Modality as a Window into Cognition

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Abstract

This dissertation explores questions at the foundation of the study of meaning. It is primarily concerned with the question of how semantic explanation is related to linguistically-encoded meaning and of how linguistically-encoded meanings interact or interface with extra-linguistic cognition (which is really a contemporary articulation of the question ‘How is language connected to thought?’). Its central finding is that there are a variety of natural language expressions that systematically give rise to modal interpretations though, as it argues, these expressions do not have linguistically-encoded modal meanings. What these interpretations reflect is the modal structure of cognition, not the modal structure of language. A semantic explanation of these expressions, then, encompasses not only an explanation of their meanings but an explanation of how these meanings engage modal cognition and what the semantic output of that system is once it is so engaged. Finally, it proposes that these modal interpretations be understood within a broad framework within which natural language enables the domain-general use of representations that might otherwise remain isolated with domain-specific cognitive systems. What these modal interpretations ultimately reflect, then, is the (domain-general) use of non-modal expressions within the modal domain of thought.
Acknowledgements

Gideon Rosen. In many ways, I have Gideon to thank for my dissertation. Each of the main ideas for the central chapters that appear in it also appeared (in a very compressed form) in a general exam that he supervised. That left the details to be filled in and left a lot of time to think about what it was that I had done—a profoundly rewarding exercise that taught me a lot about what it is (or can be) to do philosophy. The frequent meetings that led up to this exam also helped to restore my feelings of self-confidence to pre-graduate-school levels (the fact that someone was listening to me did make it hard for me to be someone without anything to say (cf. Lydia Davis' What She Knew)). It’s also been a pleasure to learn from someone with such a facility with ideas and with language (a sign of which is that I can remember exactly when Gideon has used individual words for many individual words—e.g., ‘trenchant’ and ‘incompressible’—and I’m sure I’m not the only one).

Delia Graff Fara. I remember very clearly the first time that I read Delia’s work. It was in Los Angeles, in a very cheap motel, and there was a car on fire in the parking lot. The hellish atmosphere was actually very fitting since, in the course of reading her paper, I finally understood why the poet Sharon Olds sold her soul to the devil in exchange for the ability to write her own poems (and I thought, “I’m ready”).
Edwin Williams. My work would be much less interesting if I had not met Edwin. At an early stage of my dissertation he presented a simple but devastating counterexample to a very neat, but really too neat, semantic analysis that I had developed. I didn’t really make progress on this problem for about six months partly because I had, by then, realized that nothing else that had been tried worked either. I think a lot that is good came out of that period of bewilderment, and I think I’m more creative and less complacent in my approach to solving problems as a result of it. Of course, when he wasn’t teaching me what I didn’t know, Edwin was teaching me some of the things that I do know about linguistics. He is, simply, one of the most gifted teachers I have ever encountered—curious, spontaneous, generous and exceptionally tolerant (I’ve tested to make sure).

John Burgess. John was technically responsible for helping me to think more logically, and I am certain that he has helped me to think more historically. Somehow, John is able to think about philosophy from the view of...a very long time from now, which is a skill that not many people have. His work (or “sermons”) on the role of truth in semantics (in ‘Tarski’s Tort,’ for example) and on the application of ‘semantics’ to various projects of mixed-origin has deeply informed my own thinking about how semantics is to be pursued and about the prospects of truth-conditional approaches.

Gil Harman. As I have had the occasion to say before, Gil has taught me a lot about what it is to live a life of the mind. (It’s actually very busy.) I have benefited regularly and in many ways from his capacity to keep track of developments in the broader intellectual community, both through formal channels, like the cognitive-
science list-serv that he maintains, but also through (what often matters more) personal association with someone who takes a deep interest in these things.

Jimmy Martin. From the earliest days of my dissertation, I’ve benefited tremendously from conversations with Jimmy who is, simply, one of the most talented and inspiring philosophers I have ever met. His influence on my thinking about language is probably greater than anyone else’s and it’s to him that I owe my familiarity with some of the most intellectually stunning work being done on language today, notably Paul Pietroski’s, and Elizebeth Spelke’s work (it’s also from him that I first heard of names like ‘Uriagereka’ and ‘Boeckx’—though I then had to hear them again). I have always found that what he takes seriously is worth taking seriously and it is a gift to know someone like this.

Maria Griffin. In the beginning, however, was my mother. I dedicate my dissertation to her.
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Chapter 1

Chapter Overview

In ‘How to Cross the Atlantic Without Crossing It’ I argue against the consensus that a claim like ‘Mary crossed the Atlantic’ entails its progressive counterpart, ‘Mary was crossing the Atlantic.’ The absence of this entailment provides support for the view that some progressive sentences receive substantive modal interpretations (contrary to the claims of non-modal theorists) and for the view that these modal interpretations are insensitive to the actualization or non-actualization of the events that are described as in progress (contrary to the claims of revisionist modal theorists). The cases that have united these unlikely allies in the belief that there is such an entailment do not provide evidence for a semantic effect (i.e., an entailment), but rather, for an interaction effect between those modal conditions that attach to some progressives and a hindsight bias favoring actualized outcomes. As I discuss, the failure of this entailment provides a crucial piece of evidence for the claim that it is the association or non-association of an outcome (such as Mary’s arrival across the Atlantic) at the level of the event predicates that combine with the progressive that distinguishes between those progressive sentences that have modal interpretations
and so fail to exhibit this entailment pattern) and those progressives that do not
(and so conform to it).

In ‘Modality, Cognition, Semantic Explanation,’ I defend the view that tradi-
tional analyses of the progressive are guilty of generalizing to the worst case insofar
as they analyze all progressive sentences either on the model of a claim like ‘Mary
is crossing the Atlantic’ or ‘Mary is swimming’ though, as I show, these progressives
have strikingly different modal and temporal properties. I depart from tradition
by offering a non-modal analysis of the progressive that generalizes across these
progressive varieties. I also advance a hypothesis, which I call ‘The Displacement
Hypothesis,’ that builds on the central insight of the previous chapter and makes
specific predictions concerning the link between outcome-association in the pro-
gressive environment and those modal interpretations to which outcome-associated
progressives like ‘Mary is crossing the Atlantic’ give rise. Although this hypothesis
makes predictions about where we will find these modal interpretations and where
we will not, it does not anchor these interpretations in the outcomes or outcome-
associated events to which it makes reference. In fact, as I argue, these modal
interpretations reflect the modal structure of cognition, not the modal structure of
language and so cannot be explained in terms of modal meanings or an interac-
tion of modal and non-modal meanings. Our understanding of what it is to offer
a semantic explanation has to be able to accommodate the systematic association
of modal interpretations and non-modal meanings that we see in connection with
these outcome-associated progressives.
In ‘Modality Without Modals’ I extend my analysis of (non-futurate) progressives to the case of futurate progressives like ‘Mary is crossing the Atlantic tomorrow,’ and thereby achieve a solution to yet another problem of unification faced by traditional approaches to progressive meaning. In doing so, I show that the modal interpretations of futurate progressives can be explained by appeal to my Displacement Hypothesis, fulfilling one part of the linguistic program (outlined in the previous chapter) of extending the empirical support for that hypothesis. My analysis of the event predicates that appear in the context of futurate progressive claims (as well as in non-progressive environments, it should be noted) also provides an important, further piece of evidence for the Displacement Hypothesis but by supplying us with the best, though least expected, source of counterexamples to the alleged entailment pattern discussed above.

In ‘Modality as a Window into Cognition,’ I conclude by discussing the consequences of my central findings for our understanding of the interface between language and extra-linguistic cognition. I frame these findings against the background of a line of research that makes a compelling case for the claim that natural language enables the domain-general use of representations that might otherwise remain within cognitively isolated and domain-specific systems. This research suggests that we need not think of natural language expressions as making contact with cognitive systems through their connections with representations that are proprietary to those systems. My view is that the modal interpretations that we find in connection with outcome-associated predicates (in those environments that expel or ‘displace’ those outcomes in the sense of my Displacement Hypothesis) reflect
modal cognition’s use of non-modal language—the very sort of domain-general phe-
nomenon that one should expect against this conception of the role of language in thought.
Chapter 2

How to Cross the Atlantic Without Crossing It

Introduction

It seems unimpeachable to infer that something was happening from the fact that it happened. If I truly report that I crossed the Atlantic, surely, it seems, it is also true that I was crossing the Atlantic. I will argue that this is not the case; there is no entailment from a past perfective\(^1\) claim like ‘I crossed the Atlantic’ to its progressive\(^2\) counterpart ‘I was crossing the Atlantic.’

This claim is quite surprising. It is very natural to assume that the perfective and progressive provide two different ways of describing an event relative to two different viewpoints on its development over time. The perfective gives us a view from above, as it were; it allows us to canvass the entire development of an event and so also to describe it in its entirety. The progressive gives us a view from within;

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\(^1\) I will remain neutral on the question of whether there is a phonologically null perfective marker in the syntactic representation of this sentence. In conformity with common usage, I will use ‘perfective’ as a label for the non-progressive sentences that are of interest in this paper.

\(^2\) I will assume that such aspectual pairs differ in the meanings that they encode only with respect to the contributions made by grammatical aspect (e.g. progressive and perfective aspect—if present (see above)). Progressive aspect is marked by the auxiliary verb ‘be’ and the verbal suffix ‘-ing.’
it allows us to observe a stage of an event and so also to describe the event as being underway. This suggests, for example, that I can (i) use the sentence ‘I crossed the Atlantic’ to truly describe a complete event that unfolded in the past and (ii) use the sentence ‘I was crossing the Atlantic’ to truly describe that event as being in progress toward completion. The truth of the perfective claim would seem to guarantee the existence of a certain type of event that I can view and describe from within.

I will argue, however, that there is no such guarantee. One cannot “shift viewpoints” in the manner described. The problem, in short, is that the truth of a perfective claim like ‘Mary crossed the Atlantic’ does not guarantee that the event that it describes would—at any candidate time throughout its duration—eventually be realized, other things being equal. However, the truth of its progressive counterpart, ‘Mary was crossing the Atlantic,’ does require a guarantee that that event would be realized, other things being equal. Counterexamples to the alleged entailment pattern emerge whenever the truth of such a perfective claim fails to provide this guarantee, as will be the case, for example, whenever the event that it describes unfolds accidentally. The interaction between claims that encode these distinct ways of conceptualizing the development of events is what explains the possibility of coherently reporting that something happened, though it was not happening—of reporting, for example, that Mary crossed the Atlantic, though she was not crossing it.

Aside from being at odds with this intuitive first approximation, my claim will surely also come as a surprise to semanticists and philosophers of language who work on tense and aspect. Many theorists who have developed semantic accounts of the progressive have aimed to generate entailments from sentences with perfective
aspect to their counterparts with progressive aspect. Fred Landman, for instance, reports that “It has generally been recognized . . . that the following inference pattern is valid both for activities and accomplishments; that is, the simple past\(^3\) entails the past progressive” (1992: 14; my italics). Similarly, James Higginbotham claims that in developing a semantic account of the progressive “what we want is that if the progressivized clause [i.e. the clause embedded under the progressive] comes to be true, then the progressive was true” (2009b: 147). Moreover, predicting this entailment is currently regarded as a constraint on adequate theories of the progressive even if it has not always been recognized as one. Zoltán Szabó notes, for instance, that “A central aim of semantic analyses of the progressive has been to account for the imperfective paradox—the lack of entailment from some progressive sentences to their perfective counterparts” but later adds that this is “no more important for an adequate semantics for the progressive” than accounting for the entailment from perfective sentences to their progressive counterparts (2008: 511). Although the scope of such a generalization varies among theorists,\(^4\) my target in this paper is a version that all of its advocates hold. That is, I argue against the claim that there is an entailment from past perfective claims that embed descriptions of temporally

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\(^3\) Landman does not assume that there is a covert perfective marker in a sentences like ‘Mary crossed the Atlantic.’ He assumes, instead, that ‘cross the Atlantic’ describes a complete crossing of the Atlantic, which is located in the past by the tense of that sentence.

\(^4\) Some theorists, like Szabó (2004), defend the unqualified claim that perfective sentences entail their progressive counterparts. Other theorists, such as Landman (1992), claim that the generalization holds for activity and accomplishment sentences but not for stative and achievement sentences. This variation is due to the fact that the progressive interacts with the aspectual features of the material it embeds. In the aspect literature, verb phrases are commonly classified according to whether they encode states, activities, accomplishments, or achievements, although other grammatical categories are also claimed to carry aspect. See (Vendler 1957) for this classification system.
extended and outcome-associated\(^5\) events (e.g. ‘Mary cross\(^6\) the Atlantic’) to their progressive counterparts. For short, I will say that there is no entailment from (past) outcome-associated perfectives to their progressive counterparts.

The defense of this claim comes with a rather heavy explanatory burden. This is to explain why it is that, in some cases at least, outcome-information can have a robust effect on our semantic judgments about outcome-encoding progressives. Learning that an outcome-associated event was actualized—learning that Mary crossed the Atlantic, for example—can have a significant influence on one's readiness to claim that that event was earlier in progress. However, if there is no entailment from claims that describe actualized outcome-associated events to claims that describe those events as being in progress, how is this effect to be explained? I will argue is that this effect is not semantic, but contextual, and that it arises from an interaction between the meaning of outcome-encoding progressive sentences and retrospective judgments, which have been shown to be subject to biases favoring actual outcomes (Fischhoff 1975). What we are seeing in these cases is an effect of hindsight.

\(^5\) There are a number of standard diagnostics that distinguish between those descriptions of temporally extended events that are associated with outcomes and those that are not. (Vendler 1957) is a good source.) Consider, for example, the contrast between ‘John smoked in a minute’ and ‘John smoked a cigarette in a minute.’ The former only has marked interpretations on which it may mean, for example, that John’s smoking started after a minute, whereas the latter has a straightforward interpretation on which John completely smoked a cigarette in the span of a minute. What ‘in’-adverbials do is measure the temporal distance between the onset and outcome of an event. Modification with an ‘in’-adverbial leads to non-standard interpretations in the case of ‘John smoked,’ since this description is not otherwise associated with an outcome. (On the non-standard interpretation noted above, the relevant outcome is John’s smoking.) In contrast, modification with an ‘in’-adverbial results in a very straightforward interpretation in the case of ‘John smoked a cigarette,’ since this sentence is associated with an outcome—which we may take to be John’s having smoked a whole cigarette.

\(^6\) I am following the convention of using an uninflected verb (e.g. ‘cross’) to indicate that my focus is on this basic structure as it is without tense or aspectual marking (e.g. progressive marking).
The absence of an entailment from past outcome-associated perfectives to their progressive counterparts has rather far-reaching consequences. The most obvious one concerns a long-standing debate over the role of the actual world in the semantics of progressive claims. If I am right, I think it can be shown that the progressive does not, in fact, have a modal semantics, and that the appearance of modality at the level of progressive descriptions has always been due to the presence of outcome-association at the level of our descriptions of temporally extended events. The modal constraint that, in my view, accounts for the absence of this entailment is actually a constraint that binds a temporally extended event to its associated outcome. It is not, contrary to the claims of modal theorists, a constraint that is associated with the progressive. Aside from illuminating the nature of our thought and talk about a world in progress, this result makes way for inquiry into the special role of goal- or outcome-association in cognition, into the question, more specifically, of whether our representations of outcome-associated events incorporate modality, and into the influence of temporal bias on some of our judgments about when things that happen were happening.

With these issues in view, here is the plan of my paper. In Part 1, I set out the two main types of cases for evaluating the status of this putative entailment. I offer a provisional defence of the claim that the first type of case motivates a modal account of the progressive, the dominant style of account in the literature today. I also explain why the second type, which suggests that outcome-associated perfectives entail their progressive counterparts, would seem to motivate a fairly serious departure from that style of account, in favor of one in which the actual
world plays a primary role in the truth conditions of progressive claims. In Part 2, I review two revisionary modal accounts of the progressive, both of which aim to generate this entailment, and I argue that these accounts should be rejected. In Part 3, I present several counterexamples to this entailment pattern and offer extended discussion of each.

In the remainder of my paper, I pursue the hypothesis that there is no entailment from outcome-associated perfectives to their progressive counterparts and, more particularly, that outcome-encoding progressives are not directly sensitive to whether their associated outcomes are actualized. In Part 4, I address a puzzle concerning the robust effect that outcome-information can have on our judgments about whether outcome-associated progressives are true or false. In Part 5, I focus on outlining novel semantic proposals for progressive and perfective sentences as well as both outcome-associated and non-outcome-associated event descriptions. These proposals mark a radical departure from previous treatments of these topics insofar as they are intended to account for the absence of the entailment pattern at issue.\footnote{I explore these proposals more fully in my ‘Modality, Cognition, Semantic Explanation’ and ‘Modality Without Modals.’}

1 At Swim, Two Cases

I want to start with the first of two cases that will anchor our investigation into the role of the actual world in the semantics of the progressive. As we will see, this case provides motivation for what might otherwise seem to be an excessively
complicated view of progressive meaning. This is the view that the progressive has a modal meaning and, in particular, that it quantifies over a select range of possible worlds, which may or may not include the actual world.

1.1 The Non-intervention Case

Let us begin with what I will call ‘the non-intervention case.’ Imagine that Mary is a poor swimmer and that she is attempting to cross the Atlantic by swimming from Hyannis to Quiberon, France. Despite the fact that she is a poor swimmer, she sets out alone and is determined to cross unassisted. Now suppose, as would be expected, that Mary drowns shortly after departing from Hyannis—half an hour after, just to fix details.

In this context, it is uncontroversial to claim that the following sentence is false as evaluated at any time between Mary’s departure and drowning (where ‘then’ picks out just such a time):

(1PG) Mary was crossing the Atlantic (then).

One wants to say instead that Mary was, at best, trying to cross the Atlantic. Moreover, we know that the accurate headline reads “Woman Drowns While Attempting

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8 This example was first discussed in Landman (1992).
9 In 1966, Hurricane Faith traveled across the Atlantic from the coast of Africa and reportedly killed, among others, two people who were in a rowboat in the Atlantic. It is said that they “drowned while trying to cross the Atlantic in a rowboat” (source: http://en.wikipedia.org/wiki/Hurricane_Faith) and elsewhere (somewhat callously) that, at the time, they “were busy trying to cross the Atlantic” (source: http://scienceblogs.com/gregladen/2011/09/08/there-are-interesting-things-g/), etc. That some of these constructions are not progressive constructions, which are marked in the auxiliary system, is beside the point. After all, the headline could read ‘Woman Drowns While She Was Trying to Cross the Atlantic,’ but it just isn’t as snappy.
to Cross Atlantic,” not “Woman Drowns While Crossing Atlantic.” It can seem as though there is something eccentric about saying otherwise.\textsuperscript{10}

It is illuminating to contrast this case with one in which $(1_{PG})$ is true despite the fact that Mary does not cross the Atlantic. Imagine, for instance, that Mary is an experienced captain and that she is attempting to cross the Atlantic between Hyannis and Quiberon. She departs from Hyannis but redirects her ship back to port shortly afterward, having encountered some inclement weather. In this case, $(1_{PG})$ truly describes Mary’s progress across the Atlantic while the boat was on course despite the fact that the boat does not make it across the Atlantic. This is so even on the assumption that the boat travels the same distance from shore as hapless Mary travels in the non-intervention case. So, it is not as though the truth of $(1_{PG})$ in the non-intervention context requires that Mary travel further from shore than she actually does. The difference between these cases seems to consist in the fact that the outcome associated with $(1_{PG})$ is not possible in the non-intervention context, though it is possible in the redirection context. (In fact, it is more than merely possible; if the conditions for travel were as projected, e.g. if bad weather had not caused the boat to be redirected to port and it continued on course, that outcome would eventually have been realized across a broad range of circumstances.)

\textsuperscript{10} It should be noted that some interpreters do judge that $(1_{PG})$ is true in the non-intervention context, though this does not create any special difficulty for my account. Fundamentally, and to anticipate slightly, I am trying to explain why some interpreters who judge $(1_{PG})$ to be false in the non-intervention case judge $(1_{PG})$ to be true early in the intervention case, though no one who judges $(1_{PG})$ to be false early in the intervention case judges $(1_{PG})$ to be true in the non-intervention case. Nor do I think that this intuition should be especially troubling to the modal theorist. The modal theorist can accommodate it by assuming that the relevant outcome is judged, on such an occasion, to be the ceteris paribus result of Mary’s exertions. Since this would seem to be a somewhat eccentric judgment, this might nicely explain why, as I have put it, it is \textit{uncontroversial} to claim that $(1_{PG})$ is false in this context. An independent option is to claim that, on such an occasion, $(1_{PG})$ receives a non-outcome-associated interpretation. See de Swart (1998) for one such approach.
1.2 Modal Accounts and Inertial Worlds

Modal accounts of the progressive readily explain the intuition that (1PG) is false in the non-intervention context (as well as explaining its shift in truth value across the non-intervention and redirection contexts) since they place modal constraints on outcomes associated with events that are described as being in progress. The central idea is that an event or state of affairs must at least be possible relative to a given context in order to truly be described as in progress in that context. According to David Dowty’s (1979) inertial-worlds account, for example, a progressive sentence is true at an interval, $i$, and world, $w$, just in case there is an interval, $i'$, that includes $i$ non-finally\(^{11}\) and is such that the sentence embedded under the progressive is true at it in every inertial world (relative to $i$ and $w$). The truth of a progressive claim, on this account, requires that the state of affairs described by its embedded clause be realized across a select range of possible worlds—those that are inertial.

To see the constraints that the inertial worlds account yields more clearly, we need to unpack some of the more obscure features of this definition, beginning with inertial worlds. The metaphor of inertia here is meant to evoke connections with Newton’s First Law of Motion and, in particular, with the view that a body continues in its present state unless disturbed. The semantic proposal, in which this metaphor figures centrally, is that the progressive is sensitive to how a state of affairs develops under inertial conditions—in the sense of developing in a way

\(^{11}\) An interval, $i$, includes another interval, $i'$, non-finally just in case $i$ (properly) includes $i'$ and there is some time in $i$ that comes after every time in $i'$. 
that is free of disturbance. Dowty provides various informal characterizations of inertial worlds, describing them primarily as worlds in which things develop in ways most compatible with the past course of events and also as worlds in which things take their natural course (the latter at the suggestion of David Lewis). We can think of these characterizations as attempts to make this evocative metaphor more theoretically tractable, allowing that other characterizations might be serviceable if these are found to be lacking.

Now, on the inertial-worlds account, a progressive claim is true only if the sentence embedded under the progressive is true at an interval. So, some assumptions need to be made about what it is for a sentence to be true at an interval as well as about the meaning of the tenseless and aspectless\textsuperscript{12} sentence embedded under the progressive. To that end, assume that ‘Mary cross the Atlantic’ describes a crossing of the Atlantic, which includes the realization of an associated outcome (Mary’s arrival across the Atlantic, let us assume). Assume further that ‘Mary cross the Atlantic’ is true at an interval only if Mary completely crosses the Atlantic over the course of that interval (though the sentence is not, therefore, true at the individual times in that interval). These truth conditions predict, then, that (1\textsubscript{PG}) is false as a description of what was happening at some candidate time in the actual world if there is at least one inertial world (relative to that time and to the actual world) in which Mary does not eventually arrive across the Atlantic.

Finally, for expository purposes, it will be helpful to consider an updated version of the inertial-worlds account, which incorporates events (as do most current

\textsuperscript{12} ‘Aspectless’ here just means ‘free of grammatical aspect’ (e.g. progressive aspect).
accounts). On this version of the account, inertial worlds are relativized to events, not to worlds, providing us with a more local perspective on inertial developments. This account predicts, roughly, that \((1_{PG})\) is false as a description of what was happening at some candidate time in the actual world if there is at least one relevant inertial world in which the event in focus—the event that resembles the initial stage of a cross-Atlantic passage by Mary—does not eventually culminate in Mary’s arrival across the Atlantic.

This inertial-worlds-style account generates the right predictions in both of the cases considered. On the assumption that there is no time in the half hour between departing and drowning relative to which Mary goes on to cross the Atlantic in every relevant inertial world, \((1_{PG})\) is predicted to be false. Moreover, on the assumption that every time between the departure and redirection of Mary’s boat is a time relative to which it crosses the Atlantic in every relevant inertial world, \((1_{PG})\) is predicted to be true. Results like these speak in favor of a modal account of the progressive and have encouraged many theorists to pursue this style of analysis.

1.3 Extensional Accounts and Sisyphean Labors

It is worth mentioning, however, that these sorts of considerations are importantly distinct from another sort sometimes put forward on behalf of modal accounts of the progressive. James Higginbotham, for instance, calls attention to the following sentence:

\[(2)\] Mary is squaring the circle.
Like (1_{PG}), (2) encodes a description of an impossible event. After all, no step of a Euclidean proof counts as a step toward squaring the circle. Moreover, like (1_{PG}), (2) is judged to be false. In light of the style of argument offered above, it might seem that this example also motivates a modal account of the progressive.

This is not the case. Theorists who offer extensional accounts of the progressive can (and do) explain the falsity of (2) by appealing to the fact that Mary cannot begin to square the circle. Since this event cannot even begin, there is no event at all, which might truly be described as being in progress. There is no need to assume that the progressive has a modal meaning to account for that fact. It is enough to assume (as everyone does) that the progressive requires that some stage of the event described be actualized and to observe that this requirement is not met in the relevant context.

In contrast, cases involving events with impossible outcomes do offer strong support for modal accounts of the progressive. In addition to (1_{PG}), a whole range of illustrative examples might be drawn from sentences describing Sisyphean labors. So, for example, if Mary attempted to empty the whole of the Atlantic Ocean into a small, plastic bucket, we would judge that the following sentence is false in that context at any candidate point in time:

(3) Mary was emptying the whole of the Atlantic into her bucket (then).}

Andrea Bonomi (1997) uses the example ‘Leo is emptying the Atlantic Ocean with a bucket’ to motivate the claim that the progressive introduces modal constraints. However, some care is needed here. Degree achievements like ‘empty the Atlantic’ permit an outcome-associated reading but also, a non-outcome-associated or activity reading. ‘The whole of’ in (3) is meant to override any partitive interpretations of the direct object, which might trigger a non-outcome-associated interpretation.

Some alleged counterexamples to modal accounts of the progressive trade on just this sort of ambiguity. For example, Szabó (2008) takes ‘Mary is enumerating the primes’ to be a counterexample
The falsity of (3) is explained in just the same way as the falsity of (1_{PG}) is in the non-intervention context; in both cases the sentence embedded under the progressive is associated with an outcome that is impossible relative to the context of evaluation. Just as Mary cannot cross the Atlantic unassisted, she cannot place every drop of the Atlantic Ocean into her bucket. Her labors are simply doomed to fail. And if we suppose, with the modal theorist, that events that are associated with impossible outcomes violate a modal constraint introduced by the progressive, the falsity of these sentences and those like them is explained.

Fully extensional treatments of progressive claims, treatments that require only the partial\(^\text{14}\) realization of those events that are truly described as in progress, fail where their rivals succeed. Mary can begin to cross the Atlantic by taking one stroke after another just as she can begin to fill her bucket with the waters of the Atlantic by placing in it one drop after another. These tasks are not like squaring the circle, in this respect. From the modal theorist’s perspective, the problem is simply that, relative to the context of evaluation, she cannot complete these tasks. Since there would seem to be no principled reason for the extensionalist to deny that these events may be partially actualized, extensional accounts generate the wrong predictions in these cases.

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\(^\text{14}\) See, for example, (ter Meulen 1985).
The upshot of this discussion is not, however, that extensional treatments of progressive claims should require more than they do. It is that they cannot require what they must if they are to be thoroughly extensional. They cannot appeal to the sort of constraint that would seem to be needed to explain our judgments about a sentence like \((1_{PG})\), for example. The truth value of \((1_{PG})\) appears to be sensitive to whether the event that it describes as in progress can eventuate under certain idealized circumstances, and, so, appears not to be exclusively sensitive to the development of events in the actual world.

### 1.4 The Intervention Case

This much looks like good news for the modal theorist. However, matters become significantly more complicated with just a slight variation on the non-intervention case.

Let us turn now to what I will call ‘the intervention case.’ The intervention case is as much like the non-intervention case as is possible up to the point before which Mary drowns. The signal difference between these cases is that Mary is prevented Mary from drowning in the intervention case and is granted safe passage across the Atlantic.

This difference between the cases leads to an unsurprising difference in our intuitions about the truth value of \((1_{PF})\) across them.

\((1_{PF})\) Mary crossed the Atlantic.
(1_{\text{PF}}) is true in the intervention case but false in the non-intervention case. The reason would seem to be that the truth of (1_{\text{PF}}) requires that Mary make it across the Atlantic and this condition is satisfied in the intervention case but not in the non-intervention case. What is much less obvious—and here is the significant complication—is that the actualization of this outcome post-intervention influences whether (1_{\text{PG}}) is judged to be true pre-intervention. Indeed, some people claim that (1_{\text{PG}}) is true in the first half hour of the intervention case, including people who deny that (1_{\text{PG}}) is true then in the non-intervention case.

This is very puzzling. After all, we have two cases that would seem to be identical up to a certain point in time—the point before which Mary drowns in the non-intervention case and the point before the intervention in the intervention case. Yet, it would seem that a description is true of the event in focus in the intervention case that is not true of the event in focus in the non-intervention case. Why should that be? Why should a late-coming and miraculous intervention influence our judgments regarding what was happening earlier on?

Some modal theorists, notably, Fred Landman, whose account is discussed below, think that the contrast between the intervention and non-intervention cases
tells us something about the meaning of the progressive. Landman takes the lesson to be that the progressive is directly sensitive to whether the event described by its embedded clause is actualized. So, for example, the fact that Mary crossed the Atlantic in the intervention case guarantees that \((1_{PG})\) is true throughout that period.\(^{15}\) The actualization of that outcome directly, rather than indirectly, contributes to the truth of \((1_{PG})\) in that it suffices to “check off” the truth condition associated with \((1_{PG})\) that is concerned with whether there is a complete event of the relevant type. (On an inertial-worlds account, an actualized outcome might indirectly contribute to the truth of an outcome-associated progressive claim by revealing that certain outcomes were inertial earlier.)

In contrast, on any standard interpretation, the inertial-worlds account does not predict that \((1_{PG})\) is true early on in the intervention case. \((1_{PG})\) is predicted to be false in both of our cases at any given time between Mary’s departure and the critical juncture because, at any such time, Mary is as incapable of reaching Quiberon in the one case as she is in the other. The intervention does nothing to change this since it would seem not to be a candidate for inclusion in the relevant inertial worlds. To begin with, it occurs after the times relative to which these worlds are generated. So, it is not among the facts about the actual world that must be carried over into them. For that reason the question is, “Does the intervention occur in these worlds?” and not, “What effect does the intervention have in each of these worlds?” Moreover, given that the relevant events seem to be exactly alike

\(^{15}\) This is assuming that the event in focus then is a stage of that complete event. For more on this theme see section 2.1.
in the two cases up to the critical juncture in time, there seems to be no principled answer to the question, “Why should one outcome be judged to be normal in the one case, but not in the other?” Since it is the intervention that enables Mary to reach Quiberon, inertial worlds in which it does not take place are not worlds in which Mary crosses the Atlantic. In view of these assumptions, \((1_{\text{PG}})\) is predicted to be true, at best, only as a description of what Mary was doing at later times falling between the moment of intervention and her arrival. But, of course, that is not at issue.

What should we learn from these two cases? I have presented some evidence that motivates a modal account of the progressive. But a modal theorist might respond to our two central cases in very different ways. Given that the inertial-worlds account is well motivated and makes the correct prediction in the first of the two cases, one natural option is to try to incorporate the insights of the inertial-worlds account into an account that builds in sensitivity to actualized outcomes. In fact, this is just the option recommended by modal theorists like Fred Landman and Paul Portner. Since their accounts represent the leading attempts to secure an entailment from the perfective to the progressive and, correspondingly, to accord the actual world a prominent place in the semantics of the progressive, while still retaining the insights of a modal theory, I turn to considering them now—beginning with Landman’s account.
2 Two Modal Accounts of the Progressive

2.1 A Counterfactual Account of the Progressive

Landman’s COUNTERFACTUAL ACCOUNT (1992) of the progressive is in the tradition of David Dowty’s inertial-worlds account. As on that account, the progressive is treated as having a modal meaning, the in-progress is analyzed in terms of the complete, and normality considerations play a key role in the determination of the possible worlds relevant to the evaluation of progressive claims. Landman departs from this sort of account, however, in claiming that it is not always relevant to consider how matters stand in non-actual possible worlds when evaluating a progressive claim. In fact, as we will see, Landman accords the actual world a primary role in his semantic account of the progressive.16

The Formal Account

Central to Landman’s semantic proposal is the idea that progressive claims instruct us to follow the development of events in the actual world until they are fully actualized or stop—in which case we are instructed to follow the development of these events in possible worlds where they continue further. Landman models this idea with what he calls ‘continuation branches.’ A continuation branch for an event e that goes on in a given world w is the smallest set of pairs of events and worlds such that the following conditions hold:

16 I have in mind here unembedded progressive claims, where the world of evaluation is the actual world.
(a) For every event $f$ in $w$ that $e$ is a stage of, the pair of $f$ and $w$ is a member of the continuation branch for $e$ in $w$. Call this ‘the continuation stretch of $e$ in $w’.

(b) If the continuation stretch of $e$ in $w$ stops in $w$, there is a maximal $f$ that stops in $w$. In the closest world $w'$ in which $f$ does not stop:

(i) if there is not a reasonable chance on the basis of what is internal to $e$ in $w$ for $e$ to continue as far in $w$ as it does in $w'$, the continuation branch for $e$ in $w$ terminates.\(^{17}\)

(ii) if there is a reasonable chance of this, then the pair of $f$ and $w'$ is a member of the continuation branch for $e$ in $w$. In this case, the construction continues as follows:

(c) For every $g$ in $w'$ such that $f$ is a stage of $g$, the pair of $g$ and $w'$ is a member of the continuation branch for $e$ in $w$. (This too is called a ‘continuation stretch’ but it is the continuation stretch of $e$ in $w'$.)

If the continuation stretch of $e$ in $w'$ stops, then the construction of a continuation branch for $e$ continues via a clause similar to (b). So, for example, if that continuation stretch stops, then there is a maximal event, $h$, and $h$ stops in $w'$. One then considers the closest world $w''$ to $w'$ in which $h$ develops further. And, finally, one

\(^{17}\) This condition is slightly more complicated than it appears to be. One evaluates whether it is reasonable for an event to continue, after the point at which it stops in the actual world, as far as it does in the nearest possible world in which it does not stop but develops further. The reason for this is that, on Landman’s view, the question of whether some continuation is reasonable does not arise within a world, but across worlds.
considers whether it is reasonable for $e$ in $w$ (given what is internal to $e$) to continue as far in $w$ as $h$ does in $w"$. If this is not reasonable, the continuation branch for $e$ in $w$ terminates. If it is reasonable, the construction continues in the manner demonstrated. In any case, the construction of a continuation branch for an event $e$ in world $w$ halts for one of two reasons: (i) some continuation stretch of $e$ stops and its continuation is an unreasonable option for $e$ in $w$ or (ii) an event on the continuation branch for $e$ in $w$ does not stop (or, more colloquially, stop short).

We can think of this apparatus as encoding a particular spelling-out of the metaphor of inertia familiar from Dowty’s account. The basic idea, recall, is that the progressive requires a mechanism of idealization that keeps track of how events develop in the absence of interruption. On Landman’s account, this idea is reflected in an apparatus that invites one to identify when an event’s course of development has stopped and to track the continued development of that event by means of counterfactual shifts, which remove disturbances impeding its development. The development of an event over time is represented via the ‘stage of’ relation, which is a relation that holds between two stages of an event where the second is regarded as more developed version of the first.\textsuperscript{18}

Given the role accorded to the actual world in this apparatus, we get different results when we apply it to our two core cases before the critical juncture in time—even on the assumption that the event in focus in each is identical up to then, only diverging afterward when one stops in the actual world and the other develops into a complete cross-Atlantic passage. In the non-intervention case, the continuation

\textsuperscript{18} For more on the ontology of event stages in Landman’s account, see (Landman 1992).
branch for the event in focus terminates shortly after one departs from the actual world. This is because the worlds in which that event constitutes the early stages of a successful cross-Atlantic passage are too far away from the actual world (again, given what is internal to that event) to count as representing the normal development of the actual event. In the intervention case, the continuation branch only includes the actual world since the event in focus develops (let us assume) into a complete crossing of the Atlantic and departures from the actual world are only licensed when events stop in the actual world. So, in the intervention case, unlike in the non-intervention case, there is no need to track the development of the event in focus across possible worlds.

The semantic analysis of the progressive offered by Landman allows us to relate these results to our intuitions about (1\text{PG}) across our two cases, since it tells us how a continuation branch for an event is relevant to the truth or falsity of some progressive claim about it. On Landman’s account, the progressive is a relation between an event \(e\) and an event type, or set of events, \(P\). A progressive claim of the form ‘PROG(\(e, P\))’ is true relative to a world \(w\) \(^{19}\) just in case there is some event \(f\) and some world \(w’\) such that the pair of \(f\) and \(w’\) is a member of the continuation branch for \(e\) in \(w\) and \(f\) is an event of type \(P\). \(^{20}\) These truth conditions tell us that if Mary’s early activity is a stage of a fully actualized cross-Atlantic passage, then she was crossing the Atlantic all along (whether we knew it or not).

\(^{19}\) There is no relativization to times here in the metalanguage because they are explicit in the language.

\(^{20}\) This is supplied by the material embedded under the progressive.
Notice, though, that in order to generate the desired entailment from the perfective to the progressive, we need to assume that events (in particular, the temporally extended, outcome-associated events of interest in this paper) have developmental structure and that perfective sentences encode events with that structure. After all, continuation branches track the development of an event (via its stages) and the progressive is assumed to be a relation between an event stage and set of events, which holds just in case that stage is a stage of an event in that set of events (or, equivalently, just in case that stage develops into an event in that set of events).

In light of this, let us assume, as Landman does, that ‘Mary cross the Atlantic’ describes an event with development stages and that that event is encoded by the claim ‘Mary crossed the Atlantic.’ It follows from this that there is an entailment from \((1_{PF})\) to \((1_{PG})\). As long as the event described by \((1_{PG})\) early in the intervention case is a stage of the complete event described by \((1_{PF})\), even the earliest and least hopeful portion of Mary’s cross-Atlantic passage can be truly described with \((1_{PG})\). More generally, we can say that the progressive counterpart of an outcome-encoding perfective claim is true throughout the development of the event described by the perfective claim.

**Attempts**

We have seen how Landman proposes to account for the intuition that \((1_{PG})\) is true as a description of what was happening early in the intervention case, but what about the stalwarts who maintain that \((1_{PG})\) is false? More generally, what explains our mixed intuitions about \((1_{PG})\) in the intervention context?
According to Landman, these stalwarts tacitly assume that the event in focus early on is not a stage of a cross-Atlantic passage by Mary, but a stage of some other type of event instead. Landman supports this view by pointing out that it is natural to follow a rejection of \((1_{PG})\) in the relevant scenario with the claim ‘Mary was only trying to cross the Atlantic.’ A claim to the effect that Mary was only trying to do something, Landman supposes, does not entail any claim to the effect that Mary was—to some extent at least—already doing it (though perhaps without any chance of ultimate success).

Although it is clear that interpreters may, in some cases, disagree about what counts as a stage of a certain type of event, I will argue that this is not the source of our disagreement in the intervention case; interpreters all tacitly assume that the event in focus is a stage of a cross-Atlantic passage by Mary and the disagreement lies elsewhere. If that is right, Landman’s explanation of our mixed intuitions does not work and they remain unaccounted for.

To start, one might challenge Landman’s explanation by saying that a ‘try’–claim does require that a stage of the event described by its complement be actualized. In fact, Yael Sharvit (2003) has independently argued for this claim based on the fact that while (a) is fine as a continuation of (4), (b) seems anomalous (where ‘#’ is a rating of the anomalousness of a sentence):

(4) Mary tried to cut a tomato.

(a) But she couldn’t cut it.

(b) ##But there wasn’t a tomato.
Sharvit observes that ‘try’ seems to contrast with uncontroversially intensional verbs such as ‘want’ in this respect. Consider, for example, that both of the continuations below are unproblematic.

(5) Mary wanted to cut a tomato.
(a) But she couldn’t cut it.
(b) But there wasn’t a tomato.

The thought is that whereas ‘want’ induces an intensional context, at least a part of the event described by the infinitival complement of ‘try’ must be actualized. This is supposed to explain the fact that the indefinite phrase in (4) carries existential commitment when embedded under ‘try’ but not necessarily when embedded under ‘want.’

I am not persuaded that this sort of semantics for ‘try’ is correct. So, I will offer a different and, I would argue, less controversial argument against Landman’s explanation. But the strategy of response is essentially like the one I just briefly pursued. My strategy will be to show that a claim that is taken to be true in the intervention context supports the hypothesis that the event in focus is interpreted as a stage of a cross-Atlantic passage by Mary. If some interpreters judge (1) to

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In particular, I find it doubtful that ‘try’ sometimes forces an existential reading of an indefinite noun phrase in its complement clause. Sharvit motivates this claim by presenting contrasts in the availability of continuations that target indefinites in the complement clauses of ‘want’ and ‘try’ and we see that there is some kind of contrast between the continuations that follow on (4) and (5). It seems to me, though, that the contrast here is simply due to the fact that it is very strange—though not impossible—to imagine John applying himself to the task of cutting a tomato without there being a tomato. Still, John might mistake a plastic apple for a tomato and attempt to cut that. In that case, plausibly, one could report that John tried to cut a tomato, though there were no tomatoes to cut. John might not even have succeeded in cutting into the plastic. No stage of the event described by the complement clause of (4) is actualized in that case, further undermining the proposal.
be false in the intervention case, but accept this claim, then Landman’s explanation fails. And it fails simply because his explanation rules out this package of intuitions.

The key observation is that (1\text{PF}) is judged to be true in the intervention context. Reflection on this obvious point, however, suggests something much less obvious. (1\text{PF}) describes a temporally extended event that spans between Mary’s departure and arrival. On the assumption, then, that the event described developed over this period of time, there must have been stages of a cross-Atlantic passage by Mary throughout this time (and, of course, it would be obscene to deny that the event in focus in the intervention case constitutes such a stage whereas some other event does). Now since there is no reason to claim that stages of this event were not realized during the period of time between Mary’s departure and the intervention—when there were no apparent delays, pauses, fits and starts, or anything else that might be regarded as a gap in an event—there is no reason to deny that this type of event developed throughout Mary’s departure and the time of intervention.

Support for the claim that (1\text{PF}) describes an event that spans between Mary’s departure and arrival comes from modification with in-adverbials. An in-adverbial (e.g. ‘in three months,’ ‘in five days’) measures the temporal distance between the onset and outcome of an event whose description it modifies. Crucially, an in-adverbial measuring the temporal extent of the event described by (1\text{PF}) does not measure the distance between the time of intervention and the time of Mary’s arrival at Quiberon. If Mary arrived at Quiberon three days after setting out from Hyannis, the following perfective claim is true, irrespective of whether she was rescued after a half hour or two days:
(6) Mary crossed the Atlantic in three days.

As noted above, since there is no reason to think that the development of the event described by \(1_{PF}\) is suspended in the period between Mary’s departure and the time of intervention, the event in focus must constitute a stage of across-Atlantic passage by Mary. And this is incompatible with Landman’s explanation of our mixed intuitions concerning the truth value of \(1_{PG}\) early on in the intervention case.

This discussion reveals some very striking differences between perfective and progressive descriptions of outcome-associated events. We have seen that a claim like \(1_{PG}\) is sometimes judged to be false despite the fact that a part of the event described as in progress is actualized at the relevant time and that it may also be judged to be false despite the fact that the event is, in the fullness of time, totally actualized. Why should that be? What more is required for the truth of that claim? I will revisit these issues again when I discuss putative counterexamples to the generalization under investigation. For now, the lesson to take is that Landman’s explanation of recalcitrant intuitions is unsuccessful.

**The Dual Nature of Outcome-Encoding Claims**

Setting recalcitrant intuitions aside, other difficulties emerge for Landman’s account when we pause to consider the dual nature of outcome-encoding progressive claims. Outcome-encoding progressives purport to describe what a portion of the world is like at a time. However, their association with an outcome means that they—in a sense to be made precise—have a prospective orientation. In using a present outcome-associated claim like ‘Mary is crossing the Atlantic,’ for example, part of
what I am doing is characterizing Mary’s present exertions. However, I am also characterizing the outcome of these exertions, which is not itself in the present, and may, in principle, be very distant from it. In using that claim, I am relating Mary’s present exertions to this outcome in some way and it is the task of a semantic theory to fill in the details here. In what follows, I will argue that Landman’s way of filling in these details gives us the wrong account of what it is to describe something as in progress.

On Landman’s account, a true outcome-associated claim relates an event to an event on its continuation branch that realizes this outcome. Recall that this outcome is realized either in the actual world or in a non-actual world suitably related to it (where this is determined by the conditions on the construction of a continuation branch for the event). Ultimately, this is a matter that is decided by what actually happens after the time at which the event is said to be in progress. So, the status of a claim about what is happening at a time depends on what happens after the fact, so to speak. If the event is not interrupted, normality considerations are irrelevant and the actual world provides an actual outcome. If the event is interrupted some time down the line, one is to consider what outcome would be normal for the event as it is upon interruption, not as it is at the time at which it is said to be in progress.22

Is there really compelling reason, though, to think that one privileges an event as it is in its twilight in issuing or interpreting an outcome-associated claim about what is earlier in progress? It seems to me not. In fact, it seems that different outcomes may be considered normal for an event at different points in its devel-

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22 See footnote 27 for a statement of this condition within Landman’s formal system.
opment. In way of illustrating this, consider the following case. Mary starts out as in the intervention and non-intervention cases, and though she grabs hold of a passing tugboat that tugs her some way toward France, she happens to lose her grip and drown short of an arrival at Quiberon. Let us suppose that if she had not lost her grip, she would have arrived there. Is \((1_{PG})\) true as a description of what was happening initially?

According to Landman’s account, one ought to consider whether Mary’s arrival across the Atlantic would be reasonable relative to the event in focus as it is on the verge of interruption. The prediction in this case is that \((1_{PG})\) is true as a description of what was happening throughout the ordeal. After all, by the time she lost her grip, Mary would have gotten across if things had gone otherwise. However, one might take the view that Mary’s fortune changed over time and, correspondingly, one’s judgments about what was happening over this period of time might also shift. So, one might judge that \((1_{PG})\) is false as a description of what was happening earlier on, seeing as Mary’s prospects for getting across were very dim then, and one might judge that \((1_{PG})\) is true as a description of what was happening after the arrival of the tugboat, seeing as it afforded Mary a safe passage across. What this possibility shows is that a semantic treatment for this sort of claim has to accommodate shifts in our judgments about the progress of an event that unfolds over time.

It is important to see that Landman’s way of specifying the connection between an event and its outcome does not accommodate this sort of change. The

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23 Thanks to Whitney Schwab for suggesting this scenario.
reason is that, in the type of case just considered, what is happening throughout the development of the event is determined, all the same, by the outcome that is reasonable for the event as it is upon interruption. The same problem appears, though perhaps less obviously, in a case like the intervention case—where an associated outcome is eventually actualized. On Landman’s account, there can be no shift in one’s judgments about what was happening over the period of time during which that event unfolds. These parallel problems are rooted in the core of Landman’s semantic formalism—a formalism that allows him to delay the association of an outcome with an event as much as is possible given its development in the actual world. Though this mechanism enables Landman to generate an entailment from (1\textsubscript{PF}) to (1\textsubscript{PG}), it results in an overly restrictive conception of progress over time.\textsuperscript{24}

We need a better account of the dual nature of outcome-encoding claims. In particular, we need an account that specifies the connection between an event and its associated outcome in a way that accommodates shifts in our intuitions about its progress over time. As the line of criticism here suggests, we ought to pursue a view on which the connection between an event and its associated outcome, at a given time, is not mediated by the actual course of events following that time. The challenge for this sort of approach, of course, is to make sense of the relevance of the actual future given that we sometimes take back our progressive claims in light of how things actually turn out. One of the contributions of Landman’s account is that it forces us to pay close attention to this fact, though, as I will argue in section \textbf{4}, the lesson is not the one he takes from it.

\textsuperscript{24} For more discussion of the contrast between these two types of cases, see section \textbf{4}.
2.2 An Ordering Semantics for the Progressive

I want to turn now to Portner’s ORDERING SEMANTICS for the progressive, which represents a more conservative attempt to capture our intuitions about progress. Portner’s aim in offering his account is to respect “Dowty’s central intuition” that “the semantics of the progressive is to be framed in terms of the theory of modality” (1998: 761). Portner’s contention is that theorists, Landman included, have neglected this intuition and, in so doing, have missed an opportunity to “relate the difficult cases which have arisen for the analysis of the progressive to more general issues in the semantics of modality” (1998: 761). Among these difficult cases are the intervention-style ones that seem to many to show that there is an entailment from the perfective to the progressive and so present a challenge for theorists claiming that the progressive has a modal meaning. Portner’s bold claim is that they can be handled, in fact, by the best modal frameworks of our day—modal frameworks that incorporate an ordering semantics, such as those associated with Stalnaker (1968), Lewis (1973), and Kratzer (1981), (1991), (1977). From within this perspective, it can seem like Landman’s account is only half-heartedly modal insofar as non-actual possible worlds are only invoked some of the time.

The Formal Account

Central to Portner’s semantic proposal is the assumption that the progressive introduces a modal base and ordering source, both of which are familiar from the work of Kratzer (1981), (1991), (1977). The modal base associated with the progressive
is partly distinguished from other modal bases (those associated with deontic and epistemic modals, for example) in being sensitive to events and event descriptions. In particular, Portner assumes that this modal base is a function from events and properties of events (provided by the material embedded under the progressive) to propositions. Together, these propositions comprise the circumstances that are relevant to the completion of an event as an event of a given type. So, for example, in evaluating whether 'Mary was crossing the Atlantic' is true as a description of what was happening early on (in the non-intervention context, say), the operative modal base will be one that is sensitive to the event in focus early on and the property of being a cross-Atlantic passage and yields the set of propositions relevant to whether that event develops into an event of that type. The propositions determined by this modal base might, for example, encode information about Mary’s abilities as a swimmer, the distance between Hyannis and Quiberon, the content of her outlandish plan, etc. Propositions of this variety, taken together, constrain any idealizations that might be engaged to represent the development of an event. In this way, the propositions determined by the modal base play the role in Portner’s account that pairs of intervals and worlds play in Dowty’s and that event-internal circumstances play in Landman’s.

The ordering source, the characteristic parameter of an ordering semantics, imposes a ranking\(^{25}\) on the set of worlds that are compatible with all of the propositions determined by the modal base. The ordering source itself is a function that takes an event and yields a set of propositions that establishes an ideal for worlds.

\(^{25}\) It is used to establish a partial order among worlds.
namely, the ideal of non-interruption (or inertia, if you like, though this is a departure from official terminology). This information can then be used to rank worlds in accordance with how well they approximate this ideal in comparison to others. So, for example, a world in which Mary is suddenly caught in a rip current or is overwhelmed by a large wave or is sucked into the depths of an ocean whirlpool might count as less ideal than a world in which Mary continues swimming, at least for a little while, under circumstances that are held fairly constant.

The modal base and ordering source (along with the ranking on worlds induced via the ordering source) generate the set of best worlds, which is the set of possible worlds ultimately relevant to the evaluation of a progressive claim. The set of best of worlds is simply the set of worlds compatible with all of the propositions provided by the modal base, where, for each world, no other world is more ideal with respect to the propositions supplied by the ordering source. This restriction to worlds that are ranked best vis-à-vis the ordering source finds parallel in Dowty’s assumption that the inertial-worlds function generates those worlds in which the course of events proceeds in ways most compatible with the past course of events and in Landman’s assumption that a continuation branch for an event includes only reasonable continuations.

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26 It can be helpful to think about the way that model exam answers might provide an ideal for exam responses or the way a code of conduct might provide an ideal for conduct.
27 To see how this might work, let ‘\(\leq_{O(e)}\)’ represent the relation ‘is better than or equal to with respect to an ordering source, \(O\), relative to an event, \(e\),’ and let ‘\(<_{O(e)}\)’ represent the relation ‘is better than with respect to an ordering source, \(O\), and an event, \(e\).’ With these relations in hand, we can say, for example, that for any world \(w\) and \(w'\), \(w \leq_{O(e)} w'\) just in case all of the propositions associated with \(O(e)\) that are true relative to \(w'\) are true relative to \(w\). Moreover, we can say that \(w <_{O(e)} w'\) just in case \(w \leq_{O(e)} w'\) but it is not the case that \(w' \leq_{O(e)} w\).
28 An unreasonable continuation for an event is one that requires too many counterfactual shifts to serve as an idealization for an event’s development in the actual world.
We are now in a position to see how these parts come together in an analysis of progressive meaning. According to Portner, a sentence of the form ‘PROG(e, P)’ is true relative to a world, w, just in case in all of the worlds w’ that are best with respect to e and P, there is an event e’ that is of type P and e is a non-final part of e’ in w’. As on Landman’s account, the progressive is here assumed to be a relation holding between an event and a set of events. As on Dowty’s account, this relation holds just in case that event develops in the prescribed way in every world in a set of privileged possible worlds. What these truth conditions tell us, in slightly more intuitive terms, is that a certain type of event is in-progress just in case in all of the most favorable worlds that respect the prospects for its eventual realization as an event of that type, it develops into an event of that type.

The Problem of Interruptions: Mary and the Romans

Although Portner’s account improves on Landman’s and Dowty’s in various respects, these adjustments do not illuminate the nature of the relationship between perfective and progressive claims. As I will argue, Portner’s account does not fix the role of the actual world in the semantics of the progressive and, for this reason, simply fails to address the problems posed by our central cases.

29 For example, Portner replaces Landman’s idiosyncratic constraint on the construction of continuation branches (i.e. that the continuation branch for an event exclude its unreasonable continuations) with the constraint that the possible worlds relevant to the evaluation of a progressive claim are those with the fewest interruptions (according to the ordering source) compatible with the facts at hand (according to the modal base), a requirement that can be stated in terms of the core meaning of the progressive, from parameters of interpretation that are familiar from other modal treatments, and that do not themselves require a modal analysis (as the notion of ‘reasonable distance’ would seem to). Portner’s account also improves upon Dowty’s in accommodating more contextual influence over the accessibility relation associated with the progressive.
The problem lies in Portner’s characterization of the modal base associated with the progressive. The modal base, recall, is intended to yield the set of circumstances or propositions relevant to whether an event is completed as an event of a given type. However, on such a construal, the modal base does not constrain the extent to which the actual world is to furnish these circumstances. One might well wonder, for example, whether consideration should be given to the circumstances relevant to whether the event develops into a given type in the actual world. In that case, it might be pertinent to know whether the event did, in fact, develop into that sort of event. Then again, it might be that consideration should be given to the circumstances relevant to whether an event develops into a given type up to a certain time in the actual world. In that case, all of the circumstances holding up to that time would be pertinent, while circumstances holding after that time would not be.

Reflection on Dowty’s and Landman’s modal accounts suggest considerations in favor of some of the options among those left open by Portner’s account. So, for example, Portner’s account might be restricted so that the modal base yields as much information as possible concerning whether an event develops into an event of a given type in the actual world. That restriction would result in a variant of Landman’s account. (Recall Landman’s requirement that departures from the actual world occur in the construction of a continuation branch for an event only if the event is interrupted in the actual world.) Then again, Portner’s account might be restricted so that the modal base yields as many circumstances relevant to whether an event develops into an event of a given type as are available up to and during
the time at which that event is described as being in progress. In that case, Portner’s account would be a variant of Dowty’s. (Recall Dowty’s requirement that the inertial worlds relevant to the evaluation of a progressive claim be like the actual world up to and including the evaluation time of the progressive.) And, surely, there are other options aside from these familiar ones. The crucial point, however, is that Portner does not offer an account that decides in favor of one or another of these substantive options.

This indecision is reflected in Portner’s remarks concerning one of the (non-)intervention-type cases discussed by Landman. Here is Portner’s description of the relevant case, which I will call ‘the Roman army case’:

Suppose that Mary is violently opposed to Roman occupation of her part of Gaul, and one day decides that it is her duty to do as much damage to the army as she can; she enters the town barracks one day at noon and attacks whomever she sees.

The first outcome considered, which is parallel to the non-intervention case discussed earlier, is one in which Mary does not wipe out the well-trained local garrison because she is far out-matched. The robust intuition in this case is that Mary was not defeating the enemy, despite the zealousness of her attack. A contrasting case is a case in which Mary does, despite the expectations of her enemies, end up defeating the occupying Romans. In this case, Portner agrees with Landman’s intuition, which is that Mary was defeating the enemy (though this surely would have seemed improbable at the time).
In explaining these judgments, Portner invokes what are, in fact, two competing positions on the status of the actual world in the semantics of progressive claims. Portner says, for example, “If somehow Mary succeeds in destroying the whole Roman army . . . we know that she is not an ordinary person. The kind of modal base assumed above [where it is assumed that Mary cannot defeat her enemy] must be wrong; in putting propositions like ‘Mary can’t fight for more than 48 hours straight’ and ‘Mary can’t defeat more than 100 soldiers an hour’ into it, we have vastly underestimated her abilities. She must be a special kind of hero, or a god in disguise. The part of the circumstantial modal base that represents her abilities must be revised. It must attribute to her herolike or godlike abilities” (1998: 775). This much is very consonant with Dowty’s proposal about the role of the actual world in the semantics of progressives. That is, facts pertaining to Mary’s actual abilities at the time at which she is said to be defeating the Roman enemy are relevant to the assessment of that claim. The actualization of the outcome associated with that claim is significant only because it alerts us to the fact that it was no ordinary human being who went into battle.

Elsewhere, however, Portner remarks that Mary’s victory over her enemy represents a case “where a completely unexpected fact, that Mary defeated the whole Roman army, is incorporated into the modal base. Because it is there, we get to focus on completely ideal realizations of Mary’s fight, where she defeats the whole army” (1998: 785-6). This circumstance, however, holds much after the time at which Mary is said to be routing her enemy, which marks a departure from the previous conception of the actual world’s role in the semantics of progressive claims.
Granted, the fact that Mary defeated the enemy does not itself make it the case that she was defeating the enemy, which marks a contrast with Landman’s account on which it does. Still, the inclusion of a fact like that among the propositions associated with the modal base licenses the exclusion of any interruptions that might otherwise have been compatible with Mary’s earlier prospects for victory. Given that, facts concerning whether Mary had a sound strategy for defeating her enemy or whether she had super-human abilities are irrelevant to the determination of the claim’s truth value. (Analogously, it might be said that facts concerning whether Mary was able to cross the Atlantic early on or whether she had a sound strategy for making a passage across the Atlantic are irrelevant to the determination of \((1_{PG})’s\) truth value in the intervention case.) Clearly, this line of thought is consonant with Landman’s proposal since the actualization of an outcome-associated event effectively guarantees that that event was earlier in progress. Normality considerations have only a trivial role to play, according to it.

The central debate among theorists like Dowty and Landman, as well as their extensional interlocutors, concerns the extent to which circumstances holding in the actual world are relevant to the evaluation of progressive claims. An account, such as Portner’s, that does not take a stand on this question is not going to help settle this debate. In what follows, I want to make progress toward settling this debate by re-examining the assumption that there is an entailment from outcome-associated perfective claims to their progressive counterparts.
3 Counterexamples

In what follows, I will present, what I take to be, some clear counterexamples to the generalization under investigation. What unifies these cases is that, in each, the truth of an outcome-encoding perfective claim fails to guarantee that the event that it describes would—relative to some candidate time in the event’s development—eventually be realized, other things equal. I take this to provide further evidence for the hypothesis that outcome-associated progressives require, for their truth, that the events that they describe eventuate in their associated outcomes, other things equal.\footnote{Although this is reminiscent of Dowty’s claim that the progressive expresses inertial modality, it is important to see that this hypothesis concerns the truth conditions of outcome-associated progressive claims and so leaves open the question of whether the progressive introduces a modal meaning (and, indeed, leaves open whether any expression in an outcome-associated progressive sentence encodes such a meaning).} Though it is standardly assumed that an entailment from the perfective to the progressive holds throughout the development of the event described by a given perfective claim, some of the examples to follow would serve as counterexamples to weaker views on which the entailment holds at some time in the course of the development of the event described by a given perfective claim. So, while some of the examples are designed to show that something happened, though it was not (for a non-negligible period of time) happening, I also present examples where something happened, though it was never happening.
3.1 Coin Toss

I will start with a simple case. Imagine that someone tosses a fair coin. The coin makes its parabolic journey through the air and it lands heads. The following claim, then, is true:

(7) The coin landed heads.

Now, if you are like me, you will take the following sentence to be false as a description of what the coin was doing when it began to make its descent (even knowing that it eventually lands heads):

(8) The coin was landing heads (then).

Again, if you are like me, (8) suggests somehow that it was determined in advance that the coin would land heads.

I think that this truth value judgment and the suggestiveness of the claim can be accounted for. Ordinarily, I, and many others, I suspect, think of a fair coin toss as being an indeterministic event. In the particular scenario, above, this amounts to taking the view that the coin might have gone on to land tails instead of heads. Now consider an inertial-worlds-style theory, which requires for the truth of (8) that the coin land heads in every world in which it continues to fall without interruption. Such a theory predicts that (8) is false precisely because there are some worlds, on this way of thinking about how the event unfolds, in which the coin lands tails and some in which the coin lands heads (the actual world being one of them).
This style of account also has the resources to explain the judgment that (8) is true in this context. If one thinks of a coin toss (fair or not) as being a deterministic event, then this account predicts that one will take the sentence to be true. This is because in every world in which the coin continues to fall without interference (in the above scenario), it lands heads. Note that this also straightforwardly explains the suggestiveness of (8) in the view of someone who does not conceptualize the event in this way.\(^{31}\)

It is important to point out that, on this explanation, actualized outcomes are not playing the explanatory role suggested by Landman. On Landman’s view, the coin’s landing heads in the actual world directly accounts for the intuition that (8) is true relative to the time at which that event is said to be in progress. According to the sort of account that I want to defend, however, the actual world plays an indirect role, at best, in explaining why some take (8) to be true then. Actual outcomes might, for example, provide one with evidence concerning what the world was like at an earlier time. (Later, I will also suggest that actual outcomes may influence one’s judgment about those courses of events that count as inertial.) Accordingly, a deterministically-minded person will take the coin’s landing heads as evidence that the world was such that that was to happen. If, instead, it were feasible to compute the outcome of the coin toss on the basis of physical facts about the world and its

\(^{31}\) Note that it need not be the case that someone using the progressive has either a global determinist or indeterminist outlook. Instead, as I think is nicely observed with coin toss cases, there may be topics of discussion (or contexts of discussion) that can encourage one to take a view on the nature of events unfolding over time. For this reason, I think we should expect there to be differences in the responses to ‘coin toss’- and ‘cross-Atlantic’-sentences.
laws earlier on, the role of the actual outcome in evaluating the truth or falsity of (8) would be null.

Still, it might be claimed that it is possible to deny the entailment from the claim ‘The coin landed heads’ to ‘The coin was landing heads’ while preserving the generalization that I have targeted for criticism. One might think, for example, that ‘The coin landed heads’ does not encode a description of a temporally extended event. On this view, that claim describes something like the outcome of the coin toss and excludes the coin’s descent. In that case, the lack of an entailment from the perfective claim to its progressive counterpart does not tell against the generalization I have targeted as it only concerns descriptions of temporally extended (and outcome-associated) events.

The problem with this response, however, is that it is blind to the versatility of event descriptions. ‘The coin landed heads’ can be interpreted as describing the result of the coin toss but it can equally be interpreted as describing both the coin’s descent and its eventual outcome. The application of standard diagnostics for discriminating between these sorts of event descriptions shows that this sentence may be taken to describe an extended and outcome-associated event. We can, for example, modify the sentence ‘The coin landed heads’ with an ‘in’-adverbial as follows:

(9) The coin landed heads in three seconds flat.

Here, the ‘in’-adverbial picks out the temporal distance between the onset and outcome of the coin’s landing, which is characteristic of event descriptions that rep-

32 This concern has its place. It is possible that some people are unsure as to which interpretation is intended when confronted with this case.
resent extended and outcome-associated events. We may also detect an ambiguity with the adverb ‘almost,’ which is another characteristic feature of descriptions that represent this sort of event. Consider, for example, the following sentence:

(10) The coin almost landed heads.

This sentence may be interpreted as meaning that the coin landed and that it almost landed heads (landing tails instead) or that it did not land heads at all, but would have if it had not (let us suppose) gotten stuck in the ceiling from the force of the toss. Admittedly, it is somewhat strange to imagine a scenario in which the coin would have landed heads but for the fact that it got lodged in the ceiling—but the sentence can clearly be associated with this interpretation. In light of this, there is nothing suspect about the claim that ‘The coin landed heads’ can be interpreted as describing an extended, outcome-associated event.

3.2 Short Swim

Sentences describing exact accidental outcomes also afford us a good opportunity to see that there is no entailment from outcome-associated perfectives to their progressive counterparts. Imagine, for instance, that Mary is attempting to cross the Atlantic but happens to drown after five miles. Once this has happened, the following sentence is true:

(11) Mary swam five miles.
But it is not the case that its progressive counterpart is true at any point in Mary’s attempted crossing if we are conceptualizing this outcome as something that just—as it is sometimes put—happened to happen:

(12) Mary was swimming five miles (then).

Again, this can be explained by appeal to assumptions like those made above. If we suppose that at any candidate point in time, Mary might have gone on to swim fewer than five miles, or more, or exactly five miles before drowning and if we also suppose that the progressive requires for the truth of (12) that Mary swim five miles in every world in which her swimming goes on without interference (from the time of evaluation), the falsity of (12) follows.

I should note, though, that sentences like (12) are predicted to be degenerate on some semantic analyses of the progressive. Peter Hallman (2009b) and Anita Mittwoch (1988), for example, claim that the progressive can only combine with event descriptions that represent an event as being internally homogenous in the sense that its parts satisfy the same description as the whole—a requirement that would be violated by an event that satisfies the description ‘Mary swim five miles’ and that should, therefore, rule out the possibility that (12) is a well-formed sentence. Similarly, James Higginbotham (2009b) has claimed that this sort of description cannot combine with the progressive on account of the fact that it does not satisfy a certain normative requirement, namely, that the outcome associated with the relevant event description (the completion of a five mile swim) constitute
its proper end or telos. In light of these claims, my appeal to a sentence like (12) might be regarded as illicit.

In response to these predictions, I would like to simply point out that progressive claims relevantly similar to (12) may, in fact, be judged to be true in ordinary settings, where they also occur without a trace of anomaly. So, for example, if Mary is running on a treadmill and is making progress on a particular course, which she reasonably expects to complete, there is nothing amiss about the following claim—as long as this course is a five mile one:

(13) Mary is running five miles.

This is the case whether or not Mary takes the completion of a five-mile run to be the goal of her activity. This sentence is true in such a context, for reasons already outlined. Facts like this give us reason to reject approaches, such as those canvassed above, that rule out this possibility.

3.3 Slow Drift

We can also see that the falsity of (12) is not due to a misalignment between Mary’s goal and the outcome of her intentional activity. So, it is not as though this sentence is false because it does not describe what Mary takes herself to be doing. After all, the same pattern can be observed with non-agential subjects. Suppose, for example, that over the course of an afternoon a slow breeze blows a leaf across the length of a pool. Once it has drifted this distance, the following sentence is true:

(14) The leaf drifted across the length of the pool.
However, the following is judged to be false as a description of what was happening at any moment during this slow drift:

(15) The leaf was drifting across the length of the pool (then).

This is so despite the fact that the perfective counterpart of this sentence is true.

It appears, then, that to the extent that outcomes associated with progressive sentences are regarded as accidental, progressive sentences purporting to describe the progress of events with those outcomes will be judged to be false—a very striking fact.

3.4  *I Love Lucy*

Finally, I want to consider an example involving proportional quantifiers. Let us take as the basis of our example the famous chocolate factory scene from *I Love Lucy*. Let us imagine that Lucy is supposed to be sorting chocolates at a chocolate factory. There are eighteen chocolates to be sorted on the belt before her, but since the foreman is distracted initially, Lucy takes the opportunity to eat six of them consecutively. She sorts the remaining chocolates.

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33 I can imagine some attempting to drive a wedge into this argument by distinguishing between parts of and stages of an event. Sandro Zucchi defends Landman’s account against criticism on these grounds (1999). He cautions, for example, that a person’s walk may eventually take him to a police station, but it need not be the case that he is then walking to a police station; his walking may fail to constitute a stage of the event of walking to a police station, though it might well be considered a part of that event. But this observation is orthogonal to the argument here. As we saw, Landman assumes (and must assume) that temporally extended events have development stages. Moreover, given the further assumption that the perfective claims in (11) and (14) describe this type of event, the account does predict that their progressive counterparts were true throughout their development whenever that took place.

34 I have adapted and repurposed this example, which is originally from Peter Hallman (2009b).
Let us represent the proportion of chocolates consumed by Lucy to those not consumed by her over the sorting period by using a ‘1’ to indicate that she has eaten a chocolate and a ‘0’ to indicate that she has sorted a chocolate. This gives us the representation in (16) relative to which the perfective claim in (17) is true:

(16) 1 - 1 - 1 - 1 - 1 - 1 RT 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0

(17) Lucy ate (exactly) one third of the chocolates.

Consistent with the pattern that has emerged, however, its progressive counterpart, (18), is not judged to be true at the reference time marked by ‘RT’ (nor is it judged to be true at any time throughout the period represented).

(18) Lucy was eating (exactly) one third of the chocolates (then).

So, as with the previous examples, I take this to constitute a counterexample to the claim that outcome-encoding perfectives entail their progressive counterparts.

4 Hindsight Bias

4.1 Arriving at the Start

We began with a puzzle about progress. Why do some interpreters who judge (1_{PG}) to be false in the non-intervention case judge (1_{PG}) to be true in the intervention case? The cases seem to be identical early on, diverging only later when Mary drowns in the one case and is saved in the other. This pattern is especially surprising on the assumption that, in each, the truth value of (1_{PG}) depends on whether
Mary would eventually get across, other things being equal. Why should what happens later change anyone’s mind about that? We have seen that this pattern cannot be explained by appeal to an entailment from \((1_{PF})\) to \((1_{PG})\); there is no such entailment. In any case, that would not have explained why intuitions are mixed concerning whether \((1_{PG})\) is true as a description of what was happening early on in the intervention case, though intuitions about whether \((1_{PF})\) is true are not.

One might attempt to explain away the intuition that \((1_{PG})\) is true in the intervention case, and thereby bypass this question, by proposing that \((1_{PG})\) is being mistaken for a claim that is true. In fact, this is the treatment that Szabó recommends for handling this sort of intuition (though he expresses some tentativeness). On his view, interpreters who take \((1_{PG})\) to be true early on in the intervention case are mistaking the progressive claim to be evaluated for a futurate progressive—a claim to the effect (roughly) that Mary was planning to cross the Atlantic at the relevant time.

In favor of this proposal, it might be said that Mary was planning\(^{35}\) to cross the Atlantic early on and that that does not require that she actually was crossing the Atlantic. Since futurate and non-futurate progressives are superficially indistinguishable—in this case both have the surface form ‘Mary was crossing the Atlantic’—one might be duped into endorsing the false claim on account of the fact (let us suppose) that the look-alike futurate claim is true.

\(^{35}\) Though, if there is a hint of infelicity here, it may be a sign that this underestimates what Mary was doing.
I do not think that this proposal can be sustained and the question set aside, however. To begin with, even if the considerations cited in its favor were true, it does not explain the distribution of truth value judgments across our two test cases. Why should the claim ‘Mary was crossing the Atlantic’ be interpreted as a regular progressive in the non-intervention scenario (for which reason it is commonly judged to be false) and then, sometimes, as a futurate progressive in the intervention scenario (for which reason it is, quite often, judged to be true)? The proposal does not discriminate between the non-intervention and intervention cases. Consequently, it leaves these distribution facts unexplained.

Aside from this, it is not clear that the considerations cited in its favor are, in fact, true. In particular, it is doubtful that ‘Mary was crossing the Atlantic’ is on any surer footing if interpreted as a futurate claim than it is if interpreted as a non-futurate claim. Semantic analyses of the futurate progressive in ascendancy today incorporate normality considerations in roughly the same way as inertial-worlds-style treatments of the regular progressive, suggesting that, even if interpreted as a futurate claim, \((1_{PG})\) should be judged to be false early on.\(^{36}\) And this seems correct. Anyone who doubts whether ‘Mary was crossing the Atlantic’ is true as a description of what Mary was doing in the Atlantic, would have responded sceptically to Mary’s announcement that she was driving to the coast and crossing the Atlantic. Mary surely planned to do these things, but that does not provide a guarantee that she was (futurately) doing them.

\(^{36}\) See Dowty (1979) and Copley (2009).
4.2 Hindsight Bias

I think a different explanation of these facts is required and, in what follows, I offer a new proposal. My hypothesis is that the effect that we observe in the intervention case, among others, is due to an interaction between the meaning of outcome-associated progressive claims and retrospective judgments, which have been shown to be subject to biases favoring actual outcomes.

I have in mind a retrospective bias that has come to be known as ‘hindsight bias’ in the experimental psychology literature. Hindsight bias manifests as the tendency for individuals with outcome information to judge an outcome to be more probable in hindsight than they would judge it to be with foresight alone—without any awareness of this fact. (It is the absence of any awareness of this tendency that differentiates hindsight bias from innocent outcome-oriented feedback learning.)

In a typical hindsight experiment subjects receive information about a target event. Some individuals receive information about the ‘actual’ outcome of the event (whether it was, in fact, or not). Individuals are then asked to assign a probability to the outcome’s occurrence as if they did not know that it was the outcome. The upshot of this research is that subjects who receive outcome information estimate a higher probability for the outcome than do subjects who do not receive outcome information.

In one pioneering experiment by Baruch Fischhoff (1975), for example, participants were given a description of an unfamiliar historical battle between the British and the Gurkas of Nepal (the target event). The participants were then presented
with four mutually exclusive and exhaustive outcome scenarios: (i) British victory, (ii) Gurka victory, (iii) military stalemate with no peace settlement, (iv) military stalemate with a peace settlement. Some subjects were informed that one of these outcomes was the actual outcome of the target event. They were then asked to rate the probability of each of the four possible outcomes as if they were unaware of the actual outcome. Others were not given outcome information and were also asked to rate the probability of each of the outcomes. Fischhoff found that in each of the cases he presented, outcome information boosted the perceived probability of outcomes. Fischhoff also found that the less likely an outcome is judged to be in a foresight condition, the greater the influence of outcome information in a hindsight condition.

Although it is appealing to hypothesize that our puzzling shift in intuitions is due, in part, to the operation of hindsight bias, I think caution is appropriate. For one, the progressive is not directly sensitive to probability judgments, though experimental work on hindsight bias has focused on these judgments. An outcome-encoding progressive claim may be judged to be true, though the realization of its outcome is improbable, as we have seen, or false, though the realization of its outcome is highly probable. As an example of the latter, ‘The coin was landing heads’ might be judged to be false though the coin was likely to land heads (perhaps as a result of a biased toss).\(^{37}\) Moreover, the questions put to subjects in

\(^{37}\) It is commonly assumed that asymmetric weighting of a coin is enough to produce a biased coin flip. Interestingly, however, this is not the case. Andrew Gelman and Deborah Nolan (2002) cite work on probability theory, which explains why weighting a coin in this way does not have a biasing effect (unless, as they point out, the coin is so light that it floats like a feather). “[A] lopsided coin,” they explain, ”spins around an axis that passes through its center of gravity, and although the axis does not go through the geometrical center of the coin, there is no difference in the way the biased
Fischhoff’s hindsight experiments concern the probability of the occurrence of outcomes. Outcome-associated progressive claims, however, concern much more than the occurrence of outcomes. They have to do with the association of outcomes with events that are conceptualized as having certain trajectories. Consideration has to be given, then, to the potential for hindsight bias to coopt a mechanism like that.

That being said, I think it is very fruitful to consider the effect observed in our central pair of cases in light of this line of research. What this research suggests is that outcome-information can have a significant and non-transparent effect on how we think about a given course of events. Moreover, it is plausible to assume that a bias favoring actualized outcomes might manifest, in connection to an outcome-associated progressive claim, as a bias favoring developments that ensure the realization of its associated outcome, other things equal. After all, an outcome-associated progressive claim is not semantically sensitive to whether its outcome is actualized, but rather, is sensitive to whether there is a course of events that ensures the realization of this outcome, other things equal. If this mechanism is coopted by a retrospective bias, we might find that such developments are incorporated into the trajectories that earlier events are assumed to have.

and symmetric coins spin about their axes” (2002: 310). While asymmetrically weighting a coin does not itself produce a bias, the way in which the coin is tossed may. In an experiment cited by Gelman and Nolan, the lid of a pickle jar (the ‘lopsided coin’ in this case) was tossed a hundred times in such a way that it landed on its edge and spun rapidly on a surface before falling to one side. In none of those cases did the coin land heads (i.e. on the bottom side of the lid). The reason is that “a lopsided coin tends to fall on the side that makes its center of gravity high and the center of gravity for the lid was closer to the top” (2002: 310).
4.3 Event Blindness and Other Evidence for the Hindsight Hypothesis

I think that there is some promising evidence for this hypothesis. What I would like to do here is provide some evidence for the claim that the observed effect depends on the presence of actualized outcomes and for the claim that where we see this effect we also see patterns along the lines suggested above in the courses of events that are taken to be inertial.

So, to begin, how do we know that it is actualized outcomes that matter? Perhaps the shift in intuitions about whether (1PG) is true would occur even if Mary made a significant amount of progress toward France before drowning. Against this, however, it seems that interpreters are inclined to take the attitude that close does not count in cases like that one. If Mary were tugged some way toward France only to drown before arriving (so that 'Mary crossed the Atlantic' is false), one's inclination is to say that Mary was not crossing the Atlantic initially but that she was crossing later—again, on the assumption that she would have gotten across, if she had not lost her grip. In a case like is, it seems fairly uncontroversial that Mary’s fortune changes over the course of her ordeal.

Here is a case for comparison that may be helpful in sharpening intuitions. Suppose that a plane is in flight that is scheduled to land in London and that it is hijacked half an hour after its departure. At that point, the hijackers commandeer the plane’s controls and begin to implement their plan to land the plane in Havana. Now suppose that there is an attempt to overpower the hijackers that goes badly
wrong and that the plane ends up crashing short of an arrival in Havana. If the counter-attack had been detected a little sooner, the plane would have landed safely, as planned. (The flight path does not change throughout the flight—we can imagine that this is to avoid attracting attention.) As in the previous case, the judgment here seems to be that the plane was flying to London initially, but that after half an hour it was flying to Havana. One is not inclined to say that the plane was, all the while, flying to Havana. So, there seems to a contrast, and if so, a rather striking and interesting one, between those cases in which an associated outcome is actualized and those cases in which an associated outcome is only nearly actualized.

There is also evidence that suggests that this “hindsight” effect is registered in connection with developments that robustly support the actualization of associated outcomes. Consider that we do not see this effect in accidental-outcome cases, where an outcome is not brought about in some modally robust way, though we do see it in the intervention case, for example, where an outcome is brought about in such a way. That is, we are reluctant to judge that Mary was swimming six miles, upon learning that Mary swam six miles, though some of us readily judge that Mary was crossing the Atlantic, upon learning that Mary crossed the Atlantic (despite our reluctance in the non-intervention case).

Finally, there is evidence that this effect coincides with a pattern of including such late-coming developments in the inertial trajectories of earlier events. This evidence comes from a phenomenon that I will call ‘event blindness.’ In the intervention case, for example, interpreters who judge that Mary was crossing the Atlantic early on seem neglect the actual occurrence of the intervention. They struggle to
answer and are even surprised by the following sort of question: “Assuming that Mary was crossing the entire time, what effect did the intervention have?” Similarly, in a scenario, like the one above, in which the hijackers successfully land the plane in Havana, some interpreters will judge ‘The plane was flying to Havana’ to be true throughout the flight. In that case, we see the same phenomenon. There is surprise at a question like the following: “Assuming that the plane was, all the while, flying to Havana, what effect did the hijacking have?” (Interestingly, one response to this line of questioning is to claim that these developments cause the earlier events to be in progress.) In contrast, those who judge these sentences to be false are prepared to answer questions concerning the significance of these occurrences and to connect these events to their intuitions about the truth value of those claims. The plane was not flying to Havana initially, it is said, because the hijacking happened only later. Mary was not crossing the Atlantic initially because the intervention came later. Event blindness is just what we would expect if interpreters assume that certain events, like the intervention and hijacking, do not mark a change in the normal course of events just as soon as they occur.

5 Future Directions

5.1 An Asymmetry

As I mentioned at the start of this paper, the question of whether the progressive has a modal meaning has long been debated and entrenched positions can be found on
both sides of the question even today. Some theorists, including, as we have seen, David Dowty (1977), (1979), Fred Landman (1992), and Paul Portner (1998), have argued for the view that it does. These modal theorists think that a sentence like ‘Mary is leaping to the moon’ is false and it is false (roughly) because Mary cannot leap to the moon, other things equal; the truth of that claim depends on what certain possible worlds are like. Other theorists, including Alice ter Meulen (1985), Terence Parsons (1990), (1989), and Zoltán Szabó (2004), (2008), have argued for the view that the progressive does not have a modal meaning. They think that the truth value of a sentence like ‘Mary is leaping’ depends on what Mary is actually doing; no recourse to possible worlds is necessary.

It is not surprising that this debate has persisted. The considerations presented in favor of each position seem to draw us equally in two incompatible directions. A claim like ‘Mary is leaping to the moon’ really does seem to have modal truth conditions and a claim like ‘Mary is leaping’ really does seem to have nothing to do with modality. Nonetheless, accounts of the progressive have tended to model the meaning of all progressive sentences on either outcome-associated or non-outcome-associated progressive claims. That is, these accounts have tended to assimilate outcome-associated claims like ‘Mary is leaping to the moon’ to non-outcome-associated claims like ‘Mary is leaping’ or vice versa.

This is a mistake and the central result of this paper provides a crucial piece of evidence for showing that it is. A very interesting pattern emerges once we combine the fact that there is no entailment from past outcome-encoding perfectives to their progressive counterparts with other (familiar) entailment patterns. What emerges
is an asymmetrical entailment pattern that distinguishes outcome-associated and non-outcome-associated claims in the direction of the perfective to the progressive and a symmetrical entailment pattern that groups them together in the direction of the progressive to the perfective.

To start, consider the direction from the progressive to the perfective. It is recognized that an event may be in progress at a time, though it may not be fully actual then. This is reflected in the following entailment patterns:

(19) Mary was walking. $\not\rightarrow$ Mary walked.

We see the same entailment pattern in the following case:

(20) Mary was crossing the Atlantic. $\not\rightarrow$ Mary crossed the Atlantic.

So, from the fact that something was happening, one cannot conclude that it happened in either of our two cases. I will also assume, as seems plausible, that Mary may be walking though she never walks just as she may be crossing the Atlantic though she never crosses the Atlantic. (So, the more general pattern is that from the fact that something was happening, one cannot conclude that it will have happened.)

Now consider the other direction, from the perfective to the progressive. To begin with, we have the non-outcome-associated pattern:

(21) Mary walked. $\rightarrow$ Mary was walking.

However, as I have shown, outcome-associated claims pattern differently here:
(22) Mary crossed the Atlantic. $\Diamond$ Mary was crossing the Atlantic.

What we see is that, from the fact that something happened, one can conclude that it was happening in the case of non-outcome-encoding claims (e.g. (21)) but not in the case of outcome-encoding claims (e.g. (22)).

None of the familiar analyses of progressive claims can accommodate these patterns. The extensional accounts can explain the non-outcome-associated pattern, since the truth conditions of progressive claims are supposed to concern the actual world alone. So, for example, we might suppose that a progressive claim tells us that a part of a given type of event obtains at a time and that a perfective claim tells us that events with such parts obtain over time. This sort of approach predicts the symmetrical patterning of (19) and (20), but it does not predict the asymmetrical patterning of (21) and (22). Nor does this account explain the modal truth conditions of outcome-associated progressive claims.

Similarly, non-revisionary modal accounts can explain the outcome-associated pattern, since the truth conditions of progressive claims are supposed to concern what relevant possible worlds are like and the actual world may not be among these worlds. However, they cannot explain the non-outcome-associated pattern (assuming, of course, that the progressive imposes substantive modal constraints on all of the event descriptions with which it combines). After all, on these accounts, there is no guarantee that if something happened, it was also happening. So, these accounts do not predict the pattern in (21). Moreover, these accounts predict that a claim like 'Mary is walking' is false if Mary does not walk in all of the possible
worlds that are relevant to the evaluation of that claim (irrespective of what the actual world is like). In just the same way, recall, these accounts predict that ‘Mary is crossing the Atlantic’ is false if Mary does not cross the Atlantic in all of the possible worlds that are relevant to the evaluation of that claim (again, irrespective of what the actual world is like). Clearly, these are highly unintuitive results.

5.2 The Outlines of a New Semantic Approach

I propose that it is outcome-association, at the level of the event descriptions that combine with the progressive, that is responsible for the sort of ceteris paribus modal condition that attaches to some progressive sentences—and not the progressive itself. It is this condition that explains the absence of an entailment from outcome-associated perfectives to their progressive counterparts and that explains, moreover, the peculiar truth value shift that we saw across the non-intervention and redirection cases (which did seem to coincide with a change in the modal status of the associated outcome across these cases). The progressive, as the extensional theorists have long claimed, does not have a modal semantics.

The semantics of the progressive, in my view, is quite simple. The progressive requires that a part of an event of a given type obtains at a time. This carries no commitment to the existence of a whole such event—whether possible or actual, as I think desirable. I also assume that perfective claims encode event representations that make these parts available (whether one assumes that they incorporate a covert perfective marker or not). As noted above, this allows us to explain the
non-outcome-associated patterns in a very straightforward manner. It also allows
us to explain the fact that ‘Mary was crossing the Atlantic’ does not entail that Mary
will have crossed the Atlantic and in just the same way that we explain the fact that
‘Mary was walking’ does not entail that Mary will have walked—all without invok-
ing modal meanings. As I noted earlier, this is an approach that has been urged by
the non-modal theorists.

So far, however, this proposal does not explain the source of the modal inter-
pretations that attach to outcome-associated progressives. It is natural to assume
that these modal interpretations are due to modal meanings that are encoded by
outcome-associated event descriptions. On this approach, an outcome-associated
event description encodes a constraint that binds the event described to its associ-
ated outcome and, in particular, that requires that that outcome would eventually
be realized, other things being equal, at every stage in the event’s development.

Though this is a natural enough starting point, there is good reason to think
that this approach cannot be sustained. An immediate problem is that these modal
interpretations arise in the progressive environment, but not in the perfective en-
vironment, though outcome-associated event descriptions figure in both. If these
modal meanings were present in both of these environments, we would expect
modal interpretations to be present in both. But this is not what we find. That
these modal interpretations do not arise in both environments is clear from the fact
that ‘Mary crossed the Atlantic’ cannot be true if Mary got partway across and would
have gotten all the way across, though she did not. ‘Mary crossed the Atlantic’ sim-
ply tells us about an event that unfolded in the actual world.
I would like to conclude by suggesting a possibility that allows us to avoid the difficulty just noted and that allows us to capture the data presented here. It is possible that the sort of modal interpretation that attaches to a claim like ‘Mary was crossing the Atlantic’ is not rooted in a modal meaning encoded by it; it may be that this interpretation is due to the fact that this claim tells us that a part of an outcome-associated event obtains at a time though its outcome does not—and that this is a general cognitive pattern of interpretation that arises in cases like this. This would allow us to explain why ‘Mary crossed the Atlantic’ is not associated with a modal interpretation, though ‘Mary was crossing the Atlantic’ is, while allowing us to preserve a uniform semantics for the progressive as well as a uniform semantics for outcome-associated descriptions. It would also allow us to explain the absence of a modal interpretation in the case of non-outcome associated progressive claims. I take these to be considerable virtues, though it remains to be seen whether this pattern is, in fact, a general one—one that can be observed across other outcome-associated constructions in relevantly similar environments.

6 Conclusion

We have come a long way from the intuitive picture of what perfective and progressive claims tell us about the development of events over time. On the intuitive picture, recall, the perfective gives us a view from above, allowing us to describe a complete event, and the progressive gives us a view from within, allowing us to describe a stage of an event. An entailment from the perfective to the progressive
would follow on the assumption that the truth of a perfective claim guarantees the existence of a complete event that is constituted by stages (or parts), which the progressive might be used to characterize as being in progress—perhaps by relating a stage of the event to the complete event. We can think of this in terms of a shift in “viewpoints” that this account of the relationship between the perfective and progressive supports.

The problem with the intuitive picture should now be clear. The truth of an outcome-associated perfective claim does not guarantee that the event that it describes would—at any candidate time throughout its duration—eventually be realized, other things being equal. However, the truth of its progressive counterpart does require a guarantee that that event would be realized, other things being equal. In the intervention case, for example, \((1_{\text{PF}})\) is true of an event that developed over a certain period of time, but, for some, there are non-negligible stretches of time during this period relative to which \((1_{\text{PG}})\) is not true. \((1_{\text{PG}})\) is judged to be false as a description of what was happening at those times because Mary would not then make it across, other things being equal. So, although Mary crossed the Atlantic in the intervention case, she was not crossing the Atlantic initially. If it is assumed, as on Landman’s account, that an entailment from the perfective to the progressive should hold throughout the development of the event described by the perfective, then the entailment clearly fails in this case. We have also seen cases where the failure of this entailment is even more plain; there may be no time over the course of the development of an event described by a true outcome-associated perfective claim when its progressive counterpart is also true.
As we have seen, though, some interpreters judge (1PG) to be true throughout the duration of the event described by (1PF). This is taken to be a problem for views on which the truth of (1PG) depends on whether Mary would have crossed the Atlantic, other things equal. I do not think that these cases pose a problem for this sort of view, however. I think that mixed intuitions concerning the truth value of (1PG) in the intervention case are due to mixed intuitions concerning whether that condition is met. In my view, those who judge that (1PG) is true, as a description of what was initially happening, are assuming that Mary would then cross the Atlantic, other things equal. My hypothesis is that this assumption is due to an interaction between hindsight bias, which favors actual outcomes, and outcome-associated progressive claims, which are sensitive to whether those outcomes would be realized under idealized conditions. A piece of evidence for the presence of bias here comes from a phenomenon that I call ‘event blindness.’ That is, interpreters who judge (1PG) to be true early on in the intervention case show signs of neglecting the actual occurrence of the intervention, whereas those who judge (1PG) to be false attend to its occurrence and regard it as signaling a change in the normal course of events.

Finally, I suggested that the debate concerning whether the progressive has a modal or non-modal semantics can be settled in light of the central result of this paper. This result figures crucially in a set of entailment patterns that, together, strongly support the view that the modal interpretations that we have been considering are linked to the presence of outcome-association in the progressive environment, and not to the progressive. It remains to be seen whether, as I have hypothesized, these interpretations reflect a general cognitive pattern of interpre-
tation that arises whenever outcome-associated events are described as obtaining at a time though their outcomes do not. More research is required to substantiate this hypothesis, but it suggests the possibility that the study of these event representations may provide a window into the place of modality in cognition and its connection to natural language.
Chapter 3

Modality, Cognition, Semantic Explanation

1 Introduction

There can be no question that when I ask myself, searchingly, “What could I have done?” I am wondering about those actions that were possible for me and not about any actual course of action. ‘Could’ gives voice to a modal concept here, one that concerns counterfactual possibility. But there are other, more reluctant expressions in natural language and it can be difficult to tell whether they express modality. So, for instance, if I swam earlier in the day and I am now reflecting on the progress of that activity—I think, I was swimming earlier—have I, in thinking about the progress of that activity, introduced a layer of modality into my thought?

As it happens, this is a polarizing question for theorists who are interested in grammatical aspect, which is the system of meanings that provide various viewpoints on events, and who are, in particular, interested in the semantic contribution of the progressive\(^1\) to claims that characterize events as in progress. The dominant

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\(^1\) The progressive is marked, in English, with the auxiliary ‘be’ and with the verbal suffix ‘-ing.’
view in the literature (you may be surprised to learn) is that the progressive has a modal meaning so that a claim like ‘I was swimming’ does introduce a layer of modality.\textsuperscript{2} There is, however, a significant contingent—the sometimes self-styled ‘radicals’—that denies that the progressive has a modal meaning so that a claim like ‘I was swimming’ does not introduce a layer of modality, but rather contributes something much more modest (e.g., that a swim event is partially realized).\textsuperscript{3}

The modal and non-modal theorists are each, in a sense, half-right about progressive sentences. Some progressive sentences do give rise to modal interpretations. But not all of them do. I defend the view that a fault line lies between progressive sentences like ‘Mary was crossing the Atlantic’ that embed ‘outcome-associated’ predicates of events (that are, intuitively, associated with endpoints, goals, or outcomes) and progressive sentences like ‘Mary was swimming’ that do not. The modal interpretations that arise in connection with the former sort of claim do not arise in connection with the latter.\textsuperscript{4}

In light of the fact that only some progressive sentences have modal interpretations, I propose an analysis of the progressive on which it does not have a modal meaning. But, of course, if the progressive does not have a modal meaning, we

\textsuperscript{2} See, for example, Dowty (1979), Landman (1992), Portner (1998), Higginbotham (2004), and Hallman (2009b).

\textsuperscript{3} See, for example, Bennett and Partee (1978), ter Meulen (1985), Parsons (1990), and Szabó (2004) and (2008).

\textsuperscript{4} So, the charge against the modal theorist should never have been that progressive sentences do not have modal interpretations—some of them manifestly do—it should have been that the attribution of modal conditions to the progressive is an instance of generalizing to the worst case and that it misrepresents the meaning of some progressive claims. This is a problem that has passed unnoticed and, in light of the modal interpretations of some progressive claims, has enabled modal theories to proliferate.
confront (for the first time) the difficult task of explaining how it is that certain progressive sentences come to be associated with modal interpretations.

There is a form of answer to this question that has the imprimatur of mainstream approaches to semantic explanation both within linguistics and within the philosophy of language. It is to explain these modal interpretations, somehow or other, in terms of linguistically encoded modal meanings (as reflected, for example, in the long history of attempts to analyze the progressive as having a modal meaning). This would be to offer an explanation of the modal interpretation of ‘Mary was crossing the Atlantic’ that is of the same kind as the explanation of the modal interpretation of a sentence like ‘What could I have done?’

This approach cannot, however, be pursued in an explanatory manner in the case of our distinguished class of progressive sentences. I argue that there is no candidate meaning or interaction of candidate meanings that can be appealed to in way of explaining why these modal interpretations arise in precisely those environments in which they do. (Part of the story, then, will consist in laying bare these environments.) What these interpretations reflect, on my view, is not the modal structure of language but the modal structure of cognition. So when we explain why certain progressive sentences have modal interpretations we are, on my view, not merely offering an explanation of the meanings that they encode, we are also offering an explanation of how it is that these meanings engage modal cognition, and what the semantic or interpretive output of that system is once it is so engaged.

The latter approach has a variety of benefits. For one, it allows us to posit very simple and natural meanings for the expressions implicated in the genera-
tion of these interpretations (e.g., the progressive, outcome-associated predicates, etc.) and this has consequences, as usual, for our understanding of those linguistic systems in which these expressions are embedded (the aspect system, the verbal domain, etc.). In addition, there appear to be a variety of expressions that give rise to the modal interpretations that we see in connection with our distinguished class of progressives and which also involve outcome-association. The approach that I pursue opens up the possibility of recognizing a systematic connection between these expressions. To suppose that these interpretations arise, in each case, as a result of modal meanings encoded by each is to mistake a systematic connection for an accidental one, to offer a shallow answer or no answer at all to questions like ‘Why the same flavor of modality in each case?’ and ‘Why manifestations of this modality in environments with a certain shared structure?’ Finally, although my argument implies that semantic explanation can go well beyond linguistically encoded forms, the expressions that are of interest in this paper offer a unique vantage point from which to consider our assumptions about the nature of linguistic modality, including our assumptions about the semantic contribution of modal expressions and the nature of their access to modal cognition, and beyond this, a vantage point from which to consider why the realization of modality in natural language takes the form that it does.

With the aims of the paper in view, the plan for it is as follows. In section 2, I argue against two paradigm-setting analyses of the progressive (the first non-modal and the second modal) and defend my own non-modal analysis of the progressive. In section 3, I advance a hypothesis (‘The Displacement Hypothesis’) concerning the
environments that trigger the modal interpretations of certain progressive claims. Finally, in section 4, I defend the view that the modal structure of these interpretations is not linguistically encoded, but rather reveals aspects of the structure of modal cognition. I reflect on the consequences of this account for our understanding of semantic explanation, the motivation that it provides for a new and expanded role for the philosophy of mind in the study of language, and I note some of the more urgent questions that this line of research opens up for further inquiry.

2 An Analysis of the Progressive

2.1 Instants and Intervals

As the term ‘progressive’ suggests, we use progressive claims to talk about events that are in progress. Our task in what follows is to advance from this near truism, stated in everyday language, to an illuminating and precise semantic analysis.

With this goal in mind, let us start with a broad description of the progressive as a predicate that characterizes instants in a changing world. To see why this description is apt, consider that the progressive is a stative predicate, which is the sort of predicate that characterizes what a part of the world is like at an instant. Evidence for the claim that the progressive is stative may be drawn from its behavior across diagnostics for stativity. So, for example, the progressive predicate ‘be running’ in (2) patterns with the stative predicate ‘be here’ in (1) insofar as Max’s

5 See Hallman (2009a) for an argument that it is durationlessness that characterizes stativity.
running, like his being here, is interpreted as surrounding my arrival (or as being simultaneous with it, though this is less salient):

(1) Max was here when I arrived.

(2) Max was running when I arrived.

The interpretation of these predicates contrasts with the interpretation of an eventive predicate in this environment. This is the sort of predicate that characterizes what a part of the world is like over a non-instantaneous interval of time.⁶ So, for example, the eventive predicate ‘run’ in (3) contrasts with our previous examples insofar as Max’s run is interpreted as following my arrival:

(3) Max ran when I arrived.

The same general pattern emerges if we consider the interpretation of these predicates across both past and present tense environments. What we find is that progressive predicates, like stative predicates, receive a uniform interpretation across these environments though eventive predicates do not:

(4a) Max was here.

(4b) Max is here.

(5a) Max was running.

(5b) Max is running.

⁶ See Hallman (2009a) for this characterization of the contrast between stative and eventive predicates.
(6a) Max ran.

(6b) Max runs. (habitual interpretation)

In particular, the predicate ‘run’ receives a habitual interpretation in (6b) and cannot be interpreted as describing a running episode,\(^7\) which is the salient interpretation of its counterpart in (6a). Since the progressive patterns with statives across diagnostics for stativity,\(^8\) I will continue to assume that it is a stative predicate. Given my view of stativity, this amounts to the claim that the progressive characterizes what the world is like at an instant in time. Though, in the interest of facilitating discussion across frameworks, I will treat this as interchangeable with the claim that the progressive characterizes a state of the world (i.e., the sort of thing that holds at a moment).\(^9\)

This brings us to the connection between the progressive and characterizations of what the world is like over time. It appears that while the progressive is itself a stative predicate, it combines exclusively with eventive predicates. For this reason, we get anomalous results when we attempt to combine the progressive with a stative predicate such as ‘be blue,’ as the following sentence shows:

(7) ?The sky is being blue.

The possibility of a ‘repair’ interpretation on which (7) means something like ‘The sky is acting blue’ (behaving bluely?) only serves to underscore this generalization,

\(^7\) This claim commits one to treating as special a certain style of discourse—sometimes called the ‘sportscaster present’ (e.g., ‘He shoots; he scores!’)—in which the occurrence of a particular event may be narrated in what appears to be a present tense environment.

\(^8\) See Vlach (1981) for an early defense of this claim.

\(^9\) The latter characterization allows us to pursue a treatment for statives that parallels current treatments of eventive predicates as predicates of events (those inspired by Davidson (1967)).
as it appears to require the predicate ‘be blue’ to be interpreted as an eventive predicate along the lines of ‘act blue.’ An attempt to combine our earlier stative predicate ‘be here’ with the progressive also appears to invite this repair strategy:

(8) ?Max is being here.

In the context of (8), ‘be here’ is not interpreted as indicating Max’s indexically specified location. Rather, it receives an almost Heideggerian interpretation, indicating Max’s active engagement with the world or something along these lines. Consistent with our assumptions, we also find that the progressive does not combine with progressive predicates, as the following example shows:

(9) ??Max is being running.¹⁰

Note, moreover, that the trouble here is not due to the presence of the verb ‘be’ in these predicates. As Peter Hallman points out, (10) is acceptable though the verb ‘be’ figures in the predicate ‘be fed rice,’ which combines with the progressive:

(10) The baby was being fed rice.

¹⁰ Not only is (9) decidedly odd, it appears not even to be amenable to a repair interpretation of the sort sketched for (7) and (8). This is something that calls for explanation, but I leave it as an open question.
It appears, then, that the progressive combines with eventive\textsuperscript{11} predicates, which represent what the world is like over intervals of time or, if you like, which represent (temporally extended) events.

A Hypothesis

At this point, it is natural to wonder about the relationship between the progressive and the predicate with which it combines. How is instant related to interval? A hypothesis suggests itself. It is, broadly, that the progressive encodes a certain part-whole relation: it is true of (or at) a part of the sort of thing that the predicate with which it combines is true of (or at). In terms of a relation between events and their states (or momentary parts), for example, the hypothesis is that the progressive represents a state of an event as holding at a given time.\textsuperscript{12} This hypothesis predicts that ‘Max was running,’ at the very least, describes a state (or momentary part) of a run by Max as holding at a past time.

\textsuperscript{11} One complication arises in connection with achievement predicates, which are predicates that are thought to characterize instantaneous events (e.g., ‘leave’ as in ‘John left’). Given that these are eventive predicates, they cannot, on present assumptions, characterize instants or states tout court. I recommend that we think of achievement predicates (or better, predicates that are interpreted as achievements) as characterizing the instantaneous outcomes of events that are, in fact, extended. When the progressive combines with such a predicate (to anticipate some of what is to come) it may select any part of the event it represents but for its outcome. So, on this interpretation of the event predicate ‘leave,’ ‘John is leaving’ does not allow an interpretation on which John is now gone, though it (at least) indicates that a part of the event that precedes that outcome obtains. See Rothstein (2004) for a similar view concerning achievements in the progressive environment (though my claim is a claim about achievements both within and without the progressive environment).

\textsuperscript{12} Various assumptions might be made about what it is for there to be a state of an event. For example, in reflecting on the aspects of progressive meaning discussed in 2.1, Parsons (1990) says that we might adopt a view on which “for every event that is in progress, there is a uniquely associated state, the “In-Progress” state of the event, which holds as long as the event is in progress” (170). Hallman (2009a) takes a different approach and gives this idea algebraic expression, facilitating its integration into lattice theoretic approaches to event structure inspired by (for example) Bach (1986) and Krifka (1992). Since these are matters to be decided by one’s broader theoretical commitments, I will simply assume that states are momentary parts of events and allow this to be understood in any number of different ways.
As far as it goes, the hypothesis offers a nice explanation of the descriptive overlap between pairs of claims like ‘Max was running’ and ‘Max ran.’ But how far does it go? Notice that the hypothesis leaves open a number of questions that we eventually want to address. Among them are the following: Does the progressive represent anything more than the existence of a momentary part of a temporally extended event? Does the progressive require, for instance, that the event predicate with which it combines characterize an actual temporally extended event? Or does it require it to characterize a possible event (whether actual or not)? And if the progressive does introduce a modal constraint, what sort of modality does it express? Since this hypothesis has, in one form or another, been tremendously fruitful in connection with analyses of the progressive and since I think there is good reason to adopt it, I will do just that.13 The task ahead, as I see it, is to address the difficult questions left open by it.

A Restriction

For now, there is one more preliminary matter to settle (though as we will see, it will prove to be of great significance for understanding the progressive as well as for understanding a number of other seemingly unrelated expressions). The matter concerns whether there are restrictions on the parts of a given type of event that are candidates for selection by the progressive. So, for example, can ‘Max was running’ describe any part of a run by Max?

13 For an alternative approach, see Szabó (2004).
Interestingly, it appears that there is a constraint on the parts of a temporally extended event that may serve as candidates for selection. Notice, for example, that if Mary is already across the street, one cannot use (11) to describe Mary’s crossing of the street as being in progress (currently):

(11) Mary is crossing the street.

This is so despite the fact that Mary’s being across the street is an outcome or endpoint that is associated with the underlying event predicate in (11). Notice that when ‘cross the street’ occurs in (12), which tells us that an event characterized by that predicate held in the past,\(^ {14} \) it is a condition on its truth that that outcome occurred:

(12) Mary crossed the street (#but she didn’t get across).

Since that very\(^ {15} \) event predicate combines with the progressive in (11) and since the progressive represents a state of the event it describes as holding (by our hypothesis), it appears that the outcome or final part of the event—Mary’s being across the street—is not a candidate for selection.

\(^ {14} \)I intend the interpretation of this sentence on which it describes a particular past event (variously described as its ‘episodic,’ ‘simple past,’ and ‘perfective’ interpretation).

\(^ {15} \)It might be denied that a predicate like ‘cross the street’ is associated with an outcome and, in particular, that it represents a complete street-crossing (i) in the progressive context of (11) and (ii) in the non-progressive context of (12). The problem with simply denying (i) is that there are interpretive effects that depend on the representation of its associated outcome at the point at which this predicate combines with the progressive (as I discuss shortly). One might also deny both (i) and (ii). Hallman (2009b) (who is inspired by the approaches in Kratzer (2004) and Mittwoch (1988)) assumes that a predicate like ‘cross the street’ has a partitive meaning, arguing that the completion interpretation in (12) is due to an unpronounced (‘telicizing’) operator and that it is the progressive that reinstates a connection between a part of a street-crossing by Mary and her arrival across the street (which constitutes a putative explanation for the interpretive effects just alluded to). Setting other problems aside, my main objection to this sort of combination view is that it builds a condition into the meaning of the progressive that cannot generalize across progressive claims (as I also discuss shortly).
As a first pass, we might capture this fact by assuming that the progressive introduces a restriction against the selection of the final parts of events. If we assume that Mary’s being across the street is a final part of a crossing of the street by her, then this assumption allows us to explain why (11) cannot be used to describe Mary’s street-crossing as being in progress in a scenario in which she is already across the street. We will have occasion to revisit this tentative assumption once we encounter more complex data, but for now it provides us with an explanation for the very interesting restriction evidenced by (11).

We have, then, three core assumptions. The first is that the progressive is a stative predicate that combines with eventive predicates. The second is that the progressive is true of or at the sort of thing its underlying predicate is true of or at, which gives us a certain direction of analysis to work with. The third, as we have just seen, is that the progressive cannot select the event-final part of the event represented by its underlying predicate (i.e., that part cannot be said to be progressing). With these core assumptions in place, I want to turn now to an early analysis of the progressive that encodes these assumptions and attempts to settle some of the hard questions raised by them.

### 2.2 An Early Analysis of the Progressive

Michael Bennett and Barbara Partee (1978) propose the following analysis of the progressive, which is illustrated here for the sentence ‘Mary is crossing the street’:
'Mary is crossing the street’ is true at I if and only if I is a moment of time, there exists an interval of time I’ such that t is in I’, I is not an endpoint for I’, and ‘Mary cross the street’ is true at I’.

Notice that the Bennett-Partee analysis encodes a version of each of our core assumptions. It is assumed, on the analysis, that the progressive is stative insofar as it is true at a moment. It is assumed that the (in this case) clause with which the progressive combines is eventive insofar as it is true at a non-instantaneous interval. Moreover, it is assumed that progressive claims are true of (or at) parts of whatever sort of thing their underlying clauses are true of (or at). After all, according to the analysis, progressive claims are true at instants that are parts of intervals at which their underlying clauses (e.g., ‘Mary crosses the street’) are true. And, finally, it is assumed that there is a restriction on the progressive’s being true of or at a final part, which is expressed, on the present analysis, in terms of a restriction on the progressive’s holding at an interval-final moment.

The analysis also provides us with an answer to the question of whether the progressive commits us to something more than a part—to something more than a characterization of what the world is like at a moment in time. What it tells us, in particular, is that the moment characterized by the progressive is only a mere part of stretch of time in the actual world that extends into the future and that is characterized by the clause with which it combines.
2.3 Dowty’s Inertial-Worlds Analysis (First Attempt)

Although the Bennett-Partee analysis is fully extensional, it inspired a wave of modal analyses of the progressive, which were argued to be necessary to avoid certain problematic entailments generated by it. (Ironically, these entailments resemble the sort of entailments that the Bennett-Partee account was itself designed to avoid.)

One of the most interesting and simple arguments of this kind was offered by David Dowty (1979). Dowty retains the temporal relation encoded by the Bennett-Partee analysis. That is, he assumes that when the progressive combines with a predicate (or clause), that predicate characterizes an interval of time that includes and extends forward from the progressive’s time of evaluation. But, he claims, such a predicate does not invariably characterize intervals of time in the actual world, pace the Bennett-Partee analysis. For this reason, a predicate combining with the progressive must be assumed to characterize an interval in a possible world or in possible worlds that may be non-actual.

I want to focus, for a moment, on Dowty’s reasons for rejecting the assumption that predicates combining with the progressive invariably characterize intervals in the actual world. What we are told is that that assumption generates an incorrect entailment. It leads to the prediction, for example, that (13) entails that John watches television while asleep though, clearly, (13) is understood to mean that John was watching television up to the moment at which he fell asleep:

(13) John was watching television when he fell asleep.
To see why that entailment might be taken to follow from the Bennett-Partee analysis, suppose that there are two consecutive moments, $t_1$ and $t_2$ (where $t_1$ precedes $t_2$), and suppose that ‘John is watching television’ is true at $t_1$ and that John is asleep at $t_2$. On these assumptions, the analysis requires that ‘John watch television’ be true at an interval that includes $t_1$ and also includes (at least) $t_2$ (since otherwise ‘John is watching television’ would be true at an interval-final moment).

But by our assumptions, this means that there is a time at which John is asleep, which is included in an interval at which he watches television.

Notice, however, that an alternative assumption about time might be made, which, to some extent, insulates the Bennett-Partee analysis from this particular argument. If time is assumed to be dense, then there are times that occur between $t_1$ and $t_2$ and these times may be included within an interval at which ‘John watches television’ is true with one of these designated as an interval-final moment. There need not be any overlap, then, between the time when John watches television and the time when he is asleep, contrary to Dowty’s claim.

It is difficult to adjudicate whether this response is really adequate, however. If the progressive imposes the requirement that a given type of event continue past the point at which it is said to be in progress, appeal to the fleet moments between $t_1$ and $t_2$ might not be thought to be adequate for representing the continuation of the event (that is, they may not represent this continuation robustly enough).
Moreover, it might be wondered whether the response respects the intuition that (13) is interpreted as meaning that John was watching television up to the point at which he falls asleep. One might have the intuition that this requires there to be no (relevant) intervening event between the particular moment at which John is said to be watching television and some designated “next” moment at which he is asleep. These concerns might be taken to provide some motivation for an account like Dowty’s—one on which John promptly stopped watching television in the actual world (though not in certain possible worlds) and subsequently fell asleep. But the motivation for this account is pretty thin, indeed. If there were no more evidence than this, I think it would be very difficult to settle these issues in favor of one or another of these approaches to progressive meaning (which is not yet to consider whether we should resist the temporal assumption that underlies both approaches).

2.4 Dowty’s Inertial-Worlds Analysis (Second Attempt)

What we should do, in light of these inconclusive results, is investigate whether there might be clearer cases on which to base our claims about progressive meaning. And I think there are clearer cases.

I recommend that we think of progressive claims as being divided into one of two distinct classes depending on whether the predicate combining with the progressive is grammatically associated with an outcome/endpoint (call these ‘outcome-associated progressives’) or not (call these ‘non-outcome-associated pro-
gressives’). The last section represented an attempt to motivate a modal analysis of the progressive on the basis of an example taken from the second of these classes (and, in fact, Dowty's argument represents the only argument of this sort—which is, in part, what makes it so interesting and instructive to consider). In this section, I want to consider an attempt to motivate this analysis on the basis of an example from the first of these classes.

Various diagnostics tell outcome-associated and non-outcome-associated predicates apart. So, for example, it is known that ‘in’-adverbials (e.g. ‘in five minutes’) measure the temporal span of an event, from onset to outcome. For this reason, when they combine with ‘in’-adverbials, predicates that are associated with outcomes (e.g. ‘cross the street’ in (15)) pattern differently than predicates that are not (e.g. ‘watch television’ in (14)). We see, for example, that (14) strikes us as being peculiar, though (15) does not:

(14) ?John watched television in five minutes.

(15) Mary crossed the street in ten seconds.

The reason for this is that ‘in ten seconds’ can measure the temporal distance between the onset and outcome of the event described by the predicate ‘cross the street,’ whereas ‘in five minutes’ cannot straightforwardly measure the temporal distance between the onset and outcome of an event described by the predicate

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16 There is a large literature on the topic of outcome-association under ‘telicity’ and on the predicates that are associated with outcomes (or teloi) under ‘accomplishments.’ For a canonical early source on these topics, see Vendler (1957). For an interesting and more recent discussion of these topics, see ‘On Events in Linguistic Semantics’ and ‘Accomplishments’ in Higginbotham (2009b), although I wish to distance myself from the view that outcomes represent the proper ends of events—a view found in that work and that is encouraged, I think, by the description of these outcomes as ‘teloi.’
‘watch television’ (since, ordinarily, that predicate is not associated with an outcome). Notice, though, that (14) is interpretable if it is taken to have a non-standard meaning—if it is taken to mean, for example, that five minutes elapsed before John began to watch television (in which case, presumably, ‘watch television’ itself describes the outcome of an event that is not otherwise overtly characterized). Other ways of associating that predicate with an outcome are available, but questions concerning the mechanics of these interpretations should not detain us. The point of the contrast between (14) and (15) is not that predicates are rigidly either associated with an outcome or not, it is rather that we can distinguish between those cases in which they are and those cases in which they are not.

Outcome-associated progressives give us reason to reject the Bennett-Partee analysis. In particular, they provide us with evidence to reject the assumption that the predicate that combines with the progressive characterizes an interval (or event) in the actual world. To see this, consider that the following outcome-associated progressive may be true despite the fact that Mary was prevented from making it across the street:

(16) Mary was crossing the street when she was hit by a car.

Since we are assuming that a predicate like ‘cross the street’ is associated with an outcome in the progressive environment—Mary’s being across the street—and since (16) may be true despite the fact that this outcome is not eventually actualized, that assumption cannot be maintained.
It seems that there are two minimal departures from the original Bennett-Partee proposal that might be considered, each of which rejects the assumption that the predicate that combines with the progressive characterizes an interval in the actual world. The first option replaces that assumption with the assumption that the progressive represents a (non-final) part of the interval characterized via the predicate with which it combines. According to this option, ‘Mary was crossing the street’ simply tells us that, sometime in the past, a (non-final) part of a street-crossing by Mary held. The second option assumes that the predicate that combines with the progressive characterizes an interval (or event), not necessarily in the actual world as on the rejected analysis, but in certain relevant possible worlds, where this interval includes the progressive’s time of evaluation and extends forward from it. According to this option, ‘Mary was crossing the street’ tells us both that a part of a street-crossing by Mary held in the actual world and that this part develops into a complete street-crossing by Mary in certain relevant possible worlds.

As it turns out, there is considerable prima facie evidence in favor of the second option insofar as outcome-associated progressives do receive modal interpretations. Consider, for example, that there are truth value shifts across cases in which (i) an event is partly realized and can be totally realized and those in which (ii) that event is realized to the same extent (we may suppose) but cannot be totally realized. Take (17), for instance:

(17) Mary is crossing the Atlantic.
If we imagine that Mary sets out to captain her ship across the Atlantic and is part-way across when she receives a signal to return to port, then it is uncontroversial to claim that (17) is true as a description of what was happening before she received the signal. But if we imagine that Mary, who is in the grips of a hallucination, sets out to swim across the Atlantic and is part-way across when she drowns, it is uncontroversial to claim that (17) is false as a description of what was happening before she drowned. This contrast is easily explained by appeal to the contrast in the modal status of the outcome in question across these cases. An analysis on which (17) says only that a part of a cross-Atlantic passage by Mary obtained, misses the contrast between these cases completely.

Dowty’s analysis provides a reasonable starting point for analyzing these progressive sentences as it imposes conditions on the possible, though not necessarily actual, continuations of an event. It is illustrated here for the sentence ‘Mary is crossing the street’:

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17 We see variation in the sorts of facts that are taken to be relevant to this question, across speakers, just as we see in connection with other modal interpretations. It appears to be possible to focus exclusively on Mary’s own subjective point of view, for example. This may be one explanation, among others, for why some interpreters claim that (17) is true in the second case. But it is just as easy to see that there is a (broader) fact base that does not support the truth of that claim. Consider yourself whether the headline reporting the fatality would read ‘Woman Drowns While Crossing Atlantic’ or ‘Woman Drowns While Trying to Cross Atlantic.’

18 Among the technical difficulties of the analysis is the fact that (i) given the relative scope of the quantifier over inertial worlds and the quantifier over intervals that extend into those worlds, a given type of event is required to take up the exact same interval of time across inertial worlds in which it is realized—a constraint that appears to be too strong; (ii) that the relativization to worlds and intervals does not allow for the simultaneous progressing of events that have incompatible outcomes, though there is evidence that supports this possibility (as discussed by many theorists including Portner (1998) and Szabó (2008)); (iii) that without supplementation, the description that applies to an event that is completed across possible worlds does not apply to that part of it that is realized in the actual world (as discussed by Hacquard (2009)); and (iv) that it does not attribute a stative semantics to the progressive.
‘Mary is crossing the street’ is true at an interval I and world w if and only if there is some interval I’ such that I ⊆ I’ and ‘Mary cross the street’ is true at I’ in every inertial world relative to I and w.

The inertial worlds that figure in this analysis are worlds, to use just one evocative characterization, in which some course of events unfolds without disturbance or interruption relative to a given time and world. Their presence in the analysis is critical for explaining the shift in truth value judgments that we see in connection with (17). According to the analysis, (17) is true on the assumption that Mary eventually arrives across the Atlantic in every world in which her past activity continues undisturbed and it is false on the assumption that there is some such world in which she does not eventually arrive across. And this aligns nicely with our intuitions about (17) across these cases and the corresponding assumptions that might be made about Mary’s prospects in each.

2.5 Generalizing to the Worst Case

We have seen that outcome-associated progressives provide some motivation for a modal analysis of the progressive. However, if the progressive is to have a uniform meaning, this sort of analysis has to generalize to non-outcome-associated progressives. And it is far from clear that it does.

There are three properties to consider in evaluating whether the inertial worlds analysis generalizes to these progressives (although these properties are common across modal analyses). According to this analysis (i) predicates that combine with
the progressive need not characterize actual intervals (or events) that extend into the future, (ii) though they are required to characterize intervals in certain possible worlds, and (iii) those intervals are required to include and extend beyond the progressive’s time of evaluation. These are the conditions that, together, give us the basic modal-temporal profile of outcome-associated progressive claims.

The first of these assumptions generalizes, without a hitch, to the case of non-outcome-associated progressives. As we saw in section 2.3, in the case of non-outcome-associated progressives, there is no evidence for—and perhaps some evidence against—the assumption that these predicates characterize actual intervals (or events) that extend into the future. There is, though, clear evidence against this assumption in the case of outcome-associated progressives. We saw, for example, that ‘Mary was crossing the street’ may be true even if Mary was prevented from making it across. In the interest of pursuing a uniform analysis of the progressive, we should assume that the progressive does not require that the intervals or events characterized by its underlying predicates be actual.

What about the other two assumptions? Do they also generalize to the case of non-outcome-associated progressives? Consider again the example from our first attempt to motivate a modal analysis of the progressive:

(18) John was watching television when he fell asleep.

The inertial-worlds analysis tells us that (18) may be true in a context in which John promptly stops watching television after he was said to be watching it. But the analysis now requires that there be an interval over which John watches television
(that includes the relevant moment in the actual world at which he was said to be watching television) and that extends into every future of every world in which John’s activity continues without disturbance or interruption. These are surprisingly strong conditions to propose for such a claim. Indeed, we are confronting a version of the rather startling theoretical commitment that I presented at the outset—that the thought ‘I was swimming’ introduces a layer of modality into the contemplation of my swim. As I will now argue, this is not a commitment that we should accept.

**Barriers to Continuation**

We should reject the generalization of the modal-temporal conditions in (ii) and (iii) to non-outcome-associated progressive claims on the grounds that they, unlike their outcome-associated counterparts, do not show sensitivity to barriers to continuation. Recall that the inertial-worlds analysis invites us to consider how an event would continue under somewhat idealized circumstances (i.e., those in which an event continues without barriers or interruptions). This sort of idealization is very intuitive though it is also, without question, somewhat elusive. It can be difficult to know with certainty whether some feature of a particular case counts as an interruption or presents a barrier or not.\(^9\) My argument does not, however, require that we make any involved decisions of this sort. The crucial observation is simply that non-outcome-associated progressives are utterly insensitive to anything that might be a barrier to continuation and that they differ from their outcome-associated coun-

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\(^{9}\) We might, however, let judgments about progressive claims reveal the features of cases that do or do not count as interruptions. These are not necessarily details that need to be decided in advance in order to determine whether the best theory incorporates this mechanism of idealization.
terparts in this respect. What this contrast shows is that these conditions cannot be attributed to the progressive itself, which applies as much to the one type of predicate as to the other.

Let us compare cases. Suppose that there is some last moment at which ‘John is watching television’ is true in the actual world and that this moment is followed by John’s falling asleep. The question before us is whether ‘John was watching television when he fell asleep’ could be true in a context in which there are indefinitely many circumstances in the actual world each of which is sufficient to ensure that John stops watching television just when he actually does. This list might include the following conditions, among others:

– An electrical storm caused a power outage.

– John’s television was programmed to turn off.

– John intended to stop watching television just then.

– John’s television consumption was being strictly supervised.

And yet, none of this influences our judgment about whether it could be that John was watching television when he fell asleep. This judgment appears to be insulated from these and other potential barriers to continuation.

Compare this to the case considered earlier in which Mary sets out to captain her ship across the Atlantic but is called back to port some time after. This is a ‘good’ case. The outcome-associated sentence ‘Mary is crossing the Atlantic’ is true as a description of what was happening between Mary’s departure and the eventual
rerouting of the ship. But consider whether you would judge this sentence to be true if the signal to return were simply one among an indefinitely long list of conditions each of which is sufficient to ensure that Mary returns to port when she does. We might consider the following conditions, among others:

- The crew have mutinied.
- The ship is slowly sinking.
- The coastguard has intercepted it.
- It has only enough gas to return to port.

These calamities can influence one’s judgment concerning whether Mary was actually crossing the Atlantic in the midst of them. They can cast doubt on whether that event was progressing and, as in the case in which Mary attempted to swim across the Atlantic, it might be thought that Mary was, at best, trying to cross the Atlantic.

It appears, in light of this contrast, that non-outcome-associated progressives do not represent the events that they describe as having possible continuations. In a way, this is not surprising. There is no independent evidence in favor of the assumption that these progressives represent the continuations of events at all. We see no evidence, for example, of a restriction against the progressive’s selection of the event-final parts represented by their underlying predicates, though this restriction is implicated, somehow or other, in the continuation requirements that we see in the case of their outcome-associated progressive counterparts.
We do, however, have evidence for the claim that outcome-associated progressives represent the events that they describe as having possible continuations. There are two routes to seeing this. To begin with, we noted (in section 2.1) that ‘Mary is crossing the street’ cannot represent the terminal portion of a street-crossing by Mary as ongoing. We have since learned that ‘cross the street’ is an outcome-associated predicate and that outcome-associated predicates have distinguished final parts. In light of this, a more accurate (though still not general enough) articulation of the relevant restriction is that the progressive cannot select the outcome-portion of an event represented by an outcome-associated predicate with which it combines. *If* we make the further assumption,\textsuperscript{21} in keeping with the accounts we have seen, that these predicates invariably characterize an entire event in the context of progressive claims, a part of which is represented as holding at a time, then these progressive claims also invariably represent the continuation of these events. (Of course, these continuations, as we have seen, need not be actual in every case.)

That further assumption is not essential, however, and we need not be waylaid by arguments at all. We could, more simply, begin from the observation that outcome-associated progressives give rise to interpretations that concern the possible continuations of events, parts of which are represented as holding at a time, and then attempt to relate that fact to the restriction against the progressive’s selection of outcomes. This would constitute, in fact, the most elegant account of the difference between outcome-associated and non-outcome-associated progressives:

\textsuperscript{20} See section 2.6 for a more general statement of the restriction.

\textsuperscript{21} I hinted at the rejection of this assumption at the end of 2.3.
instead of having to recognize three independent sources of difference between outcome-associated and non-outcome-associated progressives—the modal interpretation of the one but not the other; the temporal relation instantiated by the one but not the other; and the outcome-restriction of the one but not the other—we explain the modal and temporal character of outcome-associated progressives in terms of the restriction on the selection of their outcomes. This is a departure from tradition, but as I argue in the next section, it allows us to avoid the problems that have beset traditional approaches.

2.6 A New Proposal

By now, we have seen ample evidence that outcome-associated and non-outcome-associated progressive sentences have strikingly different properties. Both outcome-associated and non-outcome-associated progressives represent a part of the events described by their underlying predicates as holding at a time, but only outcome-associated predicates show any restriction on the parts that may be so represented. Moreover, only outcome-associated progressives give rise to modal interpretations that concern the possible continuation of an event past the time at which it is said to be in progress and up to its culmination.

These striking differences between outcome-associated and non-outcome-associated progressives make the task of providing a unified semantic analysis for the progressive seem quite daunting. Moreover, neither of the analyses considered so far provide viable models for a unified analysis as each generalizes
properties that are strictly connected with outcome-associated progressives to their non-outcome-associated counterparts. The Bennett-Partee analysis assumes, for instance, that non-outcome-associated progressives represent the actual continuation of the events described by their underlying predicates and the inertial-worlds analysis assumes that they represent the possible continuations of those events.

It is possible, however, to isolate a property that is shared by outcome-associated and non-outcome-associated progressives. As I noted from the start, progressive sentences describe (at the very least) a part of the events characterized by their underlying predicates as holding at a time. But what if that is all they describe? We have been assuming that there is more to progressive meaning than that, but this has left us unable to account for the differences between these progressives. The challenge for an approach guided by this idea is, of course, to explain how their rich and intricate differences emerge if as minimal a meaning as this is attributed to the progressive.

I think that this challenge can and should be met. To that end, I propose that the progressive contributes the following minimal meaning:

\[ \text{PROG}(\phi) \text{ is true if and only if a state of the event represented by } \phi \text{ holds.} \]

Recall that, on the view assumed here, states constitute momentary parts of (temporally extended) events. This makes it intelligible to assume that the progressive represents a state of an event as holding at an instant. As already mentioned, how-
ever, the analysis may be adjusted if the connection between states and events is to be understood in some other way.

Note that my analysis does not incorporate an explicit restriction against the selection of the terminal or outcome portions of events characterized by outcome-associated predicates. This is a virtue as our aim is to offer a unified semantic analysis and that restriction would single out, for special treatment, those predicates that are associated with outcomes. Moreover, it would seem that this restriction calls for a more general formulation within our semantic theory. After all, it appears to be in effect across a number of constructions that represent parts of outcome-associated predicates as holding at a time. Building this restriction into each of these constructions would constitute a failure to capture the generality of the restriction. Rather than do this, I will simply note that there is such a general restriction and that the task remains to represent it in a suitably general way.

There is also no explicit commitment in the analysis to the existence of an (extended) event—actual or otherwise—that is characterized by $\phi$. The assumption that the progressive carries such a commitment has made trouble for analyses of the progressive from the start. It saddled early theorists, such as Montague (1970) and Scott (1970), with unwanted entailments (roughly of the form ‘if $\phi$ is happening, then $\phi$ has happened’). Bennett and Partee avoided these particular entailments by introducing the idea of a sentence’s being true at an interval into their tense logic (so that a sentence could be said to be true at an interval without being required

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22 I have in mind, for example, futurate progressives (e.g. ‘Mary is crossing the Atlantic tomorrow’), certain statives with ‘for’-adverbials (e.g. ‘Mary is in jail for five years’), and non-culminating accomplishments (which do not appear in English).

23 This particular innovation was Partee’s, as has been noted in print.
to be true at each of the moments comprising the interval). But it nonetheless saddled them, in turn, with a commitment to the actualization of states of affairs in cases where, as Dowty noted, we want no such commitment. And, in my view, it has saddled modal theorists ever since with a commitment to possible events in cases where no such commitment is appropriate. It would be better to reject this assumption.

Finally, and perhaps most importantly, the analysis does not incorporate a modal condition. So, the modal condition that attaches to outcome-associated progressives cannot be explained by appeal to the linguistic meaning encoded by the progressive. My hypothesis, in going forward, is that this modal condition (a composite of modal and temporal conditions, really) should be related to the restriction on outcomes in the progressive environment. It is helpful, in thinking about these characteristics as related, to see them as two species of what is sometimes called ‘displacement.’ ‘Displacement’ is simply a label for the fact that natural languages encode information about things not immediately present (e.g., what is non-local, non-present, non-actual, etc.).\textsuperscript{24} What I would like to propose is that the displacement of outcomes in the context of outcome-associated progressive claims (i.e., the fact that these outcomes are never in progress when the events with which they are associated are said to be) results in their modal displacement (i.e., in the requirement that that part of the event which is said to be in progress eventually culminate in that outcome across a range of relevant possible circumstances). Given the role

\textsuperscript{24} Today, one finds this term used almost exclusively to describe modals (that is, to indicate displacement along a modal dimension), but its original use was more general, in fact.
that I take displacement to play in accounting for the differences between outcome-associated and non-outcome associated progressives, I name this hypothesis ‘The Displacement Hypothesis’:

**DISPLACEMENT HYPOTHESIS:**

There is modal displacement just where there is outcome displacement.

In the context of this paper, it is assumed that the outcomes that fall under the Displacement Hypothesis are outcomes that are associated with events, but the hypothesis can easily be extended to the case of states that are associated with outcomes, if there are plausible examples of this sort (as I think there are).

It is important to see that the Displacement Hypothesis leaves room for competing proposals concerning the precise mechanisms by which modal displacement occurs. For all it says, it might be that outcome-associated predicates themselves have a modal meaning, which is triggered in precisely the right way by the outcome displacement that is enforced within the context of progressive claims. Or, for that matter, the modal displacement of outcomes might not be the result of any modal meaning at all—not at the level of the progressive and not at the level of the outcome-associated predicates with which they combine. In section 4, I will argue that the second of these options is the correct one. But first, I will offer evidence for the claim that it is, in fact, outcome displacement that triggers the modal interpretations of outcome-associated progressives. To make a successful case for that claim is to make a successful case for the Displacement Hypothesis.
3 The Displacement Hypothesis

I have argued that the progressive represents a state of an event described by its underlying predicate as holding. Although this analysis captures what is common across outcome-associated and non-outcome-associated progressives, or, alternatively, because it captures what is common across these progressives, it does not, without supplementation, explain why outcome-associated progressives and only outcome-associated progressives give rise to modal interpretations. This is precisely where the Displacement Hypothesis enters in. It allows us to relate the restriction against the progressive’s selection of outcomes—a restriction that specifically affects outcome-associated progressives and which must be represented at some appropriate level of generality by the grammar—to the modal interpretations that attach to outcome-associated progressives. The Displacement Hypothesis predicts that whenever an outcome that is associated with an event is displaced, it is also modally displaced. As the progressive can only select the non-outcome portions of an event characterized by an outcome-associated predicate, the outcomes of outcome-associated predicates are always displaced in progressive contexts. The hypothesis predicts, then, that outcome-associated progressives are always associated with modal interpretations.

A good way to test the Displacement Hypothesis is to examine the entailment relations between claims that describe outcome-associated events as complete (e.g., ‘Mary crossed the Atlantic’) and their progressive counterparts (e.g.,
‘Mary was crossing the Atlantic’). The Displacement Hypothesis predicts that, for any part of an outcome-associated event that the progressive represents as holding, there arises the same modal requirement.\(^{25}\) I have assumed that the content of this modal requirement is essentially the one suggested by Dowty, namely, that that part of an event that holds culminate in its associated outcome across every inertial possible circumstance. This modal requirement emerges, according to the hypothesis, whether or not the predicate combining with the progressive characterizes an event that is ever fully actualized.

There are, however, alternatives to this hypothesis. Notable among them is an alternative that predicts (i) that a substantive modal requirement emerges whenever the progressive represents a part of an outcome-associated event as holding and that outcome remains unactualized and (ii) that this modal requirement is trivially satisfied whenever the progressive represents a part of an outcome-associated event as holding and that outcome is eventually actualized. From the perspective of this alternative, outcomes are implicated in explaining why outcome-associated progressives and only outcome-associated progressives have modal interpretations, but it is the actualization or the non-actualization of an outcome that triggers modal requirements. The displacement of outcomes does not enter into the explanatory exercise.

The consensus in the literature, currently, is that a sentence like ‘Mary crossed the Atlantic’ does entail its progressive counterpart. This entailment pattern has

\(^{25}\) Recall that the goal of the hypothesis is to relate the modal and temporal character of outcome-associated progressives solely to the displacement of their outcomes.
been thought, by some, to undermine the case for modal treatments of progressive sentences, but, in fact, it is compatible with the alternative modal hypothesis just considered. That hypothesis predicts that the modal interpretation attaching to a claim like ‘Mary was crossing the Atlantic’ would be trivial if the event characterized by its underlying predicate were fully actualized—as would be the case in a context in which ‘Mary crossed the Atlantic’ is true. But, if correct, this entailment pattern undermines the sort of modal condition that I view as attaching to outcome-associated progressives (and the sort of modal condition that Dowty attributed to the progressive itself) insofar as this condition requires the possible realization of the event characterized by the progressive’s underlying predicate across a range of inertial possible circumstances—a condition that would not, in general, be satisfied by its sheer actualization.

As I have argued elsewhere, however, this consensus is mistaken. Outcome-associated progressives give rise to a substantive modal condition relative to every part of an outcome-associated event that is represented as holding, just as predicted by the Displacement Hypothesis (and just as Dowty’s analysis predicts—despite its faulty grounds). The plan, then, in the remainder of this section is to defend the Displacement Hypothesis by showing that the alternative modal hypothesis cannot be sustained. I do this not by arguing against the content of the modal conditions assumed on this alternative, but by showing that there is one and only one trigger for modal conditions—namely, outcome-displacement—so that where there is

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26 See my ‘How to Cross the Atlantic Without Crossing It’ (2014a) for general arguments for the rejection of this entailment pattern.
a modal condition, we find outcome displacement, and where there is outcome displacement, we again find that modal condition.

3.1 Landman’s Counterfactual Analysis

The alternative modal hypothesis outlined above receives its classic articulation in Fred Landman’s (1992) counterfactual analysis of the progressive. Since I have argued that the progressive does not have a modal semantics, we are not going to entertain the possibility that this hypothesis offers a candidate analysis of its meaning. We can, however, regard it as providing an alternative hypothesis concerning the modal interpretations that attach to outcome-associated progressives. That is to say, we can regard it as providing a candidate answer to the questions, ‘Why is it that outcome-associated progressives and only outcome-associated progressives give rise to modal interpretations?’ and ‘What factors may influence the modal interpretations that we find?’

At the heart of this hypothesis is the idea that outcome-associated progressives are sensitive, in the first instance, to the continuation of events in the actual world and only secondarily to their continuation across possible worlds. In particular, we can think of an outcome-associated progressive as keeping track of the continued development of an event until it is fully actualized or stops short of completion. Only in the latter case (modulo the conditions discussed below) does it keep track of how that event would develop, were it to continue past the point at which it stops. Since this counterfactual tracking is designed to allow a given event to continue in
the absence of impediments to its development, we can think of this aspect of the hypothesis as encoding a particular spelling-out of the metaphor of inertia familiar from Dowty's analysis.

Landman models this counterfactual tracking with what he calls ‘continuation branches.’ A continuation branch for an event \( e \) that is partly realized in a world \( w \) is the smallest set of pairs of events and worlds such that the following conditions hold:

(a) For every event \( f \) in \( w \) that \( e \) is a stage of, the pair of \( f \) and \( w \) is a member of the continuation branch for \( e \) in \( w \). Call this ‘the continuation stretch of \( e \) in \( w \).’

(b) If the continuation stretch of \( e \) in \( w \) stops in \( w \), there is a maximal \( f \) that stops in \( w \). In the closest world \( w' \) in which \( f \) does not stop:

(i) if there is not a reasonable chance on the basis of what is internal to \( e \) in \( w \) for \( e \) to continue as far in \( w \) as it does in \( w' \), the continuation branch for \( e \) in \( w \) terminates.27

(ii) if there is a reasonable chance of this, then the pair of \( f \) and \( w' \) is a member of the continuation branch for \( e \) in \( w \). In this case, the construction continues as follows:

27 This condition is slightly more complicated than it appears to be. One evaluates whether it is reasonable for an event to continue, after the point at which it stops in the actual world, as far as it does in the nearest possible world in which it does not stop but develops further. The reason for this is that, on Landman's view, the question of whether some continuation is reasonable does not arise within a world, but across worlds.
(c) For every $g$ in $w'$ such that $f$ is a stage of $g$, the pair of $g$ and $w'$ is a member of the continuation branch for $e$ in $w$. (This too is called a ‘continuation stretch’ but it is the continuation stretch of $e$ in $w'$.)

If the continuation stretch of $e$ in $w'$ stops, then the construction of a continuation branch for $e$ continues via a clause similar to (b). Otherwise, the construction of a continuation branch comes to an end.

With this apparatus in place, we can characterize, in formal terms, the conditions under which an outcome-associated progressive is true on this modal hypothesis given our assumptions about the meaning of the progressive (on a substitution of stages for states). An outcome-associated progressive is true, on this combination of assumptions, just in case a stage of an event characterized by the progressive’s underlying predicate holds and it is a stage of an event on its continuation branch that is an event of the type given by that predicate. So, for example, ‘Mary is crossing the Atlantic’ is true, on this proposal, just in case a stage of a cross-Atlantic passage by Mary holds (in the present) and it is a stage of an event on its continuation branch that is a complete crossing of the Atlantic by Mary.

We are also in a position to appreciate the conditions under which outcome-associated progressives come to generate substantive modal interpretations as well as those under which they generate trivial modal interpretations. If Mary crosses

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So, for example, if that continuation stretch stops, then there is a maximal event, $h$, and $h$ stops in $w'$. One then considers the closest world $w''$ to $w'$ in which $h$ develops further. And, finally, one considers whether it is reasonable for $e$ in $w$ (given what is internal to $e$) to continue as far in $w$ as $h$ does in $w''$. If this is not reasonable, the continuation branch for $e$ in $w$ terminates. If it is reasonable, the construction continues in the manner demonstrated. In any case, the construction of a continuation branch for an event $e$ in world $w$ halts for one of two reasons: (i) some continuation stretch of $e$ stops and its continuation is an unreasonable option for $e$ in $w$ or (ii) an event on the continuation branch for $e$ in $w$ does not stop (or, more colloquially, stop short).
the Atlantic in the actual world the counterfactual condition *that she would cross were she to carry on past some candidate moment in time* is trivially satisfied; in constructing a continuation branch for the event under consideration, we are never required to depart from the actual world. But if Mary does not cross in the actual world, then a substantive modal requirement emerges, namely, *that she would cross the Atlantic in a suitable (merely) possible world were she to carry on past some candidate moment in time*; in constructing a continuation branch for the event under consideration in this case, we would be required either to stop before locating a complete event of the relevant type or to depart from the actual world in search of it.

3.2 Difficulties for the Modal Alternative

Mixed Intuitions

One of the virtues of Landman’s modal hypothesis is supposed to be that it predicts an entailment from a sentence like ‘Mary crossed the Atlantic’ to its progressive counterpart, ‘Mary was crossing the Atlantic.’ But the question of whether there is such an entailment is much less straightforward than it appears to be.

The hypothesis receives some prima facie support from the fact that, in some cases at least, the actualization of an event seems to encourage the judgment that that event was earlier in progress. Recall our earlier context in which Mary, wild with hallucination, attempts to cross the Atlantic only to drown shortly afterward. What Landman draws attention to is the surprising fact that, if Mary receives divine
aid instead of drowning and miraculously crosses the Atlantic, some interpreters will judge that she was crossing the Atlantic all along—even initially, when she was completely incapable of getting herself across (as in the original context). Why is it that interpreters are content enough to deny that Mary was crossing the Atlantic in the case in which she drowns (call it ‘NON-INTERVENTION’) and yet some will say, in connection with a case that looks exactly like that one initially but in which she gets across (call it ‘INTERVENTION’), that Mary was crossing the Atlantic all along? This makes it appear as though judgments about the progress of events can, in some cases, be extremely non-local. For Landman, of course, it is Mary’s arrival across the Atlantic that makes for the difference between these cases—it is that non-local feature of the case that explains why some judge ‘Mary is crossing the Atlantic’ to be true early on.

However, this can, at best, be only be a part of the story. Intuitions about this case are mixed, as Landman himself notes. That is to say, while some interpreters judge that Mary was earlier crossing the Atlantic, others have what I would like to characterize as ‘the stalwart intuition.’ They reject the claim that Mary was crossing the Atlantic in INTERVENTION and frequently volunteer, as Landman independently observes, that she was trying to cross the Atlantic, just as interpreters who share that judgment are inclined to do in NON-INTERVENTION.

The stalwart intuition appears, however, to support the Displacement Hypothesis and to undermine Landman’s modal alternative. After all, the intuition is readily explained by appeal to the fact that Mary is no more capable of getting herself across the Atlantic in INTERVENTION, initially, than she is in NON-INTERVENTION.
Since this would suggest that Mary does not get across the Atlantic in all of the possible inertial circumstances that are relevant to the event that is underway early on, the Displacement Hypothesis is well-positioned to predict the intuition. In contrast, if it is assumed that that early event does, in fact, develop into a complete cross-Atlantic passage in intervention, Landman’s hypothesis can only predict that Mary was then crossing the Atlantic.

Landman attempts to explain away this recalcitrant intuition in the only way that it seems reasonable for him to do so. He claims that our stalwarts do not assume that the event in question develops into an actual cross-Atlantic passage but rather assume that it is a part of some other type of event instead. However, there is independent evidence for the claim that this event is interpreted as an early portion of an actual cross-Atlantic passage by Mary. Consider, to begin with, that all interpreters can agree on the truth of the following sentence in intervention:

(19) Mary crossed the Atlantic.

We have been assuming that the underlying event predicate in (19) characterizes a temporally extended event that is grammatically associated with an outcome. What it would benefit us to know, however, is the span of this event—the distance between its onset and its outcome—in the case that concerns us. Well, suppose that the answer to that question takes the following form, where the ‘in’-adverbial measures the distance between the event’s onset and outcome:

(20) Mary crossed the Atlantic in three days.
The important point is that (20) tells us that there were three days between Mary’s departure and her arrival across the Atlantic, not that there were three days between the intervention and her arrival. (If the distance between the moment of intervention and her arrival were two days, for example, (20) would still be true.) What we have, then, is agreement among interpreters that a cross-Atlantic passage spans between Mary’s departure and her arrival, including the time at which the event in question is underway. Given the radical implausibility of assuming that interpreters (i) recognize that a cross-Atlantic passage by Mary is underway early on but (ii) deny that the event in question constitutes a part of that passage, we should conclude that our stalwarts have other reasons for rejecting the claim that Mary was crossing the Atlantic early on in intervention—reasons that they have in common with interpreters who likewise reject this claim in non-intervention, a systematic connection that is not captured by Landman’s alternative explanation—and that Landman’s hypothesis is not positioned to explain their intuition.

The Progress of Events over Time

We have just seen an illustration of what is actually a more general problem for our alternative modal hypothesis, namely, that it does not accommodate change in the progress of events that develop over time. If there is a complete event (actual or possible) that is related to an actual event stage via its continuation branch, then relative to it, that (complete) event may be said to be in progress. But, equally, it cannot be denied that that event is in progress relative to any of its actual stages.
In this way, the hypothesis encodes a very rigid conception of what it is for an event to be in progress.

We have already seen a case that suggests that this conception is too rigid to model our interpretations of outcome-associated progressives. In particular, we saw that interpreters may judge that a part of an actual cross-Atlantic passage by Mary obtains and yet deny that Mary was then crossing the Atlantic. We could easily construct further cases like this. Take our ‘good’ case in which Mary is captaining her ship across the Atlantic. Suppose that instead of turning back to port when she receives the signal to, Mary jumps overboard in a desperate and foolish do-or-die attempt to get across the Atlantic. It might be said, in such a case, that Mary was crossing the Atlantic up until she leapt overboard. Again, we can envision the headline reading: Woman Jumps from Ship, Drowns in Attempt to Cross Atlantic.\(^{29}\) Perhaps we even have the strength to imagine that there is, in this case too, an intervention that ultimately secures Mary’s safe passage across the Atlantic. Then it might be said that there was a period between leaping overboard and being saved when it would not be accurate, in light of all the facts, to describe Mary as crossing the Atlantic. She would have crossed the Atlantic, as we are imagining the case, but we might choose to deny that she was crossing during the desperate interim.

We can see a similar problem in cases in which event stages are related to complete but (partially) non-actual events via their continuation branches. Recall that Landman’s hypothesis requires that we consider, when constructing continua-

\(^{29}\) Interestingly, the headline ‘Woman Drowns While Crossing Atlantic’ would, in this case, be understood as situating the incident of drowning within the context of the ship’s passage across the Atlantic.
tion branches in such cases, only those continuations that would be reasonable for an event at the point at which it breaks off in the actual world. This is just one facet of a general design feature of Landman’s continuation branches, which allows an entailment to be secured from claims describing completed events to claims describing those events as being in progress. That is, continuation branches are designed, in every case, to represent an event’s development in the actual world as far as is possible. But this non-ad-hoc aspect of the account leads to difficulty. It allows for the possibility that an event may be said to be in progress at a time because crucial possibilities for its continuation later emerge. To see that this is a problem, we might consider a case in which Mary is hopelessly attempting to cross the Atlantic when she is rescued by a group of fisherman bound for the opposite shore. If shortly after this rescue, however, a deranged Mary becomes convinced that she has been taken captive by pirates and leaps overboard, we want to be able to accommodate the intuition that she was crossing the Atlantic only while aboard the fishing vessel.

Note further, that in a case like this, one in which Mary never does make it across, the effect observed in connection with intervention is absent. That is, one is not inclined to judge, upon learning that Mary was for a brief time crossing the Atlantic, that she was crossing all along. This is a difference between these cases that goes unrecognized on Landman’s hypothesis, since, in each, we have an event that is related to a complete event of the relevant type via its continuation branch. It is a matter of indifference, according to this hypothesis, that one is related to an actual event and the other to a partially non-actual event.
By way of summary, we have seen that the modal alternative to the Displacement Hypothesis is too rigid to account for the variety of intuitions that one might have concerning the truth value of an outcome-associated progressive claim. The intuitions that are left unaccounted for by the modal alternative suggest that one's judgment about whether an event can be described as in progress at a time is sensitive to the continuations that are judged to be possible at that time. The Displacement Hypothesis can account for this sensitivity since it assumes that a modal condition that concerns those possible continuations arises relative to the time at which an event is described as being in progress.

Admittedly, it faces challenges of its own. In particular, it has to answer to the actualization effect observed in cases like INTERVENTION. But, as we have seen, this effect does not ultimately motivate a modal analysis on which (i) the substantive modal constraints that attach to outcome-associated progressives only arise in the absence of outcomes and (ii) the satisfaction of these modal constraints can for that reason be deferred from one actual stage of an event to another and, in some cases, entirely sidestepped. This provides us with good reason to think that there must be some other explanation for the actualization effect and that the Displacement Hypothesis is on the right track.

30 For one explanation, see my ‘How to Cross the Atlantic Without Crossing It.’
4 Modality, Cognition, Semantic Explanation

4.1 Modality

In the first part of this paper, I argued that there are modal interpretations that attach to outcome-associated progressive claims though not to non-outcome-associated progressive claims. This formed the basis for my argument that the progressive itself does not have a modal semantics. But this leaves us in a somewhat perplexing position. If these modal interpretations do not emerge as the result of the progressive’s having a modal meaning, how do they arise at all? The Displacement Hypothesis, defended in the second part of my paper, isolates the conditions under which these modal interpretations arise; it tells us that they arise just where there is outcome displacement. But it still might seem curious that we get these interpretations under these conditions. The problem, it might be thought, is that we have modal interpretations but no modal meanings (at least not yet).

Where, then, to look for modal meanings that might serve as anchors for these modal interpretations? One option is to backtrack. Maybe a modal semantics for the progressive was ruled out too quickly. Perhaps a hybrid analysis of the progressive, one that combines the insights of a non-modal approach (suitable for non-outcome-associated progressives) and the insights of a modal approach (suitable for outcome-associated progressives) can provide us with the explanation that we are looking for. The following ‘hybrid’ analysis\(^\text{31}\) of the progressive, for example,

\(^{31}\)I have not encoded the requirement that outcomes be displaced in the progressive environment, as per my earlier recommendation that it be represented at a more general level in the grammar.
not only correctly predicts that outcome-associated progressives and only outcome-associated progressives have modal interpretations it is able to explain, in a certain sense, why they do (since only outcome-associated progressives are required to satisfy substantive modal truth conditions):

**OPTION 1:**

‘PROG φ’ is true relative to a moment, I, and world, w, if and only if one or the other of the following conditions holds:

(i) φ characterizes a temporally extended and non-outcome-associated event and a state of φ obtains at I in w.

(ii) φ characterizes a temporally extended and outcome-associated event and a state of φ obtains at I in w and there is some interval, I’, such that I ⊆ I’ and for all w’ that represent the worlds that are inertial relative to I and w, φ is true at I’ and w’.

Matters of detail aside, **OPTION 1** might appear to give us what we want and in a neat package besides.

The problem, however, is that the analysis is, in a different but crucially important sense, unexplanatory. It is nothing more than a disguised ambiguity approach in that it attributes radically dissimilar truth conditions to our two sorts of progressives, obscuring the condition that they do genuinely share (the condition that I take to be introduced by the progressive). Since one of our aims in theorizing about the meanings of claims like these is to account for their acquisition and since positing ambiguity (however cleverly disguised) without strong motivation to do so...
makes it difficult to achieve explanatory adequacy of this sort, a hybrid approach should be rejected.

This leaves only one possibility for locating candidate modal meanings: outcome-associated predicates. This is an attractive possibility in many ways. If it could be made to work, it would allow us to assign a genuinely uniform semantics to the progressive and it would also allows us to recognize the differences between outcome-associated and non-outcome-associated progressives in an explanatory manner, as these differences would stem from the distinct semantic profiles of their underlying predicates.

While I think the motivation for this approach is unimpeachable—we should assign a genuinely uniform semantics to the progressive and we should appeal to differences between outcome-associated and non-outcome-associated predicates in explaining the differences between the progressive claims that embed them—I do not think that we can, ultimately, root our modal interpretations in the meanings of these predicates. Since the temptation to anchor these interpretations in linguistically encoded meaning is very strong, it will be worth exhausting the most natural strategies available for achieving this aim.

The simplest starting hypothesis is that an outcome-associated predicate, φ, introduces the modal condition that attaches to outcome-associated progressives, as represented in the following schematic condition:

**OPTION 2:**
For any part of an event characterized by $\phi$ that holds there is a modal connection (of the relevant sort) between it and the outcome associated with $\phi$.

Option 2 generates the correct prediction for outcome-associated progressives when combined with the assumption that the progressive selects a state of the event described by its underlying predicate and indicates that it holds. What Option 2 tells us is that relative to the time at which that part of the event holds, there arises a modal connection between it and its associated outcome.

However, this assumption fails (dramatically) to account for the meaning of outcome-associated predicates in non-progressive contexts. To begin with, we want to predict that the following claim entails that there was a complete cross-Atlantic passage, which took place before the present:

(21) Mary crossed the Atlantic.

But if we assume that, in (21), the past tense locates the event characterized by the predicate ‘cross the Atlantic’ within the past and if we assume that Option 2 provides us with an appropriate schematic meaning for that predicate, then (21) may be true even if no part of a cross-Atlantic passage occurs in the past, contrary to fact. All that matters is that the relevant modal condition be satisfied by any part that is realized.

So we need to ensure, somehow, that a non-progressive claim like (21) characterizes the whole of a cross-Atlantic passage. The smallest adjustment to the
current proposal which would allow us to secure this result would be to assume the following:

**OPTION 3:**

An outcome-associated predicate, $\phi$, characterizes a complete $\phi$ event, and indicates that, relative to any part of the event, there is a modal connection (of the relevant sort) between it and the outcome associated with $\phi$.

**OPTION 3** allows us to predict, correctly, that (21) entails that a cross-Atlantic passage occurred within the past. It also allows us to explain why modal interpretations arise in the progressive environment. Relative to any part of the event that is selected by the progressive, a modal connection (of the relevant sort) is assumed to obtain between it and its associated outcome.

**OPTION 3** gives us more than what we want, however. In addition to allowing us to predict that (21) entails that a whole cross-Atlantic passage occurred in the past, it forces the condition that a modal connection obtain between the parts of that event and its associated outcome. So, it predicts not only that a cross-Atlantic passage occurred but that it was bound to occur across inertial circumstances. This is an unwanted layer of modality. We know this because we have already seen evidence against an entailment from a claim like ‘Mary crossed the Atlantic’ to its progressive counterpart, ‘Mary was crossing the Atlantic.’ But that entailment is ensured by **OPTION 3** since it assumes that the very modal condition encoded by outcome-associated progressives (via outcome-associated predicates) is encoded
by non-progressive counterparts such as (21) (again via outcome-associated predic-
cates).

What we are looking for, then, is an option that allows us to block this un-
wanted layer of modality. Since we are assuming (as we must) that an outcome-
associated predicate contributes a modal meaning when combined with the pro-
gressive, we should consider the possibility that the semantics of a non-progressive
claim like (21) is more complicated than it might at first seem to be and, in partic-
ular, that it contains an element that neutralizes this layer of modality.

Let us assume, for the sake of argument, that sentences like (21) include, in
addition to a past tense operator, a ‘perfective operator,’ which indicates that the
actual world is the only world that is inertial. Insofar as many theorists do assume
that a past tense claim like (21) contains a silent perfective operator and insofar
as this operator has been implicated in attempts to explain why modal expressions
in this environment license entailments that concern what the actual world is like
(i.e., ‘actuality entailments’),\textsuperscript{32} this assumption appears to have some independent
motivation. We have, then, the following package of options to consider:

\textbf{OPTION 4A:}

An outcome-associated predicate, $\phi$, characterizes a complete $\phi$ event,
and indicates that, relative to any part of the event, there is a modal
connection (i.e. an inertial connection) between it and the outcome
associated with $\phi$.

\textsuperscript{32} See, for example, Hacquard (2009).
OPTION 4B:

The perfective operator, PERF, indicates that the actual world represents
the only inertial world.

These options allow us to explain why the layer of modality present in outcome-
associated progressive claims is absent in their ‘perfective’ counterparts. Moreover,
we retain the benefits of OPTION 3, which allowed us to predict that (21) entails
that a whole cross-Atlantic passage occurred sometime in the past as well as to
predict that its progressive counterpart bears a modal interpretation.

Nonetheless, this package of options faces insuperable difficulties. First,
although the perfective has been invoked to explain why modals in certain
environments—‘perfective’ environments, it is claimed—come to characterize what
the actual world is like, the modal dimension of their meaning is not neutralized—
they continue to characterize what is necessary or possible, as the case may be.
So, for example, Valentine Hacquard observes that when French necessity modal
‘devoir’ combines with the perfective in (22), it both indicates what had to happen
(i.e., Jane had to take the train) and also fails to render the environment in which
the verb phrase occurs opaque so that it is entailed that Jane took the train:

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

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

‘To go to London, Jane had to take the train.’
As expected, we see a contrast between this necessity modal and the French possibility modal ‘pouvoir,’ which indicates that it was possible, though not necessary, for Jane to take the train and which also fails to render the environment within which the verb phrase appears opaque:

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

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

‘To go to London, Jane was able to take the train.’

It is troubling to assume, in light of this, that the perfective neutralizes the modal dimension of the meanings we are attempting to attribute to outcome-associated predicates. Why should the perfective suppress the modal dimension of meaning associated with those predicates but not the modal dimension of meaning of recognized modals?

Of course, it might be said that the modality introduced by outcome-associated predicates (as per our assumption) is of a special variety and that, for this reason, it is a mistake to expect that outcome-associated predicates should pattern along the lines of other recognized modals. But even if we accept that the variety of modal meaning introduced by outcome-associated predicates is not to be analyzed alongside other varieties of modal meaning (which is highly doubtful), and even if we ignore the fact that our assumption about perfective meaning is tailored to outcome-associated predicates and remains idle with respect to non-outcome-associated predicates (which is problematic), it still appears that 4B rules out too much.
The reason is that the sort of modal interpretation that attaches to outcome-associated progressives (on our going assumption) also appears to arise in connection with other expressions and in perfective environments (or at least environments with equal claim to being perfective environments). Bar-el, Davis, and Matthewson (2005) claim, for example, that ‘non-culminating accomplishments’ give rise to this variety of modal interpretation in past tense perfective environments (environments that are a match for (21)). These are expressions that characterize temporally extended and outcome-associated events (like our ‘outcome-associated’ predicates) and yet may be used to characterize events that are associated with unrealized outcomes (hence the label ‘non-culminating’). So, for example, they report that, in Salish, (24) can be interpreted as indicating that a part of a canoe was built by Mary and that, under inertial circumstances, a whole such canoe would have been built by her though it was not, in fact, built:

(24) Mary built a canoe, but she didn’t finish it.

Though we may not even need to look beyond English for support for this possibility. The following sentence would seem to be interpreted as meaning (roughly) that, for a period of time, preparations were made for Mary work at 5pm and she would have under inertial circumstances, though she did not actually do so, as the continuation in (25) shows:

(25) Mary worked at 5pm, but the schedule was changed at the last minute.

If that is correct, then (25), too, presents us with a strong prima facie counterexample to this assumption about perfective meaning.
We appear to be forced, yet again, to move on to a different approach. Where, though, to go from here? So far, I have considered various proposals regarding the meaning of outcome-associated predicates as well as other key expressions (such as the perfective), all as part of an effort to explain, among other things, why outcome-associated progressives bear the modal interpretations they do and why certain non-progressive counterparts of these claims do not. Throughout, I have avoided building in reference to displacement—as in the feature of an environment that prohibits an associated outcome from being present relative to a given time. My reason for avoiding an appeal to displacement in the meanings of outcome-associated predicates is, again, that it would be unexplanatory. We would have to appeal to a disjunctive set of conditions, as in the following representation:

**OPTION 5:**

An outcome-associated predicate, $\phi$, characterizes a complete $\phi$ event and one of the following conditions obtains:

(i) A part of a $\phi$ event obtains and its outcome is displaced, in which case there is a modal connection (of the relevant sort) that obtains between that part and its associated outcome. [the progressive condition]

(ii) A $\phi$ event obtains and its outcome is undisplaced, in which case there is no modal connection (of the relevant sort) that obtains between any of the parts of that event and its associated outcome. [the non-progressive condition]
OPTION 5 does not represent a candidate meaning for outcome-associated predicates. It is, instead, a disjunctive description of the conditions under which modal interpretations arise and those under which they do not—which is precisely what we have been attempting to explain, not redescribe.

It appears, however, that this is the only sort of linguistically encoded “meaning” that is close to being extensionally adequate—that would appear close, in other words, to correctly predicting those outcome-associated sentences that have modal interpretations and those that do not. This is no accident either. OPTION 5 mimics the condition spelled out by the Displacement Hypothesis, which correctly predicts that modal interpretations attach to progressive claims whenever the progressive combines with an outcome-associated predicate but not otherwise (not in connection with non-outcome-associated progressives nor in connection with non-progressive claims that embed outcome-associated predicates).

The options for anchoring the modal interpretations of outcome-associated progressives in linguistically encoded modal meanings are, in my judgment, now exhausted. In light of this, I would like turn to an alternative approach, which does not attempt to anchor these modal interpretations in linguistically encoded modal meanings, but attempts to explain them in terms by appeal to an interface between the language system and modal cognition.
4.2 Cognition

I would like to propose that an outcome-associated predicate such as ‘cross the Atlantic’ characterizes a complete event (e.g., a complete cross-Atlantic passage). This sort of predicate does not, on the present proposal, encode a modal condition of the sort that could anchor or explain the modal interpretations that attach to outcome-associated progressives. Of course, this is not to flatly deny that these predicates ever encode modal conditions. My concern has never been to deny that. The point is that they do not, in general, encode the particular modal condition that we discern in connection with the progressive claims that embed them.

This assumption gives as much as we can ask for with respect to linguistically encoded meaning. Crucially, it allows us to explain the fact that (21) (i.e. ‘Mary crossed the Atlantic’) describes a complete cross-Atlantic passage without requiring any resort to artificial linguistic conditions. (Whether we assume that this sort of event is located entirely within the past by the past tense or by a perfective operator or in some other way—perhaps by means similar to those by which the progressive comes to be an environment that excludes outcomes—can be settled at another time.)

This leaves us with the task of explaining why modal interpretations emerge when the outcomes of outcome-associated predicates are displaced. But notice that this is all that requires an explanation, which is as it should be. We have a characterization of the progressive environment which allows us to identify a semantic difference between outcome-associated progressives and non-outcome-associated pro-
gressives: the outcomes of outcome-associated predicates get displaced in progres-
sive contexts. But there is no comparable semantic difference between outcome-
associated and non-outcome associated claims in the non-progressive environment
represented by a sentence like (21). An explanation of these modal interpretations
should exploit these facts, not obscure them.

I propose that the displacement of outcomes in the progressive environment
triggers cognitively default modal interpretations. These modal interpretations are
default in the sense that they do not reflect any linguistically encoded modal con-
ditions or set of instructions for interpretation. What they reflect is the structure of
modal cognition—that system of cognition that underwrites our capacity for modal
thought and talk—not the structure of modal language. This assumption should
be uncontroversial. It is forced by the fact that we see interpretations with modal
structure, structure that is not encoded by linguistic structure, and by the conven-
tion of labeling that aspect of cognition responsible for modal interpretations ‘modal
cognition.’

What I am proposing, then, is a certain division of labor between the set of
instructions for interpretation that is encoded by language and those aspects of
interpretation that reflect extra-linguistic semantic structure. The progressive, as
already proposed, indicates that a momentary part or state of an event character-
ized by its underlying predicate obtains at a time. If this predicate is not associated
with an outcome, that is all we get. If this predicate is associated with an outcome,
the progressive may select any non-terminal stage of the event characterized by
that predicate. (In terms of the diagram below, this means that the vertical line
may move left or right along the event represented, though it cannot occupy any of the shaded regions representing the realization of its outcome.) In this second case, the outcome associated with the event is invariably displaced; it is never what is in progress when the event with which it is associated is said to be in progress. This triggers a default interpretation of the sentence on which that outcome is also modally displaced. I have suggested that it is an inertial modal connection that mediates between that part or state of the event that holds (that part that intersects with the vertical line) and its outcome. The sentence is understood, therefore, to require that that part of the event that is selected would eventuate in that outcome under non-disruptive conditions (represented below by the realization of an outcome along each of the branching possibilities):

There follows from this no general requirement that that part that holds eventuate in that outcome in the actual world. This is the result we want since, as is known,
the actual world can thwart the paths that would be cut into the future under more hospitable circumstances.

4.3 Semantic Explanation

If the account developed in this paper is correct, it shows that semantic explanation can reach well beyond linguistic form. Outcome-associated progressives represent a striking case in point. These progressives are never interpreted strictly in accordance with the linguistic meanings that they encode. A sentence like ‘Mary is crossing the Atlantic,’ for example, is not associated with an interpretation according to which Mary is simply part way across the Atlantic (which is roughly the meaning it encodes). It is invariably interpreted as indicating that Mary would also arrive across the Atlantic under inertial circumstances. This is an invariant, not invited, interpretation.

For this reason, my account rules out a view of semantic explanation on which its proper domain is linguistic form. There are different versions of this thesis, some stronger than others. A quite strong construal of this view has been defended recently by Wolfram Hinzen ((2006) and (2008)). On the view that he defends, the computational or syntactic system with which humans are endowed forms possible human thought. On this view, a theory of syntax is, effectively, a theory of semantics. Proponents of this view recognize that natural language has semantic structure and that this structure is highly constrained (so that there can be a scientific theory of it), they just think that these constraints are to be understood as emerging from
syntactic or computational constraints. This sort of position is set against more standard views on which it might be said, by way of contrast, that syntax *formats* (that is, provides a format for) conceptual structures or thoughts that exist independently of a syntactic system that subserves their expression in language. Insofar as my account adduces evidence for “a semantic process that is systematic, monotonic, and unsupported by syntactic laws,” ((Hinzen 2006); original emphasis) the ‘semantics is syntax’ view cannot be maintained.

My account bears equally, though, on more moderate construals of this thesis. So, for example, it is commonplace to assume that linguistic form can, through the semantic information that it encodes, recruit resources from extra-linguistic cognitive systems. Semantic information that is embedded within these systems comes to be relevant to the project of offering semantic explanations, but this is only on the assumption that it is routed through linguistically encoded instructions.

There is, at present, active speculation about these matters as they relate to modal expressions. Angelika Kratzer (2013) has recently claimed, for example, that quantificational elements of modal expressions (e.g., the universal quantificational force of ‘must’) reflect the contribution of (the semantic component of) the language faculty, not modal cognition, whereas the projection of modal domains (i.e., those possible circumstances over which there is quantification) occurs through the linguistic recruitment of resources from modal cognition. It is important to emphasize that if my findings in this paper are correct, this way of thinking of semantic explanation needs to be broadened so as to include those cases in which extra-linguistic cognitive systems contribute to the interpretation of linguistic form, are engaged by
language, but not via meanings (thought of as instructions to these systems) that recruit this material.

This is not to say, however, that the cognitively default interpretations discussed in this paper are irrelevant to the project of providing semantic explanations for linguistic forms. Far from being the case, what these interpretations reveal is of great interest for semantic theories of linguistic modality. As I mentioned before, questions concerning the division of labor between linguistically encoded meaning and modal cognition as well as the nature of modal meanings (including the sorts of instructions that they might issue to modal cognition and their access to it) are wide open and it is clear that our assumptions about these matters must take into consideration what is known or what we have reason to believe about its structure. The default modal interpretations considered in this paper are important, in part, because they give us a direct window into this system and, so, provide us with the sort of information that we need to adjudicate these and other claims about natural language modality.

We might, for example, take as evidence against the claim that quantification is proprietary to the language faculty, the fact that our default modal interpretations are amenable to an analysis in terms of universal quantification over inertial possible circumstances, though this structure is—including the apparent quantificational component—not contributed by the language faculty. And it appears plausible to assume that outcome-associated progressives will provide us with clues, at least, as to the possible differences between the mechanisms involved in the domain projec-
tion of modals and outcome-associated progressives.\footnote{The possibility of a difference between the domains projected by modals like ‘can’ and progressives was noted in passing by Szabó (2008).} There are surely other facets of our theories of linguistic modality that could profitably be considered alongside default modal interpretations.

What my approach to our progressive puzzles has shown, I hope, is that there is much to be gained by taking cognitive considerations seriously in the pursuit of semantic explanation. While we should, for this reason, exploit what is known of the cognitive systems that interface with the language faculty in offering semantic explanations (a recent series of papers\footnote{See Pietroski et al. (2009) and Lidz et al. (2011).} focusing on how ‘most’-claims like ‘Most of the dots are blue’ constrain the operations of the visual system provide an excellent example), it should be kept in mind that there are various modes of access to such interfaces and various means by which we may come to knowledge of these systems. What the possibility of cognitively default modal interpretations suggests is that our knowledge of these systems can be guided by language to a considerable extent if we are sensitive to its limits.

5 Conclusion and Future Directions

For close to fifty years, the progressive has cast a shadow much larger than its size. Many theorists have thought, and many still do, that the progressive has a modal meaning. Landman’s account, as we have seen, invokes the elaborately wrought apparatus of continuation branches as a central component of his analysis.
of progressive meaning and Dowty’s the machinery of inertial worlds. We have also
seen, though, that there are non-modal analyses of the progressive on which the
progressive encodes conditions that concern, not merely the partial realization of a
certain event, but, as on the Bennett-Partee analysis, its continued development in
the actual world.

Accounts that attribute conditions like these to the progressive are respon-
sive to genuine complexities in the interpretation of some progressive sentences,
but these complexities reside with outcome-associated progressive claims, not with
non-outcome-associated progressive claims. Outcome-associated progressives give
rise to a substantive modal interpretation that does not arise in connection with
their non-outcome-associated counterparts. For this reason, attempts to (i) root
this complexity in the meaning of the progressive and to (ii) provide a genuinely
unified analysis of its meaning (one that reveals exactly what is in common across
outcome-associated and non-outcome-associated progressives) are doomed to fail.

Accounts that attribute a simpler meaning to the progressive, one designed with a
view to explaining the interpretations of non-outcome-associated progressives, are
also responsive to the interpretations of some progressive sentences. To say noth-
ing more, however, is to leave the complexity of outcome-associated progressives
untouched and, therefore, to leave the most interesting part of the story untold.

On my view, the meaning of the progressive is quite simple and so this
complexity cannot be explained by appeal to its meaning alone. The progres-
sive indicates—whatever the predicate with which it combines—that a state of
the event characterized by that predicate holds at a time. There is no inertial
modality here and there are no forced continuations either. This meaning captures exactly the condition that can be generalized across outcome-associated and non-outcome-associated progressives.

There is an important difference, though, in the way that outcome-associated and non-outcome-associated predicates interact with the condition encoded by the progressive. The former are associated with outcomes and these outcomes are not among the parts of an event (characterized by such predicates) that are available to be selected by the progressive. This restriction does not reflect an aspect of the progressive’s meaning, but rather an aspect of the grammar that comes into play in the progressive environment (among other environments). We can describe the interaction that sets outcome-associated predicates apart by saying that their outcomes are displaced in the progressive environment. Outcomes are never, that is, among the parts of an event that may obtain when it is in progress—they are never there perhaps in something like the way that a future event is not now, a distant object not here, and a merely possible or imaginary circumstance is not actual—all cases that might be classed as cases of displacement.

This property of outcome-associated progressives turns out to be very important. The modal interpretations that attach to outcome-associated progressives arise just when the outcomes associated with those predicates are displaced—which is the content of my Displacement Hypothesis. The Displacement Hypothesis predicts that outcome-associated progressives invariably give rise to modal interpretations.

If we assumed that it did, we would miss out on an important generalization since outcome-associated expressions outside of the progressive environment also witness this sort of restriction.
(since these outcomes are invariably displaced in the progressive environment) and it predicts that these modal interpretations do not arise in environments in which those predicates are not displaced. And the evidence does appear to support the Displacement Hypothesis. There is, after all, no entailment from claims describing completed outcome-associated events (e.g. ‘Mary crossed the Atlantic’) to claims describing those events as being in progress (e.g. ‘Mary was crossing the Atlantic’). This evidence provides striking support for the Displacement Hypothesis and counts against a rival view on which it is not the displacement of outcomes that triggers (substantive) modal interpretations, but the absence of outcomes.

Although the Displacement Hypothesis tells us where these modal interpretations are to be expected, it does not tell us why they arise. One approach to answering this question is to try to anchor our modal interpretations in modal meanings. I have argued that this strategy cannot be made to work in an explanatory manner. There is, however, an alternative approach to answering this question, which does not appeal to linguistically encoded meaning but to extra-linguistic cognition. The answer suggested by this approach is that our modal interpretations reflect the modal structure of cognition, not the modal structure of language. This solution allows us to tell a very natural and simple story about the meanings of expressions implicated in the progressive and non-progressive environments that are our concern and it presents a unique opportunity to reflect on our assumptions about linguistic modality and its connection to this system.

There is, in addition, good reason to expect that this approach has explanatory benefit even beyond accounting for the modal interpretations of outcome-associated
progressives. This is because there is good reason to think that there are other lin-
guistic constructions involving outcome-associated predicates to which my analysis
can be extended. As has already been observed, across various contexts, predicates
that are associated with outcomes—like the predicates that I have labeled ‘outcome-
associated predicates’—are implicated in the generation of modal interpretations
with an inertial modal flavor (though it is not widely appreciated that these pred-
icates may contribute, in virtue of their particular structure, to these patterns). I
think that these expressions can be shown to be associated with these modal inter-
pretations in the environment isolated by the Displacement Hypothesis, though the
challenge lies in showing this in detail (in showing how it might be, for example,
that the predicate ‘cross the Atlantic’ in ‘Mary is crossing the Atlantic tomorrow’
applies to an outcome-associated event, a part of which holds in the present).36 But
this has an important consequence if correct and here lies the promise for anyone
who would pursue analyses for these constructions along the lines sketched in this
paper: their application would allow for a systematic explanation of the modality
expressed across these cases, both within and across languages, in contrast to an
explanation on which each of these expressions gives rise to a modal interpretation
in virtue of having a modal meaning and, in this way, bears only an accidental con-

36 I have in mind, in particular, futurate progressives (e.g. ‘Mary is crossing the Atlantic tomorrow’),
statics with ‘for’-adverbials (e.g. ‘Mary is in Paris for a week’), non-culminating accomplishments,
and certain sentences in which frustratives (such as the Tohono O’odham ‘cem’) appear to mark the
frustration a goal that lies along an inertial path, but where the source of that inertial path does not
have an obvious explanation (e.g. there is no prospective aspect that can explain it, for example).
For an extension of my account to the case of futurative progressives see my ‘Modality Without Modals’
(2014d). For some discussion of the modal interpretations of certain statics with ‘for’-adverbials,
see Hallman (2009a) to whom this observation is due. For a discussion of the connections be-
tween inertial modality and non-culminating accomplishments, see Bar-el et al. (2005). And for
discussions of the connection between inertial modality and frustratives (among other expressions
including progressives and futurate progressives), see Copley (2009) and Copley and Harley (2010).
nection to the others (despite the fact that each involves outcome-association and each gives expression to the same sort of modality in a displacement environment).

Alongside the questions that arise in connection with this linguistic program is a set of broad theoretical and philosophical problems at the intersection of the study of language and mind. Foremost among them is the fact that we do not yet have a way of understanding how it is possible for language to engage extra-linguistic cognitive systems in the absence of explicit linguistic instructions that are legible to these systems. We do not have, to take the case that is our present concern, developed theories concerning how it is possible for modal cognition to make use of linguistically-encoded information that does not (or need not) itself encode modal concepts. The task of arriving at a theory of this phenomenon takes on even more urgency when we consider that our present-day philosophy of mind is deeply shaped by claims to the effect that the mind is massively modular or largely comprised of modular ‘core’ systems each with their own domains, operations, and proprietary representations. All of this puts pressure on the assumption that there is relatively free exchange across cognitive systems and makes the possibility of cognitively default interpretations (modal or otherwise) seem mysterious. A philosophy of mind that takes these claims seriously must, however, account for this capacity and for the appearance of free exchange.\(^{37}\)

\(^{37}\) For more discussion of these themes see my ‘Modality as a Window into Cognition’ (2014b).
Chapter 4

Modality Without Modals

1 Introduction

This paper focuses on the solution to two problems with traditional semantic treatments of the progressive. Both are problems of unification that we confront when we attempt to generalize canonical approaches to progressive meaning across importantly distinct progressive classes. These traditional approaches fail both to illuminate the semantic condition that is shared by these classes and to clarify the sources of their rather striking semantic differences.

The traditional divide in the progressive literature concerns whether the progressive has an extensional or intensional semantics. Those in the former camp\(^1\) claim, roughly, that an event of a certain type is in progress at a given time just in case a part of an event of that type holds at that time. Those in the latter camp\(^2\) further require, again to put it roughly, that that part that holds in the actual world

\(^1\) See, for example, Bennett and Partee (1978), ter Meulen (1985), and Parsons (1990).
\(^2\) See, for example, Dowty (1979), Landman (1992), and Higginbotham (2009a).
eventuate in a complete event of that type across suitably related possible circumstances.

The first problem with these accounts and with this debate, which has passed unnoticed until recently, is that while some progressive sentences give rise to certain modal interpretations, others do not. In particular, I will argue that a progressive sentence like ‘Mary is swimming’ is not associated with the sort of modal interpretation that manifestly attaches to a sentence like ‘Mary is crossing the Atlantic.’ The first sort of progressive claim appears to support the case of the non-modal theorist while the second appears to support the case of the modal theorist. This suggests that the presupposition of this longstanding debate—that progressive sentences lend themselves either to the one or to the other type of analysis—is mistaken. The first problem of unification, then, is to account for how it is that the progressive has a uniform meaning across these sorts of claims, while still accounting for the fact that the one has a modal interpretation that the other lacks.

The second problem relates to the connection between non-futurate, or regular, progressives, and futurate progressives. These progressives contrast in interesting ways. Consider, for example, the difference between the claims ‘Mary is crossing the Atlantic’ and ‘Mary is crossing the Atlantic tomorrow.’ The first is naturally interpreted as a non-futurate progressive and on that construal indicates (at the very least) that a cross-Atlantic passage by Mary is underway. The second is interpreted as a futurate progressive and does not relate information about a cross-Atlantic passage that is underway, but, as the label ‘futurate’ would suggest, information about

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3 See my ‘Modality, Cognition, Semantic Explanation’ (2014c) for an account.
a projected or planned cross-Atlantic passage. There are also interesting similarities between futurate progressives and sentences like ‘Mary is crossing the Atlantic,’ which do not extend to sentences like ‘Mary is swimming.’ For one, futurate progressives give rise to modal interpretations\textsuperscript{4} just as, in my view, progressives like ‘Mary is crossing the Atlantic’ do. The second problem of unification, then, is to account for how it is that the progressive has a uniform meaning across non-futurate and futurate progressives while still accounting for fact that the latter have a future orientation that the former lack (in addition to accounting for various other differences to be discussed).

I will argue that we can solve both problems of unification with a simple common strategy. The solution requires that we relate the differences that we see across these progressive varieties to the different sorts of event predicates that embed across them. It is the association or non-association of an outcome (or telic endpoint\textsuperscript{5}) that distinguishes between progressives like ‘Mary is crossing the Atlantic’ and ‘Mary is swimming.’ Whereas the latter embeds a predicate of events that is not associated with an outcome, the former embeds a predicate of events that is associated with one (i.e., Mary’s arrival across the Atlantic). It is also the association of such an outcome that explains the various dimensions of similarity between futurate progressives like ‘Mary is crossing the Atlantic tomorrow’ and non-futurate progressives like ‘Mary is crossing the Atlantic.’ The differences between those claims are equally due to these outcomes and, in particular, to whether the

\textsuperscript{4} See Dowty (1979) and Copley (2009), for example.

\textsuperscript{5} I will be using ‘outcome’ instead of ‘telic endpoint’ throughout the paper so as to remain neutral on the nature of the ends in question.
overt descriptive material encoded by a predicate like ‘cross the Atlantic’ applies to an entire outcome-associated event (in which case we get a non-futurate progressive) or to its outcome alone (in which case we get a futurate progressive). These distinctions give us the following classification of progressive sentences:

```
Progressives
   ↓               ↓
Outcome-associated     Non-outcome-associated
   ↓               ↓
Futurate                Non-futurate
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Of course, if outcome-association plays the role I suggest in distinguishing between these three classes of progressives, it must also be implicated in explaining their distinct modal profiles. I will argue that this is, indeed, the case. On my view, it is a restriction on the progressive’s selection of outcomes from the parts of an event that it may represent as holding that triggers the modal interpretations that we see in connection with progressive claims like ‘Mary is crossing the Atlantic’ and ‘Mary is crossing the Atlantic tomorrow’ and which explains the absence of these modal interpretations in the case of progressives like ‘Mary is swimming.’

As I have argued elsewhere, this way of explaining these modal interpretations—this linking of modal interpretations to outcomes that are, in a certain sense, expelled from the environment in which these modal interpretations appear—

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cannot be recast in terms of modal meanings that generate these interpretations or in terms of an interaction of natural language meanings alone. Despite being triggered by outcome-associated predicates in the progressive environment, these interpretations must be regarded as reflecting the modal structure of cognition, not the modal structure of language. What we are seeing, in these cases are expressions of modality, but without modals.

With these aims in view, the plan of my paper is as follows. In section 2, I briefly discuss the first problem of unification and propose an account of the progressive that allows us to solve it. The core project of this paper is, however, the futurate progressive, so the remaining sections focus on how its apparent idiosyncrasies might be illuminated by such an account. In section 3, I discuss the second problem of unification and show how the analysis developed in response to the first provides a foundation for a solution to the second, though it requires that we revisit our assumptions about the meanings of the predicates that combine with the futurate progressive. In section 4, I defend the view that futurate progressives embed what I call ‘outcome-oriented’ predicates (i.e., predicates whose associated outcomes alone are characterized by the overt descriptive material that they encode) and that this provides the sole dimension of contrast between regular and futurate progressives. In section 5, I conclude by noting some of the questions and further avenues for research raised by the semantic approach defended in this paper, including its possible extension to other expressions (such as simple futurates like ‘Mary crosses the Atlantic tomorrow’), to certain systems of meaning (such as
the imperfective), and its implications for our understanding of the interactions between tense, aspect, and modal systems.

2 The Progressive

Traditionally, analyses of the progressives are split between those that attribute a modal semantics to the progressive and those (extensional analyses) that attribute a non-modal semantics to the progressive. The purpose of this section is to show that the parties to this longstanding debate have overlooked something of critical importance to it: the distinct semantic contributions of the various event predicates that combine with the progressive and their influence on the modal profile of the progressive claims in which they figure.

As we will see, some of these combinations do result in modal interpretations, but some of them do not. In light of this, our aim should be to identify the semantic conditions that are common across these progressives, to identify those semantic differences that can be attributed to their underlying predicates, and to consider whether there are any residual aspects of interpretation that cannot be reduced to these interacting elements (and I will suggest that there are such residual aspects of interpretation).

2.1 Extensional Analyses

The common intuition animating extensional analyses of the progressive is that the progressive represents a (proper) part of an event as holding at a time. In fairness
to this style of analysis, that does seem like an appropriately modest assumption concerning the meaning of a sentence like ‘Mary is swimming.’ On this approach, what that sentence would mean, roughly, is that a (proper) part of a swim event by Mary is realized at present. To describe an event as in progress is, then, just to exploit the fact that its parts may hold at times relative to which the whole cannot be said to hold.

Aside from having the virtue of elegance, extensional analyses receive *prima facie* support from a class of entailments from claims describing completed events to claims describing those events as in progress. The following provides us with an instance of the relevant entailment pattern:

(1) Mary swam. → Mary was swimming.

This entailment can be explained very straightforwardly by assuming that ‘Mary swam’ describes an event comprised of the sort of event parts that may themselves be described as holding by the progressive.

Of course, an analysis that implements this basic intuition leaves open some questions that might be resolved in various ways. For example, one might wonder whether to describe an event as in progress is to describe that event as incomplete—and not merely to describe a proper part of the event as holding at a time. A related question concerns whether a progressive claim like ‘Mary is swimming’ commits one to the existence of an entire swim event in addition to a part of such an event.

It would seem that the answer to both of these questions is negative. There is no evidence to suggest that there is a restriction on the progressive's representing
the final part of a swim event as holding at a time. In fact, the following progressive claim can be used even if the swim event that it describes as in progress in the present moment comes to an abrupt stop:

(2) Mary is swimming.

Nor is it the case that we are committed to the existence of an entire swim event, to continue with the present example. It is not as though we are forced to interpret the claim in (2) as describing the terminal part of a fully actualized swim (rather than merely as a part of such an extended event). There is no barrier to interpreting (2) as describing the onset, say, of such an event without any commitment to its full realization (and the same goes for waltzes, walks, and other such events that might be described as in progress).

2.2 Modal Analyses

Extensional analyses work smoothly in the case of claims like ‘Mary is swimming,’ which embed event predicates (e.g., ‘swim’) that are not grammatically associated with outcomes (intuitively, these can be thought of as distinguished endpoints, goals, or teloi). However, they fail—without supplementation—to explain the more complex patterns of claims like ‘Mary is crossing the Atlantic,’ which embed predicates of events (e.g., ‘cross the Atlantic’) that are grammatically associated with outcomes. I will call the former sort of progressive a ‘non-outcome-associated progressive’ and the latter an ‘outcome-associated progressive.’
One way to see that extensional analyses are not adequate to the task of accounting for the complex interpretations of outcome-associated progressives is to consider certain truth value shifts in our judgments about these sentences that seem pegged to differences in the modal status of the outcomes with which they are associated. So, for example, the following sentence could be judged false in one context in which Mary’s arrival across the Atlantic is assumed to be impossible (other things equal) but judged true in a context in which her arrival is assured (other things being equal), even if we stipulate that she gets exactly as far across the Atlantic in each case:

(3) Mary is crossing the Atlantic.

We might, for example, imagine that Mary is swimming in the first context but captaining a ship in the second, though she makes it only part of the way across in each. An account on which this claim only commits us to a part of cross-Atlantic passage by Mary misses the contrast between our judgments in such cases completely. What we want in connection with contrasts like this one is the sort of analysis that the modal theorist defends—one that allows us to recognize that the modal status of an arrival across the Atlantic by Mary somehow constrains the truth of (3).

Moreover, to the extent that the entailment from a sentence like ‘Mary swam’ to ‘Mary was swimming’ provides support for an extensional analysis of the progressive, the failure of this entailment in the case of outcome-associated claims like ‘Mary ate a third of the chocolates’ provides evidence against its application to outcome-associated progressives:
(4) Mary ate a third of the chocolates. → Mary was eating a third of the chocolates.\(^7\)

We can easily imagine a scenario in which Mary aims to eat as many chocolates as she can and succeeds in eating one third of the available chocolates, but in which it is not the case (at any candidate time) that Mary was eating a third of the chocolates. So, we cannot simply assume that the progressive represents a part of the event described by ‘eat a third of the chocolates’ as holding at some time in the course of that event’s development. Some further explanation is required. Again, the presence of a substantive modal condition would seem to be appropriate to blocking the entailment in question (it was possible for Mary to eat a third of the chocolates or fewer or even more, other things equal, one might press) and the modal theorist is in a position to explain why we should expect just such a condition to be in effect.

Interestingly, consideration of outcome-associated progressives also suggests different answers to the two questions posed earlier, namely, whether there is a restriction on the parts of an event that may be represented as holding by the progressive and whether a progressive claim commits us to the existence of an entire event of the sort represented by its underlying predicate. Whereas these questions received negative answers in connection with a non-outcome-associated progressive like ‘Mary is swimming,’ they require positive answers in connection with an outcome-associated progressive like ‘Mary is crossing the Atlantic.’ After all, that

\(^7\) This is based on an example from Hallman (2009b), which he uses to motivate a very restricted version of this claim.
sentence cannot be used to describe what Mary is doing once she is across the Atlantic (that is, once its associated outcome is realized) and although (5) shows that it does not commit us to an actual cross-Atlantic passage, its truth does require that that part of a cross-Atlantic passage that holds eventuate in an arrival across the Atlantic by Mary across a range of relevant possible circumstances:

(5) Mary was crossing the Atlantic when she drowned.

We have, then, a commitment to the possible completion of the event represented by that underlying event predicate.

By way of summary, progressive claims like ‘Mary is swimming’ and ‘Mary is crossing the Atlantic’ exhibit striking differences and appear to motivate quite different semantic treatments. The first problem of unification confronts us here with some force since it raises the question, “What do these sorts of claims have in common and how are we to explain their differences?”

2.3 The Displacement Analysis

The problem with existing analyses of the progressive—both modal and non-modal—is that they generalize to the worst case. They do this either by applying a semantic analysis that is viable for non-outcome-associated progressives like ‘Mary was swimming’ to outcome-associated progressives like ‘Mary was crossing the Atlantic,’ where it leaves much that wants for explanation, or by applying a semantic analysis that is viable for outcome-associated progressives to non-outcome-associated progressives, where this results in the attribution of inappropriate modal
and temporal conditions to the latter. In what follows, I will develop an analysis that isolates a semantic condition that can be generalized across these progressives and explains their differences—as far as possible—in terms of the meanings of their underlying event predicates.

The Semantics of the Progressive

On my view, what outcome-associated and non-outcome-associated claims have in common is, essentially, the part-whole semantics that I sketched earlier. In this sense, extensional analyses have gotten something importantly right, despite the fact that such analyses alone cannot explain the complex interpretations of claims like ‘Mary was crossing the Atlantic.’ Recall that on that sort of analysis, the progressive simply represents a (proper) part of the event represented by its underlying predicate as holding at a given time with no commitment to the actualization of the whole of which it is a part. So, ‘Mary is crossing the Atlantic’ represents a swim part rather than a part of a swim, if you like, as holding in the present. In accordance with the (too often neglected) observation that the progressive has a stative semantics, I will assume that the proper parts that it represents as holding are states. Moreover, if we assume that events are temporally extended while states are not, the semantic condition associated with the progressive need not specifically require that those parts represented by the progressive be proper, giving us the following:

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8 See Bennett and Partee (1978), Vlach (1981), and more recently Hallman (2009a) for models and discussion.
PROG(ϕ) is true if and only if a state of the event represented by ϕ holds.

One might, of course, choose to understand states as primitive or to reduce states, say, to momentary parts of events (see Hallman (2009a) for one such analysis) and, relatedly, one might make various assumptions about what it is for events to be represented as having states\(^9\) (such that the progressive can be taken to indicate that states of events hold at various times) though I remain neutral on these issues here.

Something must also be said about the fact that the progressive cannot represent the outcome portion of an outcome-associated event as holding, which is an important facet of the contrast between outcome-associated and non-outcome-associated progressives and which is, on my view, linked to the modal interpretations of the former. Somewhat delicate considerations come into play here. To begin with, the exclusion of associated outcomes in present tense claims appears to be a general phenomenon.\(^{10}\) This gives us some reason to think that the restriction against the progressive’s selection of outcomes should be represented in a more general way than as a restriction that is built into the meaning of the progressive. Although I have at times been sympathetic to that sort of view, I think there is actually some reason to assume that the progressive itself effects this restriction (though

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\(^9\) See Parsons (1990) for some discussion.

\(^{10}\) Consider, for example, a sentence like ‘Mary is in jail for five years’ which we might well regard as being associated with an outcome (i.e., the completion of a five year jail sentence) but which cannot be used if this outcome is realized in the present.
this is not to deny that there may be environments, such as the present tense, which also effect this restriction).\textsuperscript{11}

In light of this, I would like to pose two options. The first is to assume that the progressive is itself an atelic or non-outcome-associated expression (which is a more informative claim than the claim that the progressive does not represent the outcome portions of outcome-associated events as holding). The second is to assume that the restriction on the selection of an outcome falls out from the fact that the progressive is a \textit{stative} expression—after all, it is traditionally assumed that statives are atelic.\textsuperscript{12} Since I have doubts concerning whether that traditional assumption about statives is correct,\textsuperscript{13} I will assume that the restriction on the progressive’s selection of outcomes is something that reflects an aspect of the progressive’s meaning, namely that it is itself a non-outcome-associated expression.\textsuperscript{14} I leave it open for other theorists to take the alternative to that option if they do not share my doubts about whether statives can be assumed to be atelic, an option that I think is otherwise extremely theoretically attractive.

\textsuperscript{11} In particular, I have found myself relying on just such an assumption about progressive meaning as part of an explanation of why it is that a progressive sentence like ‘Mary was crossing the Atlantic’ patterns with sentences like ‘Mary was in jail for five years, but she got early parole’ and ‘Mary worked at 5pm, but the schedule was changed’ in giving rise to certain modal interpretations (in contrast to ‘Mary was in jail for five years’ and ‘Mary worked at 5pm’) and also to explain why that sort of progressive \textit{contrasts} with those sentences insofar as it does not require the “supplementary” phrases that appear alongside those claims.

\textsuperscript{12} For some review, see the first chapter of Rothstein (2004).

\textsuperscript{13} The doubts arise in connection with a claim like ‘Mary is in jail for five years.’ It seems to me that one way of understanding this claim is as indicating that there is a state, \textit{Mary’s being in jail for five years} (as distinct from a state like \textit{Mary’s being in jail}), which could be said to hold throughout a certain interval of time, but which appears to be associated with an endpoint, namely, the completion of the five-year sentence.

\textsuperscript{14} Cf. Cipria and Roberts (2000) where it is claimed that the imperfecto is an atelic expression.
The Displacement Hypothesis

This analysis leaves us with the difficult task of explaining the modal interpretations that attach to outcome-associated progressives. But we are not without clues as to their origin. Those progressives that embed outcome-associated predicates and only those progressives give rise to those modal interpretations. We have also seen that the outcomes of outcome-associated predicates may never be represented as holding by the progressive—a condition that has no analogue in the case of non-outcome-associated progressives. Interestingly, however, the modal interpretations that attach to outcome-associated progressives are absent and the restriction on their outcomes lifted in certain non-progressive contexts. So, the following claims both describe the actualization of the sorts of events that their event predicates represent (outcome and all) and do not exhibit the modal contrast exhibited by their progressive counterparts:

(6) Mary swam.

(7) Mary crossed the Atlantic.

The absence of these two features in this non-progressive context suggests that the restriction on outcomes and the emergence of modal interpretations are linked.

I suggest that we think of the expulsion of outcomes from the progressive environment and the emergence of modal interpretations as two species of displacement—a term for the fact that natural languages provide a means to represent what

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15 Any modal conditions that have to be satisfied for the relevant events to be described as actualized are irrelevant to this point since we are considering whether there is a modal contrast of the sort that we see in the case of their progressive counterparts.
is distal and to do so along a variety of dimensions including the modal, temporal, and spatial. Just as the outcome associated with a predicate like ‘cross the Atlantic’ is modally displaced in the context of a claim like ‘Mary is crossing the Atlantic’ (i.e., it need only be realized across a range of possible circumstances, not in the actual world) so too we can say that that outcome is displaced in the progressive environment in that it is never what is in progress as long as the event with which it is associated is said to be in progress. What I propose is that the modal interpretations that we see in connection with outcome-associated progressives emerge exactly in those environments in which an outcome that is associated with an event is displaced.

**Displacement Hypothesis:**

There is modal displacement just where there is outcome displacement.

On this proposal, when an outcome-associated predicate combines with the progressive a (non-final) part of it is represented as holding at a given time but the connection between that part that holds and the outcome associated with that event comes to be mediated by a substantive modal condition. That part that holds must eventuate in that outcome across a range of relevant possible circumstances.

**Some Consequences of the Displacement Analysis**

The displacement analysis has two notable consequences, both of which I discuss in detail elsewhere, but which are worth mentioning here since they help to frame
the discussion of futurate progressives to follow and since we will have occasion to revisit these consequences once an account of futurate meaning is at hand.

First, although the displacement hypothesis does not itself anchor the modal interpretations of outcome-associated progressives in any particular linguistic element (not in the progressive and not in outcome-associated predicates, for example) or in any extra-linguistic cognitive element, the content of the displacement hypothesis cannot be fully captured by any candidate natural language meaning or any interaction between such meanings.\(^\text{16}\) These interpretations must be assumed to reflect the modal structure of cognition, not the modal structure of language.

It is not difficult to see that this is the case and so I will briefly review the relevant considerations here. To begin with, we already have reason to think that a modal semantics should not be attributed to the progressive itself. The attribution of a uniform modal semantics would result in an overgeneration of modal interpretations. Moreover, the attribution of a non-uniform meaning to the progressive—one that discriminates between outcome-associated and non-outcome-associated event predicates in such a way that the former have a modal and temporal profile that is entirely absent in connection with the latter—is on its face an \textit{ad hoc} maneuver. Even if it could be regarded as an option, the argument of this paper is meant to reinforce the contention that we can do much better.

Outcome-associated predicates also fail to provide anchors for these modal interpretations. To begin with, they cannot \textit{simply} be attributed to outcome-associated predicates since outcome-associated predicates do not issue in those

\(^{16}\) I argue for this in my ‘Modality, Cognition, Semantic Explanation’ (2014c).
interpretations in certain non-progressive or ‘perfective’ environments (e.g., ‘Mary crossed the Atlantic’). The most natural option would be to assume the presence of a covert perfective operator (as some, though certainly not all, theorists do) and to suppose that it is responsible for suppressing the modal import of these expressions in such an environment. A key problem for this strategy though is that the perfective does not suppress the modal import of the modal expressions with which it combines even though it does appear to be implicated in the licensing of actuality\textsuperscript{17} entailments.\textsuperscript{18} So, we cannot appeal to its meaning to explain why progressives like ‘Mary is crossing the Atlantic’ give rise to modal interpretations that are absent in (what we are supposing to be) their perfective counterparts. Finally, we should resist the temptation of simply reading the content of the displacement hypothesis into the meanings of outcome-associated predicates. The displacement hypothesis, which tells us that outcome-associated predicates either occur in displacement environments, in which case they give rise to modal interpretations, or occur in non-displacement environments, in which case they do not, is a theoretical hypothesis that we want to \textit{explain} in terms of candidate natural language meanings and whatever other resources might be called for. Reproducing the disjunctive content of this hypothesis at the level of the meanings of outcome-associated predicates does not explain the hypothesis—it simply restates it in a way that obscures the fact that it calls for explanation.

\textsuperscript{17} These are entailments from a claim like ‘John was able to eat three apples this afternoon’ to ‘John ate three apples this afternoon.’ It remains somewhat controversial to describe this inference as an entailment in English, though that is not the case in other languages such as French and Hindi.

\textsuperscript{18} For a defense of this claim, see Hacquard (2009).
The natural conclusion to draw in light of these difficulties is that the specific modal interpretations that we find in displacement environments reflect the semantic contribution of modal cognition, not modal language. If the displacement hypothesis is correct, these interpretations reveal that modal cognition systematically interprets outcome displacement as modal displacement.

Since I will go on to argue that the regular and futurate progressive have an identical semantics and that the displacement hypothesis also extends to the modal interpretations of futurate progressives, their modal interpretations should also be seen as reflecting the modal structure of cognition. However, since their differences, on my view, come down to differences at the level of their event predicates, we will have an opportunity to examine whether the event predicates in futurate progressive contexts also fail to exhibit these modal interpretations outside of displacement environments and, so, whether they too corroborate the assumption that our modal interpretations do not inhere in the event predicates that combine with the progressive.

Second, the displacement hypothesis is a hypothesis about when we should expect to find the substantive modal interpretations that attach to outcome-associated progressives (and, eventually, when we should expect to find the substantive modal interpretations that attach to futurate progressives as well). It predicts that we should expect to find substantive modal interpretations whenever an outcome-associated event is claimed to be in progress. After all, the outcomes of outcome-associated predicates are invariably displaced in the progressive environment (they can never be said to hold when the events with which they are associated are de-
scribed as in progress) and the displacement hypothesis links the substantive modal interpretations of outcome-associated progressives exclusively to the displacement of outcomes. Intuitively, then, there is only one switch for modal interpretations (i.e., displacement) and that switch is always on in the progressive environment.

This yields a key prediction, namely, the absence of an entailment from claims like ‘Mary crossed the Atlantic’ to claims like ‘Mary was crossing the Atlantic.’ The reason is that progressive claims like these are invariably associated with substantive modal interpretations\(^\text{19}\) and, in general, the conditions on truth they introduce will not be satisfied by claims that describe those events as fully actualized. (In this connection, consider, as I observed just a moment ago, that claims like ‘Mary crossed the Atlantic’ are not associated with the modal interpretations of their progressive counterparts.) Again, as I have argued elsewhere in detail,\(^\text{20}\) this is a good result however much it runs counter to orthodoxy. The analysis of futurate progressives that I offer below (and, in particular, my analysis of the event predicates that they embed) delivers a host of examples to support this key prediction and sheds light on why it can be difficult to isolate clear counterexamples to this supposed entailment pattern. As we shall see, the analysis suggests that a class of cases that provide the clearest counterexamples to that generalization—but have been rejected as candidate counterexamples—are in fact legitimate.

\(^{19}\) On my view, substantive modal interpretations do not depend on the non-actualization of events that are described as in progress as on Landman’s (1992) account, for example.

\(^{20}\) See my ‘How to Cross the Atlantic Without Crossing It’ (2014a).
3 The Futurate Progressive

There are three basic positions that one might take on how the progressive is related to what I will continue to call the ‘futurate’ progressive. One might take the view that the progressive and futurate progressive have unrelated meanings and only superficially resemble each other; one might take the view that they have similar, though not identical meanings; and, finally, one might take the view that they have identical meanings. In what follows, I want to briefly consider some of the reasons for and against these views and, for the latter two positions particularly, I discuss some of the ways that these positions might be filled out.

3.1 Ambiguity

There are a variety of difficulties and complexities that loom over attempts to analyze the progressive as having a uniform meaning across distinct progressive classes. One can be forgiven, in light of this, for wondering whether it would really be so bad to assume that the progressive is ambiguous across these classes. Still, I think it would be premature to accept that conclusion. Even in advance of having solutions to these challenges, close attention suggests that the challenges are actually systematically connected and this gives us reason to remain hopeful that minimal but well-placed adjustments might resolve them all.

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21 This possibility was first suggested to me by John Burgess (p.c.) during an examination in which I highlighted some of these difficulties.
Let us take a look at the sorts of differences between regular and futurate progressives that might incline one towards pessimism. One major difference between these progressives concerns the characterization of events that are described as in progress. Take the following claims, for example:

(8) Mary is crossing the Atlantic now.

(9) Mary is crossing the Atlantic tomorrow.

Whereas (8) tells us that a cross-Atlantic passage is underway (perhaps Mary is somewhere in the middle of the Atlantic), (9) tells us nothing of the kind (perhaps Mary is on her couch a safe distance away from the Atlantic). Only the former, then, commits us to a (non-final) part of an event that is characterized via the descriptive content of the event predicate ‘cross the Atlantic.’ A similar contrast is evident in connection with the characterization of the relevant outcome in each case. Whereas the outcome that is associated with (8) consists in something like Mary’s having gotten across the Atlantic, the outcome that is associated with (9) consists in a cross-Atlantic passage by Mary. Only in the latter case, then, does the descriptive content of the predicate ‘cross the Atlantic’ apply entirely to the outcome or planned eventuality (to frame the point in language that avoids a commitment to outcome-association) that would appear to be associated with the sentence.

Here is another striking difference. A basic intuition about the modal interpretations that attach to futurate progressives is that they have a future orientation. Although these modal interpretations are standardly assumed to express inertial modality just like modal interpretations of regular progressives are assumed to do
(i.e., a modality that is attuned to the development of events across uninterrupted possible circumstances), the modal interpretations of futurate progressives are thought to concern events that are scheduled, planned, or, more generally, projected to occur. And, indeed, the sense that these futurates (at least often) concern what is planned or scheduled comes through quite strongly, as illustrated by the following examples:

(10) The train is arriving at 5pm.

(11) The Yankees are playing the Red Sox tomorrow.

The train’s actually arriving at 5pm is neither necessary nor sufficient for the truth of (10). What matters is that the train’s projected arrival at 5pm be secure and, naturally enough, a reliable schedule is the sort of thing that underwrites such a projection, assuring us that, other things being equal, the train arrives at 5pm. Similarly, the Major Leagues’ scheduling of a Yankees-Red Sox game is the sort of thing that supports the judgment that (11) is true. This is what assures us that the game would happen, other things being equal. The occurrence or non-occurrence of the game makes no difference as long as that assurance is in place. The modal interpretations that attach to regular progressives do not give the strong impression that they concern planned eventualities. So, for example, although the following claim does concern an event for which planning would typically be required, we do not get the impression that it describes an event that is “on the agenda.” Rather,

\[22\] See, for example, Copley (2009).
it simply describes a certain sort of event as being underway (though one that is assumed to have a particular trajectory):

(12) Mary is knitting a sweater.

What matters modally in this case is whether Mary ends up completing a sweater across all of the possible circumstances in which her activity continues without interruption. So, what we want to be able to explain is how it is that the modal interpretations of futurates come to be so acutely focused on the “projected” future.

There is one last difference between regular and futurate progressives worth noting. In contrast to regular progressives, only some of which give rise to modal interpretations, all futurate progressives give rise to modal interpretations. This is a very striking fact since it appears that one and the same predicate, ‘run’ for example, characterizes an actual event part in the context of a regular progressive claim but possible events in the context of a futurate progressive claim:

(13) Mary is running (now).

(14) Mary is running (tomorrow).

How is it that a non-outcome-associated predicate like ‘run’ can come to characterize projected running events in all of the possible circumstances relevant to the evaluation of (14)? What explains this radical transformation?
3.2 Similarity

One sort of approach to accounting for these differences between regular and futurate progressives involves adjusting our assumptions about the nature of the event predicates that combine with the progressive to yield futurate interpretations. It might be assumed, for example, that event predicates in the context of futurate progressive claims represent their events as having preparatory or planning stages (stages that precede those that constitute what we may think of as the realization stages of the event) and that these stages are specifically selected by the progressive in the context of these claims.\footnote{One finds this suggestion in Portner (1998), for example. It is also tentatively suggested (though only with telic predicates in mind) by Cipria and Roberts in their analysis of what they call ‘intention-in-the-past’ interpretations of the Spanish imperfecto, which appear to resemble futurate progressives (2000). On their view, these interpretations exploit the preparatory stages of events in contrast to the progressivo (which can only represent the realization stages of an event as holding).} So, for example, a predicate like ‘run’ might represent a running event as being preceded by preparatory stages that remain lexically unspecified, but which may, intuitively, stand in for the scheduling of some such event for the future.

Since the futurate progressive would impose a special requirement on the event predicate with which it combines, it gives us a meaning for the futurate progressive that is at most similar to the meaning of the regular progressive. When combined with an appropriate modal semantics for the progressive, though, the approach does seem to address some of the contrasts between regular and futurate progressives that were noted in section 3.1. It helps us to understand (though see my comments below) why it is that a futurate progressive claim like ‘Mary is
crossing the Atlantic tomorrow’ does not commit us to the partial realization of a cross-Atlantic passage since only the preparatory stages of such an event are selected by the progressive in that context. It also helps us to understand the strong future orientation of the modal interpretations that attach to futurate progressives since these progressives would require that all of the realization stages of their underlyingly represented events be realized after the progressive’s time of evaluation. Finally, since the futurate progressive is assumed to have a modal semantics, it can explain why all futurate progressives have modal interpretations.

This account has drawbacks, however. The most serious is that it forces us to assume that the regular and futurate progressive are semantically distinct. What they have in common, on the present approach, is a particular sort of partitive relation. But they differ insofar as the regular progressive has a non-modal semantics and the futurate progressive a modal semantics—a difference that prevents us from offering a fully uniform explanation of the modal interpretations that attach to outcome-associated progressives and futurate progressives and of their absence in the case of non-outcome-associated progressives. Moreover, the account explains the future orientation of futurate progressives in a rather stipulative way. Not only must we assume that the futurate progressive requires that its underlying predicate have preparatory event parts\textsuperscript{24} but we must assume that it cannot represent any of the non-preparatory parts of the relevant event as holding. This alerts us to one of the striking contrasts between the present proposal and the displacement analysis.

\textsuperscript{24} Since I do not assume that there is a futurate progressive that imposes requirements that are different from the regular progressive, the presence of preparatory stages is not something that is stipulated (or could be) on my account.
In particular, the present proposal makes no use of outcome-association in explaining the exclusion of (non-preparatory) event parts in the futurate progressive case. It fails, then, to offer an explanation for the exclusion of non-preparatory event parts in that environment, which parallels the exclusion of outcomes in the regular progressive case and it simply fails to explain the apparent parallel in the status of the projected outcomes or “planned events” associated with futurate progressive claims and the projected outcomes associated with regular progressive claims.

Moreover, as promising as the general strategy is, a number of issues are also raised by the assumption that event predicates can represent their events as having preparatory stages. According to it, recall, a predicate like ‘run’ picks out or describes an event with preparatory stages as well as ordinary or realization stages in futurate progressive contexts. There is, though, a tension (if not an incoherence) in the combination of the claim that these preparatory stages are stages of an event that is described as a run event and the claim that they do not realize a run event (so that the progressive ‘Mary is running tomorrow’ does not indicate that a run event is already underway). We might express this tension in the following way. By what right do these preparatory stages count as stages of an event that is so described if they do not constitute (the realization stages of) such an event? And if they do constitute (the realization stages of) such an event, how can we avoid the conclusion that ‘Mary is running tomorrow’ indicates that a run is already underway?

Here is another way at getting at this difficulty. Consider the difference between saying that the content of ‘run’ applies to an event with preparatory and non-preparatory stages and saying that its content applies strictly to the non-preparatory
stages of an event. The present proposal, like the first of these options, gets us into difficulty because it is unclear how we can avoid the conclusion, which we do want to avoid, that preparatory stages are constitutive of an event that is described in a given way (in the way that we might think of certain preparations for dinner as constitutive of an event of *making dinner*). The second of these options seems to meet our needs better since it allows us to avoid the assumption that preparatory stages are stages of an event that is described as a run event. We are to assume that while a predicate like ‘run’ (in futurate progressive contexts) is associated with preparatory stages, its content does not apply to those preparatory stages. Note, moreover, that this fits nicely with the observation that when we articulate what the planned eventuality is that is connected with a claim like ‘Mary is running tomorrow’ we can use the very predicate that appears to be embedded by the progressive to characterize it (as in “Mary is planning to run tomorrow”). The content of that predicate applies to that “planned” event.

More can be said in favor of this revamped proposal. In particular, as alluded to above, I think more can be said about the event structure of predicates that appear in futurate progressives and, in particular, about how their event structure relates to other familiar event structures, and about why these event structures are present in the futurate progressive environment, all of which will help assuage concerns about how it is that preparatory stages and ordinary event stages come to be glued
As I develop my account, I will have occasion to return to this proposal and to motivate answers to questions like these.

3.3 Identity

In this section, I pursue the idea that the regular and futurate progressive have an identical semantics. As I will show, the displacement analysis extends to futurate progressives in an extremely natural way. This means that we can exploit the same mechanisms that we used to explain the modal interpretations of outcome-associated progressives in explaining the modal interpretations of futurate progressives, which provides a systematic explanation that was missing in the other approaches considered.

Like the event based approach discussed above, this approach requires an adjustment to our assumptions about the event structure of the predicates that combine with the progressive in the context of futurate progressive claims. As I will argue, though, predicates with the required structure can be identified both within and without the progressive environment (so they should not be seen as meeting “special” requirements that are imposed by the futurate progressive). Moreover, the assumption that predicates with this event structure are present in the context of futurate progressive claims finds a principled motivation in the interaction between

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25 These sorts of concerns evidently led Bridget Copley to pursue an alternative conception of the connection between plans and futurate progressives. Her assessment of the proposal is that it is “an interesting one, but it raises the question of why exactly a plan [i.e., preparatory stages] can count as an early stage for an event. To understand this, more must be known about how plans are involved in the meanings of futurates and how they might be assimilated to more general semantic concepts” (2009).
future-oriented temporal adverbs like ‘tomorrow’ and event predicates that figure in futurate progressive environments.

The present task, then, is to construct an analysis of futurate progressive interpretations that parallels that of the displacement analysis as it applies to outcome-associated progressives. For that reason, it will be worth reviewing what the analysis says about the latter. To begin with, the analysis tells us that the progressive itself only contributes the meaning that a state (or momentary part) of the event predicate with which it combines holds at a given time. So, to take ‘Mary is crossing the Atlantic’ as an example, what that sentence means, according to the analysis, is that a momentary part of a cross-Atlantic passage is realized by Mary in the present. Now, the analysis also tells us that an outcome that is associated with a predicate never holds when the event with which it is associated is said to be in progress (i.e., that outcome is invariably displaced in the progressive environment). So, for example, it is never the case that Mary is crossing the Atlantic when she is across the Atlantic. In precisely that case, when outcomes are displaced, the analysis predicts that an outcome-associated progressive will receive a modal interpretation. Modal cognition, if you like, “interprets” outcome displacement as modal displacement. Since the connection between the part of the event that holds when it is said to be in progress and its outcome is mediated by a modal condition, the displaced outcome ultimately plays a role in constraining our judgments about the truth of that progressive sentence.

This basic proposal heavily constrains the options for accounting for futurate progressive interpretations, which as we have seen, differ from regular progressives.
in striking ways. A successful extension of the analysis to the case of futurate progressives would not only be interesting but it would speak in favor of the original proposal as it applies to the case of regular progressives.

Let us consider how the analysis is to extend to the sentence 'Mary is crossing the Atlantic tomorrow.' What that sentence would have to mean is that a momentary part of a given type of event (i.e., whatever turns out to be represented by ‘cross the Atlantic’ in this particular context) holds in the present. As that sentence gives rise to a modal interpretation it must, by the lights of the displacement analysis, involve the displacement of an outcome that is associated with that event predicate. And, finally, that outcome must constrain the truth of that progressive claim via a modal condition. Since the event that intuitively provides the outcome relative to which ‘Mary is crossing the Atlantic tomorrow’ is evaluated is a crossing of the Atlantic by Mary (which is also the event to which ‘tomorrow’ applies), the analysis tells us that the event predicate in question must be associated with an outcome with that characterization.

At this point, a natural hypothesis emerges. It is that the descriptive content of the predicate ‘cross the Atlantic,’ in the context of that claim, applies to the outcome portion of an outcome-associated event leaving the pre-outcome portion of that event uncharacterized. This hypothesis offers us a way of explaining a number of futurate quirks that need explaining. For one, it allows us to explain why ‘Mary is crossing the Atlantic tomorrow’ does not commit us to a partially realized cross-Atlantic passage in contrast to its regular progressive counterpart. The reason is simply that the portion of the event that it represents as holding in the present is
not characterized via the descriptive content of the predicate ‘cross the Atlantic.’ It also offers us a way of explaining the connection between those candidate parts of an event that may be represented as holding and any outcome with which they may be associated. What we are in a position to say is that any such part that is said to hold may be related to an outcome as a pre-outcome portion of an event that is associated with it. That much is delivered by the event structure of the predicate in that case. Moreover, this analysis sheds light on the open texture of our characterizations of the event that leads up to an outcome—the suggestion variously of a plan or a schedule or a preparatory activity that leads to some main event. After all, since this pre-outcome event is not overtly characterized but is represented as leading to a certain prospective outcome across a variety of possible circumstances, in the context of a progressive claim, it is no wonder that there are a variety of contentful characterizations that could be seen as applying to it and that emphasize its role in preparing the way for that outcome.

4 A Unified Semantics for the Progressive

As we have seen, the displacement analysis extends very naturally to the case of futurate progressives. What the analysis suggests is that futurate progressives are progressives that embed outcome-associated event predicates (like ‘cross the Atlantic’ in regular progressive contexts) where the overt descriptive content encoded by those predicates applies exclusively to their outcomes (unlike ‘cross the Atlantic’
in regular progressive contexts). Call these predicates ‘outcome-oriented predicates’ to signal this link between their descriptive content and their outcomes.

The hope for a unified semantics for the progressive, across all of our distinct progressive classes, depends on whether we can convince ourselves that there are predicates with this event structure and that these predicates do, in fact, figure in futurate progressive claims.

4.1 Outcome-oriented Predicates

In what follows, I defend the claim that futurate progressives are simply progressives that embed outcome-oriented predicates of events. The displacement of these outcomes in the progressive environment, combined with the strict application of their descriptive content to these outcomes, leads to modal interpretations that concern the possible—though still only projected—realization of outcomes meeting those descriptions.

This is not, however, to defend the claim that these predicates occur exclusively within the context of progressive claims. In fact, I will defend the view that outcome-oriented predicates also occur outside of the progressive environment. After all, outcome-oriented predicates are intended to explain the differences between these progressive varieties and so have to be present in futurate progressives, but they are not therefore expected to be present in all and only futurate progressives. That would strongly suggest that the progressive makes a distinct contri-
bution within futurate progressive contexts and would, to that extent, undermine the claim that it has a unified semantics.

As I will argue, examples of outcome-oriented predicates occurring outside of the progressive environment have been right under our noses. It becomes clear, for example, that they are plentiful in the literature on aspect—where they are traditionally known as ‘achievements’—once the distinctions necessary to recognize them are in place.

The following sentences provide us with typical examples from this literature:

(15) The train arrived at the station.

(16) The plane landed.

(17) They reached the summit.

In each of these sentences, an outcome that is characterized by an embedded event predicate was realized (e.g., an arrival, a landing, etc.). This feature is common between these sentences and those like them that embed outcome-associated predicates such as ‘cross the Atlantic’:

(18) Mary crossed the Atlantic.

Like the others, (18) entails that the outcome associated with it was realized. Moreover, as with outcome-associated predicates, the outcomes that are encoded by achievement predicates are associated with preceding events. For this reason, we can use an ‘in’-adverbial to describe the temporal extent of the events represented
in each (and not merely to describe a period within which the event described is contained):

(19) They reached the summit in six hours.

(20) Mary crossed the Atlantic in three days.

Again, the ‘in’-adverbial that modifies the outcome-associated predicate in (20) and is understood to measure the temporal distance between the onset and outcome of that event can equally be understood to modify the achievement predicate in (19) and to measure the distance between the onset and outcome of the event that it represents. The difference between these predicates concerns the descriptions that apply to these extended events. Whereas the entire event represented by the outcome-associated predicate in (20) is characterized via the descriptive material of that predicate, only the outcome represented by (19) is characterized via the descriptive material of its predicate.

Achievement predicates provide us with clear instances of outcome-oriented predicates as well as a model for understanding the outcome-oriented interpretations of predicates like ‘cross the Atlantic’ and ‘swim.’ Unlike the latter, achievement predicates are, by default, interpreted as outcome-oriented predicates so that unless this interpretation is overridden, they are associated with this event structure. In virtue of having this event structure, their combination with the progressive results in futurate interpretations:

(21) The train is arriving at the station tomorrow.
The plane is landing this afternoon.

They are reaching the summit momentarily.

As we will see, the same can be said of predicates like ‘cross the Atlantic’ and ‘swim,’ though the predicative material encoded by these predicates has shifted to the outcome portion of the outcome-associated events that they represent on their outcome-oriented interpretations.

Before we consider those instances, I should explain how it is that my analysis of the structure of achievement predicates represents something of a departure from orthodoxy. In the aspect literature, it is standard for these predicates to be analyzed as representing an instantaneous (or nearly instantaneous) realization of an outcome. A predicate like ‘arrive at the station,’ for example, would be assumed to represent a punctual arrival at the station. On this view, achievement predicates—at least as they occur outside of the progressive environment—do not represent an outcome as one that is associated with a preceding event.26

Interestingly, however, some theorists have assumed that, within the progressive environment, achievements do have the outcome-oriented event structure that I attribute to them. This sort of proposal has been advanced to account for the fact that achievement predicates can combine with the progressive—a fact that would remain mysterious if these predicates did represent instantaneous events within that environment. According to one proposal, for example, the progressive “shifts” the

26 See Rothstein (2004: pg. 22) who claims that achievements outside of the progressive environment have “no internal structure.”
meaning of achievement predicates so they come to represent temporally extended
events that include preparatory stages that may be said to be in progress.

Over the following two sections, I will defend my analysis of achievements
and, more generally, my view of the role of the outcome-oriented predicates in
explaining the contrasts between regular and futurate progressives by (i) respond-
ing to the sorts of challenges for my account that can make this standard alterna-
tive seem appealing and (ii) by examining the interactions between future-oriented
temporal adverbs and those predicates that appear in futurate progressive environ-
ments. This should assure us that the acceptance of outcome-oriented predicates in
both progressive and non-progressive environments presents us with a much more
attractive theoretical option than the endorsement of these predicates within the
progressive environment alone.

The Challenge from Temporal Modification

The main challenge to the assumption that achievements represent *temporally ex-
tended* outcome-associated events comes from interpretive differences that result
from the temporal modification of these predicates and predicates like ‘cross the
Atlantic.'

There are a variety of diagnostics involving temporal modifiers that have been
taken to reveal the similarities as well as the differences between these predicates.
That both sorts of predicates encode outcomes is, for example, suggested by the fact
that one can ask how long the events represented by (24) and (25) took, though

27 The examples are taken from Susan Rothstein’s (2004) very clear and compressed presentation
of the relevant differences and the diagnostics that reveal them.
one cannot ask this of the eventualities represented by (26) and (27), a sign that only the former represent events with defined onsets and outcomes:

(24) How long did it take John to read War and Peace?

(25) How long did it take John to recognize Mary.

(26) #How long did it take John to be short.

(27) #How long did it take John to push carts.

Notice, however, that whereas (24) is interpreted as asking how much time the reading of War and Peace took, (25) is interpreted as asking how much time it took for a certain act of recognition to come about. So, whereas (28) does not immediately strike one as offering a paraphrase of (24), (29) does immediately strike one as offering a paraphrase of (25):

(28) How long did it take before John read War and Peace?

(29) How long did it take before John recognized Mary?

Since the temporal extent of the event characterized via the predicate ‘read War and Peace’ can be queried and since the same cannot be said of the event that is characterized via the predicate ‘recognize Mary,’ the latter is assumed not to represent an event with temporal extent. The only intelligible construal of the ‘How long?’ question in the case of (25), then, is one on which it queries the temporal extent between some contextually given time and the event represented by the predicate (explaining the paraphrasing of (25) in (29)).
This conclusion is also taken to be supported by the fact that aspectual verbs like ‘start,’ ‘finish’ and ‘stop’ interact differently with these predicates. Whereas these aspectual verbs combine with a predicate like ‘read War and Peace,’ they do not readily combine with an achievement predicate like ‘recognize Mary’\(^{28}\):

(30) John started/stopped/finished reading War and Peace.

(31) #John started/stopped/finished recognizing Mary.

Since these aspectual verbs divide up internally complex events, the failure of their combination with achievement predicates is taken to suggest that they do not represent events with internal complexity. Of course, if achievements represent events that are instantaneous, it would follow that these events lack this complexity.

There are also temporal modifiers that appear to provide instantaneous time frames that exactly align with the events represented by ‘arrive,’ though they do not exactly align with the events represented by ‘paint a picture.’ Modification with a punctual ‘at’-phrase, for example, yields different interpretive effects across the following sentences:

(32) The guest arrived at midnight.

(33) Mary painted a picture at midnight.\(^{29}\)

\(^{28}\) Let us set aside habitual interpretations and interpretations of the event predicate on which it describes a drawn out or slow motion recognizing since that quite clearly involves a shift of interpretation.

\(^{29}\) Rothstein claims that this sentence is uninterpretable and suggests that it stands in contrast to a sentence like ‘John ran at 9pm,’ which can be interpreted as meaning that that event began at midnight, but I think that (32) can also be associated with this sort of interpretation.
Whereas the ‘at’-phrase in (32) locates the event characterized via the predicate ‘arrive’ at midnight, it does not have this effect in connection with the event characterized via the predicate ‘paint a picture.’ Rather, that event is interpreted as beginning at midnight. So, it would appear that ‘at’-phrases that pick out instants locate the events represented by predicates at those instants if those events are themselves punctual or instantaneous. If that is right, this diagnostic supports the assumption that ‘arrive’ represents an instantaneous event while ‘paint a picture’ does not.

Finally, although it might appear that achievement predicates are associated with preparatory events, a variety of diagnostics are taken to show that this is not the case. In contrast to predicates like ‘paint a picture,’ which are required to have preparatory or pre-outcome stages as a matter of meaning, predicates like ‘arrive’ only seem to have preparatory events as a result of “defeasible, contextual inference” we are told (Rothstein 2004: pg. 41). Consider, to begin with, that (34) and (35) are acceptable when modified by ‘in a flash,’ which simply locates the event characterized by these predicates within a short (and apparently undifferentiated) block of time:

(34) The genie arrived in a flash.

(35) The genie painted a picture in a flash.

Matters are different, however, if these sentences are modified by an additional ‘in’-phrase:
The sentence in (37) is thought to be contradictory, unlike (36), because the modifier ‘in a few minutes’ is interpreted as measuring the temporal extent of the event represented by ‘paint a picture’ (preparatory stages and all) despite the fact that the implication of ‘in a flash’ is that there are no preparatory stages for ‘in a few minutes’ to modify outside of that short block of time. As a result the sentence is interpreted as indicating that something took both a short amount of time to happen and a longer amount of time to happen. The contrast between (36) and (37) is taken to suggest that (36) does not represent an event with preparatory stages. Rather, (36) is interpreted as meaning that the genie’s instantaneous arrival occurred within a short block of time that is itself located within a larger period of time during which the genie prepared to arrive—or so context suggests.

Responding to the Challenge

The battery of diagnostics just considered is taken to show—and not unreasonably—that achievement predicates represent instantaneous events. This threatens to undermine the project of providing an analysis of the progressive on which the differences between non-futurate and futurate progressive varieties are due, in part, to semantic differences at the level of the predicates with which the progressive combines.

To get the relevant interpretation, it may be helpful to imagine the genie doing something in order to make an appearance.
How, then, are we to make the case that the differences seen across these diagnostics are linked to the differences between outcome-oriented predicates (like ‘arrive’) and simple outcome-associated predicates (like ‘paint a picture’)? Notice, as a start, that the fundamental assumption of the foregoing discussion is that temporal modifiers that modify predicates like ‘arrive’ target the events represented by those predicates in just the same way that they target the events represented by predicates like ‘paint a picture.’ Differences in the patterning of these predicates with respect to temporal modification are, for that reason, taken to reveal differences in the structure of the events that they represent. So, for example, from the fact that aspectual verbs like ‘start’ and ‘finish’ combine with a predicate like ‘paint a picture’ but not with a predicate like ‘arrive,’ we are supposed to infer that the event represented by the latter does not have duration while the event represented by the former does.

That is not, however, an assumption that we are forced to adopt. The patterns exhibited by achievement predicates across our diagnostics are indeed different from the patterns exhibited by predicates like ‘paint a picture,’ but these patterns can be explained by an alternative assumption. That is, we can assume that temporal modifiers are sensitive to those parts of an event that are characterized via the descriptive content of a predicate. The differences in the patterning of our predicates with respect to temporal modification are due, on this assumption, to the fact that the descriptive material encoded by these predicates gets divvied up in different ways—applying to the entire event represented by a simple outcome-associated
predicate like ‘paint a picture’ and to the outcome of the event represented by an outcome-oriented/achievement predicate like ‘arrive.’

If we review the diagnostics just considered (taking them in reverse order), we will see that this assumption allows us to explain the contrasts in the patterning of our predicates as well as to explain some features that go unaccounted for on the alternative approach. Consider, for example, the contrast in the acceptability of the following sentences:

(38) The genie arrived in a few minutes in a flash.

(39) #The genie painted a picture in a few minutes in a flash.

Far from suggesting that ‘arrive’ represents an instantaneous event while ‘paint a picture’ represents a non-instantaneous event, this contrast actually suggests that temporal modifiers can discriminate between these predicates on the grounds that the descriptive content that they encode gets mapped in different ways to the events that they represent. Let us continue to assume that ‘in a few minutes’ in (39) is interpreted as indicating the temporal extent of the event represented by the predicate ‘paint a picture.’ In that case, we should conclude that (39) appears to be a contradiction because the event of painting a picture cannot have taken place in a few minutes and in a flash (though we should now wonder why ‘in a flash’ cannot target the outcome of the event represented by that predicate—a point to which we return below). But, contrary to the approach we initially considered, we should adopt the exact same assumption with respect to the default interpretation of ‘in a few minutes’ in (38). What we should say, given present assumptions, is that (38)
does not suggest a contradiction because ‘in a few minutes’ targets the entire event represented by ‘arrive,’ including the preparatory portion that leads to its associated outcome, while ‘in a flash’ targets the outcome to which its descriptive content applies (e.g., the genie's instantaneous arrival). Clearly, there is no contradiction in describing an entire event as taking a certain amount of time while also describing a proper part of that event as taking a smaller amount of time.

These assumptions comport well with the interpretations that ‘in’-adverbials seem to receive in combination with achievement predicates. As I briefly mentioned last section, an ‘in’-adverbial like ‘in a few minutes’ appears to be interpreted as providing the temporal extent of a represented event both when combined with an achievement predicate like ‘arrive’ and when combined with a predicate like ‘paint a picture.’ This is an insufficiently appreciated point. One often encounters the assumption that these adverbial phrases only have a ‘containment’ interpretation when combined with these predicates—an interpretation on which they merely locate the occurrence of an event within a period of time. However, if ‘in’-adverbials give rise to the same default interpretations across these predicates, there needs to be a temporally extended event whose extent is measured by such phrases—a possibility that cannot be accommodated if one thinks that achievement predicates represent instantaneous events.

My approach, in contrast to the alternative, also provides an explanation for why it is that the punctual ‘in a flash’ targets the outcome represented by the predicate ‘arrive,’ though not the outcome represented by the predicate ‘paint a picture.’ That it cannot do so in the latter case is clear from the fact that (39) does not have
an intelligible interpretation, which it would on such a reading. Again, appeal to the differences in the way that the descriptive content of these predicates applies to the events they represent gives us a plausible answer. Whereas the descriptive material of ‘arrive’ applies to the outcome it represents, the descriptive material of ‘paint a picture’ applies to the whole event that it represents. This renders the outcome represented by the first available for modification (so that the arrival may be said to occur in a flash), though not the outcome represented by the latter.

This explanation is further corroborated by the differences in the patterning of these predicates with a punctual ‘at’-phrase such as ‘at midnight.’ Consider again the diagnostic that was presented in the last section:

(40) The guest arrived at midnight.

(41) Mary painted a picture at midnight.

Whereas (40) is interpreted as locating the outcome of an extended event (i.e. an arrival) at midnight and cannot be interpreted as indicating that some process that culminated in that outcome was initiated at midnight, the reverse is true for (41). It cannot be interpreted as locating the outcome of an extended event (i.e. the completion of a painting) at midnight, though it can be interpreted as indicating that some process that culminated in that outcome was initiated at midnight. These facts can be explained by assumptions that we have already been led to make, namely, that the application of the descriptive content of ‘arrive’ to the outcome represented by it renders that outcome available as a target for temporal modification whereas the application of the descriptive content of ‘paint a picture’ to the entire event rep-
resented by it—not to its outcome alone—renders that outcome unavailable as a specific target for modification (just as we saw in the case of the punctual phrase ‘in a flash’). The sensitivity of punctual ‘at’-phrases to those parts of an event that are characterized is suggested by the interesting fact that only the characterized portions of the events represented by ‘arrive’ and ‘paint a picture’ can be located in relation to the time indicated by ‘at midnight,’ as shown by the fact that (40) cannot be interpreted as meaning that some process is initiated at midnight that ends in a given outcome though (41) is interpreted in this way.

Aspectual verbs such as ‘start’ and ‘finish’ also seem to target the characterized portions of events. Recall that these verbs can modify a predicate like ‘paint a picture’ (as in ‘Mary finished painting a picture’) though they cannot modify a predicate like ‘arrive.’ While this was earlier taken to support the claim that achievement predicates do not represent events as having internal complexity, we are now in a position to entertain a different possibility. In particular, we are in a position to assume that the described portion of the event that ‘arrive’ represents does not have internal complexity though the event described by ‘paint a picture’ does.

Note, though, that when an aspectual verb combines with a predicate like ‘paint a picture,’ it makes certain forms of temporal modification available that are not otherwise available. So, for example, ‘Mary finished painting a picture at midnight’ appears to have the interpretation that is denied to ‘Mary painted a picture at midnight.’ But that should not cast doubt on my earlier claim that ‘at midnight’ cannot isolate the outcome that ‘paint a picture’ represents. Rather, we should look to the fact that ‘finish’ itself contributes a content that provides for the
appropriate segmentation of the event into its terminal or final phase—a phase that can then be located at a particular time by a further temporal modifier.

Finally, we arrive the last of our diagnostics. Consider again the following questions:

(42) How long did it take John to read *War and Peace*?

(43) How long did it take John to recognize Mary?

We had earlier assumed that since (43) cannot be interpreted as querying the temporal extent of an instantaneous event, it naturally comes to be interpreted as querying the amount of time between some contextually relevant time and the realization of that event. But it is worth pausing now to consider whether we are in a position to predict that (43) is paraphrasable as the question ‘How long did it take *before* John recognized Mary?’ if we grant that assumption. It seems, actually, that we are not. After all, a “How long”-question appears to presuppose that the event it queries is temporally extended but this presupposition is not in general satisfied either through the semantics of these event predicates or through pragmatic mechanisms\(^{31}\).

The assumption that ‘arrive’ has an outcome-oriented structure can help us out of this muddle. Since ‘read *War and Peace*’ represents a temporally extended and outcome-associated event and since the descriptive content of that predicate applies to the whole of that event, the length of that event (the distance between

\(^{31}\)The genie arrived in a few minutes in a flash’ does not appear, at first sight, to have a contradictory interpretation. So, it cannot be argued that the default (though still defeasible) presumption is that achievement predicates represent events that are preceded by preparatory activities.
its onset and outcome) is what is queried by the ‘How long’-question. Since ‘arrive’
also represents a temporally extended and outcome-associated event, the distance
between its onset and outcome can also be measured and queried by that sort of
question. But there is a difference. Only the outcome of that event is characterized
and it is instantaneous. So that question cannot be interpreted as asking how long it
took. Instead, the question has to be interpreted as asking about the time between
the onset of the event represented by that predicate and that characterized portion
(in the same way that ‘in’-adverbials—‘in a flash’ excepted—target the character-
ized portions of outcome-oriented predicates but still have to measure the distance
between those outcomes and the onsets of the events with which those outcomes
are associated).

**Shifted Interpretations**

The preceding discussion provides us with reason to think that achievement predi-
cates like ‘arrive’ have outcome-oriented event structures. In what follows, I want to
develop the position that other predicates, although not interpreted as having these
structures by default, can come to be interpreted as outcome-oriented predicates.
This is a key claim for me given that my argument requires that the predicates that
combine with the progressive to yield futurate progressives have this structure.

This may strike one initially as a surprising claim. After all, some of the pred-
icates that figure in futurate progressive claims superficially appear to receive non-
outcome-associated interpretations or even simple outcome-associated interpreta-
tions outside of this environment. But these predicates are indeed transformed
when they appear in the context of futurate progressive claims. Take for example, predicates like ‘run’ and ‘run a race,’ which appear in the context of the following futurate progressives:

(44) Mary is running tomorrow.

(45) Mary is running a race tomorrow.

The predicate ‘run’ is normally interpreted as a non-outcome-associated predicate but in the context of (44) comes to be interpreted as a predicate that has an outcome and whose descriptive content is shifted or oriented to that outcome. In this case, it is a running (that occurs tomorrow) that serves as the outcome of the event in progress. Similarly, the predicate ‘run a race,’ is normally interpreted as a simple outcome-associated predicate but in the context of (45) it comes to be interpreted as a predicate whose descriptive content applies not to the whole of an outcome-associated event but to its outcome alone. In this case, it is the the running of a race (tomorrow) serves as the relevant outcome of the event in progress.

What we want to understand, then, is how it is that these predicates can come to have such shifted interpretations both in the context of progressive and non-progressive claims. It will be helpful to start by considering how predicates like ‘run’ and ‘run a mile’ might come by these interpretations in non-progressive contexts. Consider the following claims in which these predicates are modified by ‘in’-adverbials:

(46) Mary ran in five minutes.
(47) Mary ran a race in five hours.

Note that these sentences have an interpretation on which they supply the time elapsed between the onset of an event and the realization of its associated outcome (characterized via the descriptive content of ‘run’ and ‘run a race,’ respectively). Here we have, again, predicates with outcome-oriented structures. It should be noted that, although available, these interpretations can be quite strained. This is not absolutely general, however, as the following sentence shows:

(48) The baby crawled in six months.\(^{32}\)

(48) tells us that the baby’s crawling was the outcome of some preceding event, which took six months. In this case, it is not at all difficult to conceptualize a developmental period that lasted six months and led to that outcome. In fact, this interpretation leaps to mind. It is, by contrast, difficult to conceptualize an event that lasted five minutes and led to a run by Mary, which is roughly what (46) requires (though it helps to imagine, for example, that Mary requires that much time to overcome her strong desire not to run).

The ‘in’-adverbial that combines with these sentences plays no small role in bringing about the possibility of these shifted interpretations. It appears that its interpretation as a phrase that measures the distance between the onset and outcome of the event represented by the predicate it modifies requires a predicate like ‘run’ to be interpreted as an outcome-associated (not non-outcome-associated) predicate. In both (44) and (45), modification by an ‘in’-adverbial opens up the

\(^{32}\) This example is due to James Martin.
possibility of mapping the descriptive content encoded by those predicates onto the outcome portions of the events they represent. This stands in stark contrast to the interpretations that the following pairs of sentences invite:

(49) Mary ran.

(50) Mary ran a race.

Taken together, this suggests that in thinking about how it is that predicates like ‘run’ and ‘run a race’ come to be associated with outcome-oriented structures in the context of futurate progressive claims, it will pay to closely consider the role of temporal adverbs in this process.

Interestingly, when the progressive combines with predicates like ‘run’ and ‘run a race’ these predicates need to occur with a future-oriented temporal adverb in order to receive futurate interpretations, while predicates like ‘arrive,’ which naturally have an outcome-oriented event structure, do not:

(51) Mary is running tomorrow.

(52) Mary is running a race tomorrow.

(53) The train is arriving (tomorrow).

But how exactly are future-oriented temporal adverbs implicated in shifting the interpretation of predicates like ‘run’ and ‘run a race’?

I propose that these future-oriented adverbs create a temporal anchor for characterized outcomes within the progressive environment (much like an ‘in’-adverbial
creates an anchor for outcomes outside of the progressive environment). When the progressive combines with an event predicate it indicates that a part of the event represented by that predicate is realized at a given time (though never its outcome). But that part of the event that is realized at the time at which the event is said to be in progress cannot be modified by a future-oriented temporal adverb. If ‘Mary is running tomorrow’ is true, clearly, it cannot be interpreted as meaning that a part of a certain type of event is underway in the present and it occurs tomorrow. So, we have the progressive, on the one hand, which indicates that a part of an event represented by its embedded predicate is realized at a given time and a future-oriented modifier, on the other, which modifies that predicate and indicates that some part of the event it represents happens in the future (relative to that time).

Now, since a future-oriented adverb like ‘tomorrow’ targets the characterized portion of an event and since a future temporal adverb cannot target that part of an event that the progressive represents as holding at a given time (and that may be any part up to but not including its associated outcome) future temporal adverbs have to be understood as modifying outcome-oriented predicates in the progressive environment. So, we have, as a result of the interaction between the progressive and future-oriented temporal adverbials, a recipe for interpreting the event predicates that appear in that context as having outcome-oriented event structures.

This also helps to shed light on why it is that predicates like ‘run’ and ‘run a race’ have to be accompanied by future-oriented temporal adverbs if they are to contribute to futurate progressive interpretations, while predicates like ‘arrive’ do not. When a predicate of events like ‘arrive’ combines with the progressive, the
descriptive content of that predicate already applies to its outcome. It has the sort of future orientation that predicates like ‘run’ and ‘run a race’ are shifted into having. So, the modification of this predicate with something like ‘tomorrow’ only makes specific when its outcome is slated to occur.

**Some Consequences of the Extended Displacement Analysis**

There are some loose ends to tie up before closing. In particular, I would like to note two consequences of the extended displacement analysis, which exactly parallel the consequences of the original analysis discussed in section 2.3. In my view, an appreciation of them deepens conviction that displacement is the key to accounting for the progressive in all of its variety.

I want to begin by revisiting the question of the source of the modal interpretations that attach to outcome-associated progressives. Recall that in my earlier discussion of this question, I defended a certain negative thesis, namely, that these modal interpretations cannot be explained exclusively in terms of the meanings of the natural language expressions that are implicated in their emergence. One of the possibilities that I considered but ultimately rejected was that these interpretations have their source in the meanings of outcome-associated predicates. This question might be raised anew in connection with the outcome-oriented predicates of events that occur in the context of futurate progressives. After all, regular and futurate progressive sentences differ with respect to the predicates of events that they embed. So we might ask, “Do those predicates that appear in futurate progressives also fail to give rise to modal interpretations outside of a displacement environment?”
What we see conforms exactly to the predictions of the displacement hypothesis. Outcome-oriented predicates fail to exhibit the modal interpretations connected to their counterparts in progressive contexts when they represent complete events, that is to say, events with non-displaced outcomes. So, for example, (54) is interpreted as indicating that a train did actually arrive at the station at noon (whatever conditions are required for that—modal or otherwise) and not, in addition, that it would have done so (again, whatever conditions are required for it to do so—modal or otherwise) across a range of inertial possible circumstances:

(54) The train arrived at the station at noon.

The same is true for a shifted predicate like ‘cross the room in a minute’ in the context of the following non-progressive claim (where we might imagine that Mary takes that action after a minute of deliberation concerning whether to do so):

(55) Mary crossed the room in a minute.

The truth of (55) does not require that that outcome was bound to occur, just that it actually did. In this respect, these predicates pattern just like their (simple) outcome-associated and non-outcome-associated counterparts.

The second question concerns the relevance of outcome-oriented predicates like ‘arrive’ to debates surrounding the modal status of progressive sentences and their relevance to the question of whether there is an entailment from sentences describing completed events to sentences describing those events as in progress. As I noted earlier, the displacement analysis predicts that there is not an entailment of
this sort in the case of claims that embed (simple) outcome-associated predicates like ‘cross the Atlantic.’ This can seem unintuitive and it can be difficult to construct natural cases that show this entailment pattern to be invalid. And though I do think that there are such counterexamples, explaining why they can be difficult to isolate is a matter of theoretical, not just rhetorical, interest. By the same token, if there were a class of sentences that yielded more clear counterexamples to this entailment pattern, it would be a matter of theoretical interest to explain why and to explain what makes them better suited to this purpose.

We are now in a position to see that there is a class of predicates, which clearly shows that this entailment pattern is invalid, namely, those predicates that are embedded by futurate progressives, notably achievement predicates like ‘arrive.’ So, for example, it is easy to imagine a scenario in which ‘The train arrived at the station’ is true, but in which its progressive counterpart, ‘The train was arriving at the station’ is not (perhaps because the train tracks were in such bad condition that it was not expected to make it to the station and only very narrowly did). Similarly, we can readily call to mind a situation in which ‘Mary won the match’ is true, but ‘Mary was winning the match’ is not simply because there was no moment when this outcome was bound to occur in the sense relevant to progressive interpretation. In fact, the failure of this entailment is so plain that, as far as I know, only one theorist has had the courage to claim that an entailment does hold for sentences that embed predicates of this sort\(^\text{33}\) (and even he later recanted\(^\text{34}\)).

\(^\text{34}\) See Szabó (2008).
Still, the surprising fact is that this class of predicates is not regarded as providing a fund of data for adjudicating debates about the modal status of progressive sentences. This is because it is assumed that predicates like ‘arrive’ represent instantaneous events in the context of claims like ‘The train arrived at the station’ but temporally extended events in the context of claims like ‘The train was arriving at the station,’ so that there are not appropriate event structures in place to support an entailment from the former to the latter. On this way of understanding the relevant event structures, the absence of this entailment reveals nothing of interest about the modal status of (certain) progressive claims.

If my view about these predicates is correct, however, they do provide us with clear counterexamples to this entailment pattern and, therefore, offer support for the displacement analysis and its view of the modal status of outcome-associated progressives. The reason that it is easier to generate counterexamples with predicates like ‘arrive’ than with predicates like ‘cross the Atlantic,’ I propose, is that unlike the former, the latter characterize the entire course of the events that they represent—including their developmental period. This can make it difficult to construct natural cases in which an event that falls under such a characterization unfolds though it does so in an accidental or non-modally robust way, particularly in those cases in which that characterization imposes incremental constraints on the development of an event (as with a predicate like ‘cross the Atlantic,’ in contrast to a predicate like ‘eat a third of the chocolates’).
5 Conclusion and Future Directions

This paper has focused on the solution to two problems of unification that stem from traditional ways of thinking about the semantics of the progressive. The first problem is one that has, until recently, been overlooked. It is to provide a semantics for the progressive that can generalize across progressive claims like ‘Mary is swimming’ and ‘Mary is crossing the Atlantic.’ This turns out to be a difficult problem because these progressives give rise to interpretations with very different temporal and modal properties. The second problem is to provide a semantics for the progressive that can be generalized even further—to cover futurate progressives like ‘Mary is crossing the Atlantic tomorrow,’ which exhibit other temporal and modal peculiarities.

Despite these differences, however, it is possible to provide an illuminating semantics for the progressive that generalizes across these progressive classes. The key strategy involves attributing a simple meaning to the progressive and relating these semantic complexities to the event predicates with which the progressive combines. On my view, the progressive tells us only that a state of a given type of event holds at a time. But though it contributes this meaning alone, it interacts in different ways with its embedded event predicates. According to the account I have developed, ‘Mary is swimming’ differs from ‘Mary is crossing the Atlantic’ insofar as the latter embeds an event predicate that is associated with an outcome and the former does not and ‘Mary is crossing the Atlantic tomorrow’ differs from
both insofar as it embeds an event predicate that is associated with an outcome to which its descriptive content exclusively applies. When outcome-associated predicates combine with the progressive, their outcomes are displaced and modal cognition interprets that displacement as modal displacement. Moreover, the differences in the modal interpretations that attach to futurate and non-futurate progressives can also be explained in terms of whether the descriptive content of embedded outcome-associated predicates applies exclusively to those outcomes (in which case we get futurate modal interpretations) or not (in which case we get non-futurate modal interpretations). That is what explains why we see the modal interpretations that we do in just those cases in which we do.

The successful extension of the analysis that I developed as a solution to the first problem of unification to the second problem of unification is of interest for a few reasons that are worth mentioning here. First, it offers very strong evidence in favor of my original analysis insofar as that analysis heavily constrained the space of solutions that counted as admissible for the second unification problem. Second, as I have already mentioned, my explanation for the modal interpretations that attach to predicates with displaced outcomes should be seen as revealing aspects of the modal structure of cognition, not the modal structure of language. So, the successful extension of my analysis to the case of futurate progressives can be seen as furthering our understanding of the interface between natural language and modal cognition. Finally, the extension of my analysis to the case of futurate progressives also suggests the possibility of further extensions.
Perhaps the most obvious candidate for a displacement style analysis is the simple futurate, which appears to have much in common with futurate progressives. Consider the following examples:

(56) The Yankees are playing the Red Sox tomorrow. (futurate progressive)

(57) The Yankees play the Red Sox tomorrow. (simple futurate)

In both cases, what we find is a modal condition requiring the possible realization of a certain planned eventuality (i.e., a Yankee-Red Sox game occurring tomorrow) across a range of possible circumstances. Consistent with this, it is clear that the actual occurrence of a Red-Sox game tomorrow is neither necessary nor sufficient for the truth of these claims.

There is no question that we should aim for a systematic explanation for these common modal interpretations. Despite this one finds in the literature on futurates, the view that the modal interpretation of (56) is due to the modal meaning of the futurate progressive and that the modal interpretation of (57) is due to the semantics of genericity.35 This last suggestion is especially puzzling. (57) concerns a particular planned eventuality and, for this reason, would appear to be strikingly unlike a generic claim. An extension of the displacement analysis to the case of simple futurates holds out the promise not only of a more revealing analysis of simple futurates but also a more systematic explanation of futurate interpretation.

Another obvious frontier is the imperfective system. The possible connection between the progressive (both in its regular and futurate guise), simple futurates,

35 This claim is defended at length in Copley (2009).
and the imperfective has been noted by a number of authors. And although there have been attempts at a unified modal analysis of the imperfective, the displacement analysis offers us a different way of thinking about what imperfective interpretations might have in common (e.g., displacement), a way of thinking about what they do not have in common (e.g., we might ask and provide different answers for questions like, “How do various imperfective forms come to be associated with outcomes, if they are?” “How do their outcomes come to be displaced, if they do?”) and a way of avoiding a commitment to modal meanings where they are unwanted—which is especially valuable given not all of the range of interpretations associated with the imperfective are modal (i.e., some regular progressives do not have modal interpretations).

We have seen the displacement analysis work for us in similar ways throughout this paper. Beyond these particular applications, however, the analysis invites us to consider the possibility that there are deep and systematic explanations for aspects of interpretation that are not ultimately anchored in natural language expressions and that attention to the limits of language can lead us to ask more fruitful questions about what the contributions of language are.

36 See for example, Higginbotham (2009a), Ippolito (2004), Copley (2009), Dowty (1979), and Cipria and Roberts (2000).
Chapter 5

Conclusion:

Modality as a Window into Cognition

It is standardly assumed that expressions of modality in natural language are in some way related to our capacity for modal thought. That is to say, the theory of modality in natural language semantics is assumed to be a theory that has consequences for our understanding of the connection between language and extra-linguistic modal cognition. However, since this theory has for most of its history been pursued without much serious attention to extra-linguistic cognition (just ‘cognition’ hereafter) it has been entirely unclear what those consequences are.

It is only very recently, against a swell of research addressing broad questions about the architecture of cognition and, in particular, about the interface between language and cognition,\(^1\) that a concrete proposal concerning the nature of this relationship has emerged. Angelika Kratzer, one of the main pioneers of the theory

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\(^1\) I have in mind those theorists (particularly syntacticians) who are working within the Minimalist program and are guided by the hypothesis that the faculty of language (narrowly construed) is only as complex as it needs to be to meet the demands of the performance systems with which it interfaces.
of modality in natural language semantics, has ventured the hypothesis that modal
cognition comprises one of our ‘core knowledge’ systems (2013). These are early
developing and specialized systems (e.g., domain- and task-specific systems) that
form the core of our mature cognitive abilities. A core modal system is, then, a
system that enables pre-linguistic infants and adults alike to engage in some form
of modal thought, however rudimentary, and on the present proposal, is assumed
to enter into contact with our faculty of language (as it is called) at some point en
route to intellectual maturity.\(^2\)

These assumptions invite many questions about how these systems enter into
contact or interface with one another. How, for example, are we to understand the
way in which natural language expressions access our capacity for modal thought
and which do? In broad outline, the view defended by Kratzer is that natural lan-
guage *modals* recruit resources from modal cognition (so that it is a kind of cog-
nitive outsourcing that brings the systems together). The modal auxiliary ‘can,’
for example, is analyzed in terms of a quantificational component (an existential
quantifier that binds world variables) and a domain projection variable (providing
the domain over which that quantifier quantifies). This domain projection variable
recruits from modal cognition the capacity to project possibilities (represented as
possible worlds) relative to some worldly “anchor” (which we can think of simply
as a part of the actual world).\(^3\)

\(^2\) In keeping with the program of research into these core knowledge systems, Kratzer argues that
human and non-human animals alike possess a core modal system. This program would further
suggest that whatever differences there are between human and animal mobilizations of this system
are due to interactions between the faculty of language and this system.

\(^3\) This last point reflects Kratzer’s commitment to her Modal Anchor Hypothesis which says that
modal projection always takes place from syntactically provided event variables.
To make the details of the proposal a little more vivid, let’s consider it in the context of a richer and more concrete semantic representation. Pictured below is a container with several balls contained within it. The container has an opening through which any of the balls within may exit. Now consider the sentence in (1), which we may use to describe an aspect of this situation, and the semantic representation that Kratzer proposes for it in (2).

(1) The blue ball can exit.

(2) $\exists e (\text{now}(s_0)(e) \land \exists w (w \in f_{\text{factual}}(e) \land \exists e'(e' \leq_{\text{part}} w \land \text{later}(e)(e') \land \text{exit(\text{-blue-ball})(e')})))$

The representation in (2) tells us that there is an event, $e$, that is contemporaneous with the utterance situation, $s_0$ (in the present), and that there is some world, $w$, in the set of worlds that are possible relative to the facts that pertain to $e$ and there is some event, $e'$, that is a part of $w$ occurring after $e$ and is also an event of the blue ball exiting. According to Kratzer’s proposal, the component of the semantic representation in (2) that recruits resources from modal cognition is the domain
projection variable ‘f\textsubscript{factual}.’ In the case just considered, this variable is crucially involved in yielding the set of worlds that are possible relative to the facts that pertain to the event represented by e. It does this, though, by “issuing instructions” to modal cognition to project possible continuations from that event.\textsuperscript{4}

Many aspects of this proposal deserve comment, but what deserves the most critical attention, in light of the modal interpretations discussed in my dissertation, is its exclusive attention to modal vocabulary. Despite the fact that the proposal addresses itself to questions concerning the interface between language and modal cognition, it only considers the possibility that modal expressions recruit resources from or impose demands on modal cognition. It does not take into account the possibility that non-modal expressions may engage modal cognition in a way that yields interpretive effects (where this does not involve placing that system under certain demands). It is worth emphasizing how curious this aspect of the proposal is given that it assumes the existence of an interface or two-sided point of contact between language and modal cognition and modal cognition is assumed to contribute to the interpretation of language. To concentrate on the demands placed by language on that cognitive system is, in effect, to think about the interface in a way that looks out from language alone.

But why think that modal cognition contributes to the expression of modality only insofar as language makes certain demands of it? If the theory of modality is to

\textsuperscript{4} Kratzer further speculates that while some elements of the representation in (2) are to be categorized as non-logical building blocks along the lines of the domain projection variable (e.g. the part-whole relation \(\leq\text{part}\)) and, like ‘left of,’ are to be thought of as drawing resources from extra-linguistic cognition, others are to be characterized as logical building blocks (e.g. including quantifiers and connectives) and are to be thought of as being contributed by a dedicated semantic component that comprises a part of the language faculty.
explain how expressions in natural language come to be systematically associated with modal interpretations (a restriction to ‘modal’ expressions here would clearly be tendentious) and if we are guided by the idea that there is an interface between language and modal cognition and that modal cognition makes contributions to interpretation, we should not neglect the possibility that modal cognition makes contributions to interpretation in the absence of demands that it do so.

The expressions that have occupied my attention throughout this dissertation bring this possibility to life. They provide us with examples of expressions that yield modal interpretations despite the fact that they do not have modal meanings that encode these interpretations and that explain their emergence. To bring ideas together, these interpretations reflect the contribution of modal cognition, though it is not—where they are concerned—responding to the demands of language. This is an idea I have tried to capture with the phrase *modality without modals*, a phrase that will sound paradoxical only as long as one thinks of the interface between language and modal cognition from the side of language alone.

I think, though, that there is a deeper source of motivation for thinking that modal interpretations of natural language expressions have to be routed through modals, which, if correct, that suggests that there are deeper conceptual barriers to understanding the interpretations with which I am concerned. After all, it is quite intuitive to think that modals play this role because they alone have meanings that latch onto modal concepts. That gives us some grip on their connection to that system but also, importantly, on that system’s use of natural language meanings (i.e. on the legibility or usability of these meanings or “instructions”). This sug-
gests a very straightforward (if simplistic) model for thinking about the connection between language and modal cognition and, more generally, for thinking the contact between language and cognition. It appears to be much less straightforward, by comparison, to think about the connection between non-modal expressions and modal cognition and to think about how those expressions can be used by it.

If there is a view suggested by these ideas it is that modal cognition constitutes a particular domain of thought and, for that reason, needs to deal with representations that are specific to the modal domain. A non-modal expression does not represent the sort of expression that could establish contact with this system and that could be used by it. This conception of the interface between language and modal cognition of course generalizes so that, across the board, cognitive contributions to interpretation would be routed through expressions that latch onto the concepts that are proprietary to those systems.

There is, in fact, very good evidence to suggest that core knowledge systems are systems with their own proprietary representations and borders that pose obstacles to the free exchange of information (in much the way that, in the philosophical tradition, modular cognitive systems are thought to pose barriers to the free exchange of information). Animal navigation systems, provide us with a compelling illustration of this. For all their sophistication, they betray very surprising limitations.

Experiments conducted by Biegler and Morris (1993) (1996), for example, have shown that rats can learn to search for food at a particular landmark (e.g. at a pole) and in a particular geocentric position (e.g. the northeastern corner)
but have difficulty learning to search for food at a location bearing a particular
geocentric relation to a particular landmark (e.g. northeast of the cylinder).

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  X

“At the north east corner”
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  X

“At the cylinder”
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  X

“Northeast of the cylinder”
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A very similar cognitive deficit appears in the navigation experiments conducted
by Cheng (1986) and Gallistel (1990). In their experiments, rats were shown the
location of food, were disoriented, and were then faced the task of reorienting
themselves and relocating the food. What they found was that the disoriented rats
readily reoriented themselves using geometric information specific to their spatial
environment but not by using non-geometric information despite the fact that they
can make use of this information outside of the reorientation task. So, although
the rats could represent food as being located ‘to the left of a long wall,’ they could
not readily represent food as being located ‘to the left of a white wall.’ In general,
Cheng and Gallistel’s rats, like Beigler and Morris’, showed limited combinatorial
capacities.
The signature limitations of core knowledge systems are, however, in the most dramatic fashion, transcended in animals that possess natural language. Language appears to enable the domain-general use of representations, allowing for the flexible combination and use of representations that would otherwise remain isolated within in domain specific systems. This is what enables adults, for example, to navigate flexibly in reorientation tasks—to make use, that is, of integrated geometric and non-geometric representations, a capacity that is inhibited as soon as their productive speech capacities are inhibited (Hermer-Vazquez et al. 1999) and which is not in evidence in very young children (Hermer and Spelke 1994) (Hermer and Spelke 1996) until they show mastery of spatial expressions like ‘left’ and ‘right’ (Hermer-Vazquez et al. 2001).

The conception of natural language that is motivated by this line of research helps to enlarge our sense of the possibilities for contact between language and cognition.5 Rather than think, for example, that language accesses the resources of a cognitive system (e.g., modal cognition) through an expression (e.g., a modal) that is associated with some representation belonging to it (e.g., a modal concept), we can now consider the possibility that natural language expressions—in virtue of their use as domain general representations—can come into contact with and be used by systems to which they have no proprietary or native connection.

What I propose, then, is that we think of the modal interpretations that attach to expressions with displaced outcomes as reflecting the non-native use of expres-

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5 I am grateful to James Martin for many helpful conversations about this line of research and its possible bearing on the interpretations investigated in my dissertation.
sions by modal cognition. I assume here no deep distinction between, for example, the use (on the part of a modular navigation system) of a natural language expression that encodes both geometric and non-geometric information, which results in flexible navigation, and the use (on the part of modal cognition) of non-modal information, which results in the projection of certain possibilities from certain sorts of events. There may be reasons to draw such a distinction, but for now, in the absence of any such reasons, I am inclined to think that this is an illuminating way of understanding what it is for language to serve thought, a theme that appears in Chomsky's work (2013), for example, and seems to find a home in the line of research cited here.
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Perception and Performance 1.


