Actuality Entailments and the Argument from Collapsed Duality

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1 Introduction: The Phenomenon

Modal expressions—expressions like 'must' and 'can'—figure importantly in our ability to think and talk about things that are non-actual: people who are not actual (e.g., 'There could have been a Tom Collins'[1]), events that did not happen (e.g., 'He could have been spreading rumors'), ways in which events that happen do not happen (e.g., 'Rome could have been built *in a day*'), etc. These expressions are not, in general, required to represent what the actual world is like.

Recently, however, certain environments have come to light in which these expressions (among other expressions that appear to be modals) *are* required to represent what the actual world is like. Consider, for example, that the following two sentences bear interpretations on which they differ with respect to whether it is entailed that we took the train:

(1) Yesterday, we were able to take the train.

(2) In those days, we were able to take the train.

Notice that if (1) is interpreted as describing a particular past event or episode,[2] it entails that we took the train.[3] This is in contrast to (2), which is compatible with the possibility that we did not exercise our ability (or right) to take the train and, so, never did. Since the sort of entailment that (1) gives rise to (in unembedded contexts) represents what the actual world is like, it has come to be known as an 'actuality entailment.'

Actuality entailments are trickier to account for than has been recognized. As I will argue, our best accounts predict actuality entailments in environments that do yield them, but at the cost of collapsing the distinction between possibility and necessity modals in those environments. This is a problem because there is, indeed, a non-trivial distinction between them in those environments.

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[1] This is the name of the fictitious gossip who was at the center of a hoax of exposure in 1874, designed to convince naive targets that a certain Tom Collins was slandering them somewhere nearby.

[2] This is sometimes called an 'episodic' or 'perfective' interpretation, which is most natural in this context and is cued by the adverbial 'yesterday.' 'In those days,' cues an interpretation that is variously called an 'imperfective,' 'generic,' or 'habitual' interpretation.

[3] Since (1) can be associated with an interpretation on which it does not have this entailment, it might seem that there is *no* disambiguation of meanings for a sentence with the surface form of (1) on which it does have this entailment. However, I think that this only seems to be the case because of the absence of overt morphology that clearly disambiguates between (1)'s perfective and imperfective interpretations. I take the cross-linguistic pattern discussed in this paper to provide strong support for the presence of just such an entailment in English. Where this overt morphology is present, there is no uncertainty about whether there is also an actuality entailment or not.

For this reason, an analysis of (1) needs to account *both* for the fact that we took the train and for the *possibility* that, in some context, that was one option among other (mutually) incompatible options. Since possibility and necessity modals are duals and are collapsed on these proposals, I call this argument 'The Argument from Collapsed Duality' (ACD).

Having briefly presented the central phenomenon and argument of my paper, the plan for the remainder is as follows. In section 2, I will provide some background on actuality entailments. In section 3, I will present some standard assumptions about aspect and modality with a view to showing why it is that actuality entailments do not simply come for free. In sections 4 and 5, I will look at two recent accounts that successfully generate actuality entailments (one developed by Valentine Hacquard and the other developed by Angelika Kratzer). In section 6, I will present the ACD and show how it makes trouble for these accounts and, more generally, for accounts that adopt relatively standard assumptions about aspectual and modal systems in natural language. In section 7, I present some consequences of this discussion for debates concerning whether the progressive has a modal semantics. In section 8, I discuss some possible responses to the ACD and show them to be wanting.

2 Background

Actuality entailments appear to be correlated, cross-linguistically, with grammatical aspect. This is quite a surprising discovery insofar as it is commonly assumed that grammatical aspect, at its core, concerns how it is that languages represent eventualities as unfolding over time (or, as in the case of states, how they occupy it). But, in languages in which there is a morphological distinction between perfective and imperfective aspect, actuality entailments appear to be licensed in perfective environments though not in imperfective environments. So, for example, in French, a language with this morphological distinction, the following two sentences[4] differ in terms of whether it is entailed that Jane took the train (where 'pfv' and 'impf' indicate perfective and imperfective aspect, respectively):

(3) Pour aller à Londres, Jane a pu prendre le train.

   To go to London, Jane can-past-**pfv** take the train

(4) Pour aller à Londres, Jane pouvait prendre le train.

   To go to London, Jane can-past-**impf** take the train

   'To go to London, Jane could (was able to) take the train.'

What we find is that when the modal expression 'pouvoir' (translated as 'can') is marked with perfective aspect, as in (3), it is entailed that Jane took the train, whereas when it is marked with imperfective aspect, as in (4), there is no such entailment.

It also appears that only a certain sort of modal yields actuality entailments when combined with the perfective (Hacquard 2009). In particular, it seems that circumstantial modals do, though not epistemic modals.[5] Of course, this is to assume that expressions like 'can' and 'must' *are* modal expressions in environments that license these entailments.

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[4] These examples are taken from Hacquard (2009).

[5] Semantically, circumstantial and epistemic modals are distinct in that the former concern, for example, what is possible or necessary given certain circumstances holding in the actual world (or base world, more generally), whereas the latter concern what is possible or necessary given certain epistemically relevant bodies of information. Circumstantial modals are also thought to differ syntactically insofar as they occur below tense and aspect while their epistemic counterparts occur above tense and aspect (Cinque 1999).

That might be denied. Rajesh Bhatt (1999) has argued, for example, that 'was able to' is ambiguous between a non-modal interpretation (on which it conveys something like 'managed to') and a modal interpretation (on which it conveys something like 'had the ability to'). On his view, 'able' does not itself have a modal semantics. It appears to have one, in the context of a sentence like (1), because it combines with the imperfective and the *imperfective* has a modal semantics.

On this point, however, the evidence is with appearances. To begin with, Bhatt's proposal cannot be generalized to cases involving expressions like 'can' and 'must.' When these expressions are associated with epistemic interpretations, they occur in a structurally higher position than tense and aspect and do not give rise to actuality entailments, but they are, nonetheless, associated with a *modal* interpretation in that position.[6] So, it cannot be claimed that these expressions only appear to have a modal semantics through their combination with the imperfective.

But there is also more direct evidence for the claim that expressions like 'can' and 'must' receive modal interpretations in the environment of the perfective. Valentine Hacquard adduces French data, for example, that shows that there is a contrast between possibility and necessity modals in perfective environments.[7] Both (5) and (6) entail that Jane actually took the train. However, (6) tells us that taking the train was necessary for Jane, whereas (5) tells us that taking the train was possible (or optional) for Jane. It may be true in a context in which mutually incompatible options were available to Jane (e.g., taking the bus instead of the train):

(5) Pour aller à Londres, Jane a pu prendre le train.

To go to London, Jane **can**-past-**pfv** take the train

'To go to London, Jane could (was able to) take the train.'

(6) Pour aller à Londres, Jane a dû prendre le train.

To go to London, Jane **must**-past-**pfv** take the train

'To go to London, Jane had to take the train.'

The status of the train trip as one possible option, among others, also plausibly explains why one has the impression, as reported by Hacquard, that Jane's taking the train was her preferred[8] method of travel.[9] These facts allow us to draw a non-trivial distinction in this environment between expressions that represent what is actual in addition to what is possible (i.e., possibility modals like 'can') and expressions that represent what is actual in addition to what is necessary (i.e., necessity modals like 'must').

This non-trivial distinction poses a challenge for current proposals that aim to capture actuality entailments: to capture actuality entailments while accommodating the distinction between (i) modals that indicate that an event is an event of a given type in some *but not necessarily all* of the accessible possible worlds in which it occurs and (ii) modals that indicate that it is of that type in *all* of the accessible worlds in which it occurs.[10]

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[6] As Hacquard (2009) shows for French, when imperfective morphology appears on an epistemically interpreted modal, it influences the temporal properties of the event described by the modal's complement, not the modal.

[7] It might be fruitful to think of the contrast between 'Yesterday evening, Jane was permitted to make a phone call' and 'Yesterday evening, Jane was required to make a phone call' along these lines.

[8] Note that 'Yesterday, we were able to take the train' also gives this impression.

[9] See Hacquard (2009) for details regarding this analysis.

[10] This statement can, in obvious ways, be modified to accommodate counterpart-theoretic frameworks, which will be considered later.

3   The Basic Challenge

Actuality entailments come as quite a surprise against the background of certain standard assumptions regarding aspectual and modal systems. My aim in this section is simply to present these assumptions and to show that it takes some further work to generate actuality entailments.

To begin with, it is standard to assume that the perfective is an existential quantifier and that it quantifies over events (Lenci and Bertinetto 2000), (Bonomi 1997). This captures the fact that perfective claims are used to describe particular events or episodes and allows for a dimension of contrast with the imperfective, which is thought to be a universal quantifier over events. The perfective also appears (more or less[11]) to describe events that are complete relative to a given reference time. This property is reflected in the assumption that the perfective locates the time-span of an event within a given reference time. These features of perfective meaning are represented in the following lexical entry (where 'P' represents a property of events, contributed by a verb phrase, and 'τ' gives the time-span of an event):

(7) $[[\text{PERFECTIVE}]] = \lambda P.\lambda t.\exists e[\tau(e) \subseteq t \ \& \ P(e)]$

Paraphrasing roughly, (7) says that the perfective combines with a property of events and a time (supplied by the past tense, for example) and quantifies over events that have time-spans that are included in the time supplied and are events of which that property holds.

Turning now to modals, on standard assumptions, modal expressions like 'can,' and 'must' quantify over sets of accessible possible worlds. The quantificational force of these expressions (existential and universal, respectively) is lexically encoded, but whether a set of worlds is accessible—whether a particular flavor of modal meaning is expressed (epistemic or deontic, for example)—varies contextually and is determined by the conversational background associated with the modal. Conversational backgrounds consist of (i) a modal base, which determines a set of worlds, and (ii) an ordering source, which imposes an ordering on those worlds in accordance with some ideal (represented by a set of worlds). Modals quantify over the worlds provided by the modal base that are best according to the ordering source.

Circumstantial modals, which will be my focus in this paper, have modal bases that determine worlds compatible with certain facts holding in the actual world (or base world). As these are my focus, I will simplify the entry for these modals by lexicalizing the relevant modal base (just as the quantificational force of modals is lexicalized) and by supressing mention of the ordering source (among the other parameters of the interpretation function). What we get, then, is the following entry for 'can' (where '**P**' represents an intensional property of events):

(8) $[[\text{can}_{\text{circ}}]] = \lambda \mathbf{P}.\lambda e.\exists w'$ compatible with circumstances in w s.t. $\mathbf{P}(w')(e)$

Paraphrasing roughly, (8) says that 'can' (interpreted as a circumstantial modal) combines with an intensional property of events and an event and quantifies over some world w' compatible with the circumstances holding in the actual/base world such that that property holds of that event in w'.

If we apply these assumptions to an example like (3) (a fragment of which is repeated here as (9)), it will become plain that we fall short of securing an actuality entailment.[12]

(9) Jane a pu prendre le train.

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[11] See Koenig and Muansuwan (2000) for the claim that the perfective does not describe complete events but maximally bounded events.

[12] For the sake of transparency, I will work with an English translation of (9) in the derivations that follow.

As I have mentioned, we are assuming that circumstantial modals appear within the scope of the perfective and that they combine with properties of events that are contributed by verb phrases, in accordance with this schematic diagram:
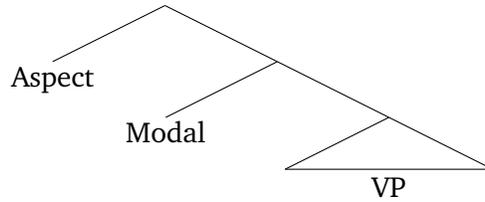
Combining[13] the meaning of the perfective with the property of events contributed by the verb phrase in (9) gives us the following simplified meaning:

(10) [[can[Jane take the train]]] =

λe.$\exists$w′ compatible with circumstances in w s.t. take-the-train(e,j,w′)

What we have as a result is a property of events that is true of an event, e, just in case there is some world w′ compatible with the circumstances in the actual world, w, such that e is an event of taking the train by Jane in w′. Since (10) is a property of events, it is suitable for combination with the perfective. The combination of the two gives the following:

(11) [[PERFECTIVE[can[Jane take the train]]]] =

λt.$\exists$e[τ(e) $\subseteq$ t & $\exists$w′ compatible with the circumstances in w s.t.

take-the-train(e,j,w′)]

When (11) is combined with a past time, the result is a condition on the truth of (9) that says that the time-span of some event is included in that past time and that, in some world compatible with the circumstances in the actual world, it is an event of Jane's taking the train. Notice, however, that this fails to entail that Jane did actually take the train.

4   Hacquard's Solution

In the last section, we saw that certain standard assumptions about the meaning of the perfective and circumstantial modals fell short of delivering actuality entailments, leaving us with a problem to solve. My aim for this section is to present Valentine Hacquard's solution to this problem.

Hacquard's solution depends on a semantic and a pragmatic innovation. In terms of the semantics, she assumes that the meaning of the perfective is relativized to its own world of evaluation. So, the entry for the perfective is now as follows:

(12) [[PERFECTIVE]] = λP.λt.$\exists$e[**e in w** & τ(e) $\subseteq$ t & P(e)]

As a result, the perfective now quantifies over an event in the actual world (in an unembedded context such as we have in mind) and 'can' can quantify over worlds in which *that* event has various properties. This is represented below:

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[13] The rule of composition at work here is IFA (i.e. Intensional Functional Application), which simply ensures that the meaning that combines with the modal has a world argument. In this case, it transforms a property of events into an intensional property of events.

(13) $[[$PERFECTIVE$[$can $[$Jane take the train$]]]] =$

$\quad\quad$ λt.$\exists$e$[$e in w & τ(e) $\subseteq$ t & $\exists$w$'$ compatible with the circumstances in w s.t.

$\quad\quad$ take-the-train(e,j,w$'$)$]$

When (13) is supplied with a past time, the result is a condition on the truth of (9) that says that an actual event held in the past and that, in some possible world compatible with the circumstances in the actual world, it was an event of Jane's taking the train.

$\quad$ This semantic adjustment still does not get us the right result, however. We want to generate the result that that actual event was *also an event of Jane's taking the train*. More generally, we want the property that applies to that event in some accessible possible world to apply to the event in the actual world as well.

$\quad$ In order to secure this further result, Hacquard suggests a pragmatic principle called 'Preservation of Event Descriptions Across Worlds' (PED), which requires an event to maintain its properties across worlds in the normal[14] case:

$\quad\quad$ For all worlds w_1, w_2, if e_1 occurs in w_1 and in 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.

The PED allows us to draw the needed conclusion in our (normal) case. From the fact that an actual event is an event of Jane's taking the train in some accessible possible world, it follows by this principle, that it is also an event of Jane's taking the train in the actual world.

$\quad$ Note, however, that this pragmatic principle actually secures more than what is wanted. It delivers actuality entailments but at the cost of *requiring our event to be an event of Jane's taking the train in all of the worlds in the domain of the modal in which it occurs*. As I will discuss in section 6, this feature of the account effectively collapses the distinction between possibility and necessity modals in environments that license actuality entailments.

5 Kratzer's Solution

I want to turn now to an alternative solution proposed by Angelika Kratzer (2011).[15] This solution will be of particular interest as it relies exclusively on semantic assumptions (unlike Hacquard's solution, which relies on the PED).
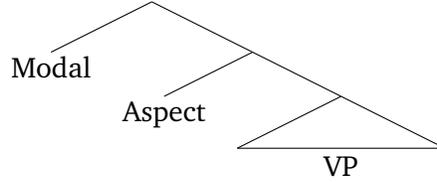
$\quad$ To begin with, although Kratzer assumes that the perfective is implicated in the generation of actuality entailments, she does not assume that its meaning is relativized to its own world of evaluation. In fact, the lexical entry that she assigns to the perfective is essentially the same as our original entry:

(14) $[[$PERFECTIVE$]] = \lambda$P.λx.λt.$\exists$e$[$P(x)(e) & e $\leq$ t$]$

Kratzer also assumes—in part, to explain the absence of actuality entailments in cases involving episodically interpreted modals—that a perfective operator occurs (optionally) *below* circumstantial modals in English, as reflected in the following schematic diagram:

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[14] The PED is not intended to apply to counterfactuals, but it is assumed to be in effect in the default case that we are considering. Counterfactuals are treated as a special case, according to the PED, on account of the fact that counterfactuals are the morphologically marked case cross-linguistically.

[15] This proposal is also entertained in closely related work by Lisa Matthewson (2012).

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              Modal
                    Aspect
                            VP
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Now, although Kratzer and Hacquard both assume that the properties of actual events are to be recovered from the properties of certain possible events in the cases that concern us,[16] they cannot both accomplish this "recovery" through the PED. For one, Kratzer denies that the same event can occur in different worlds (and, *a fortiori*, denies that it bears the same properties in different worlds), assuming instead that events (or individuals, more generally) can have only counterparts in other worlds (Lewis 1968). So, what would seem to be needed is a counterpart-theoretic analogue, which ensures that we can recover information about the properties of an actual situation from its counterparts.

Let us turn to counterparts, then. In Kratzer's system, the domains of circumstantial modals are generated via counterpart relations that are anchored to designated individuals (though really, individual-time pairs), which are made available in the course of a syntactic derivation.[17] This is modeled through the introduction of a domain function, f, which, when given a designated individual-time pair as an argument, supplies those individual-time pairs that are its counterparts (a relation indicated by 'CP' below). Kratzer brings the circumstances relevant to the input pair into alignment with the circumstances relevant to the counterpart pairs by assuming that these circumstances share their intrinsic properties. This is modeled with a relation (represented by 'c-match' below) that takes the sum of what is in common between the designated individual and time (giving an individual stage) and takes the sum of what is in common between its counterpart individuals and times and requires that their circumstances match in this way. (15) gives a representation of this domain function:

(15) $f(< x, t >) = \{< x', t' >: CP(x)(x') \mathrel{\&} CP(t)(t') \mathrel{\&} \text{c-match}(x \bullet t)(x' \bullet t')\}$

As expected, the circumstantial modal, 'can,' existentially quantifies over the set of pairs of individuals and times supplied by the domain function, f, and indicates that a relation, P, holds of some such individual-time pair, as represented below:

(16) $[[can]] = \lambda P.\lambda x.\lambda t.\exists x' \exists t'[< x', t' > \in f(< x, t >) \mathrel{\&} P(x')(t')]$

As we will see, when the P-relation is a 'perfectivized' relation, we get an actuality entailment.

It will be helpful to consider a sample derivation. Let us take the following example from Kratzer:

(17) Mary could climb Everest.

This sentence is assumed to have an interpretation on which it reveals both that Mary climbed Everest and that it was possible for her to do so given the circumstances. If we enter into the derivation of its meaning at the level of the perfective (working bottom-up), what we find is a meaning that awaits combination with counterpart individuals and times (since it is within the scope of 'can'), but which already locates an event of climbing counterpart-Everest within such a time:

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[16] Remember, the problem is as follows: properties of events that combine with circumstantial modals apply to non-actual events, but they must somehow also be made to apply to actual events.

[17] Since this is not my focus, I will simply take this for granted without comment. See (Kratzer 2011) for more details.

(18) [[PERFECTIVE[climb Everest]]] =

λx.λt.$\exists$e[$\exists$y[CP(Everest)(y) & climb(y)(x)(e)] & e $\leq$ t]

Combining (18) with (16) gives the following:

(19) [[can[PERFECTIVE[climb Everest]]]] =

λx.λt.$\exists$x$'$$\exists$t$'$$\exists$e[$< x', t' > \in$ f($< x, t >$) & $\exists$y[CP(Everest)(y) & climb(y)(x$'$)(e)] & e $\leq$ t$'$]

When (19) is supplied with an individual and a time, we get a truth condition that tells us that there is some counterpart of that individual and time and a climbing event of counterpart Everest by the counterpart individual that occurs within the counterpart time. So, given Mary and some past time, what this tells us, intuitively, is that (in a world very similar to ours) someone exactly like Mary climbed something exactly like Everest in circumstances that exactly matched Mary's actual circumstances at that past time. It follows from these assumptions that Mary did actually climb Everest in the past. So, it appears that the account generates an actuality entailment, where it should, while also retaining a modal semantics for 'can.'

6   The Argument from Collapsed Duality

Both of the approaches to securing actuality entailments considered confront serious problems. Among them, is the fact that they are incompatible with the assumption that there is a non-trivial distinction between *existential* and *universal* circumstantial modals in environments that license actuality entailments.

   I want to begin by showing how this problem arises in connection with Hacquard's account. Suppose that we have a claim that gives rise to an actuality entailment. It describes an event that occurs in the actual world as well as in one or more of the worlds in the domain of a circumstantial modal. Now, in order to secure the result that, for example, it was an event of Jane taking a train in the actual world, we have to be able to infer from the fact that it is of this type in one of these possible worlds that it is also this type in the actual world. The PED can secure this result but it requires that this event be an event of Jane taking a train in all of the worlds in which it occurs. However, if Jane's taking the train is only an option (and it must be possible to acknowledge this in some contexts), we want to be able to say that in another possible world in the domain of the modal, this event is an event, say, of Jane's taking the bus (not of taking the train). But the PED precludes this possibility insofar as it requires that it also be an event of Jane's taking the train there.

   That is problem enough, but I think it may fairly be said that this set-up also precludes the possibility of a non-trivial distinction between possibility and necessity modals in an environment in which they yield actuality entailments. To recognize that there is a non-trivial distinction of this sort within this framework is in part to recognize—to take our example—that there is a difference between a claim that indicates that in *some (but not necessarily all) of the worlds in which a given event occurs* it is an event of Jane's taking the train and one that indicates that in *all of the worlds in which that event occurs* it is an event of Jane taking the train.[18] If we rely on the PED to secure

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[18] For a discussion of this claim, see the following section.

actuality entailments, this distinction is collapsed.[19]

Versions of these problems also arise in connection with Kratzer's account although in a slightly different way. Recall that on Kratzer's account, the function that generates the domain of a circumstantial modal delivers sets of individuals in circumstances so like their originals and their circumstances in the actual world that we are licensed to infer that specifications applying to members of those sets also apply to their originals in the actual world. We saw, for example, that from the fact that a counterpart of Mary's climbed counterpart Everest, we are licensed to infer that Mary actually climbed Everest. But if we are to acknowledge that Mary's climbing Everest was one option among other mutually incompatible options, we have to be able to say that a counterpart of Mary did something other than climb counterpart Everest in a relevant possible world—an assumption that is ruled out by the stringent constraints on the domains of circumstantial modals. Moreover, to recognize a non-trivial distinction between possibility and necessity modals in this framework involves recognizing that there is a difference—to take our example—between a claim that indicates that *some (but not necessarily all) of the worlds in which counterparts of a given event occur* are worlds in which these are events of counterpart-Mary climbing counterpart Everest and one that indicates that *all of the worlds in which counterparts of a given event occur* are worlds in which they are events of counterpart-Mary climbing counterpart Everest. If we retain these stringent assumptions, we cannot acknowledge this non-trivial distinction.

The problem from collapsed duality does not just confront these specific attempts to capture actuality entailments. It is a problem for anyone who would attempt to generate actuality entailments by making substantive appeals to the features of possible worlds—for anyone, that is, who treats the perfective as contributing information about the temporal features of an event (even one that is relativized to a world), treats circumstantial modals as having a possible-worlds semantics and is led by these assumptions to recover a description that applies to an actual event from descriptions that apply to certain appropriately related possible events. If there is a non-trivial distinction between necessity and possibility modals in some contexts, then those possibility claims that yield actuality entailments allow for different and incompatible descriptions to apply to appropriately related events in relevant possible worlds (e.g., some are events of taking the train, others of taking the bus). This presents us with a dilemma. On the one hand, there seems to be no principled way to secure the result that only some of these descriptions provide us with suitable characterizations of a given actual event.[20] On the other hand, although matters would be simpler if these possible worlds contained uniform characterizations of these key events—the accounts canvassed in this paper present us with different options for reading the descriptions of actual events off of the descriptions of related possible events in such a case—that would be to deny the possibility of a non-trivial distinction between these modals in these environments, which is a bedrock assumption if any of our assumptions are.

7 Some Responses to the Argument from Collapsed Duality

One possible response to the ACD is to grant that there is a non-trivial distinction between possibility and necessity modals in the relevant environments and to bypass the general strategy outlined

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[19] If the PED were rejected, then there might be an event which is an event of Jane taking the train in the actual world, which is also an event of Jane taking the bus in some merely possible world. But, in that case, facts about the descriptions that events fall under in possible worlds would not entail facts about the descriptions that those events fall under in the actual world, and Hacquard's account would therefore cease to generate actuality entailments. Similar remarks apply to Kratzer's account.

[20] This assumption was tacit in my discussion of Hacquard's and Kratzer's proposals.

above by hard-wiring actuality entailments into the meanings of circumstantial modals. The following lexical entry is an example of one that might be pressed into this service:[21]

(20) $[[\text{can}]] = \lambda \textbf{P}.\lambda \text{e}[\textbf{P}(\text{w})(\text{e}) \,\&\, \exists \text{w}' \text{ compatible with circumstances in w s.t. } \textbf{P}(\text{w}')(\text{e})]$

When (20) is applied to an event description and an event, it tells us that that event falls under that description in the actual (or base) world as well as in some accessible world or worlds, thereby generating an actuality entailment and accommodating the possibility that there is an accessible possible world in which that sort of event does not take place. So, circumstantial modals have not just their standard possible worlds interpretation, but also a distinct component of meaning that secures actuality entailments.

Despite the fact that this proposal gives us actuality entailments and a non-trivial distinction between necessity and possibility modals, there are serious considerations that tell against it. First, the approach is strikingly unexplanatory. That aspect of the entry that allows it to generate an actuality entailment neither follows from a general account of modality nor does it appear to lend itself to the development of such an account. It is worth emphasizing, in connection with this, that actuality entailments are a *surprising* phenomenon given the received wisdom concerning aspect and modality. (And does (20) really address the concern of anyone who wonders why assumptions about what Jane was permitted to do and when she was permitted to do it should systematically lead to conclusions about what she did do?) Second, it has been suggested that actuality entailments emerge through an *interaction* between circumstantial modals and other meanings. This assumption is supposed to explain why circumstantial modals do not always license actuality entailments even when interpreted episodically (Kratzer 2011). If that is correct, then (20) also overgenerates actuality entailments.

Another response to the ACD is to deny the assumption that there is a non-trivial distinction between possibility and necessity modals in the relevant environments. As will already be clear, however, the assumption that there is a non-trivial distinction is very well supported. Take the French data from Hacquard, for instance. Hacquard explicitly observes that a sentence like the following (originally (5)) may be judged true, though taking the train was one option among other incompatible options:

(21) Pour aller à Londres, Jane a pu prendre le train.

To go to London, Jane **can**-past-**pfv** take the train

'To go to London, Jane could (was able to) take the train.'

Now, it is possible to maintain this observation while denying that there is a non-trivial distinction between this possibility modal and its dual in this perfective environment. But one would have to say that something other than the event in question (the one described as a possible and actual event of taking the train) underwrites the possibility of her taking the bus, for example, and that it is in virtue of that other thing (a situation or event or what have you) that one senses that it is possible for Jane to do other than take the train. A critical problem for this approach is that the very same consideration would lead us to suppose, mistakenly, that we may grant that it is possible for *Jane to take the bus* even if we accept the necessity claim that corresponds to (21)—accept, that is, the necessity of her taking the train. It seems, in light of this, that (21) itself leaves open the possibility of Jane's taking the bus rather than the train.

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[21] This lexical entry is considered in a footnote in (Hacquard 2009) and was suggested by an anonymous referee.

Finally, it might be argued that Hacquard's and Kratzer's accounts do not collapse the distinction between possibility and necessity modals. Taking Hacquard's account as an example, it might be granted that it cannot both secure the result that a certain event was an event of Jane taking the train in some relevant possible circumstance as well as in the actual world and acknowledge that that event was an event of taking a bus in some other (equally relevant) possible circumstance. Nevertheless, it might be said that the difference between a possibility and necessity claim in this case comes to the fact that the latter, though not the former, tells us that there *exists an event* that is an event of Jane taking a train in *every* relevant possible circumstance. My problem with this objection is that this is an implausible account of the difference between these claims. The modal difference between 'Jane a pu prendre le train' and 'Jane a du prendre le train' has to do with whether *a certain description* applies to an event in those worlds in which it occurs, not with whether the event exists in some rather than all relevant worlds. That necessity claim does not have the power to populate accessible worlds with events. For this reason, in discussing what it is for there to be a non-trivial distinction between these claims, I have made explicit a restrictor like 'in some/all of the worlds *in which the event occurs*'—a restrictor that might be tacit in the appeal to those circumstances that are *compatible with* the actual world, on Hacquard's account (with similar remarks applying to Kratzer's account). Clearly, that phrasing leaves a lot to be filled in (to some extent by design given the context sensitivity of modals) but it is implausible to think that the occurrence of an event—the fact that something happened—is not among the actual circumstances with which accessible possible worlds should be compatible.[22]

8   Further Consequences: Modal Analyses of the Progressive

Interestingly, a version of the theoretical difficulty posed by actuality entailments arises in the context of other treatments of purportedly modal expressions.[23] Modal analyses of the progressive provide us with one example.[24] These analyses assume that the truth of 'Mary is taking the train to London,' for example, requires that in some suitably related world or worlds (those that represent the ideal continuation of an event) there is an event of taking the train to London by Mary.[25] But they are also required to predict that an event of that type is partially actualized. The problem is that while these accounts do assume that there is an actual event that in such a world/in such worlds is part of an event of a given type, it is not directly assumed that it is a partially actualized event *of that type*. It remains unclear, then, how one can go from the assumption that there is a complete possible event of a given type in a suitably related world/in suitably related worlds (in which its continuation is ideal) to the assumption that there is a partially actualized event of that very type.

Recognizing that this is a problem for these analyses, Hacquard suggests that a principle like the PED be invoked to secure this transition. But I have argued that neither the PED nor its counterpart-theoretic analogue provides us with an adequate solution to the problem raised by actuality entailments. So, there is not yet a general, independently motivated solution that might be exploited by the modal theorist.

The difficulty for the modal theorist is, however, a little more hairy than this dialectic would suggest. Not only has this difficulty for modal accounts not been appreciated, it is, moreover,

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[22] My thanks to REDACTED for raising this as a possible objection.

[23] One sense in which the problem is not exactly the same is that we will be concerned with event parts and their descriptions.

[24] This is noted by Hacquard (2009) as well.

[25] See, for example, Landman (1992), Portner (1998), Higginbotham (2009).

widely regarded as an advantage of these accounts over their non-modal rivals that the former do *not* directly assume that the subevents represented by the progressive are partially realized events of a given type.[26] Non-modal theories of the progressive are, in fact, routinely criticized for making this assumption since it is believed (wrongly, in my view) to carry an unwanted commitment to a *complete* actual event of such a type of which the actual part is a part.[27] But this is all very confused. Modal theorists are in need of a solution to this problem though it is far from clear that it should be the same solution that is needed to explain actuality entailments, contra Hacquard's suggestion. After all, as non-modal theories suggest, we can understand the progressive itself as indicating that there is a partially realized event of a give type (supplied by its complement) and then leave it as a matter of debate whether the progressive additionally imposes modal constraints (and perhaps, on this matter, modal theories may legitimately claim advantages). A similar move is simply not available in connection with the perfective, which cannot be assumed, in virtue of its meaning alone, to give us the actuality entailments that we want *when we want them*.[28]

9   Conclusion

I considered two proposals for generating actuality entailments in this paper. I suggested that these be seen, not as independent proposals, but as representing two versions of a general strategy that one would find oneself driven to (i) given the adoption of relatively standard assumptions concerning aspectual and modal systems and (ii) given reasonable assumptions about how an interaction between particular aspectual and modal meanings might yield these entailments.

As I have argued, this general strategy runs into a serious problem. In using descriptions that apply to possible events to draw conclusions about suitably related actual events both accounts preclude the possibility of a non-trivial distinction between the possibility and necessity modals implicated in the generation of these entailments. That this is a problem for these proposals, not simply a consequence of them, is supported by the evidence that we have for a non-trivial distinction between these modals in environments in which these entailments are present (evidence, it should be noted, which is *not* in dispute).

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[26] See, for example, ter Meulen (1985) and Parsons (1990).

[27] For further discussion, see REDACTED. For related work on the semantics of the progressive, see REDACTED and REDACTED.

[28] For discussion on this point, see Hacquard (2009).

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