The Semantics of the Progressive

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1. Introduction

This paper is about the meaning of the progressive aspect, which has been notoriously difficult to give a satisfying account of.[1] A number of intriguing properties of its meaning were first brought out in formal semantic treatments. An event semantics approach to the progressive which integrates concepts of normality and perspective as well as adequate lexical representations seems to be particularly promising. In section 2 I will present several problems connected with the semantics of the progressive that are crucial for shaping its truth conditions. Several solutions to these problems that have been suggested in the literature will be discussed.[2] In section 3 I will sketch a preliminary account of the meaning of the progressive aspect. In section 3.1 the basic components that underlie the truth conditions of the progressive will be described. In section 3.2 I will present underlying lexical assumptions and the truth conditions for the progressive. Finally, in section 4, I will evaluate the proposal by revisiting the problems discussed.

2. Seven problems out of many

The imperfective paradox: One of the widespread traditional ideas about the meaning of the progressive conveys that sentences in the progressive aspect refer to events in progress, i.e., events that are not yet completed. This can be illustrated by a very simple scenario:

>*Scenario A*: Rebecca stepped onto the street, walked towards the other side (t^R), and reached the sidewalk.

While this scenario can be described by a sentence in the simple past (1a), the event in progress at reference time t^R can be referred to by a sentence in the progressive, as in (1b).

(1)　a.　Rebecca crossed the street.
　　　b.　Rebecca was crossing the street.

This leads to a very straightforward idea that has been formulated in terms of interval semantics by Bennett and Partee (1972) and that can be rendered in event semantics as in **P1**:

(**P1**)　The Extensional Approach
　　　　PROG(p) is true iff the event e described by PROG(p) is part of an event e' described by p.

P1 requires that the sentence in the simple form p be true in order for the progressive sentence PROG(p) to be true. But this is wrong. Another simple scenario shows that this condition does not in fact hold:

[2] To make these different approaches comparable I will rephrase them in terms of event semantics. Since these reformulations are of course not straightforward translations of the original proposals, the criticisms may not always carry over to the original approaches.

> ***Scenario B***: Rebecca stepped onto the street, walked towards the other side (t^R) when she stumbled over a pothole and hurt her leg so badly that she didn't reach the sidewalk on the other side.

We can still use (1b) to refer to this situation which shows that the event does not have to culminate to make the progressive sentence true. This observation involves the well-known imperfective paradox (cf. Dowty 1979: 146): with non-resultative verbs the progressive sentence entails the sentence in the simple form (2a), while this is not the case for resultative verbs (2b), i.e., verbs that are lexically marked for a specific result state.

(2) a. [Rebecca was pushing the cart   Rebecca pushed the cart]

     b. ¬ [Rebecca was crossing the street   Rebecca crossed the street]

This has led most aspectologists to assume that some kind of intensionality is involved in the meaning of the progressive. Thus, Dowty (1979) provides us with an intensional version of **P1** making use of the notion of "inertia worlds" which can "be thought of as worlds which are exactly like the given world up to the time in question and in which the future course of events after this time develops in ways most compatible with the past course of events." (Dowty 1979: 148). In event semantics his approach aproximately amounts to the following:

(**P2**) The Normality Approach
      PROG(p) is true, iff in all inertia worlds the event e described by PROG(p) is part of an event e' described by p.

Thus, according to **P2** to evaluate the truth of a sentence in the progressive we just have to look at those worlds where everything proceeds normally.

The interruption problem: Still, **P2** cannot deal with numerous cases. To show this, we have to bring Rebecca into another unpleasant situation (cf. Vlach 1981: 285f):

> ***Scenario C***: Rebecca stepped onto the street, walked towards the other side very inattentively (t^R) while nearby a bus was approaching her driven by a very inattentive driver.

If everything proceeds as can be expected from this course of events, the bus will hit Rebecca so that she won't reach the other side. Thus, **P2** predicts that (1b) is false under this scenario, but it is not. An interruption coming from outside the event we are referring to, no matter if it could be expected or not, does not affect the truth of the progressive sentence. This leads Vlach (1981: 288) to base the truth conditions for the progressive on the possible continuation of the event referred to:

(**P3**) The Continuity Approach
      PROG(p) is true iff in those worlds where the event e described by PROG(p) continues after the reference time of PROG(p) e will be a part of an event e' described by p.

The restriction in **P3** allows us to do away with the bus in Scenario C and just look at those worlds where the walking event continues beyond the point where it got interrupted in the actual world. But Landman (1992: 12) observed that the event might have continued beyond this point but then got interrupted a couple of seconds later because there was a second bus coming down the street. According to **P3**, the progressive sentence should now be false, but it is not. Thus, Landman (1992: 12) suggested that to improve **P3**, the condition should include that e continues beyond any possible interruption.

The impossibility problem: The truth conditions in **P3**, even in their improved version, still cannot cope with another problem, as Landman (1992) observed.

> *Scenario D*: Rebecca was on the beach near Brisbane. She went swimming and, at t^R, had already swum a couple hundred yards towards the east.

We can assume that if Rebecca continues what she is doing at t^R beyond that time and the sharks don't get her she will end up in Chile eventually. According to **P3** the sentence *Rebecca was crossing the Pacific* should be true under this scenario, but it obviously is not. It seems that if there is hardly any chance that the event culminates, the idea of its uninterrupted continuation does not license the progressive. Therefore, Landman (1992: 25) tries to make the concept of "a reasonable chance on the basis of what is internal to *e* in *w*" part of the truth conditions of the progressive. A greatly simplified version of this is given in **P4**:

(P4)   <u>The reasonable-chance approach</u>
PROG(*p*) is true iff in those worlds where there are no event-external interruptions the event *e* described by PROG(*p*) has a reasonable chance to be part of an event *e'* described by *p*.

The intention problem: **P4** still does not say what distinguishes 'event-external' from 'event-internal' and what counts as a reasonable chance (cf. Glasbey 1996: 334). Consider the following situation:

> *Scenario E* (adapted from Asher 1992: 477): Rebecca, who was very depressed at the time, wanted to commit suicide and therefore stepped onto the street and walked towards the other side (t^R) in order to get hit by a bus in the middle of the street.

Under this scenario (1b) is inappropriate. To make an agentive progressive sentence true, the agent should not intend that the event does not culminate. Landman (1992) probably would say that if Rebecca does not even intend to cross the street the event is not very likely to culminate. In this case, (1b) would correctly be predicted as false. But Landman does not discuss this problem.

Naumann and Piñón (1997) try to account for the intention problem more directly and assume that for a sentence in the progressive to be true, the possible agent of the event referred to must – at reference time – be able to bring the event to its culmination and must not intend to not carry out the whole event. Somewhat simplified their approach looks like this:

(P5)   <u>The intention-and-ability approach</u>
PROG(*p*) is true, iff there is a world *w* where the event *e* described by PROG(*p*) is part of an event *e'* described by *p*, and iff the agent (if there is one) is able to bring *e* to a culmination, and does not intend the non-culmination of *e*.

But this seems to be too strict. According to **P5** the sentences in (3) should be impossible since it is explicitly expressed that the agent intends the non-culmination of the event, but they are not.[3] Intention seems to be an important parameter in the truth conditions of the progressive, but it is not a necessary condition for agentive progressive sentences.

(3)   a.   John intended not to kill Rebecca, but, nutritionally ignorant, he was killing her by feeding her too much tasty but greasy food.
  b.   although she really intended not to do it she was making him a millionaire by placing all his money on the skinniest nag at the races.

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[3] More precisely, the truth conditions Naumann and Piñón (1997) give require that the speaker *believes* that the agent does not intend the non-culmination of the event, but even for this version the sentences in (3) are counterexamples.

The perspective problem: Another problem is brought up by Landman (1992: 30f) in the appendix of his paper. It is illustrated by the following scenario:[4]

> ***Scenario F***: Rebecca was on a plane to Canberra, which had started at nine o'clock; at ten o'clock (t^R) hijackers forced the captain to fly to Mount Isa, where the plane landed at eleven o'clock.

Under this scenario we can truthfully utter not only (4a) but also (4b). This is surprising, since according to the semantics of negation either p or $\neg p$ should be true, but not both. This cannot be explained by any of the approaches discussed.

(4) a. Rebecca was flying to Canberra when the plane was hijacked.
     b. Rebecca was flying to Canberra; well, in fact, she wasn't, she was flying to Mount Isa, but she didn't know that at the time.

It seems that in (4a) we adopt a perspective that is different from the one we choose in (4b). In (4a) the actual outcome of the event does not play a role; I will call this the 'intensional perspective'. (4b), in contrast, is viewed as if from a later point of view. It takes the outcome of the event in the actual world into consideration; I will call this the 'extensional perspective'.[5]

The 'imperfective-paradox' paradox: Among the problems that one comes across when thinking about the progressive is a problem which is of a more lexical nature:

> ***Scenario G***: In court, the judge examines a witness; it is known that the witness observed all the incidents relevant to the case in question (from at least five o'clock to five fifteen) ...
> Ignorant judge: "*What was happening at five o'clock?*"
> Omniscient witness: "*I was standing at the window at five and I saw that Rebecca was killing Jamaal while Linda was drying her hair.*"

> ... (***Scenario G1***) At five fifteen Jamaal was dead and meanwhile (because her hairdryer had broken or she had just decided to do so) Linda had stopped drying her hair, which was still pretty wet.

> ... (***Scenario G2***) At five fifteen Linda's hair was dry and Jamaal wasn't dead, since Rebecca had stopped strangling him (because the rope had broken or she had changed her mind).

Under scenario G1, the witness told the truth; he didn't commit himself to the claim that Linda dried her hair completely. But under scenario G2 we cannot accept his testimony that Rebecca was killing Jamaal, since he knew that Jamaal survived.[6] The expected imperfective paradox doesn't show up, since we tend to conclude that Jamaal was dead afterwards. This is what I want to call the 'imperfective-paradox' paradox. The following examples show that the denial of the event's culmination is nearly impossible for the progressive of some verbs:

(5) a. At five, Linda was drying her hair but in the end, it wasn't completely dry.
     b. ??at five, Rebecca was killing Jamaal but in the end, he wasn't dead.

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[4] Cf. also Bonomi (1997) for more refined examples of the perspective problem.

[5] Asher (1992) and Glasbey (1996) employ different concepts of 'perspective' that I don't have space to discuss here.

[6] There is an emphatic reading in which it is understood that the killing is not completed (*I had to interfere; I mean, she was killing him!*) which we also get for sentences in the simple future (*She will kill him, I have to interfere!*). Both have to be interpreted counterfactually.

    c. at five, she was crossing the Red Square, but in the end she hadn't completely crossed it.

    d. ??at five, she was burning down the house, but in the end she hadn't burnt it down.

The 'complex-event' problem: The last problem I want to discuss briefly shows up with verbs denoting causative events.

> ***Scenario H***: Jamaal was attacking Rebecca with a knife and stabbed her a couple of times (t^{R1}) whereupon Rebecca collapsed; lying on the floor (t^{R2}), she died in a few minutes.

Referring to the reference time t^{R1} sentence (6a) is perfect while the same sentence uttered with respect to t^{R2} is false. According to the approaches discussed so far this is unexpected. If we assume that *to kill* means something like 'cause to die', what is happening at t^{R2} is part of the event described in (6b). For causative verbs whose causing subevent precedes the caused subevent the progressive has to be related to the first, causing subevent.

(6)   a. Jamaal was killing Rebecca.
        b. Jamaal killed Rebecca.

3. The meaning of the progressive aspect

3.1. The ingredients

Mereological relations: The truth conditions should express that the event *e* described by PROG(*p*) is a part of an event *e'* described by *p*, where *e'* can occur in a non-actual world. A part should be understood as a 'natural part', which is not a mere temporal stage but something whose particular properties allow it to be delineated from other units. For example, a particular baseball game has as its parts a particular homerun, a particular catch or a particular fast ball. Any natural part of an event is a subevent, i.e., an event itself which is temporally related to all other subevents. With respect to events referred to by causative verbs like *to dry*, a causing event (i.e., the action performed by the agent on the theme entity) and a caused event (i.e., the theme entity becoming dry) can be distinguished as immediate subevents (see section 2.2).

The interruption condition: In section 2 it was shown that certain kinds of external interruptions must be abstracted away from when judging the truth of a progressive sentence. The following scenario (adapted from Asher 1992) will show that Landman's (1992) vague idea of what is internal to the event is too generous.

> ***Scenario I***: Rebecca stood in front of a huge minefield, started walking and walked about 50 yards into the minefield (t^R).

Under this scenario the sentence *Rebecca is crossing the minefield* should be odd, since (i) it is almost impossible that Rebecca completes her crossing and (ii) what is happening with the minefield (e.g. exploding mines) can be considered event-internal because *the minefield* occupies an event-related argument position. But most speakers find the sentence acceptable. Thus, a more restricted notion of what is internal to the event seems to be in order. I will assume that only so-called 'agent-internal interruptions' affect the truth of the progressive. These agent-internal interruptions have their origin in the immediate domain of the proto-agent;[7] they include wrong or missing intentions and abilities or sudden

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[7] I use the term 'proto-agent' in the sense of Dowty (1991). It refers to the event-participant that has the most agentive properties. A proto-agent is not necessarily an animated being.

changes in intention, ability, or physical structure of the agent.[8] All other interruptions are considered external, e.g., the bus in scenario C and the exploding mines in scenario I.

The normality condition: Having abstracted away from external interruptions, the culmination of the event has to be modally restricted in a certain way to make the progressive sentence true. Some have suggested that the culmination has to be possible (Glasbey 1996, Naumann and Piñón 1997), some have assumed that there has to be a reasonable chance of culmination (Landman 1992), and other approaches might even imply that the culmination has to be probable to make the progressive true.[9] I'm not quite sure if a mere possibility condition might be too weak, but a probability condition is definitely too strong:[10]

> ***Scenario J***: Jamaal was participating in an amateur tightrope walking contest. He usually falls off the rope three out of four times. He started walking on the rope which was tightened across the arena and took a couple of steps (t^R).

This scenario can be easily referred to with *Jamaal was crossing the arena*, showing that even if it is only remotely possible that the crossing is completed, the progressive can be used. For the time being, I will assume that the modal part just says that, external interruptions aside, the completion of the event must be possible.[11]

Perspective: The truth of a sentence in the progressive has to be evaluated with respect to a perspective. To keep things as simple as possible I will assume that there are just two perspectives, an extensional one and an intensional one, where the choice of a perspective is determined by semantic and pragmatic factors. We can conceive of perspectives as functions from events to sets of worlds. The extensional perspective (i) assigns the actual world to the event, the intensional perspective (ii) assigns to the event all worlds in which the event is not externally interrupted:[12]

(7)   a. $Persp^{EXT}(e) = \{w^0\}$
       b. $Persp^{INT}(e) = \{w \mid e$ is not stopped in w by agent-external interruptions$\}$

3.2. The recipe

Lexical entries: As section 2 has shown, the lexical influence on the interpretation of sentences in the progressive has to be taken into consideration. With some verbs (*to kill, to burn down*) the result state is somehow prominent. These verbs evoke the 'imperfective-paradox' paradox. Furthermore, with verbs like *to kill* which involve more than one subevent, the progressive is related to the first subevent. I will therefore assume that the meaning of verbs is expressed by lexical event structures which capture these differences.

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[8] An anonymous referee confronted this idea with the example *Rebecca was crossing the road when she suddenly remembered she'd left the kettle on gas and had to turn back.* This suggests that my idea about what counts as an event-internal interruption is still too generous. It might be necessary to restrict the class of event-internal interruptions to interruptions which are due to those wrong or missing intentions and abilities and insufficiencies of the physical structure of the agent which were already given at he beginning of the event.

[9] Asher (1992) assumes a default implication relation between the simple and the progressive sentence, which in some cases amounts to a probability condition (cf. Glasbey 1996).

[10] Cf. also the examples in Bonomi (1997: 187).

[11] I am aware that this is too simple. In particular, the problem of incompatible result states has to be taken into consideration (cf., e.g., Dowty 1979, Naumann and Piñón 1997): Referring to a falling coin, both sentences *the coin is coming up heads* and *the coin is coming up tails* are odd. The progressive does not seem to be possible if it refers to an event that is part of several equally probable culminations of events.

[12] The term 'actual world' shouldn't be taken to literally if we want to deal with examples like *I dreamed Rebecca was crossing the street*. The external perspective picks the world w^0 as the world in which the process part of the event takes place, i.e. the world which counts as actual in the particular setting, while the internal perspective also yields worlds different from w^0.

Lexical event structures contain variables for e^1 and e^2 as subevents, s as a result state, '*****' as an indicator of a prominent result state, '$<$' as a temporal precedence relation, and '$<>$' as a relation of temporal overlap.[13]

(8)   a. *to kill*: $e^1 </<>$CAUSE $e^2 < s$*****
      b. *to cross*: $e^1 < s$

(8a) for example expresses that a killing involves a first causing subevent (the agent acting upon the theme), a second temporally overlapping or following caused subevent (the theme referent dying) and a result state (the being dead of the theme referent). This result state is marked as prominent.[14] The meaning of this notion is admittedly vague. I suspect that either causative verbs that are rather unspecific with respect to the activities in the first subevent or verbs with resultative particles involve prominent result states. Thus, the prominence marker might turn out to be derivable from other lexical information.

Truth conditions: As a starting point for a more refined theory of the progressive I will assume that the progressive is a three place relation PROG($e,E,Persp$) with the following truth conditions:[15]

(**P6**)   The perspective approach
          PROG($e,E,Persp$) is true iff

   (i)   there is an event e' and a world w $Persp(e)$ such that e' occurs in w and e is a part of e',
   (ii) e is of event type E where E is the VP translation and is associated with its lexically projected event structure LES^E,
   (iii) e occurs in the actual world w^0 at reference time t^R and has all of the properties that are specified in LES^E for the first subevent of e'.

Choice of perspective: Finally, I will give a list of the semantic and pragmatic factors that determine the choice of a perspective. In some cases one perspective is forced, in other cases both are equally available. The following list is not meant to be complete: We tend to choose *Persp^{EXT}* (i) if the outcome of the event is conversationally relevant, (ii) if adverbials like *in fact* or *actually* occur,[16] (iii) if the lexically specified result state is prominent, and iv) if it is known that the event culminates. We tend to choose *Persp^{INT}* (i) if the outcome of the event is not relevant, (ii) if there is no information about the further course of the event available, and (iii) probably by default.

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[13] These are only partial event structures. Information about semantic relations, temporal and other properties of subevents is left out here. For an overview of this lexical event structure theory cf. Engelberg (1999) and for a more thorough presentation of the theory Engelberg (2000).

[14] For different purposes Pustejovsky (1995: 72) employs a similar concept 'head of an event', which he relates to the notion of 'foregrounding'.

[15] It should be noted that the truth conditions and scenarios in this paper presuppose that the progressive is used in combination with simple tenses (simple past, simple present, simple future), i.e. those tenses in which the time of reference and the time of event overlap in a Reichenbachian tense theory. If we want to extend this theory to uses of the progressive in the perfect tenses by adapting the truth conditions in **P6** to Reichenbach's framework, we would have to relate the occurrence of the event (in condition iii of **P6**) to the time of event and not to the time of reference. In the past perfect, for which Reichenbach (1966) assumes the relation 'time of event < time of reference < time of speech', the occurrence of the event in the progressive has to be located before the time of reference which is marked by the cosmic intervention in *she had been jogging for a while when the comet hit her*. The embedding of the proposal in a Reichenbachian theory of tense seems straightforward.

[16] Under scenario C these adverbials even allow one to refer to a miraculous completion of the event; cf. the following example sentence from Landman (1992: 30): *I would never have believed it at the time, but she was actually crossing the Atlantic*.

4. Conclusion - the problems revisited

The preceding ideas are not meant to be a theory of the progressive. They rather serve to identify the components that have to go into the semantics of the progressive. A strict formalization of this idea is still another matter.[17] Nevertheless, something like **P6** seems to be on the right track to solve the problems discussed in section 1: The imperfective paradox does not occur because of *Persp*^{INT}. The interruption problem is solved by integrating interruption in the perspective functions and by sharpening the border between internal and external interruptions. The impossibility problem is done away with by having introduced a possibility condition into the truth conditions. The intention problem does not occur because on the one hand, wrong or changed intentions are considered internal interruptions, and on the other hand, if there is a denial of the intention to bring the event to a culmination, the extensional perspective is chosen. The perspective problem is solved by evaluating the truth of progressive sentences relative to a perspective. And finally, appropriate lexical representations help to solve the 'imperfective-paradox' paradox and the complex-event problem, the former because prominent result states trigger *Persp*^{EXT}, the latter because of the introduction of condition (ii) in the truth conditions.

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[17] For limits of space, I have not discussed some recent approaches to the progressive like Asher (1992), Glasbey (1996), Bonomi (1997), and Portner (1998), which do not change the overall picture of the problems we are confronted with very much, but rather provide interesting formalizations of the ideas of perspective, interruptions and normality using, e.g., non-monotonic reasoning or channel theory. In particular, Bonomi's (1997) promising conception of event stereotypes deserves a more thorough treatment than I can give here.