# LONG PATHS AND SHORT PATHS: A PUZZLE FOR MANFRED

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The puzzle concerns the interaction between the semantics of path-oriented prepositions and of the progressive. Look at (1)-(3):

(1) We rode *through* the tunnel.
(2) We rode *into* the tunnel.
(3) We rode *out* of the tunnel.

Let us assume that we took the following train trip (the tunnel in question is near Rotterdam, and we assume the whole trip is in the past).

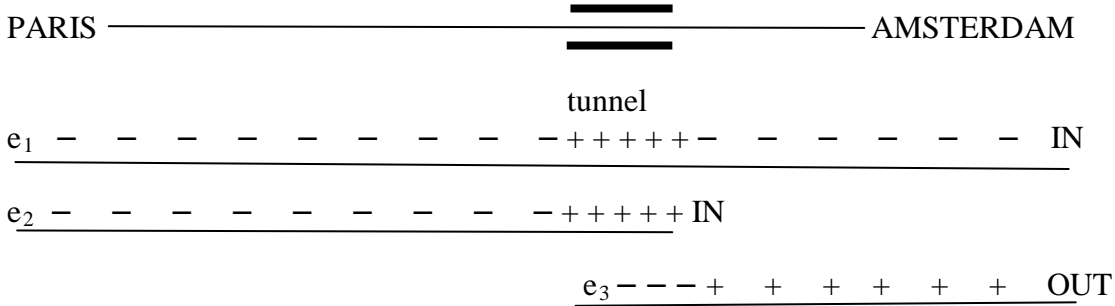PARIS ———————————————————— AMSTERDAM
tunnel

3 hours   1 hour
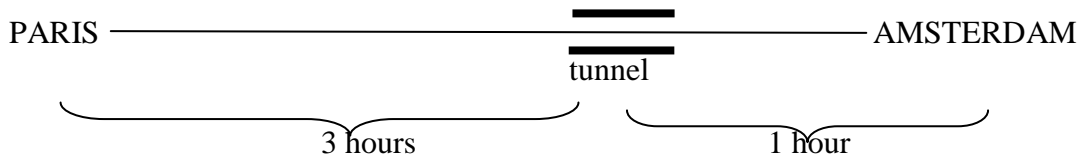
On a semantics for prepositional phrases like that of Kracht 2002, all three sentences (1)-(3) come out as true (as they should), because for each sentence you can find a past event making the sentence in question true, in particular, the events e_1, e_2, e_3 of us riding on the train with running times as below:

PARIS ———————————————————— AMSTERDAM

tunnel

e_1 ————————————————————————

e_2 ———————————————————

e_3 ———————————————
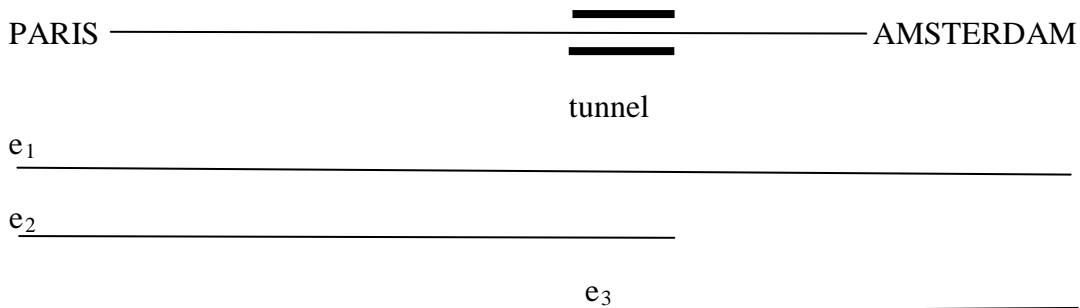
(1) is true, on Kracht's semantics, because the running time of e_1 partitions into three successive intervals: the stretch where the train is not yet in the tunnel, followed by the stretch where the train is in the tunnel, followed by the stretch where the train is no longer in the tunnel.
(2) is true, because the running time of e_2 partitions into two successive intervals: the stretch where the train is not yet in the tunnel, followed by the stretch where the train is in the tunnel.

And (3) is true, because the running time of e_3 partitions into two successive intervals: the stretch where the train is not yet out of the tunnel, and the stretch where the train is out of the tunnel.

PARIS ───────────────────── ═══ ───────── AMSTERDAM

tunnel

e_1 − − − − − − − − −+++++− − − − − − − IN

e_2 − − − − − − − − −+++++ IN

e_3 − − −+ + + + + +   OUT

We move to the progressive. A standard assumption in the semantics of the progressive is what I will here call the **Progression Principle:**
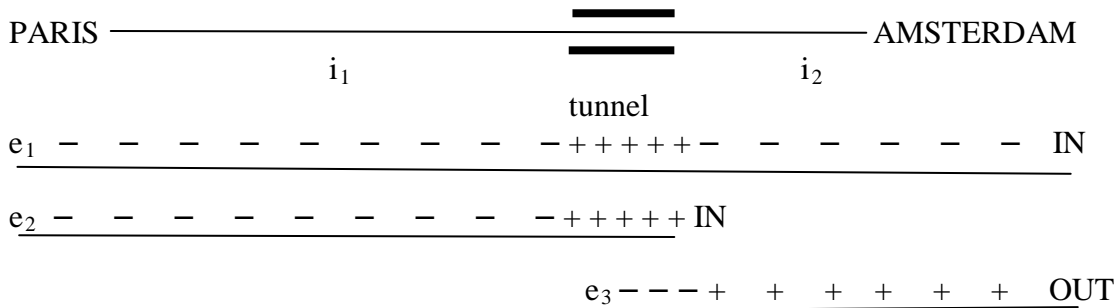
> **The Progression Principle:**
> If an event e is realized with running time i, then (except maybe at the very end of i), during i PROGRESSIVE(e) is true.

Dowty 1979 assumes this principle, so do I in Landman 1992, and so do many others. It justifies an entailment from the simple past to the past progressive: if *I drew a circle* is true at interval i, then during i, *I was drawing a circle* is true. I argued in Landman 1992 that Dowty's semantics doesn't strictly speaking get you this inference due to his inertia semantics, and also that there are issues about what to do with pauses, but I will ignore these issues here; the problems I am concerned with here are not problems of inertia or pauses.

What is useful about the progression principle for our purposes here, is that it allows us to use the progressive as a check on the adequacy of the non-progressive semantics: say, your semantics of a non-progressive sentence predicts that sentence to be true because of an event with running time i; put that sentence in the progressive and check your intutions concerning the truth of the progressive during i. The progression principle tells you that, if your semantics for the non-progressive was correct, you should find that your intuitions are such that the progressive comes out at true at any reasonable subinterval of i (ignoring pauses and the very end). If this doesn't come out, you have a problem, either with your semantics, or with the progression principle (and the latter seems rather reasonable).

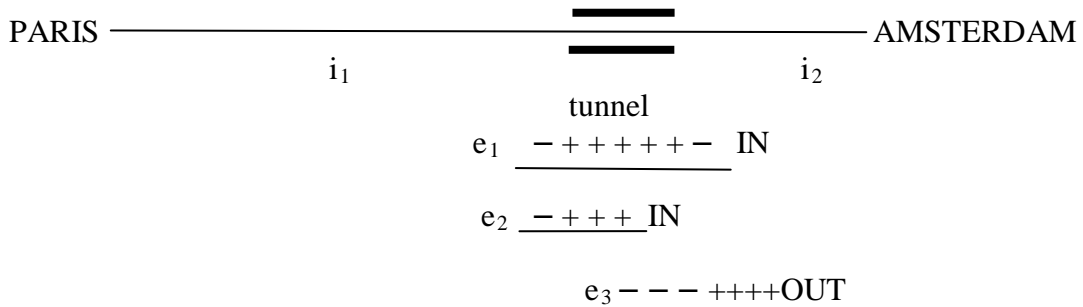We apply this principle now to Kracht's semantics.

(1a) We were riding through the tunnel.
(2a) We were riding into the tunnel.
(3a) We were riding out of the tunnel.

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PARIS ────────────────────────  ══════  ──────────── AMSTERDAM
                         i₁                            i₂
                                   tunnel
e₁ − − − − − − − − − + + + + + − − − − − − −   IN

e₂ − − − − − − − − − + + + + + IN

                              e₃ − − − +  +  +  +  +  +   OUT
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Let i_1 be a stretch where the train is between Brussels and Antwerp, and i_2 a stretch where the train is between Den Haag and Schiphol. With the progression principle, Kracht's semantics predicts that (1a) is true at i_1 and at i_2, that (2a) is true at i_1, and (3a) is true at i_2. In other words: we watch the tulipfields between Den Haag and Schiphol from the train, and I tell you: 'We're riding through the tunnel'; or I tell you: 'we're riding out of the tunnel.'

      Since you're unlikely to find my statement acceptable, it seems that Kracht's semantics has a problem. And the diagnosis of the problem seems quite clear: apparently we don't use progressive statements like the above on just any point of the path between Paris and Amsterdam, but only on a much smaller subpath. We might strengthen the semantics as follows:

      Kracht's semantics for *into the tunnel* requires the path of an event which is into the tunnel to be a path on which a single change from not in the tunnel to in the tunnel takes place. We can change that to requiring the path to be **the path of that single change**. Arguably, the change takes place over a smaller interval than the whole trip from Paris to the tunnel, let's say, over the interval that starts around the point: 'prepare for going into the tunnel' and end around the point 'you will have noticed that we're in the tunnel now'. If the preposition meaning restricts us to paths that are restricted in this way, sentences (1)-(3) will still be true, but in virtue of events with a smaller running time:

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PARIS ────────────────────────  ══════  ──────────── AMSTERDAM
                         i₁                            i₂
                                   tunnel
                       e₁  − + + + + + −  IN

                      e₂ − + + + IN

                          e₃ − − − ++++OUT
```

In that case, the progressive sentences (1a)-(3a) are required to be true only at the intervals indicated, which is reasonable, not at intervals i_1 or i_2, which is also reasonable.

I will call the unrestricted Kracht-semantics the long-path semantics, and the restricted semantics the short-path semantics (where 'short' means 'restricted to the actual change, this doesn't have to be actually short, of course)/

Should we move from the less restricted Kracht-semantics with long paths to this more restricted proposal with short paths? Before we rashly do so, we should note that there also *is* a use of the progressive which fits the Kracht semantics. We go back to point i_2. While we couldn't really truthfully say (4a), we *could* say (4b):

(4) a. [said at i_2]: We're riding through the tunnel right now.
    b. [said at i_2]: You know, today we pay extra, because we're riding
            through the tunnel.

The progressive in (4b) seems to say: we pay extra because we're on a trip which is through the tunnel. But that is basically what the long-path semantics tells us the progressive *should* say. Be that as it may, I will argue below that the usage of the progressive in (4b) has nothing to do with the long path semantics.

This suggests that we ought to change to a short path semantics. But that raises a variety of problems. This becomes clear when we *combine* the prepositional phrases we are talking about here with prepositional phrases that require reference to the long path, like *from Amsterdam to Paris*:

(5) We rode from Paris to Amsterdam through the tunnel.

On a short path semantics, this sentence does not come out as true in the above scenario. More precisely, the short part semantics only provides a reading for this sentence with a long tunnel, where we go into the the tunnel around Paris and only get out around Amsterdam. But (5) seems to have another reading: say, the train can take one of two routes, one which goes through the tunnel, the other which goes over a bridge, and I am telling you we took the tunnel route. And that seems to be the long path reading.

But then, if we assume for this case a long path semantics, what about our feelings about the progressives in (1a-3a)? Why can't we say (4a) truthfully, if the semantics has a perfectly fine long path interpretation?

Without solving this problem, it can be noticed that the short path/long path distinction has the flavour of an ambiguity. When we move the prepositional phrase around in the sentence in (5), we get, I think, a different prominence effect:

(6) a. We rode from Paris to Amsterdam through the tunnel.
    b. We rode through the tunnel from Paris to Amsterdam.

It seems to me that, while an interpretation with a short tunnel is not exactly excluded in (6b) a long-tunnel interpretation is more prominent here. Cf. (7):

(7) a. We rode from France to England through the tunnel.
    b. We rode through the tunnel from France to England.

While to me (7a) seems non-committal as to a long tunnel or short tunnel, out of the blue, the long tunnel interpretation is prominent in (7b).

To make matters more complex, let's look at semelfactives with directional prepositions, these are famous cases like (8):

(8) I kicked the ball into the net.

The standard idea about such sentences is: the kicking event initiates a movement of the ball, and *into* constrains the path of the movement, not the kicking. The latter suggests a long-path semantics of *into*, i.e. the kicking marks the beginning of a movement path on which ultimately an *into*-change takes place. However, the facts for this case are, once again, complex. Take the following scenario:

-at t_1 I kick the ball (from far).
-at t_2 I stand still and watch it go through the air.
-at t_3 it gets into the net.

You ask me at t_2 what I am doing, and I say with a smug smile:

(9) I am kicking the ball into the net.

I find this baffling. I can use the progressive (9) during the actual kick, but it is very funny to say (9) at t_2.

Maybe surprisingly, I have less problems with the following case:

(10) I shot a missile into the atmosphere of Venus.

-at t_1 (day one) I shoot the missile.
-at t_2 (day two) I sit under a tree smoking a pipe.
-at t_3 (day three) the missile gets into the atmoshere of Venus.

You ask me at t_2 what I am doing, and I say (11):

(11) I am shooting a missile into the atmosphere of Venus.

In this case, I have done the actual shooting at t_2, yet (11) doesn't sound that bad. The reason may well be that I allow for a more extended sense of *shoot* which applies beyond the point where the literal shooting is done. While at t_2 in the first example I am clearly not kicking anymore, maybe at t_2 in the second example I can still count as shooting. This raises questions about the semantics of (9): if the progressive in (9) still only applies to the kicking event, then apparently, *into the net* is not a modifier on the main event but on an event which is introduced subordinately. But that raises the possibility of rethinking cases like (5) as well.

A most interesting case, for my purposes here, is (12):

(12) I pushed John out of the window.

If John was sitting on the window sill, I pushed him, and he fell out, (12) is, of course, an accurate description of what I did. But what if the scenario is as follows:

In the building there is a large slide with several bends, and whose bottom end sticks out of the window.

-at t_1 I give John a push at the top of a slide.
-at t_2 John is sliding down the slide.
-at t_3 John gets out of the window

Now, in this case, it is certainly true that I caused John to get out of the window, and that my push was what did it, but I don't think that this makes (12) true, and also the progressive (13) does not seem true, not at t_1, but also not at t_1:

(13) I am pushing John out of the window.

Why is this so? This is, I think, a case of true short-path semantics. *Push* doesn't seem to allow long paths: If I push you into the gorge, my push and the change from not in the gorge to in the gorge must roughly coincide. That is, I can push you off the ridge (from not off the ridge to off the ridge), but if you have to fall 300 meters down first to hit the water of the river below, I wouldn't say that I pushed you into the water. I pushed you of the cliff, and as a consequence you fell into the water.

This is different, then, from the case of (10): there we extended the interpetation of *shoot* over the movement path: here we shorten the movement path so that the change directly connects to the push.

With these observations, let us come back to the train from Paris to Amsterdam. Let's assume that in the tunnel a special pushing engine stands ready to give the train a push out of the tunnel (the normal engine won't make it). This is a special service that doesn't happen on every trip (and you pay for it). We're now again between Den Haag and Schiphol at i_2 and I say:

(14) Today we're paying extra, because the engine is pushing us out of the tunnel.

The problem is this. This statement seems to be as good (or as bad) as the statement (4b) we discussed above. But, given what we just saw about the semantics of *push*, this progressive shouldn't come out as true at i_2 even on the long path analysis. The movement path constrained by *out of* contains just the change from not out to out following directly on the push. That means that the event being pushed out of the tunnel cannot extend much beyond the train being out of the tunnel. And that means that it shouldn't be true at i_1.

But that suggests that the usage of the progressive in (4b) and (14) is something else, something that the analyses of the prepositions and the progressive so far do not account for. Something possibly to do with a different grid of present (since the use of *today* rather than *right now* is rather suspicious). But that means, as I already indicated, that (4b) isn't really evidence for a long path analysis at all. If so, the progressive data in

(1a-3a) suggest that there is no long-path reading. But then how do we get long path-effects when we get them?

It seems that we need to think hard or harder about how prepositions modify event paths, which events or which event paths they modify, and how the progressive interacts with all this. Since we owe so much of the systematic study of event paths and their interaction with aspect to Manfred, I offer this puzzle (or mess?) with warmest regards to him as a birthday gift.

Dowty, David, 1979, *Word Meaning and Montague Grammar*, Kluwer, Dordrecht.
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Landman, Fred, 1992, 'The progressive,' in: *Natural Language Semantics* 1,1.