The progressive and verbs of creation
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The Progressive and Verbs of Creation[*]

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Abstract

    This paper investigates what ontological commitments are carried by certain sentences in the progressive. I focus specifically on telic sentences in the progressive with verbs of creation. First, I argue against prominent extensionalist analyses given by Parsons and Szabó. Next, I develop and defend a competing intensional analysis. This analysis captures apparent intensional phenomena with certain sentences in the progressive while maintaining an extensionalist analysis of the progressive itself. I distinguish three features of the meanings of sentences like 'Alice was baking a cake': first, the perspective taken on the event contributed by the progressive aspect; second, the intensionality in the interpretation of the verb's internal argument; and third, the telicity and modality manifest at the level of the verb phrase and sentence. The proposed account of the progressive and verbs of creation raises interesting broader questions concerning our conceptualizations of change and how, and to what extent, they are represented in the grammars of natural languages.

Some sentences, like (1), carry their ontological commitments on their sleeves.

(1)   Unicorns exist.

Most sentences are not so forthcoming. This paper examines what ontological commitments are carried by certain sentences in the progressive — specifically, by sentences like (2) describing things coming into existence.

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(2)   Alice was baking a cake.

I consider the following questions:

- Does an adequate semantics for the progressive, or at least certain sentences in the progressive, require the resources of an intensional semantics? Does it require us to get "enmeshed in the intensional"? (DAVIDSON 1967b: 22)

- If not, does it require certain other ontological commitments of its own?

These questions are important for our understanding of the semantics of the progressive, but they are also of broader interest. Our investigation can help us gain insight into the extent and nature of intensional phenomena in natural language, the metaphysical commitments of our linguistic practices, how we conceptualize things coming into existence, and the connections between modality, aspect, and aspectual categories.

What could be ontologically puzzling about the progressive? Intuitively, verbs in the progressive describe events that are "in progress" or "going on." Consider the following scenario. Alice decides to bake a cake. She gathers the ingredients and starts mixing away. Before she finishes, her friend Bert calls to make plans. Alice leaves her cake-making behind — she screwed up the proportions anyhow — and heads out with Bert. Since Alice never finished making the cake, we cannot talk about her baking a cake as something that has already occurred; we cannot use the perfective aspect and say

(3)   Alice baked a cake.

But we can talk about her baking as an event that was in progress; we can use the progressive and say (2) 'Alice was baking a cake'.

What is involved in such talk about processes of creation? Extensional accounts avoid utilizing intensional notions in analyzing sentences like (2). But they do so at the potential cost of accepting the existential commitment of the direct object position. Extensional analyses predict that progressive sentences like (2) entail existential claims like those in (4)–(5).

(4)   There was a cake Alice was baking.

(5)   There was a thing Alice was baking.

The extensionalist account in PARSONS 1990 bites the bullet and accepts that (2) entails (4). According to Parsons, although Alice never completed her baking, there

was still a cake she was baking. SZABÓ 2008 argues that extensionalists can avoid Parsons's apparently problematic prediction. But Szabó is not ontologically innocent. According to Szabó, although there was no *cake* Alice was baking, there was still some *thing* she was baking: a "cake in progress." Szabó's semantics validates the entailment from (2) to (5) by treating the truth of progressive sentences like (2) as requiring the existence of "objects in progress," entities not identical to their non-in-progress counterparts or to the parts thereof. Does having an adequate analysis of sentences like (2) require accepting such peculiar entities in our ontology?

I will argue that it does not. Though I agree with extensionalists that a modal account of the progressive itself isn't necessary, I will argue that intensional resources are needed to capture phenomena involving certain sentences in the progressive. I focus in particular on accomplishment predicates with verbs of creation, like 'bake a cake'.[1] Focusing on verbs of creation makes salient the existential commitments of extensional analyses, and brings into relief more general puzzles concerning our conceptualizations of change and how they are represented in the grammars of natural languages.

The paper is organized as follows: §1 argues against the prominent extensionalist accounts in PARSONS 1990 and SZABÓ 2008. §2 develops and defends a competing intensional analysis, and §3 briefly compares it to several existing alternatives. My proposed analysis clearly distinguishes three features of the meanings of sentences like (2) 'Alice was baking a cake': first, the perspective taken on the event contributed by the progressive aspect; second, the intensionality in the interpretation of the verb's internal argument; and third, the telicity and modality manifest at the level of the verb phrase and sentence. This account of the progressive and verbs of creation raises interesting questions at the syntax/semantics/pragmatics interfaces — e.g., concerning aspect and aspectual class, the origins of telicity, compositionality, and the role of context in interpretation. §4 concludes and considers several ways of developing the analysis in §2 in light of broader work on such questions. A technical Appendix briefly illustrates one way of implementing the analysis

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[1] Following the familiar aspectual classification from VENDLER (1957, 1967), *accomplishments* ('bake (a cake)', 'build (a house)') can be treated as containing a preparatory stage and a culmination point or goal. Accomplishments can be contrasted with achievements, which contain a culmination point or goal but no preparatory stage ('die', 'realize'). I will have little to say about about states, which lack a goal or distinguishable stages (they're homogeneous down to instants; 'love', 'believe'), or about activities, which lack a goal but contain distinguishable stages (they're homogenous only down to intervals of a relevant duration; 'run', 'swim'). On aspectual classifications, and the relation between lexical aspect (understood as a property of verbs as lexical items) and aspectual class more broadly (understood as a property of VPs and sentences), see also, e.g., VERKUYL 1972, 1993, DOWTY 1979, BACH 1986, PARSONS 1990, KRIFKA 1992, 1998, PARTEE 1999, KRATZER 2004, ROTHSTEIN 2004.

from §2 in a formal syntax and semantics.

1 Extensionalist analyses

1.1 Parsons and events in progress

Following DAVIDSON 1967a, it is standard to treat verb phrases as predicates of events. In a complex verb phrase like 'stab in the back with a knife', the adverbial modifier 'in the back with a knife' doesn't build arguments or adjuncts into the relation picked out by the verb; 'stab', 'in the back', and 'with a knife' are separate predicates of events. PARSONS 1990 extends this event semantics by introducing two primitive predicates of events — 'HOLD' and 'CUL' — contributed by aspect. On Parsons's view, the progressive semantically contributes the predicate 'HOLD'; it restricts the denotation of the verbal predicate to events that are in progress. The perfective semantically contributes the predicate 'CUL'; it restricts the verbal predicate's denotation to events that are completed. Roughly, (2) describes Alice's cake baking event as holding, whereas (3) describes this event as culminated. The predicted truth conditions for (2) and (3) are given in (6) and (7), respectively. (The predicates 'AGENT' and 'THEME' introduce thematic roles (HIGGINBOTHAM 1985, PARSONS 1990).)

(6) $\exists e \exists t [t < \text{Now} \wedge \text{baking}(e) \wedge \text{AGENT}(e, \text{Alice}) \wedge \exists x [\text{cake}(x) \wedge \text{THEME}(e, x)] \wedge \text{HOLD}(e, t)]$

(7) $\exists e \exists t [t < \text{Now} \wedge \text{baking}(e) \wedge \text{AGENT}(e, \text{Alice}) \wedge \exists x [\text{cake}(x) \wedge \text{THEME}(e, x)] \wedge \text{CUL}(e, t)]$

(6) says that (2) is true iff there is an event that is a baking event in which Alice is the baker, that is of a cake, and that was in progress at some time in the past. (*Mutatis mutandis* for (7).) Introducing the distinct predicates 'HOLD' and 'CUL' helps Parsons avoid the (misleadingly named) "imperfective paradox"; it allows him to avoid predicting that progressive sentences entail their perfective counterparts (BACH 1986, DOWTY 1977, 1979). The progressive sentence (2) introduces the predicate 'HOLD', whereas the perfective sentence (3) introduces the predicate 'CUL'. So, (2) won't entail (3) as a matter of logical form.

Parsons's truth-conditions in (6) predict that (2) entails (4): (6) entails that there exists a cake, namely, the cake that Alice's baking event is of. This is counterintuitive. Alice only began mixing the ingredients. Cake batter doesn't make for a cake.

Parsons is aware of this sort of objection. He bites the bullet and accepts that progressive sentences like (2) with verbs of creation do have such existential com-

mitments. Though Alice didn't finish her baking, there is still an "unfinished" or "incomplete" cake that exists (PARSONS 1990: 173–176). This reply is insufficient. Parsons may be right that in certain contexts we are willing to call incomplete food-stuffs 'cakes'. But what is at issue is whether, for *any* uncompleted cake-baking event in virtue of which (2) is true, the product of that event counts as a cake. The question is whether (2) entails the existence of a cake as a matter of logical form and conventional meaning.

Consider a modified version of our case. Suppose Alice is attempting a Guinness World Record for most cakes baked in two hours. The previous record was, say, ten cakes. Alice has successfully completed nine cakes and, with time winding down, starts baking her tenth when Bert, pest that he is, interrupts. Lining up the results of Alice's baking, it would be incorrect to say that Alice tied the record and baked ten cakes. She baked nine. As Szabó notes in a related context, "Incomplete [cakes] are not [cakes], just as fake diamonds are not diamonds and retired police officers are not police officers" (2008: 511).

The lesson I want to draw from Parsons's analysis is this: While DPs like 'a cake' in verb phrases of creation can have existential commitments, we shouldn't build those existential commitments into the semantics of these constructions.

1.2   Szabó and objects in progress

Szabó agrees, against Parsons, that (2) doesn't entail the existence of a cake. But he maintains that sentences like (2) have existential commitments. On Szaboó's extensional analysis, though (2) doesn't entail (4), it still entails the weaker (5) 'There is a thing Alice is baking': "What distinguishes the direct object position of 'was [baking]' from ordinary contexts is not that it blocks the raising of the indefinite article but that it blocks the raising of an arbitrary predicate combined with that article" (2008: 500; *cf.* BENNETT 1977: 508). Specifically, Szabó proposes that indefinite DPs in the direct object position of verbs of creation entail the existence of "objects in progress." For (2) to be true, on this view, Alice's baking needn't produce anything worthy of being deemed a cake; but there must at least be some *thing* that Alice counts as baking: a "cake-in-progress." (What are objects in progress? Better not to ask. They are concrete material objects not identical to their non-in-progress counterparts. Beyond that, Szabó doesn't say, and takes further requests for clarification as spurious calls for reduction (2008: 515–516). I return to this issue below.)

To capture these truth-conditions, Szabó introduces into the logical form a predicate modifier 'IP' whose semantic value is a function mapping Fs to Fs-in-progress. For instance, '$(\text{IP}(\text{cake}))(x)$' is true iff x is a cake-in-progress. The predicted truth-

conditions for (2) are roughly as in (8). (Szabó also introduces an 'IP' predicate modifier of events, whose semantic value maps events to their in-progress counterparts (see also SZABÓ 2004). But this isn't a strict departure from Parsons; it was suggested, albeit tentatively, in PARSONS 1990: 171.)

(8) $\quad \exists e \exists t[t < \text{Now} \wedge (\text{IP}(\text{baking}))(e) \wedge \text{AGENT}(e, \text{Alice}) \wedge \exists x[(\text{IP}(\text{cake}))(x) \wedge \text{THEME}(e, x)] \wedge \text{HOLD}(e, t)]$

This says that (2) is true iff there is an in-progress baking event in which Alice is the baker, that is of a cake-in-progress, and that held at some time in the past. Importantly, Fs-in-progress needn't be Fs; 'IP' blocks exportation of the predicate it modifies (2008: 515):

(9) $\quad \exists x[(\text{IP}(\text{cake}))(x)] \nvdash \exists x[\text{cake}(x)]$

So, the truth of (2) implies that there is a *thing* — a cake-in-progress — that Alice is baking; but it doesn't imply that this thing is a cake. (2) entails (5) but not (4).

Szabó's account avoids the counterintuitive entailments predicted by Parsons. But there are problems. First, there are cases suggesting that even the weaker exportation principle validated on Szabó's account is invalid: there can be processes of creation where there isn't even some thing that exists and is being created. Suppose Faith has clear intentions to build a computer, and when Faith has definitive intentions to do something, she does it. She has completed this sort of project before, and she knows what to do. She has called various hardware and electronics stores to confirm that they have the relevant parts. She is en route to the store to purchase some materials when Gary asks her why she is going. Faith says:

(10) I am building a computer.

This seems true.[2] However, Szabó's account predicts that (10) is false; no in-progress-computer exists. The worry for Szabó is that an agent's intentions can sometimes suffice to make a progressive sentence with a verb of creation true. The existence of an in-progress-object, which the act of creating is of, needn't be necessary.

Of course, Szabó will deny the intuition that (10) is true. Given that Faith has made all the preparations for her project, she might *say* that she is building a com-

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[2] Preliminary data supports this judgment. In an online questionnaire, thirty-one native English speakers were given the above scenario and were asked whether they agreed or disagreed that what Faith said was true, using a Likert scale from 1 ('completely disagree') to 7 ('completely agree'). Nearly half of the informants responded "completely agree"; the average rating was 5.84 (SEM = .95). Thanks to an anonymous referee for suggesting that a survey be run.

puter. But, the objection goes, that would be strictly speaking false; Faith was only about to be building a computer (Szabó 2008: 509; *cf.* Parsons 1990: 174–176). I grant that interpreting data about truth value judgments requires care. It can especially be difficult when one party insists on raising the standards (Lewis 1979, 1996). Nevertheless, I take it that, other things equal, it would be theoretically advantageous to take at face value the intuition that (10) is true in the original context. If this is right, cases like Faith's pose a problem for any extensional analysis of verbs of creation in the progressive. We shouldn't treat existential generalization from the direct object position of a progressive sentence with a verb of creation as semantically valid.

A second objection to Szabó's account targets his use of 'IP' as a predicate of events. Consider (11) (a modified version of one of Szabó's own examples).

(11)   Harry is enumerating the primes today.

There is a false reading of (11) on which it entails that Harry — an ordinary finite creature like us, unable to complete supertasks — will finish enumerating the primes at some time today. (Compare: 'Today we are baking a quiche', as uttered by a Home Ec teacher to begin her class. There may be other readings of these sentences that lack these entailments.) On Szabó's analysis, the truth-conditions for (11) might be roughly as in (12), where '*today*' denotes the set of times in the day of the context:

(12) $\exists e \exists t[(\text{IP}(\text{enumerating}))(e) \wedge \text{THEME}(e, \text{the primes}) \wedge \text{HOLD}(e, t) \wedge$
        $\text{CUL}(e, t') \wedge t' > t \wedge t' \subset \textit{today}]$

The problem for Szabó is that these conditions obtain in our scenario. Though there isn't an event of enumerating the primes that culminates today, there is an in-progress enumerating event that does. Szabó's analysis fails to capture the false reading of (11).

In certain cases it is hard to know precisely what is predicted by Szabó's account absent some story about the identity criteria for objects-in-progress. Unfortunately Szabó refuses to offer such a story, and he takes requests for clarification as spurious calls for reduction (2008: 515–516). I would have thought that asking what sort of thing is denoted by a novel primitive predicate needn't be a call for reduction, but I won't press this point here. My worry is that plausible assumptions about what objects-in-progress would be lead to incorrect predictions.

Although Szabó's account avoids the original version of the imperfective paradox — there is no entailment from certain progressive sentences to their perfective counterparts — his introduction of objects-in-progress leaves him vulnerable to a

related charge. Given the truth-conditions in (8), (2) entails that there is some thing — a cake-in-progress — that Alice's baking event was of. Though Alice didn't finish baking a cake, she did stop baking when she was interrupted by Bert. So, there exists a state of having baked, and there exists a cake-in-progress that this state was of. The truth-conditions for (13), stated in (14), are satisfied, given Szabó's analysis of the perfective (2008: 511–514; *cf.* Szabó 2004):

(13)   There is some thing Alice baked.

(14) $\exists e \exists t \exists x [t < \text{Now} \wedge \text{baking}(e) \wedge \text{AGENT}(e, \text{Alice}) \wedge \text{THEME}(e, x) \wedge \text{HOLD}(e, t) \wedge$
        $\exists s [\text{having-baked}(s) \wedge \text{IN}(e, \text{Alice}) \wedge \text{THEME}(s, x) \wedge \text{CAUSE}(e, s)]]$

Szabó's account thus falls prey to a version of the imperfective paradox: In any circumstance in which a progressive sentence with a verb of creation is true, an associated existentially generalized perfective sentence is also true.

Szabó briefly anticipates this sort of objection. He writes, "when the building of a house is halfway done then one has already built part of a house, but that is not to say that one has already built a house in progress" (2008: 516). This is ad hoc. Absent some story about what objects-in-progress are, Szabó's response amounts to nothing more than a brute denial.

A related problem concerns processes of creation of impossible objects. One cannot make a square circle. Nonetheless Ian wants to give it a try. Pencil in hand, he draws a dot when he is interrupted. We cannot describe what he was doing thus:

(15)   Ian was drawing a square circle.

Ian was trying to start drawing a square circle; it's not the case that he was drawing one.

Szabó's analysis seems to incorrectly predict that (15) is true. Plausibly, there was an in-progress drawing event by Ian that was of a square-circle-in-progress. To avoid this prediction Szabó might deny that there are such things as square-circles-in-progress. He might say that impossible objects make for impossible objects-in-progress. But this move should seem unattractive from Szabó's own point of view. Using intensional notions to delimit the class of objects-in-progress is dialectically awkward given Szabó's commitment to an extensionalist analysis. It makes the account of objects-in-progress rely on a primary intuition driving modal accounts of the progressive — namely, that "nothing is happening unless it can eventually happen" (Szabó 2008: 502; *cf.*, e.g., Dowty 1977: 57, Portner 1998: 767, Higginbotham 2005: 334).

Such modal constraints aside, denying that Ian's intentions to draw a square cir-

cle suffice to make his dot count as a square-circle-in-progress seems unmotivated. Why should two bricks on the ground placed with the intention of making a house count as a house-in-progress, but a dot on a piece of paper drawn with the intention of making a square circle not count as a square-circle-in-progress? Suppose Jane and Keith are in a ceramics class. Jane starts molding her clay with the plan of making a pot; Keith starts molding his with the plan of making a gargoyle. Before they get very far, they are interrupted, leaving behind qualitatively identical lumps of clay. The following seem true:

(16)   Jane was making a pot.

(17)   Keith was making a gargoyle.

Accordingly, on Szabó's account, Jane's lump is a pot-in-progress, and Keith's lump is a gargoyle-in-progress. What could make it the case that Jane's lump is a pot-in-progress and Keith's lump is a gargoyle-in-progress given that that the lumps are qualitatively identical? As far as I can see, the only thing that could make Jane's and Keith's qualitatively identical lumps be instances of different types are their respective intentions. But if Szabó needs to treat intentions as playing this sort of individuating role, then it would be ad hoc for him to deny that Ian's dot drawn with the the intention of drawing a square circle is an in-progress-square-circle. By his own lights Szabó ought to accept the existence of objects-in-progress that have impossible non-in-progress counterparts. So, by his own lights he ought to accept that his account incorrectly predicts that (15) is true.[3]

Szabó motivates his use of 'IP' as a modifier of predicates of objects on the ground that we already have independent need for 'IP' as a modifier of predicates of events (Szabó 2008: 515). This can give a spurious air of familiarity with the notion of an object-in-progress. But the two uses of 'IP' are independent. That we understand one doesn't mean we understand the other.

In this section I have raised challenges for two prominent extensional analyses of progressive sentences with verbs of creation. The objections raised against these particular analyses suggest a general problem for extensional accounts. Progressive sentences describing things coming into existence can be true even if there is no existing thing — whether an object or an object-in-progress — that is the theme of the event. Talk about processes of creation needn't entail the existence of any created thing. These considerations motivate pursuing an alternative intensional account.

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[3]Analogous critiques could be raised against related mereologically-based extensional analyses of the progressive (e.g., Bach 1986, Krifka 1992, 1998), insofar as they require an account of what it is for there to be part of an event of (e.g.) baking a cake without a complete event of baking a cake.

But what form should such an account take? Does the progressive itself deserve a modal treatment? Or is the intensionality contributed by some other element of the verb phrase or sentence? I turn to these questions in the next section.

2   An intensional alternative

In this section I develop an alternative intensional analysis of telic sentences in the progressive with verbs of creation. The primary aim is to capture the intuitively correct truth-conditions at the sentence level. In §4 I briefly consider several issues arising in implementing the proposed analysis in a compositional semantics.

2.1   Ongoingness and the progressive: 'HOLD'

A common way of capturing the apparent intensionality of sentences like (2) 'Alice was baking a cake' is to give a modal account of the progressive itself.[4] Modal accounts treat the progressive as a modal operator 'PROG' that expresses quantification over a set of relevant worlds. To a rough first approximation, 'PROG(ϕ)' is true iff 'ϕ' is true at all (/some) worlds consistent with those circumstances relevant to whether the event in question is completed and where no obstacles prevent the event from culminating (more on this in §2.3).

Semantically modal expressions concern possibilities that needn't be actual. A worry with modal accounts of the progressive itself is that certain verb phrases in the progressive seem to lack any recognizable modal element in their conventional meaning. Sentences like those in (18), for instance, which describe activities or processes, don't seem to be about possibility or necessity in any sense.

(18)   a.   Lisa is running.
         b.   Mary is pushing a cart.
         c.   The candle is burning.

There are running events, pushing-a-cart events, burning events, etc. that occur without any aim. This counts against analyzing (18) in terms of possible outcomes that are successful or uninterrupted. Imagine a community of speakers with no (other) modal idioms — no attitude verbs, no modal auxiliaries, no accomplishment verbs or verbs of creation, etc. Suppose we have given an extensional semantics for

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[4]See, e.g., DOWTY 1977, 1979, ASHER 1992, LANDMAN 1992, BONOMI 1997, PORTNER 1998, HIGGINBOTHAM 2005.

their language. We then discover that they have activity verbs which they use to describe events that are going on. Should we feel compelled to introduce an intensional semantics to capture these new elements of the language? It seems not. Put another way, if our language lacked verbs of creation or accomplishment verb phrases, would we feel compelled to give a modal analysis of sentences like (18)? Analyzing the progressive itself in modal terms seems to mischaracterize what is common to all instances of the progressive.

This argument is far from decisive. For instance, consider a modal account like the one in PORTNER 1998, which integrates the treatment of the progressive into a general Kratzerian (1981, 1991) ordering semantics for modals. A modal's domain of quantification is determined by two contextually supplied parameters: a set of propositions describing a body of relevant facts (a "modal base"), and a set of propositions describing a relevant ideal (an "ordering source"). In the case of the progressive operator, the quantificational domain would be set by a modal base describing the relevant circumstances, and a "non-interruption" ordering source describing possibilities in which the event in question isn't interrupted. A modal theorist might attempt to capture the apparent lack of modality in sentences like (18) in terms of conceptual constraints on the sorts of modal bases and ordering sources supplied for the interpretation of progressive activity sentences.[5] One might argue that because activities are internally homogenous, if an activity is going on, nothing could "interrupt" it in the sense of preventing it from having occurred; thus, progressive activity sentences call for an empty ordering source. The emptiness of the ordering source, along with the general constraint that modal bases be realistic, would imply that for any activity verb V, 'x is V-ing' entails 'x V-ed' (assuming we are restricting our attention to events that include at least one minimal activity event (DOWTY 1979)). Given a suitably rich specification of the "relevant circumstances" in the interpretation of activities, the reverse entailment would hold as well. In light of these entailments, it would be no surprise that we fail to notice the modality in sentences like those in (18).

I raise this option for the modal theorist just to put it aside. Proper evaluation of it would require a more detailed specification of the contents of modal bases (and ordering sources) in concrete examples. One would want to hear more about how the "relevant circumstances" of activities are characterized so that progressive activity sentences will (*a*) entail their perfective counterparts as a matter of conventional meaning, and (*b*) be entailed by their perfective counterparts even without a non-empty ordering source. Absent such an account one may be left wondering (e.g.)

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[5]Thanks to an anonymous referee for suggesting this line of reply.

why the sense of modality vanishes in sentences like in (18) but not in other modal sentences with empty ordering sources. I will neither attempt to offer such an account nor argue that none can be given. Instead, for the remainder of the paper I would like to put this option for the modal theorist aside, and take the above argument against modal accounts of the progressive itself at face value.

I am sympathetic with the extensionalist intuition that what distinguishes progressive sentences from their perfective counterparts is that they concern events that are ongoing, or in progress, rather than events that have already occurred. In this spirit I will follow Parsons and treat the progressive as contributing the predicate of events 'HOLD'.[6] This isn't to spurn intensionalist analyses of all progressive sentences. The suggestion is simply that we should introduce intensional resources to capture just those types of progressive sentences that require them. In what follows I will offer a way of capturing the intensionality of sentences like (2) with a simple extensionalist treatment of the progressive itself.

2.2 Intensionality and the direct object: 'THEME$_I$'

I suggest that the verb introduces an intensional thematic predicate for the interpretation of its direct object in sentences like (2) 'Alice was baking a cake'.[7] Call this predicate 'THEME$_I$'. This intensional 'THEME$_I$' predicate will relate an event to some sort of intensional object, rather than to some existing entity. But what type of intensional object? An individual concept? A property? A proposition?

To help us gain traction on this question, let's consider the following objection from Szabó against intensional analyses (2008: 508–509). Szabó argues that there is a contrast in the availability of demonstrative reference between progressive sentences with verbs of creation and progressive sentences with standard intensional verbs: If I successfully complete a general search for a house I began last October, I cannot point to it and say (19); but if I successfully complete the building of a house

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[6]For further discussion of this feature of the progressive, see, e.g., VLACH 1981, LASCARIDES 1988, 1991, MITTWOCH 1988, HALLMAN 2009; *cf.* Landman's (1992: 1) "classical wisdom" on the progressive. LASCARIDES 1988 raises objections to Parsons's analyses of the progressive and the perfective in terms of 'HOLD' and 'CUL', respectively. These objections turn on details of Parsons's specific account, details which I take to be separable from an appeal to 'HOLD' and 'CUL' — e.g., concerning Parsons's decision to treat these predicates as primitives, his treatment of adverbial modification, and his views on types of eventualities. Though Parsons treats 'HOLD' as a primitive predicate, I grant that having a further analysis of it, beyond the intuitive gloss offered here, would be theoretically desirable (*cf.* SZABÓ 2004). I address complications with adverbial modification in §4.

[7]For alternative intensional treatments of verbs of creation, see, e.g., BENNETT 1977, ZUCCHI 1999, VON STECHOW 2001, FORBES 2006. See §3 for discussion.

I began last October, I can point to it and say (20).

(19)   #*This* is what I was looking for since last October.

(20)   *This* is what I was building since last October.

Intuitively, "while there is no actual, particular, demonstrable object [I] was seeking throughout the search, there is such an object [I] was building throughout the construction" (2008: 509). Since (20) is acceptable, there must be some thing to serve as the referent of the demonstrative. So, Szabó concludes, the direct object of 'building' cannot be interpreted intensionally; existential generalization from the direct object position in (20) must be valid.

Szabó's inference from the claim that demonstrative reference is available to the claim that the verb is extensional is problematic. Contrary to Szabó, using a demonstrative can be felicitous in certain cases with intensional verbs. The interpretation of the demonstrative in such cases suggests a way to interpret our intensional 'THEME$_I$' predicate.

Suppose Nancy is planning to rob a bank. She is looking for a way in that will get her to the safe. As it turns out, there is only one such way in. Call it 'Entrance A'. Fortunately for Nancy, she finally finds Entrance A and realizes that it will take her to the safe. She says:

(21)   *This* is what I was looking for this whole time.

Nancy's use of the demonstrative is perfectly felicitous. Throughout Nancy's search, although she didn't have in mind some particular thing, she did have in mind a certain *type* of thing. She had in mind a *property* to be satisfied by what she would find. It is the availability of this property that licenses Nancy's use of the demonstrative.

By analogy, I suggest that we treat the 'THEME$_I$' predicate introduced in sentences like (2) as a relation between events and properties — specifically, between events and properties of properties, or generalized quantifier intensions (assuming the indefinite noun phrases, like 'a cake', 'a house', etc., are non-specific and interpreted quantificationally). Our revised truth-conditions for (2) will be as follows (further revisions will be given in due course; the caret $^\wedge$ indicates the intension):

(22) $\exists e \exists t [t < \text{Now} \wedge \text{HOLD}(e, t) \wedge \text{baking}(e) \wedge \text{AGENT}(e, \text{Alice}) \wedge$
        $\text{THEME}_I(e, {}^\wedge \lambda P. \exists x [\text{cake}(x) \wedge P(x)])]$ (provisional)

This says that there is a baking event by Alice that has as its theme a certain property, the property of being a property of a cake. Treating the theme of the baking event

intensionally blocks the semantic entailment from (2) to (4) 'There was a cake Alice was baking' or to (5) 'There was a thing Alice was baking'. Of course, in certain circumstances where (2) is true, (4) or (5) might also be true. The point is that, in light of cases like those discussed in §1, we shouldn't treat (4) or (5) as following from (2) as matter of conventional meaning. Treating the theme role intensionally captures this.

Before moving on, I would like to consider a second alleged contrast between verbs of creation and standard intensional transitives which Szabó appeals to in objecting to intensional analyses: a contrast in the intelligibility of questions of location. Consider (23)–(24), from SZABÓ (2008: 508). (In (23), assume the speaker isn't looking for some particular house.)

(23)   a.   I am seeking a house.
        b.   #Oh yeah? Where is it?

(24)   a.   I am building a house.
        b.   Oh yeah? Where is it?

Szabó claims that the question in (23b), unlike the question in (24b), is infelicitous. Unlike in the case of (23a), "The natural way to understand [(24a)] requires that there be some particular thing at a particular place that I am building" (2008: 508). So, Szabó concludes, the direct object of 'building' in (24a) cannot be interpreted intensionally.

However, the intuitive contrast between 'seeking' and 'building' in (23) and (24) fails to generalize to all cases with verbs of creation. Not all progressive sentences with verbs of creation license questions of location. Here are two types of counterexamples. First, there are cases in which what is being created is scattered in various places. Suppose that a set for a play is being constructed in various places around the world. The castle is being built in New York, the desert landscape in Los Angeles, the enchanted forest in London. It is true that the set is being built. But the question 'Oh yeah? Where is it?' seems misplaced. *It* isn't quite anywhere; it's all over. *Parts* of it are in New York, LA, and London, but *it* isn't in any particular location. There isn't any "actual, particular, demonstrable object" that is being built. Second, there are cases in which what is being created is an abstract object. Suppose I am composing a song in my head but never write it down. Though 'I am composing a song' is true, it is infelicitous to follow this up with the question 'Oh yeah? Where is it?'. The song doesn't occupy any particular location. So, there isn't a general contrast in the intelligibility of questions of location between progressive sentences with standard intensional transitives and progressive sentences with verbs of creation. Szabó's ex-

ample fails to show that we ought to treat existential generalization from the direct object position in progressive sentences with verbs of creation as semantically valid.

2.3 Modality and telicity: 'TELOS'

So far I have suggested that we treat the progressive as introducing an extensional 'HOLD' predicate, as in Parsons's account, and capture the intensionality of certain verb phrases in the progressive by allowing the themes of the relevant events to be (second-order) properties rather than actually existing things. However, our work is not yet done. There is another crucial intuition about progressive sentences with verbs of creation that is yet to be captured.

A characteristic feature of accomplishments is their *telicity* or *goal-orientedness*. Baking-a-cake events can be described in terms of the outcome or goal that they are aiming at — namely, that there be a cake as a result of a completed baking event. Accomplishments aim at their completions.

To capture this aspect of the meanings of sentences like (2) 'Alice was baking a cake', we can introduce a thematic predicate 'TELOS' into our metalanguage that relates an event to a proposition describing the event's successful completion or culmination. The contribution of this thematic predicate will be determined by the telicity the sentence. To a first approximation, we might treat 'TELOS' as contributed by the verb in light of its lexical aspectual class (though see §4). The truth-conditions for (2) will be roughly as in (25).[8]

(25) $\exists e \exists t [t < \text{Now} \wedge \text{HOLD}(e, t) \wedge \text{baking}(e) \wedge \text{AGENT}(e, \text{Alice}) \wedge$
        $\text{THEME}_I(e, {}^{\wedge}\lambda P. \exists x [\text{cake}(x) \wedge P(x)]) \wedge$
        $\text{TELOS}(e, {}^{\wedge}\exists e' \exists t' \exists x' [\text{baking}(e) \wedge \text{AGENT}(e', \text{Alice}) \wedge \text{cake}(x') \wedge$
         $\text{THEME}(e', x') \wedge t' > t \wedge \text{CUL}(e', t')])]$

This says that (2) is true iff there was a baking event going on by Alice of a cake whose aim was that Alice finishes baking a cake, or that a complete cake exists as the result of a culminated baking event by Alice.

The telicity of sentences like (2) is naturally captured in modal terms. I am sympathetic with the intuition driving modal accounts of the progressive that what it is for a something to be coming into existence is for it to exist in some relevant way

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[8] As Zucchi (1999) argues in his criticism of Parsons 1990, there may be reasons for treating events as "holding" and "culminating" only with respect to some property, and, hence, reasons for treating the aspectual predicates 'HOLD' and 'CUL' as denoting relations between events, times, and properties of events denoted by VPs. I bracket this complication in what follows.

the world might become. We can capture the insight of modal analyses that sentences like (2) relate actual in-progress events to possible completed events in our interpretation of the 'TELOS' predicate. Following Portner's (1998) lead (see §2.1), I adopt a simplified ordering semantics in the style of KRATZER (1981, 1991) and treat 'TELOS' as expressing universal quantification over a set of relevant worlds that best approximate a certain ideal (*cf.* BONOMI 1997). The "relevant" worlds, $\bigcap f(e)$, are those consistent with the circumstances relevant to whether the event in question, e, is completed. These worlds are $\lesssim_e$-ordered with respect to how many and what sorts of interruptions occur, if any. The "$\lesssim_e$-best" worlds are worlds in which no obstacles prevent e from culminating; the $\lesssim_e$-best worlds in $\bigcap f(e)$ are the circumstantially accessible worlds that best approximate this ideal. To a rough first approximation, 'TELOS' can be analyzed as follows, where ϕ is a proposition, and MAX is a selection function that selects the worlds in $\bigcap f(e)$ that are maximal with respect to the preorder $\lesssim_e$.[9]

(26)   'TELOS(e, ϕ)' is true iff every world $w' \in$ MAX$(\bigcap f(e), \lesssim_e)$ is a ϕ-world

For example, the conjunct with 'TELOS' in (25) says that for all worlds w' that are consistent with the circumstances relevant to whether Alice's baking event is completed, and in which no interruptions occur, there is an event in w' that is a completed baking event by Alice of a cake.

(There are various ways the rough analysis of 'TELOS' in (26) might be refined. For instance, we might relativize the circumstantial modal base and/or preorder to the property of events denoted by the verb phrase. This would help capture the common intuition that the interpretation of progressive sentences is sensitive to how the relevant event is described. We might also build into the semantics that the possible event in which e culminates and the aim of e is satisfied include e as a nonfinal subpart. For expository purposes I will stick with the simpler formulation in (26), and assume that context takes these considerations into account in determining what parameters $f(e)$ and $\lesssim_e$ are relevant for the interpretation of the progressive sentence.)

By adding a modal 'TELOS' predicate into our analysis, we can capture various phenomena motivating modal accounts of the progressive (n. 4) without having to maintain that all progressive sentences have a modal component to their meaning. Rather than treating the progressive itself as semantically modal, we can treat the apparent modal element as contributed by the verb in telic verb phrases or sentences. The truth of sentences like (2) depends, in part, on whether the events they describe

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[9]For simplicity I make the limit assumption (LEWIS 1973: 19–20) to ensure that there is a set of $\lesssim_e$-maximal worlds, i.e. a set of worlds that aren't $\lesssim_e$-bettered by any other world.

culminate in certain relevant possible worlds.[10] These worlds needn't include the actual world. Talk about things coming into existence is analyzed, in part, in terms of there being an incomplete event in the actual world whose aim is that its completed counterpart occur.

By analyzing 'TELOS' in terms of the standard semantic framework for modals, we can also co-opt various advantages of Portner's (1998) account over previous modal accounts. The relevant modal domain is calculated via familiar parameters of interpretation — modal base and ordering (source) — rather than in terms of novel apparatus and primitive notions introduced specifically for the case of the progressive (e.g., continuation branches, inertia worlds, normal worlds, reasonable worlds). This also provides independent resources for explaining another apparent feature of certain progressive sentences: their sensitivity to a "perspective" or "point of view."[11] This sensitivity can be understood in terms of context-dependence, and captured in terms of variation in the contextually supplied parameters of modal base and ordering. Consider the following example adapted from VLACH (1981), discussed also in PORTNER (1998, 2011). Suppose Oliver was walking across the street, but was hit by a bus before he could get to the other side. It seems we could truly describe Oliver's street-crossing event either as in (27) or as in (28).

(27)   Oliver was crossing the street.

(28)   Oliver was walking into the path of an oncoming bus.

This contrast can be captured in terms of the context-sensitivity of which circumstances are considered relevant and how worlds are ordered with respect to the completion of the event. Facts about the path of the bus are treated as part of the relevant circumstances in characterizing the aim of the event described by (28) but not (27). This context-sensitivity in progressive sentences can be assimilated to the recognized context-sensitivity of modals.

3   Comparisons

Let's recap. I have offered an analysis of telic sentences in the progressive with verbs of creation. First, the progressive contributes an extensional predicate 'HOLD'.

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[10]Likewise for the falsity of (11): Harry, finite creature that he is, enumerates the primes today neither in the actual world nor in any other relevant world in which his enumerating isn't interrupted (let alone in every such world).

[11]See, e.g., TER MEULEN 1987, ASHER 1992, LANDMAN 1992, BONOMI 1997, PORTNER 1998, HIGGINBOTHAM 2005.

This captures the common core meaning in progressive sentences: they describe in-progress rather than completed events. Second, the verb contributes an intensional theme predicate 'THEME$_I$' for the interpretation of its direct object. 'THEME$_I$' relates events and generalized quantifier intensions, i.e. second-order properties. This intensionality helps us avoid treating existential generalization from the direct objection position as *semantically* valid. Third, the verbal predicate contributes a modal predicate 'TELOS' that relates events and propositions describing their completions. This captures the aims of events described by telic sentences. So, the progressive itself is given a simple extensional semantics. The intensionality of sentences like (2) results from the lexical semantics of the verb and how the verb relates to its arguments in context. (See §4 and the Appendix for discussion of implementation in a formal syntax and semantics.)

It may be helpful in clarifying the commitments, features, and limitations of this analysis to briefly compare it with several alternatives.[12] For reasons of space I will focus specifically on modal accounts and on the intensional analyses in Zucchi 1999 and Forbes 2006. We have already seen that a prominent tradition in the literature treats the progressive itself as semantically modal. The intensional analysis in Zucchi 1999 integrates this tradition with a Parsons-style account. Following Parsons, Zucchi treats the progressive as supplying the predicate 'HOLD'; however, to capture the apparent telicity of progressive sentences like (2), Zucchi gives this predicate a modal analysis in the style of Landman 1992. Very roughly, 'HOLD' is true of an event *e* iff *e* culminates in certain relevant possible continuations of *e*. The worries raised in §2.1 for modal accounts carry over to Zucchi's modalized version of Parsons's account of the progressive. The positive analysis offered in §2, by contrast, clearly separates the contribution of the progressive from the apparent relevance of successful completions in the interpretation of telic sentences like (2) 'Alice was baking a cake'. This account should be of interest to theorists who are compelled by the "classical wisdom" (Landman 1992: 1) that the progressive simply characterizes events as being in-progress, but who also are attracted to characterizing the telicity of sentences like (2) in modal terms.

In §2.2 I suggested that the direct object in sentences like (2) is interpreted with respect to an intensional thematic predicate 'THEME$_I$'. Similar proposals appear in the intensional accounts in Zucchi 1999 and Forbes 2006. My 'THEME$_I$' plays a parallel role to Zucchi's 'THEME''. Both predicates are treated as being contributed by verb phrases with intensional verbs, and relate events to generalized quantifier intensions. Forbes also introduces an intensional thematic predicate 'CHAR'. How-

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[12]Thanks to an anonymous referee for encouraging me to make these comparisons more explicit.

ever, there are important differences between 'THEME$_I$' and 'CHAR' in our overall accounts.

Forbes's analysis of verbs of creation in terms of 'CHAR' follows from his more general treatment of intensional verbs (see esp. his 2006: chs. 5–7). Forbes replaces the familiar relation of *theme* with a notion of *characterization* in interpreting non-specific readings of sentences with intensional verbs. On Forbes's view, sentences with intensional verbs don't describe events as being thematically related to some entity; rather, they characterize the events as being of a certain character. For instance, 'Philip was seeking a unicorn' doesn't describe Philip's seeking event e as being thematically related to a unicorn; rather, it describes e as being characterized by the property of being a property of a unicorn. Likewise with progressive sentences with verbs of creation. The direct object 'a cake' in (2) doesn't introduce an entity that was the object of Alice's baking. It characterizes what sort of baking process was in-progress; it characterizes the event as having an "a cake" character.

Forbes treats the direct objects of intensional verbs (in their non-specific readings) as introducing an intensional predicate 'CHAR' rather than the familiar predicate 'THEME'. 'CHAR' is used to describe how the event is characterized. Phenomena concerning telicity and intensionality in progressive sentences with verbs of creation are captured by treating the characterization relation in modal terms (see esp. FORBES 2006: 106, 133–138). For "all telic verbs" (2006: 138), characterization is understood modally in terms of successful completions of the event in relevant possibilities. Roughly, for a baking event e to have an *a cake* character — for e to be characterized by the property of being a property of a cake — it must be that any successful continuation of e would result in the baking of a completed cake. This blocks existential generalizations from the direct object position in sentences like (2). 'CHAR$(e, \lambda P . \exists x[\text{cake}(x) \wedge P(x)])$' can be true even if there is no actual cake (or thing) that is the object of e.

There are a number of features of Forbes's overall account with which one might take issue. One might take issue with the theoretical utility of introducing a distinct concept of event characterization, the abstract schema Forbes offers as an analysis of 'CHAR', the host of primitive predicates he employs in providing instances of this schema (treated as meaning postulates), Forbes's denial that intensional verbs assign thematic roles to their direct objects (in apparent violation of the theta-criterion), his decision to locate telicity at the level of the verb, his claims about the unavailability of specific readings of progressive sentences with verbs of creation, or his substantive account of the nature of characterization in events described by (all) sentences with verbs of creation. Given our purposes I will put these issues aside and focus simply on our respective analyses of sentences like (2). (I return to the latter three issues

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in §4.)

Forbes is largely non-committal about what sort of modal account should be given in analyzing 'CHAR' as it applies to creation events. (He briefly considers Asher's (1992) account couched in terms normal or default success, but this, I take it, is just for purposes of illustration.) Forbes's primary aim is to integrate an analysis of progressive sentences with verbs of creation into a general account of intensional verbs. Given the differences in the mechanics of our analyses and the brevity of Forbes's discussion of telicity, direct comparison of our accounts can be difficult. Depending on how Forbes fills in the details about what "characterization" and "success" amount to for events described by sentences with verbs of creation and telic verbs more generally, our analyses may deliver equivalent truth-conditions for sentences like (2). Even if they do, there are potential empirical and theoretical differences.

Most importantly, given our previous discussion, Forbes captures both the lack of existential commitment and the telicity of the relevant sentences in terms of the single intensional predicate 'CHAR'. The analysis offered in this paper distinguishes these features and derives them from distinct elements of the semantics. The intensionality, or failure of existential generalization from the direct object position, follows from the contribution of the intensional theme predicate 'THEME$_I$'. The telicity, or goal-orientedness, follows from the contribution of the modal predicate 'TELOS'. The former predicate describes Alice's baking event as being thematically related to the generalized quantifier intension of 'a cake'; the latter predicate describes Alice's baking event as having a certain aim, the baking of a completed cake. Distinguishing the intensionality and telicity of these sentences and locating them in distinct elements of the semantics is not only illuminating in how it delineates the structure of our semantic competence. It can also have broader theoretical utility and empirical consequences. As we saw in §2.3, introducing the separate metalanguage predicate 'TELOS' and analyzing it in terms of a standard semantic framework for modals gives us explicit resources for capturing the apparent context-sensitivity of certain sentences in the progressive. Including a separate representation of the aim of the event described by telic sentences also provides a resource for capturing broader phenomena concerning telicity/atelicity in natural language — e.g., in other types of sentences with verbs of creation, and in sentences with other types of intensional and non-intensional verbs. How one makes use of this resource will depend on one's broader views about the (grammatical, semantic, pragmatic) origins of lexical aspect and telicity, and how these properties are determined at the verbal, phrasal, and/or sentential levels and integrated into the compositional semantics. Forbes is silent on these issues. I have also remained largely neutral about how the posited

truth-conditions are derived in the lexical and compositional semantics — though I will return to this question shortly. Given these limitations in our accounts, specific evaluation here would be premature. More detailed comparison and assessment must await further developments.

4   Conclusion: Prospects and problems

I have argued that we can capture various intensional phenomena with certain sentences in the progressive while maintaining an extensionalist analysis of the progressive itself. First, I adopted a simple treatment of the progressive on which the progressive introduces an extensional predicate 'HOLD'. This predicate relates events and times and says that the event in question is going on at the time in question. Next, I introduced an intensional theme predicate 'THEME$_I$' that is contributed for the interpretation of the verb's direct object. This predicate relates events and (second-order) properties rather than events and existing objects. By introducing this predicate we can avoid treating progressive sentences with verbs of creation as semantically validating existential generalization from their direct object position. These sentences don't carry existential commitments deriving from their direct objects purely as a result of their conventional meaning. Finally, I introduced an intensional thematic predicate 'TELOS' that characterizes the aims of telic sentences. By analyzing this predicate in modal terms we can capture core intuitions driving modal analyses of the progressive.

   This account of the progressive and verbs of creation raises interesting broader questions at the syntax/semantics/pragmatics interfaces, e.g., concerning aspect and aspectual class, the origins of telicity, the role of context in interpretation, and compositionality. My primary aims in this paper have been twofold: first, to articulate the intuitively correct, conventional truth-conditions of telic sentences in the progressive with verbs of creation; and second, to provide one way of capturing these truth-conditions that is empirically adequate and theoretically attractive, given a circumscribed class of data. There will be various ways of deriving these truth-conditions depending on one's broader views concerning thematic roles, argument structure, grammatical aspect, lexical aspect, and telicity. In closing I would like to briefly raise several limitations of the foregoing discussion, and complications that may arise in integrating the proposed analysis into a formal syntax and semantics. These complications aren't unique to the particular analysis defended in this paper; they arise in various guises for the alternatives considered in §2.1 and §3 as well. I will raise several possible strategies of reply, but won't attempt to adjudicate among

them here. The general issues to be described have substantial independent litera-
tures of their own.[13] More thorough investigation must be left for future work.

In §2.3 I said that the 'TELOS' predicate is contributed by the verb in light of
its lexical aspectual class. This needs to be refined. It is well known that whether
a verb is given a telic interpretation can depend on quantificational and referential
properties of the verb's arguments. For instance, 'bake' heads atelic verb phrases
when its direct object is a bare plural ('cakes') or mass nominal ('bread'), as reflected
in (30):

(29) Alice baked a cake $\left\{ \begin{array}{l} \text{in an hour} \\ \text{\#for an hour} \end{array} \right\}$. (TELIC)

(30) a. Alice baked cakes $\left\{ \begin{array}{l} \text{\#in an hour} \\ \text{for an hour} \end{array} \right\}$. (ATELIC)

b. Alice baked bread $\left\{ \begin{array}{l} \text{\#in an hour} \\ \text{for an hour} \end{array} \right\}$. (ATELIC)

For many verbs, whether they are given a telic interpretation can also depend on
broader features of the linguistic or extra-linguistic context. The (a)telicity of 'iron
the shirt' needn't be determined solely by the structure of the verb phrase, as reflected
in (31a), or its containing sentence, as reflected in (31b).

(31) a. Pete ironed the shirt $\left\{ \begin{array}{l} \text{in an hour} \\ \text{for an hour} \end{array} \right\}$. (TELIC/ATELIC)

b. Pete ironed the shirt (for an hour), but couldn't get all the wrinkles
out.

Arguably, this holds with verbs of creation as well:[14]

(32) a. Quinton baked the potato $\left\{ \begin{array}{l} \text{in an hour} \\ \text{for an hour} \end{array} \right\}$. (TELIC/ATELIC)

b. Quinton baked the potato (for an hour), but it barely got cooked.

The final stage of events in the denotations of these verbal predicates ('iron the shirt',
'bake the potato') on their telic readings can be denied without contradiction.

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[13] See, e.g., VERKUYL 1972, DECLERCK 1979, KRIFKA 1992, 1998, DOWTY 1991, JACKENDOFF 1996,
FILIP 1999, 2008, PARTEE 1999, HIGGINBOTHAM 2000, KRATZER 2004, ROTHSTEIN 2004, BORER
2005, VERKUYL ET AL. 2005, FILIP & ROTHSTEIN 2006, RAPPAPORT HOVAV 2008. Thanks to two
anonymous referees for pressing me on the commitments of my analysis with respect to these issues.

[14] *Pace*, e.g., KRIFKA 1998, FILIP 1999, 2008, FILIP & ROTHSTEIN 2006.

The contrasts between (29) and (30) and between (29) and (31)/(32) raise interesting — and contentious — questions about how and to what extent telicity and other aspectually relevant concepts are encoded in the grammar. For example: How much can (a)telicity be systematically computed from independently motivated syntactic structures, composition rules, and lexical semantic properties of the verb and its arguments, and how much depends on extra-linguistic context? To what extent are constraints on telicity specified in the lexicon — e.g., in the lexical semantics of certain (classes of) verbs? To what extent does extra-grammatical world knowledge affect how the extent of events denoted by verbal predicates is measured? How should we model effects of extra-linguistic context on (a)telicity? Via an implicature? Or via specification of context-dependent truth-conditions? How one derives the application of the 'TELOS' predicate — and, in certain cases, perhaps even whether one treats it as part of the semantic content, as opposed to a conversational implicature — will depend on how one answers these sorts of questions. One might posit "aspectual shifting" operations, coercion operations, lexical ambiguities, generalized lexical rules, pragmatic mechanisms, etc. that affect whether and how 'TELOS' is contributed for interpretation in context. What is important for the purposes of this paper is simply that the 'TELOS' element of the analysis from §2.3 specifies a component of the contents of the relevant sentences. Details of implementation will vary depending on one's broader views.

In §1 I argued that we shouldn't treat sentences like (2) 'Alice was baking a cake' as semantically validating existential generalizations from their direct object position. But what should we say about similar sentences, like (33)–(34), that *do* seem to have existential entailments?

(33)   Alice was baking a potato.

(34)   Alice baked a cake.

Is an ordinary extensional theme predicate contributed by the direct objects in these examples? Can aspect or the particular choice of direct object affect what type of theme predicate — intensional or extensional — is contributed? The issue of perfective sentences with verbs of creation is especially pressing in the present context, given the worry for modal accounts of the progressive raised in §2.1. There seems to be no more of an intensional element to the meaning of a perfective sentence like (34) than there does for a progressive sentence with an activity verb like 'Lisa is running' in (18).[15]

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[15] Thanks to an anonymous referee for pressing me on this issue.

Start with (33). There are various options here. One might semantically associate each lexical verb with a particular theme predicate (*cf.* PARSONS 1995), and posit a general lexical ambiguity in the relevant class of verbs.[16] A perhaps more explanatory strategy would be to treat the lexicon as failing to specify a particular type of theme argument for verbs of creation, and attempt to derive which theme predicate is contributed on the basis of independent lexical properties of the verb and theme argument. (Or, similarly, one might treat there as being a single theme predicate whose intensionality/extensionality is parameterized.) For instance, it isn't implausible that the progressive sentences which appear to validate existential entailments are those without Strictly Incremental Theme arguments (DOWTY 1991, KRIFKA 1992, 1998) — roughly, those with predicates denoting events whose extent isn't determined by the extent of the referent of one of its arguments. In (33), the extent of the baking event is associated with a contextually determined measure — the degree to which the potato has been cooked — rather than the degree to which an entity of the relevant kind has been created, as in (2). So, one might argue that whether an extensional or intensional theme predicate is supplied depends on structural relations between the denotations of the verb and direct object.[17]

A third response would be to treat the direct object in sentences with verbs of creation as uniformly contributing the intensional 'THEME$_I$' predicate, and deny that sentences like (33) validate existential entailments from their direct object position as a matter of their *semantics*, or conventional meaning. This option shouldn't be summarily dismissed. Arguably, one might fail to know whether the truth of (33) requires the existence of a potato, not because one isn't semantically competent with 'bake', 'potato', aspect, etc., but simply because one doesn't know how to bake a potato; one doesn't know that the process of baking a potato involves starting with an uncooked potato and finishing with a cooked potato. On this line, although the existential generalization from (33) to 'There is a potato (/thing) Alice was baking' is reasonable on the basis of general world knowledge, it isn't built into the semantics. Treating the contrast between (2) and (33) in this way has the advantage of unifying the semantics of progressive sentences with verbs of creation.

Similar options are available concerning (34) with the perfective. One could treat the perfective aspect as requiring an extensional theme predicate, but this would seem to be worryingly non-compositional. Instead one might treat the choice of theme predicate as independent of aspect, but introduce a meaning postulate that

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[16] *Cf.* SZABÓ (2008: 506–507), in his discussion of Forbes's (2006) assigning only nonspecific readings to progressive sentences with verbs of creation.

[17] Compare Szabó's conclusion that the application of 'IP' to the verb's direct object is "probably not obligatory" (2008: 517).

permits existential entailments in perfective sentences with verbs of creation.[18] Alternatively, one might attempt to *derive* the entailment via constraints on other features of the semantics. (34) says (among other things) that there is an event *e* that has as its aim a completed baking event of a cake and that *e* culminated (*cf.* (25)). Given that processes of creation aim at some thing's being created and culminate when their aims are satisfied, the final stage of a completed event of creation will involve the existence of a thing of the relevant type. Plausible principles about the nature of creation events (e.g., concerning their unit structure and aims), and resulting constraints on the interpretations of 'CUL' and 'TELOS', could thus help capture apparent existential entailments in perfective sentences analyzed in terms of an intensional thematic predicate 'THEME$_I$'. Whether these entailments count as semantic entailments will depend on whether such constraints are specified in the lexicon (either in individual lexical entries or in characterizing a lexical type). As with (33), there may be reason to deny that they are. One might deny that a perfective sentence like (34) semantically entails that a cake exists, and treat existential generalizations as reasonable pragmatic inferences drawn on the basis of general world knowledge. This line may be supported by cases like the following from Szabó:

> Mary is walking behind a construction crew that is building [a] street sideways… [T]he work and Mary's walk go on uninterrupted. However, there is a group of vandals walking behind Mary systematically destroying what the construction crew built. As a consequence, at no point of time is there a street Mary is crossing. Still, we could truthfully say 'Mary crossed the street'… while there never was a street that Mary crossed. (SzABÓ 2008: 517; *cf.* 2004: 49–50)
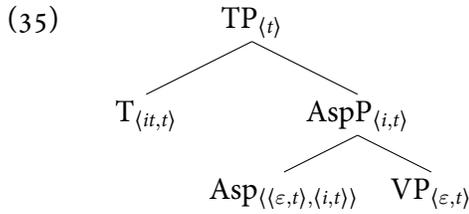
Szabó might have continued that we could truthfully say 'The construction crew built a street' even though there never was a street that the construction crew built. However, as Szabó acknowledges, it is hard to know what to say about cases like this. The results of investigations of these broader issues will be important for assessing one's broader, overall theory.

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[18] By analogy to Zucchi's "Building Principle" (1999: 189–190), where 'THEME*' abbreviates $\lambda e \lambda x [\text{THEME}_I(e, {}^{\wedge}\lambda X.X(x))]$, and $\mathcal{Q}$ is a variable for generalized quantifier extensions (type $\langle et, t \rangle$):

(i) $\forall e \forall t \forall x \forall \mathcal{Q} [[\text{baking}(e) \wedge \text{AGENT}(e, x) \wedge \text{CUL}(e, t)] \rightarrow [\text{THEME}_I(e, {}^{\wedge}\mathcal{Q}) \leftrightarrow \mathcal{Q}\lambda y(\text{THEME}^*(e, y))]]$

Appendix   A formal syntax and semantics

In this Appendix I show one way of formally implementing the analysis in §2 which takes a stand on certain of the broader issues raised in §4. Following the basic syntax and semantics in KRATZER 1998, I assume that VPs headed by eventive verbs denote properties of events, and that aspectual heads introduce existential quantification over events and relate properties of events to properties of times. I treat tenses such as 'Past' as generalized quantifiers over times. (Times are type i, individuals are type e, eventualities are type ε, and truth values are type t.)
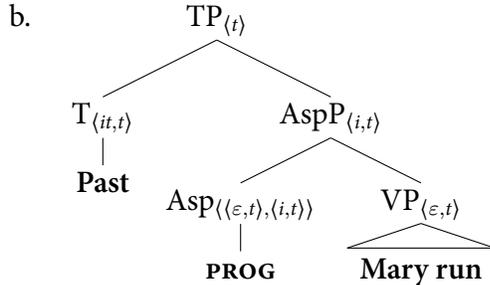
(35)

$$
\begin{array}{c}
\text{TP}_{\langle t \rangle} \\
\diagdown \\
\text{T}_{\langle it,t \rangle} \qquad \text{AspP}_{\langle i,t \rangle} \\
\diagdown \\
\text{Asp}_{\langle \langle \varepsilon,t \rangle, \langle i,t \rangle \rangle} \quad \text{VP}_{\langle \varepsilon,t \rangle}
\end{array}
$$

Following §2.1, I offer the following lexical entry for the progressive (though see n. 8):

(36) $[\![\textbf{PROG}]\!] = \lambda P_{\langle \varepsilon,t \rangle} \,.\, \lambda t_i \,.\, \exists e [P(e) = 1 \wedge \text{HOLD}(e,t)]$

A simple example illustrates:

(37)   a.   Mary was running.

b.

$$
\begin{array}{c}
\text{TP}_{\langle t \rangle} \\
\diagdown \\
\text{T}_{\langle it,t \rangle} \qquad\quad \text{AspP}_{\langle i,t \rangle} \\
\mid \qquad\qquad \diagdown \\
\textbf{Past} \quad \text{Asp}_{\langle \langle \varepsilon,t \rangle, \langle i,t \rangle \rangle} \quad \text{VP}_{\langle \varepsilon,t \rangle} \\
\mid \qquad\qquad\quad \\
\textbf{PROG} \qquad \textbf{Mary run}
\end{array}
$$

c.   Semantic values moving up the tree:
$[\![\textbf{VP}]\!] = \lambda e_{\varepsilon} \,.\, \text{run}(e) \wedge \text{AGENT}(e,M)$
$[\![\textbf{AspP}]\!] = \lambda t_i \,.\, \exists e [\text{HOLD}(e,t) \wedge \text{run}(e) \wedge \text{AGENT}(e,M)]$
$[\![\textbf{TP}]\!] = 1$ iff $\exists t \exists e [t < \text{Now} \wedge \text{HOLD}(e,t) \wedge \text{run}(e) \wedge \text{AGENT}(e,M)]$

A derivation of the truth-conditions for (2) in (25) may proceed as follows. (For concreteness I make the following simplifying assumptions (see §4): I assume that

the the verb uniformly contributes an intensional theme predicate for the interpretation of its internal argument. And I assume that verbs of creation lexically specify a particular telic interpretation; this telicity could be subject to aspectual shifts in the derivation depending on the linguistic context.)

(2)   Alice was baking a cake.

(38) $[\![\mathbf{bake}]\!] = \lambda Q_{\langle et,t\rangle}.\lambda x_e.\lambda e_\varepsilon.\mathrm{bake}(e) \wedge \textsc{agent}(e,x) \wedge \textsc{theme}_I(e,{}^\wedge Q) \wedge$
$\textsc{telos}(e, {}^\wedge\exists e'\exists t'[Q(\lambda x'.\mathrm{bake}(e')) \wedge \textsc{agent}(e',x) \wedge \textsc{theme}(e',x')\wedge$
$\textsc{cul}(e',t'))])$

$[\![\mathbf{a\ cake}]\!] = \lambda P_{\langle e,t\rangle} . \exists x'[\mathrm{cake}(x') \wedge P(x')]$

$[\![\mathbf{Alice\ bake\ a\ cake}]\!] = \lambda e_\varepsilon . \mathrm{bake}(e) \wedge \textsc{agent}(e,\mathrm{Alice}) \wedge$
$\textsc{theme}_I(e, {}^\wedge\lambda P.\exists x[\mathrm{cake}(x) \wedge P(x)]) \wedge$
$\textsc{telos}(e, {}^\wedge\exists e'\exists t'\exists x'[\mathrm{cake}(x') \wedge \mathrm{bake}(e') \wedge \textsc{agent}(e',\mathrm{Alice}) \wedge$
$\quad \textsc{theme}(e',x') \wedge \mathrm{cake}(x') \wedge \textsc{cul}(e',t')])$

$[\![\mathbf{PROG}]\!]([\![\mathbf{Alice\ bake\ a\ cake}]\!]) = \lambda t_i . \exists e[\textsc{hold}(e,t) \wedge$
$\mathrm{bake}(e) \wedge \textsc{agent}(e,\mathrm{Alice}) \wedge$
$\textsc{theme}_I(e, {}^\wedge\lambda P.\exists x[\mathrm{cake}(x) \wedge P(x)]) \wedge$
$\textsc{telos}(e, {}^\wedge\exists e'\exists t'\exists x'[\mathrm{cake}(x') \wedge \mathrm{bake}(e') \wedge \textsc{agent}(e',\mathrm{Alice}) \wedge$
$\quad \textsc{theme}(e',x') \wedge \textsc{cul}(e',t')])]$

$[\![\mathbf{Alice\ was\ baking\ a\ cake}]\!] = 1$ iff $\exists t\exists e[t < \mathrm{Now} \wedge \textsc{hold}(e,t) \wedge$
$\mathrm{bake}(e) \wedge \textsc{agent}(e,\mathrm{Alice}) \wedge$
$\textsc{theme}_I(e, {}^\wedge\lambda P.\exists x[\mathrm{cake}(x) \wedge P(x)]) \wedge \textsc{hold}(e,t) \wedge$
$\textsc{telos}(e, {}^\wedge\exists e'\exists t'\exists x'[\mathrm{cake}(x') \wedge \mathrm{bake}(e') \wedge \textsc{agent}(e',\mathrm{Alice}) \wedge$
$\quad \textsc{theme}(e',x') \wedge \textsc{cul}(e',t')])]$

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