda e_v . P_{Qu}(e) \wedge [\exists e'' : Q(e'')] \wedge \\ \partial([\exists e^* : P_{Qu}(e^*) \wedge \tau(e^*) \subseteq t] \leftrightarrow \Omega) \\ \text{with } \Omega \text{ the strongest entailment of } \exists e_v : Q(e) \\ \text{of the form } [\text{Mod}(\exists e_v^+ : R(e^+))], \text{ with } \text{Mod} \in \{\diamond, \square\} \\ \text{and } R \text{ some predicate of eventualities} \quad \text{[final version]}$$

What this says is that the existence of a P eventuality (P is the $\langle v,t \rangle$ argument whose value is context-dependent) has a necessary and sufficient condition.²⁸ This necessary and sufficient condition is given as an entailment of ' $\exists e_v : Q(e)$ ', where Q is the $\langle v,t \rangle$ argument saturated by vP.

Let Q be the predicate *Pierre devoir rendre son devoir* 'Pierre have to turn in his homework'. Then ' $\exists e_v : Q(e)$ ' has entailments of the form $[\text{Mod}(\exists e_v^* : R(e^*))]$, with R some predicate of eventualities and $\text{Mod} \in \{\diamond, \square\}$, namely:

- (117) a. $\diamond(\exists e_v^* : \text{Pierre_turn_in_his_homework}'(e^*))$
 b. $\square(\exists e_v^* : \text{Pierre_turn_in_his_homework}'(e^*))$

The second entailment (with \square) is logically stronger than (asymmetrically entails) the first one (with \diamond): we would thus only retain the second entailment, as prescribed by the presupposition. With a modal predicate like *Olga pouvoir soulever un frigo* 'Olga can lift a fridge' there is only one modal entailment (118a); similarly with our non-modal predicates, for example, *la maison coûter 100 000€* 'the house cost €100,000', except that in this case, the modal entailment is a presupposition (118b):

- (118) a. $\diamond(\exists e_v^* : \text{Olga_lift_a_fridge}'(e^*))$
 b. $\diamond(\exists e_v^* : \text{the_house_be_bought}'(e^*))$

The presupposition restricts the choice of the first argument of ACT (the P variable): it requires that the existence of a P eventuality be conditioned (necessarily and sufficiently) by another eventuality, which is a possibility, a capacity, an obligation, etc., inferred from the meaning of vP.

²⁸ For reasons of simplicity, I use a biconditional symbol, although I am aware that analyzing necessary and sufficient conditions in terms of material implication (see e.g., [Blumberg 1976](#) and [Hintikka & Bachman 1991](#)) is problematic.

Let's now apply the new lexical entry to examples. First, consider again (111):

- (119) La maison n' a pas coûté cher.
the house NEG has NEG cost.PP expensive
'The house didn't cost much.' [= (111)]
Presupposition: The house was bought.

I assume that negation is merged above Asp, the quantifier over eventualities, and below Perf.

- (120) LF of (119):
 $[_{TP} PRS [_{PerfP} Perf [Neg [_{AspP} PFV [ACT P_2 [_{vP} la\ maison\ coûter\ cher]]]]]]$

Ignoring the presupposition for the time being, we get a negated conjunction in the truth-conditions, which we can rewrite as a disjunction of negations:

- (121) If defined,

$$\begin{aligned} \llbracket (120) \rrbracket^{c,s,w,t} &= \text{True iff } \exists t'_i: t' < t \wedge \neg[\exists e_v: s(P_2)(e) \wedge \tau(e) \subseteq t'] \\ &\quad \wedge [\forall e'_v: e' \sqsubseteq e \rightarrow \neg s(P_2)(e')] \\ &\quad \wedge \exists e''_v: \llbracket vP \rrbracket^{c,s,w,t'}(e'') \\ &= \text{True iff } \exists t'_i: t' < t \wedge (\neg[\exists e_v: s(P_2)(e) \wedge \tau(e) \subseteq t'] \\ &\quad \wedge [\forall e'_v: e' \sqsubseteq e \rightarrow \neg s(P_2)(e')]) \\ &\quad \vee \neg[\exists e''_v: \llbracket vP \rrbracket^{c,s,w,t'}(e'')] \end{aligned}$$

Now we consider the presuppositions. We know that P_2 is determined by the context of utterance, and I assume that the necessary and sufficient condition attached to ACT provides the information needed for this determination.²⁹ In this case, we get that $s(P_2)$ is the property of the house being bought (a quantized property), abbreviated as B . The presupposition of ACT projects through negation, and so does the presupposition triggered by the vP predicate; so we get (notice the ' P_{Qu} ' abbreviation for quantized predicates (92)):

- (122)
$$\begin{aligned} \llbracket (120) \rrbracket^{c,s,w,t} &= \text{True iff } \exists t'_i: t' < t \\ &\quad \wedge (\neg[\exists e_v: B_{Qu}(e) \wedge \tau(e) \subseteq t'] \\ &\quad \vee \neg[\exists e''_v: \llbracket vP \rrbracket^{c,s,w,t'}(e'')]) \\ &\quad \wedge \partial([\exists e_v: B_{Qu}(e) \wedge \tau(e) \subseteq t'] \leftrightarrow [\diamond(\exists e'_v: B(e'))]) \\ &\quad \wedge [\diamond(\exists e'_v: B(e'))] \end{aligned}$$

We now simplify the presupposition, and consequently the truth-conditions:

²⁹ I am unsure whether the double entailment is taken into consideration, or if only one direction matters, in determining the value of the variable. In the latter case, I presume the necessary condition is the useful one.

$$\begin{aligned}
(123) \quad \llbracket (120) \rrbracket^{c,s,w,t} &= \text{True iff } \exists t'_i: t' < t \\
&\quad \wedge (\neg[\exists e_v: B_{Qu}(e) \wedge \tau(e) \subseteq t']) \\
&\quad \vee \neg[\exists e''_v: \llbracket \text{vP} \rrbracket^{c,s,w,t'}(e'')]) \\
&\quad \wedge \partial[\exists e_v: B_{Qu}(e) \wedge \tau(e) \subseteq t'] \\
&= \text{True iff } \exists t'_i: t' < t \\
&\quad \wedge \neg[\exists e''_v: \llbracket \text{vP} \rrbracket^{c,s,w,t'}(e'')]) \\
&\quad \wedge \partial[\exists e_v: B_{Qu}(e) \wedge \tau(e) \subseteq t']
\end{aligned}$$

The sentence presupposes that the house was bought in the topic interval in the world of evaluation and asserts that it didn't cost much, as desired. Let's now turn to modal predicates, and derive the semantic value of (115).

$$(124) \quad \text{LF of (115):} \\
\llbracket \text{TP PRS } [_{\text{PerfP}} \text{ Perf } [_{\text{AspP}} \text{ PFV } [_{\text{ACT P}_3} [_{\text{vP}} \text{ Olga devoir soulever un frigo}]]]]] \rrbracket$$

$s(P_3)$ is contextually determined to be the property of Olga lifting a fridge (a quantized property), abbreviated as L . $\llbracket \text{vP} \rrbracket^{c,s,w,t'}$ denotes an obligation of Olga lifting a fridge, such that this obligation holds in the world evaluation w at the time of evaluation t' . Factoring in the presupposition of ACT, we get (the vP predicate doesn't trigger a presupposition):

$$\begin{aligned}
(125) \quad \llbracket (124) \rrbracket^{c,s,w,t} &= \text{True iff } \exists t'_i: t' < t \\
&\quad \wedge (\neg[\exists e_v: L_{Qu}(e) \wedge \tau(e) \subseteq t']) \\
&\quad \vee \neg[\exists e''_v: \llbracket \text{vP} \rrbracket^{c,s,w,t'}(e'')]) \\
&\quad \wedge \partial[[\exists e_v: L_{Qu}(e) \wedge \tau(e) \subseteq t'] \leftrightarrow [\Box(\exists e'_v: L(e'))]]
\end{aligned}$$

I assume that the statement ' $\Box(\exists e'_v: L(e'))$ ' is time-dependent, and that the time parameter of the interpretation function serves to specify its location in time (the time at which the obligation holds):³⁰ it is thus equivalent to ' $\exists e''_v: \llbracket \text{vP} \rrbracket^{c,s,w,t'}(e'')$ '. We can conclude: the biconditional in the presupposition leads to negating the two conjuncts of the assertive content. That is, the sentence asserts that Olga didn't lift a fridge in the world of evaluation (negative AE) and that she didn't have an obligation to do so, as desired. If we remove the negation from (115), we get that Olga lifted a fridge and that she had an obligation to do so; *mutatis mutandis*, we

³⁰ The vP *the house cost a lot* triggers the presupposition that the house can be bought; the presupposition is not intrinsically tensed, but when the predicate is modified by tense, the presupposition becomes relativized to a time:

- (i) The house will cost €100,000.
Presupposition: It will be possible to buy the house.

also derive the right same semantic values for sentences with an existential modal.³¹

The presupposition which projects is that the obligation (or possibility) is a necessary and sufficient condition for the event that happens in the world of evaluation. This is not a trivial presupposition. So we expect to see its effects shine through sometimes; I think we do, indeed. It has often been noted that AEs come with an additional inference, which is not easy to pinpoint. For example, [Mari \(2016\)](#) gives examples such as (126), which indicate the existence of a plan or intention:

- (126) #Jean a pu déplacer la table, mais il ne voulait pas la
 Jean has can.PP move the table but he NEG want.PST NEG her
 déplacer.
 move.
 Intended: ‘Jean managed to move the table, but he did not want to move
 it.’ [[Mari 2016](#), ex. (9)]

Note that the sentence is still deviant if we negate the first part of the sentence. I don’t think such examples indicate that the modal is inherently goal-oriented (and that AEs are thus limited to such modals, *pace* Mari), for we observed AEs with all root flavors of modality. Instead, I propose that the necessary and sufficient condition presupposition, which projects in the case of modal predicates, is the source of the inference. For a possibility to be a necessary and sufficient condition for an event, it must be the case that the possibility is the last missing piece in some plan. With universal modals, we expect a different inference: if an obligation is a necessary and sufficient condition for an event, a natural assumption is that this obligation frustrates some plan. Suppose that if the only salient obligation in context is one that cannot be a necessary and sufficient condition for an event, we

31 For reasons of space, I do not discuss negative AEs triggered by ‘intrinsically’ negative predicates:

- (i) L’ obstacle a été impossible à franchir.
 the obstacle has be.PP impossible to overcome
 → The obstacle was not overcome.

In this case, the predicate yields an entailment of the form $\Box(\exists e'_v: N(e'))$, with *N* standing for *the obstacle not be overcome*. Actuality entailments provide a strong case for the existence of negative events, although these are a subject of skepticism among linguistics and philosophers. The following example drives this point home, I think:

- (ii) Olga a pu/ dû ne pas partir.
 Olga has can.PP have.to.PP NEG NEG leave
 ‘Olga was able/had to not leave.’
 → Olga didn’t leave.

[Bernard & Champollion \(2018\)](#) provide a linguistic account of negative events, which, as far as I can tell, can be incorporated in the current proposal.

should observe a semantic deviance and we indeed do:

(127) *Context:* A villain ordered his minions to rob a wealthy man and leave the money in a pickup truck. However, they accidentally left the money in an identical truck that belonged to the victim of the theft.

#Les voleurs ont dû rendre l' argent à son propriétaire.

the thieves have have.to.PP return the money to its owner

'The thieves had to return the money to its owner.'

(127) should be a felicitous sentence if its overall meaning amounted to saying that the thieves were morally or legally obliged to return the money to its owner and that they did (both statements are true). But it isn't, and the problem seems to be that the context establishes no causal connection between a deontic obligation and the restitution of stolen goods. If the context is one where the thieves become consumed with remorse, and guilt makes them return the money, then the sentence is perfectly natural. Another supporting context would be one where the obligation is not moral: the thieves returned the money because Superman caught them and told them to do so. Either way, the restitution wouldn't happen without the obligation, and the obligation suffices for it to happen.

With non-modal predicates, for example *the house cost a lot*, no such additional inference is observed: for example, one doesn't infer from (78a) or (111) that a certain plan succeeded. But our semantics actually predicts that, for the necessary and sufficient condition presupposition doesn't project with non-modal predicates (123).³²

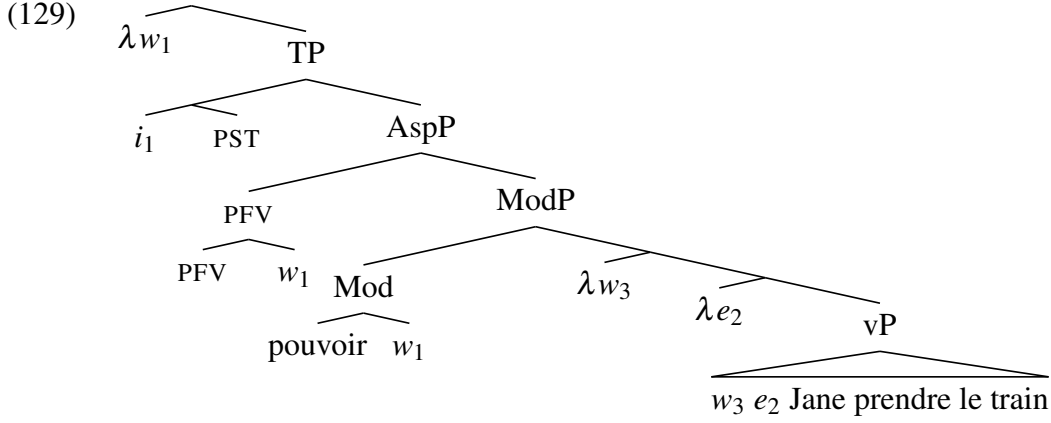
4 Comparison with Hacquard 2006, 2009

In this Section, I present and discuss Hacquard's (2006, 2009) theory, a landmark in the study of AEs, and the first account extensively based on French. The thrust of the proposal lies in what Hacquard takes to be a syntactic peculiarity of modal verbs. She claims that they create monoclausal structures: in her view, the complement of *pouvoir* and *devoir*, unlike that of other modal expressions, for example, the noun *possibilité*, is devoid of an Aspect head. As a result, the Asp head above the modal (Hacquard assumes the same clausal architecture as I do) binds an event variable in

³² The condition is still used of course, in the determination of the value of the $\langle v, t \rangle$ variable. I submit that the calculation of the value of the variable occurs at the point where ACT composes with its two $\langle v, t \rangle$ arguments; the information that the possibility to sell the house is a necessary and sufficient condition for the selling becomes lost in the course of the semantic derivation (it doesn't project), due to the incorporation of other presuppositions.

the complement of the modal.³³

(128) Jane a pu_{circ} prendre le train.



The system is extensional, with indexed abstractors over world variables (*à la Percus 2000*) and over eventuality variables. Tenses are treated as pronouns with pre-suppositional features (after *Partee (1973)*, *Heim (1994)*, *Schlenker (1999)*, *von Stechow (2004)*); the assignment function s assigns values to indices carried by individual, time, eventuality and world variables; for each $f \in \{x, i, e, w\}$, for each $k \geq 0$, $s(f_k) \in D_f$.

(130) $\llbracket i_1 \text{PST} \rrbracket^{c,s}$: only defined if $s(i_1) < c_t$;
 if defined, $\llbracket i_1 \text{PST} \rrbracket^{c,s,w,t} = s(i_1)$
 (c_t is the time of the context of utterance c)

PFV takes a world and a property of eventualities as arguments, and returns a property of times; it carries out the inclusion of an eventuality in the denotation of vP inside the topic time and in its world argument; root modals take predicates of eventualities as arguments, and return predicates of eventualities (I adapt and simplify some of the entries, merely for pedagogical reasons):

(131) a. $\llbracket \text{PFV} \rrbracket^{c,s} = \lambda w_s. \lambda P_{\langle v,t \rangle}. \lambda t_i. \exists e_v : e \text{ in } w \wedge \tau(e) \subseteq t \wedge P(e)$
 b. $\llbracket \text{pouvoir}_{root} \rrbracket^{c,s} = \lambda w_s. \lambda \Phi_{\langle s, \langle v,t \rangle \rangle}. \lambda e_v. \exists w'_s \in \text{Acc}(w) : \Phi(w')(e)$

(132) $\llbracket (129) \rrbracket^{c,s}(c_w)$: only defined if $s(i_1) < c_t$
 if defined, $\llbracket (129) \rrbracket^{c,s,w,t}(c_w) = \text{True}$ iff
 $\exists e_v : e \text{ in } c_w \wedge \tau(e) \subseteq s(i_1)$

³³ Some versions of the theory (*Hacquard 2006, 2010*) propose that this binding occurs by moving the Asp head itself from an argument position of the embedded verb; the movement is triggered by a type clash, leaves behind an eventuality trace and results in the formation of a lambda abstract. Here I present a version sans movement.

$\wedge \exists w'_s \in \text{Acc}(c_w) : \text{take}'(e, w') \wedge \text{Theme}(e, w') = \text{the train}$
 $\wedge \text{Agent}(e, w') = \text{Jane}$

‘There is an event in c_w located in a past interval, and there is a world compatible with Jane’s abilities in c_w where that event is a taking-the-train event by Jane.’

The sentence asserts the existence of some eventuality in the actual world, and with an existential quantification over possible worlds mediating between Viewpoint Aspect and vP (i.e., the modal), this eventuality is said to be, in some accessible world, an eventuality in the denotation of vP. Hacquard claims that the properties of an eventuality e in an accessible world are the same as the properties of e in the actual world, which derives that in (128) an eventuality of Jane taking the train took place in actuality.

(133) **Principle of Preservation of Event Description (Hacquard 2009):** For all worlds w_1, w_2 , if eventuality e_1 occurs in w_1 and w_2 , and e_1 is a P event in w_1 , then *ceteris paribus*, e_1 is a P event in w_2 as well.

This principle, crucial in deriving AEs, rests on the questionable assumption that an event necessarily keeps the same properties across worlds, which seems implausible in view of the existence of counterfactuals (e.g., *This wedding could have been a funeral*), as noted by Hacquard (2009) herself.

In this account, the stativity of root modals plays no role, no more than the restriction imposed by the perfective; it is silent about the actuality inferences that obtain with non-modal predicates. AEs are predicted to obtain if and only if a root modal is placed under the perfective. The imperfective, according to Hacquard, is more complex, as it brings in modal quantification: therefore the entailment ends up being about non-actual worlds, hence the absence of AE.

The claim that the complement of modal verbs lacks an Asp head runs counter to some of the evidence discussed in this article. We showed that the Aspect head above the modal doesn’t have access to eventualities in the denotation of the complement: in (62), the Asp head was IMPFV, and it didn’t quantify over eventualities in the denotation of the embedded vP; in (106), the Asp head was PFV, and again, there was a temporal mismatch, but no infelicity. It is also implausible that full CP complements would lack an Asp head, and yet AEs are observed with modals that embed (subjunctive) *that*-clauses:

(134) Il a fallu que Pierre vienne.
 it has have.to.PP that Pierre come.SUBJ
 ‘It was necessary that Pierre come.’
 → Pierre came.

Hacquard highlights the purported lack of AE with the noun *possibilité*, and argues that it lends support to her claim, since she assumes that nouns create biclausal structures:

- (135) Olga a eu la possibilité_{circ} de prendre le train de 7 heures, mais ne l'a pas fait.
'Olga had the possibility to take the 7 o'clock train but she didn't do so.'

Granted, (135) shows that a contradicting continuation can be used with *avoir la possibilité de*, without creating any semantic deviance. Yet it is imprudent to conclude from this that no sentence pronounced *Olga a eu la possibilité de prendre le train de 7 heures* triggers an AE. Such a string is in fact ambiguous: under one reading, it does not yield an AE (135), but under another one, it does, as illustrated in (136), where the *aussi*-test is applied:

- (136) Olga a eu/#avait la possibilité_{circ} de prendre le train de 7 heures, et [Marie]_F aussi l'a pris.
'Olga had the possibility to take the 7 o'clock train, and [Marie]_F took it too.'
→ Olga took the 7 o'clock train.

In light of the principles I advocate in this article, the reason no AE is triggered in (135) is either that no aspectual coercion occurs, or that a kind of coercion other than the actualistic one is available (without adverbial modification). The first option is certainly viable, since the verb *avoir* 'have', which is part of the modal expression, has some eventive usages, for example, in (137), where it means *get* in the absence of any aspectual coercion (the sentence is in the simple indicative present).

- (137) On a son bac à 18 ans.
one have.PRS his A-levels at 18 years
'One gets their A-levels at the age of 18.'

Whenever the auxiliary is *être* 'be' rather than *avoir* 'have' (8a)-(11), the contradiction test is passed. It thus follows that (136) cannot be used to support the view that modal nouns differ from modal verbs with regard to the presence of Asp in their complement; all (136) shows is that the actualistic coercion is not the only option (in the absence of licensers of other coercions) with predicates headed by the verb *avoir*.

The so-called 'exceptions' to AEs which obtain in the presence of certain temporal modifiers, for example, (12a), (72) and (75), are genuine counterexamples to Hacquard's theory, for which AEs are derived if and only if a root modal is placed in the perfective. One cannot claim that temporal modifiers change Viewpoint Aspect

from perfective into imperfective (this attempt is made in [Hacquard 2006](#), fn. 73 on p. 164 about *sempre* ‘always’ in Italian). There is no evidence that temporal modifiers have this effect. In fact, we see clearly that perfective sentences have none of the characteristic aspectual properties of their imperfective counterparts. For example, accomplishments in the imperfective give rise to the so-called imperfective paradox (i.e., the lack of entailment illustrated in (138a)):

- (138) *Context:* At that moment. . .
- a. Pierre traversait la route.
 Pierre cross.PST the road
 ‘Pierre was crossing the road.’
 \nrightarrow Pierre crossed the road.
 - b. Possible continuation:
 Il n’est jamais arrivé de l’autre côté.
 ‘He never made it to the other side.’

The entailment that Pierre crossed the road does hold in the perfective, even with a quantificational modifier:

- (139) a. À un moment donné, Pierre a traversé la route.
 at a moment given Pierre has cross.PP the road
 ‘At some point, Pierre crossed the road.’
 \rightarrow Pierre crossed the road.
- b. *Impossible continuation:*
 #Il n’est jamais arrivé de l’autre côté.
 ‘He never made it to the other side.’

[Hacquard \(2014\)](#) proposes that temporal modifiers can license a *perfect* construal of the *passé composé*, which might be compatible with imperfective or neutral aspect. The first option is not viable, as we’ve just shown. As far as neutral aspect is concerned, I suppose that it doesn’t carry out a temporal inclusion in an interval. But even with the addition of quantificational temporal modifiers, we observe that inclusion in the topic interval is compulsory in French: the inchoative and the complexive coercions, which we discussed extensively (Section 1.3), and which are licensed by the adverbials in question (the same for modal and non-modal predicates (77)), are ways of facilitating the inclusion. (140) makes the same point with a quantized predicate: the sentence is odd because it asserts that an event of running the Paris marathon (which takes at least two hours) fits in the duration of the 1pm news report (approximately thirty minutes):

- (140) #Il y a plusieurs fois où elle a couru le marathon de Paris
 there.is several times where she has run.PP the marathon of Paris

pendant le journal de 13 heures.
 during the news.report of 13 hours
 Intended: ‘On several occasions she ran the Paris marathon during the 1pm news report.’

In some languages, AEs remain obligatory under quantificational modifiers and *suddenly*: Hacquard (2014) provides examples from Bulgarian and Hindi-Urdu. By itself, such an observation is not a problem for the theory I advocate. One needs to first check how coercion works in these languages, and ascertain whether the complexive and the inchoative interpretations are ever available with statives. For what makes (12a), (72) and (75) and the like exceptional is not that they lack an AE; it is rather that they are ambiguous examples, due to the licensing of an alternative construal.

Lastly, in this system, certain inferences fail to be derived. There is no semantic encoding (and there cannot be one) of a causal connection between the event in the actual world and the possibility/necessity contributed by the modal predicate. Given the semantics in (132), it is not predicted that a continuation such as *but she didn’t want to* would be pragmatically deviant, in fact, would sound like a contradiction (cf. (126)). And as Hacquard (2009) acknowledges, the negative entailment about the main vP which obtains under negation is not derived qua entailment (cf. (7)):

- (141) a. Jane n’ a pas pu_{circ} prendre le train...
 Jane NEG has NEG can.PP take the train
 ‘Jane wasn’t able to take the train.’
 → Jane didn’t have the possibility to take the train.
- b. #mais elle pouvait_{circ} le prendre.
 but she can.PST it take
 ‘But she could.’

The predicted truth-conditions of (141a) hold that there was no event *e* in the actual world that in some world compatible with Jane’s abilities is an event of Jane taking the train; but there might be worlds compatible with Jane’s abilities in which some event of her taking the train occurs (not the same event as the one in the actual world). With a universal modal, for example (115) repeated below, the prediction is also incorrect:

- (142) Olga n’ a pas dû soulever un frigo.
 Olga NEG has NEG have.to.PP lift a fridge
 ‘Olga didn’t have to lift a fridge.’
 → Olga didn’t lift a fridge.
 → Olga didn’t have the obligation to lift a fridge.

The sentence is predicted to assert that there is no actual event e such that in all worlds compatible with Olga's circumstances, e is an event of Olga lifting a fridge. These conditions are met when there is an actual event which only exists in some accessible worlds and is, in those worlds, an event of Olga lifting a fridge. This time, the negative AE is missed (contrary to what is claimed in Hacquard 2009, p. 307).

5 Conclusion

Provided that the stativity and the coercibility of root modals are taken into consideration, it becomes apparent that aspectual coercion must play some role in the derivation of actuality entailments. This article documents a hitherto unnoticed mode of coercion of stative predicates in the perfective, with I call 'actualistic'. Like other aspectual coercion processes, it applies to modal and non-modal predicates alike. The covert coercion operator ACT reinterprets a stative predicate into a quantized one, in such a way that the existence of an event in the world of evaluation is entailed, and this occurrence is contingent on a condition, which is, by presupposition, necessary and sufficient. This condition is the existence of a possibility or a necessity, provided by the core meaning of the original stative predicate. The presupposition has detectable effects, as it manifests itself in the often described effort or intention inference; these effects are derived in the article, as well as the rather intricate entailment pattern under negation.

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