

TEMPORAL INTERPRETATION IN
NARRATIVE DISCOURSE AND EVENT
INTERNAL REFERENCE

By

DANIEL GORDON ALTSHULER

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ABSTRACT OF THE DISSERTATION

Temporal interpretation in narrative discourse and event internal reference

by DANIEL GORDON ALTSHULER

Dissertation Director:
Roger Schwarzschild

This dissertation argues that aspectual markers denote *birelational* functions from a set of events denoted by a verb-phrase (VP) to a set of VP-event-parts that are located relative to: (i) an input encoding explicitly temporal information and (ii) an input encoding information about discourse connectivity. The proposed analysis is implemented within Compositional Discourse Representation Theory and accounts for temporal interpretation in narrative discourse.

The view that aspect describes VP-event-parts allows a straightforward comparison between the English progressive and the Russian imperfective. Both lead to the *imperfective paradox* because when they combine with VPs describing non-atomic events, any one of the VP-event-parts satisfies their truth-conditions. When the base-VP describes atomic events, however, the Russian imperfective leads to an entailment that the described event culminated because the only event-part that could satisfy its truth-conditions is the VP-event. In the case of the English progressive, however, coercion takes place because its truth-conditions require proper VP-event-parts.

The view that aspect is *birelational* provides an explanation of why the Russian imperfective could lead to an entailment that the described event: (iii) took place within some salient time and (iv) did not follow a salient discourse event. This aspect relates a VP-event-part and its consequent state relative to two inputs, which specify whether (iii) or (iv) holds. One of these inputs is a *time* that is supplied by the tense and whose value is constrained by temporal adverbials. The other is a *state* that is supplied by temporal adverbials and whose value may be fixed by the discourse context.

An important consequence of the analysis is that the state input supplied by temporal adverbials determines—to a large extent—whether narrative progression is possible. For example, the state input supplied by *that same day* requires a salient antecedent and narrative progression follows from independent rules of anaphora resolution. *Yesterday*, however, introduces an unspecified state into the discourse context that is not linked to prior discourse. Finally, *now* introduces a state that is linked to the discourse context, but the constraints imposed on this state are only compatible with stative VPs, which do not trigger narrative progression.

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Dedication

Разницы нет никакой между Правдой и Ложью,

Если, конечно, и ту и другую раздеть.

(Vladimir Vysotskij)

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Chapter 1

Introduction

1.1 Object of study

Temporal interpretation of a given sentence depends largely on the *aspect* in that sentence. For example, consider the sentences in (1) and (2), which describe a letter-writing event that took place prior to the speech time. The sentence in (1) exemplifies the *perfective* aspect and entails that Abelard finished writing a letter to the Canon, while (2) exemplifies the *progressive* aspect and it does not have such an entailment; (2) is true if Abelard only wrote the salutation.

- (1) Abelard wrote a letter to Heloise's uncle, the Canon.
- (2) Abelard was writing a letter to Heloise's uncle, the Canon.

Moens and Steedman (1988) account for data, viz. (1) and (2), by proposing that aspect denotes a function from a set of events denoted by a verb phrase (VP) to a set of VP-event parts. A VP like *write a letter*, according to Moens and Steedman, denotes a set of letter-writing events that are structured in a particular way—they consist of a *preparatory process* or a series of preparations that *culminate* when the letter comes into existence.¹ The difference between (1) and (2) reduces to a difference in which VP-event part is returned by the aspect:

¹ The term 'lexical aspect' (or 'aktionsart') is often used to characterize certain properties of VP meanings that are discussed later in this chapter. In what follows, I reserve the term 'aspect' to refer to the contribution of aspectual markers such as the progressive suffix *-ing* (cf. the term 'grammatical' or 'viewpoint' aspect in Smith 1994).

the perfective aspect returns the culmination of the letter-writing event, while the progressive aspect returns the preparatory process of the letter-writing event.

In addition to describing a VP-event part, aspect has a discourse function. As noted by Jespersen 1924: "...[the aorist and the imperfect aspect] correspond to the two meanings of E. *then*, (1) next after that, as in "then he went to France"...and (2) 'at that time' as in "then he lived in France" [= "he lived in France then"]. The aorist carries the narrative on, it tells us what happened next, the imperfect lingers over the conditions as they were at that time..." (Jespersen 1924, pp. 276).² To see what Jespersen had in mind, consider the following discourse, from Kamp and Reyle 1993.

- (3) a. A man entered the White Hart alone.
 b. He was wearing a black jacket.
 c. Bill served him a beer (after Kamp and Reyle 1993, pp. 521).

Here, we understand that a man was wearing a jacket when he entered the White hart and that he was served a beer after his entrance. This understood event ordering is arguably due to the perfective aspect in (3a,c) and the progressive aspect in (3b). On this view, Jespersen's description of the imperfect applies to the progressive, which "lingers over the conditions as they were at that time", while Jespersen's description of the aorist applies to the perfective, which "carries the narrative on".

One question that arises is whether our understanding of the event ordering in discourses like (3) is, in fact, conditioned by grammatical rules, rather

² "Aorist" is often used interchangeably with "perfective". "Imperfect" is often used to characterize the combination of the imperfective aspect and the past tense.

than world knowledge. Kamp and Reyle address this issue when they write: “Surely a man would not be expected to change his clothes while or immediately after entering a pub and surely he would be served a beer only once he is properly inside. But it is not just world knowledge that is involved here. For when plausibility considerations based on world knowledge go against the formal discourse principles...there is a real conflict” (Kamp and Reyle 1993, pp. 522). Kamp and Reyle provide a discourse such as (4) below, which differs from (3) in that the events described in (4a) and (4b) have been switched around:

- (4) a. The publican of the White Hart served a customer a beer.
 b. The man was wearing a black jacket.
 c. #He entered the pub alone (after Kamp and Reyle 1993, pp. 521).

If world knowledge alone was responsible for the eventuality ordering, then the discourse above would be felicitous—i.e. it would be interpreted on a par with (3). However, the fact that it is infelicitous supports Kamp and Reyle’s idea that grammatical rules are at play—i.e. they force an interpretation in which the man was first served a beer and then went inside the pub.³

In order to account for the event ordering in (3), Kamp and Reyle build on previous work (e.g. Kamp 1979, Kamp and Rohrer 1983) and propose that aspect encodes a relation between a described eventuality and a narrative placeholder, which following Reichenbach 1947, Kamp and Reyle call the *reference point*. Their idea was that the different event orderings in (3a,b) vs. (3a,c) is due—in part—to the progressive and the perfective encoding different relations between a

³ As noted by Barbara Partee (p.c.), (4) is felicitous for those speakers of English for whom the past perfect is never obligatory. For these speakers, (4c) is understood as adding explanatory background to the text.

described event and the reference point. In effect, the proposal is to treat aspect as a discourse marker: it constrains the temporal location of a described event within a story. Putting this idea together with the observation about (1) and (2), we have the following hypothesis about the meaning of aspect:

- (5) Hypothesis about aspectual meaning
Aspect denotes a function from a set of events denoted by a VP to a set of VP-event parts that are related to the reference point.

This thesis presents two puzzles for the hypothesis in (5). The first puzzle concerns cases where the imperfective aspect in Russian seems to function like its perfective counterpart. Compare (6), which contains the imperfective VP *priežal* ('arrived'), and (7), which contains the perfective VP *priexal* ('arrived').⁴ In both examples, the father is understood to have arrived, before leaving shortly thereafter. Although some native speakers claim that there is a difference between (6) and (7), it is extremely difficult to state what that difference is. So much so, that a translation of these sentences leaves out whatever difference there may be (cf. Paducheva 1992a).

- (6) *K nam priežā-l otec, no vskore u-exa-l.*
To us arrive.IPF-PST.3S father but in.a.rush PFV-go-PST.3S
'Father came/had come to see us, but went away again soon' (Rassudova 1968).

⁴ The perfective aspect is glossed as 'PFV' and this gloss is placed immediately before the gloss for the verbal stem. This is meant to indicate that the perfective is morphologically realized as a verbal prefix. The imperfective aspect, on the other hand, is glossed as 'IPF' and this gloss is placed immediately after the gloss for the verbal stem. This is meant to indicate that the imperfective is morphologically realized as a verbal suffix (though in (6), there is no overt imperfective morpheme). See §1.4 for more discussion of Russian morphology.

- (7) *K nam priexa-l otec, no vskore u-exa-l.*
 To us PFV.arrive-PST.3S father but in.a.rush PFV-go-PST.3S
 ‘Father came/had come to see us, but went away again soon.’

The usage of the imperfective aspect in (6) is especially puzzling given the well-known generalization that the imperfective often mirrors the progressive in English, as the following example illustrates.

- (8) *Smerka-l-os', kogda brosi-l-i kosit'.*
 Darken.IPF-PST-RFL when PFV.stop-PST.3P mow.IPF.INF
 ‘It was getting dark when they stopped mowing’ (Sholokhov, *Tixij Don*;
 cited in Forsyth 1970: 66).

The contrast between (6) and (8) raises some non-trivial questions about the meaning of the Russian imperfective. Chief among these, given the hypothesis in (5), is whether the same kind of a VP-event part is at play in (6) and (8).

The second puzzle concerns the discourse properties of the Russian imperfective. Consider the discourses in (9) and (10), where the b-sentences contain the imperfective VP *čital* (‘read’). In (9), we understand Dudkin to be reading *War and Peace* at the time of the speaker’s entrance. In this way, the imperfective is on a par with the progressive in (3b). In (10), however, we understand Dudkin to have read a brochure prior to his entrance into the castle. In this way, the imperfective is on a par with the English perfect, viz. the perfect auxiliary *had* in the translation of (10b).

- (9) a. *Ja za-še-l v svoju komnatu.*
 I PFV-came.in-PST.1s in self room
 ‘I came into my room.’
 b. *Dudkin tam čita-l Vojnu i mir.*
 Dudkin there read.IPF-PST.3s War and Peace
 ‘Dudkin was there reading *War and Peace*.’

- (10) a. *Dudkin za-še-l v zamok.*
 Dudkin PFV-go-PST.3S into castle
 ‘Dudkin entered the castle.’
- b. *On čita-l brošjuru ob ètom zamke.*
 He read.IPF-PST.3S brochure about this castle
 ‘He had read (at least some of) a brochure about this castle.’

The contrast between (9) and (10) raises further questions about the meaning of the imperfective aspect in Russian. Not only is there a question about what VP-event parts are in play in (9) and (10), but also whether the VP-event parts described in these examples are related in the same way to the reference point.

Traditionally, these questions have been dealt with by treating the imperfective as an unmarked member of an opposition with the perfective—the imperfective is thought to “posses no positive semantic mark which it would express constantly” (Bondarko 1971, cited from Rassudova 1984, pp. 14). This has lead to the “widespread idea that aspect in Russian, and factual imperfective [= (6) and (10b)] in particular, does not lend itself to a semantic, truth conditional analysis” (Smith 1994, pp. 8). Paslawska and von Stechow (2003) write:

“it is hopeless to find a few factors as triggers for the imperfective. Even if we could enumerate all the factors that trigger the imperfective, there seems to be no structural functional category that could somehow be linked with an imperfective feature in AspP...we follow the line indicated by Jakobson and Forsyth: there is no such thing as the meaning of the imperfective; this ‘aspect’ is really a non-aspect” (Paslawska and von Stechow 2003, pp. 336).

The goal of this thesis is two-fold. The first goal is to show how a simple extension of the hypothesis in (5) allows for a typology of aspectual markers that includes the imperfective aspect in Russian and other Slavic languages, as well as the English progressive. The key idea is that aspectual markers denote

birelational functions from a set of events denoted by a VP to a set of VP-event-parts that are located relative to: (i) an input encoding explicitly temporal information and (ii) an input encoding information about discourse connectivity.

The other goal is to explore the interaction between aspectual and adverbial meaning. A central claim of the thesis is that temporal location adverbs supply an input that is required by aspect and this determines—to a large extent—whether narrative progression is possible. This claim is motivated by what I call ‘adverbial transparency’ to narrative progression. Consider the discourses below, in (11)-(13). The discourse in (11) is similar to (3), where we see a typical case of narrative progression—i.e. the times of the hiring and giving events described in (11b) follow the cleaning event described in (11a). This event ordering cannot be due to world knowledge since people typically work *after* being hired.

- (11) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. My wife hired her and gave her a check for one month in advance.

In (12), however, the adverbial expression *the previous day* ‘blocks’ the narrative progression. Such is the case because the time denoted by *the previous day* could not possibly follow a salient event previously mentioned in the discourse.

- (12) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. **The previous day**, my wife hired her and gave her a check for one month in advance.

The puzzling discourse is the one below, in (13), where the adverbial expression *that same day* does not alter the narrative progression—the adverbial

expression is, as it were, ‘transparent to the progress’. Here the understood event ordering is the same as in (11).

- (13) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. **That same day**, my wife hired her and had given her a check for one month in advance.

The observation about (13) is surprising given the standard assumption that in contexts where temporal location adverbials are present, narrative progression is completely determined by the time denoted by the adverbial (Hinrichs 1981; 1986, Partee 1984, Dowty 1986). That is, given this assumption, a naïve semantics for *that same day*—i.e. it denotes a 24-hour interval of time previously mentioned in this discourse—predicts (contra to fact) that the events described (13a) and (13b) are understood to be unordered with respect to each other.

The claim that aspectual meaning requires an input from temporal location adverbs is also motivated by a puzzling observation that has not received an adequate explanation: why *now*—unlike other temporal location adverbials—has an affinity for stative sentences, viz. (14).

- (14) John came to me and told me he had been dressing in my clothes whenever I wasn’t home for quite a few years, and **now he {#took/^{OK}was ready to take/^{OK}was taking}** the next step and with the help of his doctor (that I didn’t even know about) he wanted to start the process of becoming female (from *Woman’s Day* magazine).

Here, *now* seems to facilitate a description of the ‘background’ for the event of John telling the speaker about his dressing habits. In doing so, however, *now* ‘blocks’ narrative progression.

1.2 Organization of the thesis

This introductory chapter proceeds with a brief overview of the event structure assumed throughout the thesis. In particular, I discuss Moens and Stedman's 1988 assumed ontology, paying special attention to the notion of a *consequent state*, which will play a crucial role in the analysis proposed in Chapters 3 and 4. Subsequently, I provide a brief overview of the Russian aspectual system, focusing on some well-known diagnostics for (im)perfectivity that provide a glimpse of how tense and aspect interact.

Chapter 2 begins with a description of the quirky properties of the Russian imperfective. In particular, I consider data in which the imperfective seems to function like its perfective counterpart and data in which it functions like the English progressive. I suggest that the Russian imperfective could be understood more adequately if—instead of using the general notion of *completion* to characterize events described by *telic* and *atelic* VPs (as is often done)—we focus on cases in which an imperfective sentence has a telic VP and it therefore makes sense to talk about an event's *culmination*. Moreover, I suggest that we should differentiate cases in which a sentence *entails* that the described event culminated from cases in which a sentence merely *implicates* this.

Using the notions of *culmination* and *entailment* to describe the Russian data, I propose the following empirical generalization: the combination of the Russian imperfective with a base VP gives rise to an entailment that a described event culminated only when the base VP is an achievement. To account for this generalization, I extend Hana Filip's (Filip 1993; 1999; 2000) meaning for the

Russian imperfective and incorporate Landman's (1992; 2008) *stage-of* relation, which allows one to talk about the possible developments of an event. The proposed analysis not only accounts for the quirky culmination properties of the Russian imperfective, but it also naturally extends to the imperfective aspect in other Slavic languages, as well as the English progressive.

The goal of Chapter 3 is to extend the analysis offered in Chapter 2 to account for the discourse properties of aspect. The Russian imperfective once again serves as the guide because it discriminates between two influential approaches. This aspect is remarkable because it relates distinct event parts to the reference point. Which event part is at play depends on how the reference point is specified. If it is specified by a temporal location adverbial, then a VP-event part is located in time. If, on the other hand, it is specified by the discourse context, then a consequent state of a VP-event part is located in time. Based on these observations, I argue that a version of an approach to aspect advocated by Hans Kamp and colleagues (Kamp and Reyle 1993; Kamp, van Genabith, and Reyle 2005) ought to be adopted. According to this approach, aspect is *birelational*—it relates a described event to two temporal parameters. This approach differs from a *prima facie* more elegant approach first proposed by Erhard Hinrichs (Hinrichs 1981; 1986) and later extended by Barbara Partee (Partee 1984), David Dowty (1986) and Bonnie Webber (Webber 1988), in which aspect relates a described event relative to a single temporal parameter.

The goal of Chapter 4 is to make the analysis of aspect proposed in Chapters 2 and 3 formally explicit within a more general theory of narrative

progression. I adopt Compositional Discourse Representation Theory (CDRT, Muskens 1995; 1996) to provide dynamic meanings of temporal expressions as terms in a typed λ -calculus. The central claim in this chapter is that temporal location adverbs supply an input that is required by the aspect and thereby determine—to a large extent—whether narrative progression is possible. This claim is motivated by a small class of temporal location adverbs (e.g. *that same day*, *on Sunday*, *at noon*) which are often found in narrative progression contexts and yet the time that they describe is not sufficient to explain why the narrative progression is salient. I propose an analysis that not only accounts for these adverbs, but also generalizes to adverbs that are incompatible with narrative progression, e.g. *the previous day*, as well as those that are narrative triggers, e.g. *the next day*. Moreover, I provide an analysis of *today*, *on Sunday* and *now*, whose semantics is complicated by the fact they are compatible with various tenses. *Now* is given special attention because its puzzling behavior in free indirect discourse and affinity for stative sentences provides independent evidence for the *birelational* analysis of aspect advocated in Chapter 3.

1.3 Event structure

Moens & Steedman (1988) proposed that events have the tripartite structure in Fig. 1 below.

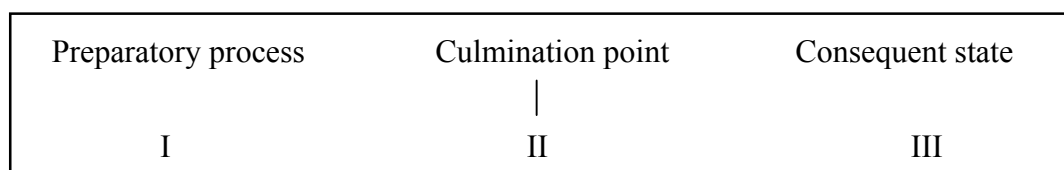


Figure 1: Moens and Steedman's (1988) tripartite event structure

The event structure above allows us to characterize various properties of VP meanings. The *culmination point* in Fig.1 allows us to distinguish between so-called *telic* and *atelic* VPs. A telic VP describes the culmination or the ‘telos’ of a given event. One type of a telic VP, called an *achievement*⁵, solely describes an event’s culmination. As such, an event described by an achievement VP is perceived as being instantaneous, i.e. as being over as soon as it is instantiated. Examples of achievement VPs are provided in (15).

- (15) a. We arrived in Pavlovsk at about ten o’clock.
 b. After the burial service, Abelard noticed the young priest’s obvious discomfort.
 c. Franz Kafka gave me a short essay on Sören Kierkegaard by Carl Dallago.
 d. On this day in 1852 Nikolai Gogol died at the age of forty-two.

So-called *accomplishment* VPs also describe an event’s culmination (cf. the term *culminated process* in Moens and Steedman 1988). For example, the culmination described by the VP in (16a) is the final step that leads the speaker to be in Pavlovsk; in (16b), the described culmination is the final word written by Kafka that completes the story; in (16c) the described culmination is the end of the autobiography read by Heloise; in (16d) the described culmination is the final brush stroke that complete Gogol’s picture of various pots and platters.

⁵ The term *achievement* is due to Vendler 1967. However, a distinction between the various types of VPs goes (at least) as far back as Aristotle, viz. the proposed categories in the *Metaphysics* and *Nicomachean Ethics* of *enérgeiai*, *práksis* ‘doing’ and *poiēsis* ‘making’ (see Ryle 1949 and Kenny 1963 for more discussion).

- (16) a. I walked to Pavlovsk via the Pushkin-Pavlovsk road.
 b. Nine years after these unhappy events, Heloise read Abelard's confessional autobiography *Historia Calamitatum*.
 c. Franz Kafka wrote a story about a man who woke up to find he had been transformed into a cockroach.
 d. Gogol drew various pots and platters, laden high with cooked fish, and surrounded by bottles and glasses.

Unlike an achievement VP, however, an accomplishment VP also describes an event's *preparatory process* (viz. I in Fig. 1 above), which comprises a series of events (or preparations). For example, the final step that makes (16a) true is the final part of a walking process that may consist of various sub-events.⁶ Similarly, the final word written by Kafka that makes (16b) true is the final part of a story-writing process.

The examples in (17) and (18) illustrate examples of VPs which solely describe a preparatory process. That is, the VPs in (17) and (18) do not describe a culmination point and are therefore *atelic*, cf. the term 'activity' or 'process' often used to describe an atelic event.

- (17) Yesterday morning Mary walked her dog in the park.
 (18) Yesterday morning Mary ran on a treadmill parallel to Anna.

Evidence that the VPs in (17) and (18) do not describe an event's culmination is that we can ask how long the events lasted, viz. (19) and (20). This is not possible in (21a) and (22a), however, where it is more natural to ask how long it took until the culmination was reached, viz. (21b) and (22b).

⁶ The precise number and quality of the sub-events is not (typically) encoded in the lexicon and is determined by the context.

- (19) How long did Mary walk her dog in the park?
- (20) How long did Mary run on a treadmill parallel to Anna?
- (21) a. #How long did Abelard notice the young priest's discomfort?
b. How long did it take Abelard to notice the young priest's discomfort?
- (22) a. #How long did you walk to Pavlovsk?
b. How long did it take you to walk to Pavlovsk?

Let us now move on to talk about the third and perhaps the least understood part of Moens and Steedman's event structure, namely an event's *consequent state* (viz. III in Fig. 1 above). This event part will play an especially crucial role in this thesis. As the name suggests, it describes the consequence associated with a particular event (cf. the oft-used notion of a 'result state' in Dowty 1979). Perhaps the strongest piece of evidence that natural language makes reference to an event's consequent state comes from the English perfect, viz. (23).

- (23) I have spilled coffee.

The sentence above has two interpretations. As noted by Higginbotham (2008), the salient interpretation is one in which "the announcement is only in order as long as there is spilled coffee around." This interpretation is often called the *result perfect*. However, there is also an interpretation of (23) that "is, as it were, "been there, done that" (Higginbotham 2008, pp. 176)." This interpretation—often called the *experiential perfect*—is especially salient if one puts the nuclear stress on *have* or if one is answering the question: "What is something that you have done as a waiter that has gotten you fired?"

One way to account for the result and experiential perfect interpretations is to appeal to the distinction between: (i) a *permanent consequent state* which doesn't have an ending (e.g. having opened the window) and (ii) a *reversible consequent state* which has an ending (e.g. the window being open).⁷ Given this distinction, we could say that on the result perfect interpretation, a temporary consequent state of a coffee spilling event holds at the speech time. This consequent state feels 'especially significant' at the speech time because it will not continue to hold forever. On the experiential perfect interpretation, however, a permanent consequent state of a coffee spilling event holds at the speech time. This consequent state does not feel 'especially significant' at the speech time because it will continue to hold forever.

Another natural language phenomenon whose analysis crucially relies on the notion of a consequent state is the so-called *resultative* construction in (24).

- (24) a. Jesse shot him dead.
 b. She painted the house red.
 c. She hammered the metal flat.
 d. He swept the floor clean (cf. Green 1970; 1972 and McCawley 1971).

As noted by Dowty, the “verb combines with an adjective and an object noun phrase to give an accomplishment in which the verb describes the causal activity (or accomplishment) and the adjective gives the result state that the direct object comes to be in as a consequence” (Dowty 1979, pp. 93). Without going into the details of Dowty's analysis, we can rephrase his observation as follows: the

⁷ For more discussion of this distinction see, e.g. Dowty 1979, Parsons 1990, Kratzer 2004.

adjective in the data above describes the consequent state that follows an accomplishment's culmination—e.g. in (24a), a man being dead is the consequent state that followed from the culmination of Jesse shooting this man; in (24b), the house being red is the consequent state that followed from a woman painting this house, and so on.⁸ This is the position taken by Rothstein (2001) who writes: “what resultatives do is give information about the state initiated by the culmination point of an event” (pp. 158).

The final phenomenon that we will look at whose analysis crucially relies on the notion of a consequent state concerns an example such as (25).

(25) Yesterday morning father walked into my house for 10 minutes.

As observed by Piñon (1999), when duration adverbials combine with VPs denoting telic events, the adverbial may specify the duration of the event's consequent state (see also Dowty 1979, pp. 255 for a brief discussion). Thus, in (25) above, we understand that the father intended to be inside the speaker's house for 10 minutes, and not that the walking in took that long. Piñon calls this the *R(esult)S(tate)-related usage* of the durational adverbials.⁹ The examples in (26) below also demonstrate such a usage. Crucially, they differ from the

⁸ One question that comes up is how the causal relation in resultatives is derived. This question has a long history. Dowty (1979) proposed that the causal relation is introduced by two rules (i) a construction specific interpretation rule and (ii) a syntactic rule that combines a transitive verb with an adjective to yield compound. More recently, Kratzer 2004 proposed that the causal relation in resultatives is carried by an unpronounced affix attached to the adjective (see also Parsons 1990 and Bittner 1999).

⁹ This is to be distinguished from the less salient usage in which the father is understood to have walked into the speaker's house multiple times and that the duration of all these iterations lasted 10 minutes; see also (27), where this 'iterated' interpretation is more salient. As noted by Piñon, German (and other languages) lexically distinguishes these two uses of the duration adverbials. In particular, the preposition *für* 'for' is used with durative adverbials to express the 'consequent state' interpretation and the adverb *lang* 'long' is used to express the 'iterated' interpretation.

examples in (27), where the duration adverbials can only be understood as specifying the duration of the described event.

- (26) a. Manuela jumped into the water for twenty minutes.
 b. Rebecca opened the window for five minutes (Piñon 1999: 420).
- (27) a. Rebecca swam for twenty minutes.
 b. Thomas loved Manuela for five years (Piñon 1999: 421).

Piñon argues that the contrast above can be explained only if we appeal to the notion of a consequent state (“result state” in his terms). He writes:

“the foremost semantic requirement of RS-related durative adverbials is that the meaning of the constituent that they combine with entail a result state. Since activities and states do not imply a result state, they are not compatible with RS-related durative adverbials” (pp. 422).

Piñon’s reasoning about (27a) above makes sense given Moens and Steedman’s event structure: VPs like *swim for twenty minutes* do not describe a culmination point and therefore cannot possibly describe a consequent state. As for (28b), it illustrates a *stative* VP, which, like an activity denoting VP, does not describe the culmination of an eventuality.¹⁰ Other examples of stative VPs are provided in (28)-(31).

- (28) Pavlovsk was a favorite summer retreat for well-to-do inhabitants of the Russian capital.
- (29) Peter Abelard had many sons.
- (30) Franz Kafka lived in the House at the Minute, near the Old Town Square in Prague, from 1889 to 1896.
- (31) Gogol knew that confession was an inseparable part of Christian ceremony.

¹⁰ The term *eventuality* was introduced by Emmon Bach to describe states and events (Bach 1981).

A well-known difference between states and activities is that the former are *strongly* homogeneous, while the latter are not—i.e. if a stative predicate P holds at an interval *i*, P holds at each instant within *i* (Taylor 1977, Dowty 1979). For this reason a stative VP like *looked frightened* in (32) is felicitous even when modified by the adverb *at that point*, which presumably refers to the point at which Anna began to approach Bill. In contrast, the activity VP like *walk his dog on a public sidewalk* is infelicitous in (32) because activity sentences cannot be true at a point, but only at an interval (albeit a small one).¹¹

- (32) Anna noticed Bill and approached him. At that point, he {^{OK}looked frightened/#walked his dog on the sidewalk}.

While there are many other observed differences between stative and eventive VPs (Lakoff 1966, Dowty 1979; see also Katz 1995 for an overview), the difference that is most crucial for the purposes of the thesis concerns the discourse properties these VP types. Ever since the seminal work by Hans Kamp (Kamp 1979; Kamp and Rohrer 1983), Erhard Hinrichs (Hinrichs 1981; 1986), Barbara Partee (Partee 1984) and others, it has been generally held that temporal anaphora depends—in part—on the distinction between eventive and stative VPs. For example, consider Partee’s classic example in (33). Here, the times of the described events (i.e. John’s getting up, going to the window, raising the blind,

¹¹ Taylor 1977 and Dowty 1979 claim that eventive sentences generally cannot be true relative to a point. While this is certainly true of sentences with activity and accomplishment VPs, it is unclear whether this is true of sentences with achievement VPs. Compare, for example, (32) to (i) below.

- (i) Then, in 1996, she became ill and unable to keep working. After over two years of very restricted activity, her illness began to be more manageable, allowing her to have some energy and reduced pain. At that point, in 1999, she and her husband, Graham, decided to launch *Inquire Within*. (<http://www.inquirewithin.net/shannonbio.htm>).

going back to bed) correlate with the order of appearance, i.e. a *narrative progression* is invoked. On the other hand, the states described in (33) (i.e. being light out, not being ready to face the day, being depressed) hold throughout the described events, i.e. a *narrative halt* is invoked.

- (33) John got up, went to the window, and raised the blind. It was light out. He pulled the blind down and went back to bed. He wasn't ready to face the day. He was too depressed (Partee 1984, pp. 253).

As noted in §1.1, narrative effects like those in (33) motivate the notion of a context supplied *reference time*—i.e. the time or event to which the story has so far developed—which is provided by the antecedent discourse and with which a temporal element in the new sentence establishes a certain anaphoric relation. And as will be discussed thoroughly in Chapter 3, described events differ from described states in (i) the relation that they bear to the reference time and (ii) whether they move the reference time forward.

1.4 The Russian aspectual system

Every verbal form in Russian is either *perfective* or *imperfective*. Imperfective verbal stems can be morphologically simple or complex. In the former case, they provide a basis for the derivation of the perfective forms, which involves prefixation. The Russian *Academy Grammar* (1960) lists twenty-eight prefixes that can be attached to an imperfective verb to yield a perfective one and up to sixteen prefixes can be compatible with one and the same verbal stem. The term *lexical prefix* is often used to describe perfective prefixes which add an

identifiable extra bit of information relating to how the event progresses. The term *superlexical prefix*, on the other hand, is often used to describe perfective prefixes which can be compositionally understood as bearing a predicational relation to a determiner phrase in object position (Romanova 2005).¹²

The examples below, in (34), illustrate that the imperfective infix *-yva-* can be added to a complex perfective verb, which in turn is derived from a simple imperfective verb. This process is often referred to in the literature as *secondary imperfectivization*.¹³

(34)	a.	<i>pisat'</i> write.IPF 'to write'	<i>za-pisat'</i> [PFV-[write.IPF]] 'to write down'	<i>za-pis-yva-t'</i> [[PFV-[write.IPF]]-IPF] 'to write/be writing down'
	b.	<i>govorit'</i> tell.IPF 'to tell'	<i>po-govorit'</i> [PFV-[tell.IPF]] 'to talk for a bit'	<i>po-govar-iva-t'</i> [[PFV-[tell.IPF]]-IPF] 'to talk/be talking for a bit'
	c.	<i>bolet'</i> be.ill.IPF 'to be ill'	<i>za-bolet'</i> [PFV-[be.ill.IPF]] 'to become ill'	<i>za-bol-eva-t'</i> [[PFV-[be.ill.IPF]]-IPF] 'to become/be becoming ill'
	d.	<i>znat'</i> know.IPF 'to know'	<i>u-znat'</i> [PFV-[know.IPF]] 'to learn'	<i>u-zn-ava-t'</i> [[PFV-[know.IPF]]-IPF] 'to learn/be learning'

Throughout the thesis, I will not indicate the morphological derivations above in the gloss. As illustrated below, in (35), I will simply indicate whether a VP is

¹² For more discussion see e.g. Isachenko 1960, Maslov 1961, Paducheva 1990, Babko-Malaya 1999, Filip and Rothstein 2005, Ramchand 2004 and Braginsky 2008.

¹³ Secondary imperfectization is often used as one of the criteria for determining the *lexical—superlexical* distinction. According to Romanova (2005), the former prefixes allow the verb to form secondary imperfectives, while the latter do not.

perfective or imperfective—e.g. in (35c), the perfective prefix is not indicated in the gloss for the imperfective VP *pogovarival* ('to talk for a bit').

- (35) a. *On govori-l o reformax.*
 He tell.IPF-PST.3s about reforms
 'He talked about reforms.'
- b. *On po-govori-l o reformax.*
 He PFV-tell-PST.3s about reforms
 'He talked a bit about reforms.'
- c. *On pogovar-iva-l o reformax.*
 He tell-IPF-PST.3s about reforms
 'He talked a bit about reforms.'

As noted in Maslov 1984, Smith 1994, Schoorlemmer 1995 and references therein, there are many diagnostics for (im)perfectivity in Russian. Below, I outline three diagnostics that provide a glimpse of how tense and aspect interact in Russian. The first diagnostic concerns episodic (non-habitual) statements, viz. (36) and (37), which illustrate that a verb in the present tense receives a present progressive interpretation if imperfective and a future interpretation if perfective.

- (36) *Anja čita-et knigu.*
 Anna read.IPF-PRS.3s book
 'Anna is reading a book'
- (37) *Anja pro-čita-et knigu.*
 Anna PFV-read-NPST.3s book
 'Anna will read a book.'

Another diagnostic for (im)perfectivity in Russian concerns verbs in the past tense. As illustrated in (38), such verbs can receive a habitual interpretation if imperfective, but must receive an episodic interpretation if perfective.¹⁴

- (38) a. *(Inogda) on pogovar-iva-l o reformax.*
 Sometimes he tell-IPF-PST.3s about reforms
 ‘(Sometimes) he talked about reforms.’ (Jakobson 1956/71, pp. 137)
- b. *(#Inogda) on po-govari-l o reformax.*
 Sometimes he PFV-tell-PST.3s about reforms
 ‘(Sometimes) he talked about reforms.’ (Jakobson 1956/71, pp. 137).

Finally, (39) illustrates that only imperfective verbs are possible with the auxiliary *budet* (‘will’), while Fig. 2 below summarizes the tense/aspect system in Russian.

- (39) *Marija budet {čitat' *pro-čitat'} knigu*
 Maria will read.IPF-INF PFV-read-INF book.
 ‘Maria will read a book.’

¹⁴ Interestingly, a perfective verb in the non-past tense can receive a habitual interpretation (Jakobson 1956/71), showing that the imperfectivity is not a necessary condition for habituality. See Chapter 2 for more discussion.

	IMPERFECTIVE	PERFECTIVE
PAST	<p><i>On (často) čit-al knigu.</i></p> <p>He often read.IPF-PST.3s book</p> <p>“He was (often) reading the book.”</p> <p>“He (often) read the book.”</p>	<p><i>On (*často) pro-čit-al knigu.</i></p> <p>He often PFV-read-PST.3s book</p> <p>“He read the book.”</p>
PRES	<p><i>On (často) čita-et knigu.</i></p> <p>He often read.IPF-PRS.3s book</p> <p>“He is (often) reading the book.”</p>	<p><i>On (často) pro-čita-et knigu.</i></p> <p>He often PFV-read-PRS.3s book</p> <p>“He will read the book.”</p> <p>“He would often read the book.”</p>
FUT	<p><i>On budet (často) čitat' knigu.</i></p> <p>He will often read.IPF.INF book</p> <p>“He will be reading the book (often).”</p>	

Figure 2: Tense/Aspect system in Russian

Chapter 2

Culmination puzzle for a theory of aspect

2.1 The puzzle

A central puzzle in research on Slavic aspect concerns cases where the imperfective seems to function like its perfective counterpart. In particular, cases in which the imperfective leads to an inference that the described event was *completed*. Such cases are especially common in Eastern Slavic languages—Bulgarian, Russian and Ukrainian (Dickey 1995; 2000)—and are puzzling because they contradict the well-documented cases in which the imperfective leads to an inference that the described event was not *completed*.

In what follows, I suggest that the Russian imperfective could be understood more adequately if—instead of using the general notion of *completion* to characterize events described by *telic* and *atelic* VPs (as is often done)—we focus on cases in which an imperfective sentence has a telic VP and it therefore makes sense to talk about an event's *culmination*. Moreover, I suggest that we should differentiate cases in which a sentence *entails* that the described event culminated from cases in which a sentence *implicates* this.

Using the notions of *culmination* and *entailment* to describe the Russian data, I address the questions below, in (40):

- (40) a. When does the Russian imperfective lead to an inference that a described event culminated?
- b. What meaning predicts the answer to (40a)?

The main contribution of this chapter is the generalization in (41):

- (41) *Culmination entailment generalization*
 The combination of the Russian imperfective with a base VP gives rise to an entailment that a described event culminated only when the base VP is an achievement.

The generalization in (41) gives part of the answer to (40a) and leads to the view that the culmination properties of the perfective and the imperfective aspect in Russian are neutralized when the base VP is an achievement. The generalization in (41) does not fully answer (40a) because it says nothing about cases in which the Russian imperfective leads to an implicature that the described event culminated. Although such cases will be discussed in this chapter and some steps will be taken towards analyzing them, the following question will—to a large extent—remain a puzzle: why would an imperfective implicate an event's culmination when its perfective counterpart entails it?¹⁵

To account for the generalization in (41) and thereby shed light on (40b), I build on Hana Filip's (Filip 1993; 1999; 2000) proposal that Russian has a partitive imperfective operator, IPF. Using Landman's (1992) *stage-of* relation to talk about the possible developments of an event, I propose that IPF combines

¹⁵ A similar question comes up with regard to simple and complex perfective markers in Hindi. The simple marker *-yaa* often leads to a defeasible inference that the described event culminated even though its complex counterpart, *li-yaa*, entails this. See Singh 1991; 1998 and Kothari and Arunchalam 2009 for more discussion.

with a VP and returns a VP-event stage. Assuming that an event described by an achievement VP comprises a stage that develops into itself in the world of evaluation (and presumably every other possible world), it is correctly predicted that IPF of an achievement VP leads to the culmination entailment. On the other hand, assuming that events described by non-achievement VPs comprise multiple stages, it is correctly predicted that IPF of a non-achievement VP does not lead to the culmination entailment because any one of the VP-event stages satisfies the truth-conditions of IPF.

The proposed analysis naturally extends to the English progressive. I propose the progressive operator, PROG, encodes a more constrained *stage-of* relation: an event is a stage of another event only if the former is a proper part of the latter. This explains why a progressive sentence cannot make reference to the type of event that would be described by an achievement VP; PROG of an achievement denoting VP leads to coercion (Moens and Steedman 1988). In this way, the English progressive differs from the imperfective in Russian and other Eastern Slavic languages, which are discussed after an analysis of the Russian data is provided. I also show how the proposed analysis can be extended to the imperfective aspect in Western Slavic languages (Czech, Slovak, Slovene) and languages that are transitioning between Eastern and Western Slavic (Serbo-Croatian, Polish). In these languages, the imperfective patterns more with the English progressive rather than its perfective counterpart when it comes to its culmination properties. In conclusion, I discuss the habitual interpretation often

attributed to the imperfective aspect and then summarize the contributions of this chapter.

2.1.1 Konstatacija fakta

I begin the investigation of the quirky properties of the Russian imperfective by comparing (42), which contains the imperfective VP *priežžal* ('arrived'), with (43), which contains the perfective VP *priexal* ('arrived'). In both examples, the father is understood to have arrived, before leaving shortly thereafter. Although some native speakers claim that there is a difference between (42) and (43), it is extremely difficult to state what that difference is. So much so, that a translation of these sentences leaves out whatever difference there may be (cf. Paducheva 1992a).

(42) *K nam priežža-l otec, no vskore u-exa-l.*
 To us arrive.IPF-PST.3S father but in.a.rush PFV-go-PST.3S
 'Father came/had come to see us, but went away again soon' (Rassudova 1968).

(43) *K nam priexa-l otec, no vskore u-exa-l.*
 To us PFV.arrive-PST.3S father but in.a.rush PFV-go-PST.3S
 'Father came/had come to see us, but went away again soon.'

The usage of the imperfective aspect in (42) is often called *konstatacija fakta*.¹⁶ Although *konstatacija fakta* is sometimes divided into various types (Glovinskaja 1982, Chaput 1990, Grønn 2003), it is usually defined as "the use of the impv aspect...which refers to a "single, completed action"" (Glovinskaja

¹⁶ *Konstatacija fakta* is translated as 'statement of fact' (Brecht 1985, Smith 1994); cf. the term *constative* in Comrie 1976, *simple denotation* in Forsyth 1970, *obščefaktičeskoe* in Bondarko and Bulanin 1967 and 'general-factual' in Maslov 1985 and Dickey 1995; 2000.

1989, cited in Dickey 2000, pp. 96). The nature of this ‘completed’ event reference is not well understood and is discussed in detail in §2.2. For the time being, the crucial observation is that—whatever the nature of such reference is—konstatacija fakta is puzzling since ‘completion’ is typically associated with the perfective aspect in other (non-Slavic) languages and not the imperfective, which like the English progressive is typically associated with ‘non-completion’ or ‘ongoingness’ (Comrie 1976). In fact, based on imperfective sentences such as (44)-(46), which provide a stark contrast to the imperfective sentence in (42), oft-cited sources such as the Russian *Academy Grammar* (1960) have incorrectly claimed that the semantic function of the imperfective aspect is to indicate that “the action expressed by the verb is presented in its course, in process of its performance” (*Academy Grammar* 1960, pp. 424, cited and translated in Forsyth 1970, pp. 3; see also, e.g. Zucchi 1999, where the Russian imperfective is incorrectly treated like English progressive).

- (44) *Probravšis' skvoz' gostejuščuju tolpu, on vo-še-l vo*
 Having.gone through dense crowd he PFV-come-PST.3S into
dvor, gde stroi-l-i dom.
 courtyard where build.IPF-PST-3P house
 ‘Having gone through the dense crowd, he entered a courtyard where a house was being built’ (http://www.eunet.lv/cgi-bin/lat/INPROZ/KARER_E/usy.txt).
- (45) *O, bud'te uvereny, čto Kolumb by-l sčastliv ne togda,*
 O rest assured that Columbus be.IPF-PST.2S happy not then
kogda otkry-l Ameriku, a kogda otrkr-yva-l ee.
 when PFV.open.PST.3S America but when open-IPF-PST.3S it
 ‘Oh, rest assured that Columbus was happy not when he discovered America, but while he was discovering it’ (Dostoevskij, *Idiot*; quoted by Vinogradov 1972 and cited in Rassudova 1984, pp. 15).

- (46) *Smerka-l-os'*, *kogda brosi-l-i kosit'*.
 Darken.IPF-PST-RFL when PFV.stop-PST.3P mow.IPF.INF
 'It was getting dark when they stopped mowing' (Sholokhov, *Tixij Don*;
 cited in Forsyth 1970: 66).

To better understand konstatacija fakta, some researchers have investigated the behavior of the Russian imperfective in questions and question/answer pairs (Forsyth 1970, Glovinskaja 1982, Rassudova 1984, Chaput 1990, Israeli 1996; 1998, Mehlig 2001, among others), as well as in discourse contexts (Hopper 1979; 1982, Chvany 1985, the collection of papers in Thelin 1990, Stunová 1993, Dickey 2000, Grønn 2003, among others). The oft-cited examples in (47) and (48) below illustrate konstatacija fakta in questions, where it often occurs.¹⁷

- (47) *Kto čita-l* *Kapitanskiju dočku?*
 Who read.IPF-PST.3S Captain's Daughter
 'Who has read *Captain's Daughter*?' (Glovinskaja 1982, pp. 122).
- (48) *Bol'šoj medved' vzja-l svoju čašku, vzgljanu-l*
 Big bear PFV.take-PST.3S his bowl PFV.look-PST.3s
i zareve-l strašnym golosom: — kto xleba-l
 and PFV.roar-PST.3S terrible voice who eat.IPF-PST.3S
iz moej čaški?
 from my bowl
 'The big bear took his bowl, looked inside and roared in a terrible voice:
 "Who has supped from my bowl?"' (Chvany 1985, pp. 260)

According to Forsyth (1970), questions like (47), often involve "a situation that has previously been mentioned in the discourse and is therefore

¹⁷ As noted by Grønn (2003), Mazon (1914, pp. 220) was the first to point out that questions represent a particularly propitious environment for konstatacija fakta. For this reason, many studies of konstatacija fakta focus exclusively on questions.

already known to the hearer.” That is, (47) would be uttered in a context where it has already been asserted (through the use of the perfective) or assumed as part of the common ground that someone had read *Captain’s Daughter*. In such a context, the interlocutor in (47) simply wants to identify the agent of the presupposed reading event. Similarly in (48), the big bear infers from perceptual evidence that someone had supped from his bowl. The imperfective VP *xlebal iz moej čaški* (‘supped from my bowl’) is used to ask about the agent of the presupposed supping event (which the bear is angry about).

Forsyth’s insight is further illustrated by the statement and follow-up question in (49), as well as the discourse in (50).

- (49) Speaker A: *Krasivo u-krasi-l-i elku.*
 Beautifully PFV-decorate-PST.3P Christmas tree
 ‘They decorated the Christmas tree beautifully.’
- Speaker B: *Kto ukraša-l?*
 Who decorate.IPF-PST.3S
 ‘Who decorated it?’ (Rassudova 1984).
- (50) a. *V ètoj porternoj ja na-pisal pervoe ljubovnoe pis'mo*
 In this tavern I PFV-write-PST.1S first love letter
k Vere.
 to Vera
 ‘In this tavern, I wrote my first love letter to Vera.’
- b. *Pisa-l karandaš-om.*
 Write.IPF-PST.1S pencil-INST
 ‘I wrote it in pencil’ (Forsyth 1970, pp. 86).

In (49), Speaker A asserts that the Christmas tree is beautifully decorated. Subsequently, Speaker B wants to know who is responsible for this decoration. In (50a), the speaker asserts that he wrote his first love letter in a particular tavern. In (50b), the speaker elaborates that a pencil was used.

In sum, konstatacija fakta is often found in questions and in elaborative contexts, where an event's 'completion' is often presupposed. Such contexts, however, are not necessary for konstatacija fakta. As we have already seen, konstatacija fakta is found in discourse initial contexts where no presupposition of a completed event is found.¹⁸

- (51) *Včera k nam **priezža-l** otec, no vskore u-exa-l.*
 Yesterday to us arrive.IPF-PST.3S father but in.a.rush PFV-go-PST.3S
 'Father came/had come to see us yesterday, but he went away soon.'

In addition, Altshuler (2009a; to appear) discusses non-presuppositional konstatacija fakta cases that are found embedded within a discourse, in which we infer a causal or a background discourse relation (see Chapter 3 for discussion of the various discourse relations; see also Grønn 2003, pp. 255-270). Some examples discourses are provided below, in (52) and (53).

- (52) *My **pozдно pri-š-l-i** domoj. **Zavozi-l-i***
 We late PFV-come-PST-2P home. Drop.off.IPF-PST-2P
produkty k otcu.
 products to father
 'We came home late. We had dropped off groceries at my father's.'
- (53) *Dudkin **za-še-l** v zamok. Za nedelju do togo otec*
 Dudkin PFV-go-PST.3S into castle From week to that father
*emu **rasskaz-yva-l** istoriju ob ètom zamke.*
 him tell-IPF-PST.3S story about this castle
 'Dudkin entered the castle. A week before that, his father had told him the history about this castle.'

In (52) there is no presupposition that there had been a dropping off event.

Instead, it is asserted that a dropping off event took place and we infer that this

¹⁸ Note that this example differs from Rassudova's original example in (42); it has a temporal location adverb, making it a more plausible candidate to be uttered discourse initially.

event provides an explanation for why the agents of the dropping off came home late. Similarly, in (53), there is no presupposition that Dudkin had a conversation with his father. Instead, it is asserted that a conversation had taken place and we infer that this event either (i) explains why Dudkin went to visit the castle or (ii) describes the circumstance in which Dudkin visited the castle (e.g. well prepared).

These data show that *konstatacija fakta* is quite robust, appearing in different discourse contexts. The same could be said about the progressive interpretation, viz. (44)-(46). This raises some non-trivial questions about the meaning of the imperfective aspect. As noted by Durst-Anderson (1992), *konstatacija fakta*, rather than the progressive, “has always been the source of worry to all Russian linguists...because its “objective” meaning is assumed to be identical with that of the perfective aspect” (Durst-Anderson 1992, pp. 154). Traditionally, this worry has been dealt with by treating the imperfective as an unmarked member of an opposition with the perfective—the imperfective is thought to “posses no positive semantic mark which it would express constantly” (Bondarko 1971, cited from Rassudova 1984, pp. 14). This view is confirmed by Comrie’s oft-cited typological survey of aspect (Comrie 1976), where it is suggested that *konstatacija fakta* is “perhaps the strongest single piece of evidence in Russian (and similarly in the other Slavonic languages) for considering the perfective to be the marked form” (pp. 113).

The idea that markedness theory should be applied to Russian aspect comes from Jakobson (1932), who made the distinctions below (see also Trubetzkoy 1939):

“A linguist, in considering a pair of contrasting morphological categories, often starts from the assumption that both categories have equal rights (*seien gleichberechtigt*) and that each possesses its own positive meaning: category I has the meaning A, and category II the meaning B; or at least, that I means A, and II expresses the lack or negation of A. In fact the general meanings of correlative categories are distributed in a different way: if category I expresses the presence of meaning A, then category II does not express the presence of meaning A, i.e. it does not state whether A is present or not. The general meaning of category II compared with category I is limited to the absence of ‘A-indication’. If in a given context category II expresses the absence of meaning A, this is merely one of the uses of the category in question: the meaning is here conditioned by the situation, and even if this meaning is the most common function of this category, the investigator nevertheless must not equate the statistically predominant meaning of the category with its general meaning...” (Jakobson 1932, cited in Forsyth 1970, pp. 7).

Following Chvany 1975, I refer to Jakobson’s advocated opposition of two categories as *subordinate opposition*. This opposition crucially differs from *privative opposition*, which Jakobson explicitly rejects, i.e. the idea that a pair of contrasting morphological categories I and II should be analyzed as I expressing A, while II as expressing the negation of A (i.e. A vs. $\neg A$).¹⁹ Subordinate opposition has been applied to Russian aspect as follows. Whereas the perfective expresses “the action as a total event summed up with reference to a single juncture”, the imperfective “does *not* inherently express the action as a total event summed up with reference to a single juncture.” In other words, “the use of the perfective is dictated by the speaker’s need to express the action concerned as a total event, the use of the imperfective by the need to avoid the view of the action inherent in the perfective” (Forsyth 1970, pp. 11; see also Maslov 1959; 1965).

An important consequence of such an analysis is that “positive

¹⁹ Grønn (2003) points out that the term ‘privative’ has been used in various ways throughout the literature. For example, Forsyth (1970, pp. 6) and Hulanicki (1973, pp. 175) refer to the Jakobsonian opposition of categories as ‘privative’ rather than ‘subordinate’. See Chvany 1975 for more discussion.

aspectuality is expressed in perfective verb forms” and therefore “the imperfective is in a sense ‘non-aspectual’, i.e. the meaning of a perfective form includes as one of its elements the expression of aspect, while an imperfective form carries no such element of meaning” (Forsyth 1970, pp. 14). This has led to the “widespread idea that aspect in Russian, and factual imperfective [=konstatacija fakta] in particular, does not lend itself to a semantic, truth conditional analysis” (Smith 1994, pp. 8). A similar skepticism is not only recurrent in Slavic linguistics, where “truth-conditional semantics has never been fashionable” (Grønn 2003, pp. 111), but it is also expressed by semanticists who subscribe to a truth conditional analysis of aspect. For example, Paslawska and von Stechow write:

“it is hopeless to find a few factors as triggers for the imperfective. Even if we could enumerate all the factors that trigger the imperfective, there seems to be no structural functional category that could somehow be linked with an imperfective feature in AspP...we follow the line indicated by Jakobson and Forsyth: there is no such thing as the meaning of the imperfective; this ‘aspect’ is really a non-aspect” (Paslawska and von Stechow 2003, pp. 336).

In order to better understand the challenges that a truth-conditional analysis faces when it comes to the Russian imperfective, I briefly outline Paslawska’s and von Stechow’s analysis of aspect in the next section. Their analysis is *time relational*, i.e. it subscribes to the idea that the meaning of an aspectual marker constitutes a relation between a described event and a so-called *reference time* (Kamp 1979, Kamp and Rohrer 1983; see also Klein 1994).²⁰ The problem of treating the Russian imperfective in this way, according Paslawska

²⁰ The best of my knowledge, the first time relational analysis of the Russian imperfective was proposed by Timberlake (1985).

and von Stechow, is that there is no one relation that could adequately characterize this aspect.

This worry has been recently addressed by Grønn (2003) and Borik (2006), whose analyses I consider in turn. Grønn proposes that the Russian imperfective is underspecified; it constitutes the general overlap relation between a described event and a reference time (cf. Klein 1995). Borik, on the other hand, proposes that the Russian imperfective is the unmarked member of a *privative opposition*, i.e. the imperfective is the negation of the perfective. This leads to a disjunctive analysis in which the Russian imperfective is compatible with various relations between a described event and a reference time. Unfortunately, Grønn's and Borik's analyses raise some non-trivial issues which reaffirm the worry expressed by Paslawska and von Stechow.

Finally, I discuss an analysis proposed by Hana Filip (Filip 1993; 1999; 2000), which subscribes to the view that aspectual markers are *partitive*, i.e. they denote functions from a set of events denoted by a VP to a set of VP-event *parts* (cf. Moens and Steedman 1988; see also Landman 1992). I argue that Filip's analysis gives the best chance of accounting for the quirky culmination properties of the Russian imperfective and later, in Chapter 3, show how it can be made time relational without leading to the problems that face competing analyses.

2.1.2 Truth conditional analyses of the Russian imperfective

Paslawska and von Stechow's take as their starting point the assumption that aspectual markers are functions that combine with VP denotations, namely a set of events (Davidson 1967 *et seq.*), and require that there be an event in that set

which bears a particular relation to the *reference time*. They follow Reichenbach (1947) and assume that the *reference time* is “the time we speak about”; it is encoded by the tense and often specified by temporal adverbials (Paslawska and von Stechow 2003, pp. 313). As illustrated below, in (54), Paslawska and von Stechow propose that there are three aspectual operators that differ in the way the run time of an event in the extension of the VP is related to a reference time.²¹

(54) Paslawska’s and von Stechow’s three “semantics aspects”

- a. INCLUDES (“PERFECTIVE”) \rightsquigarrow
 $\lambda P \lambda t \exists e [\tau(e) \subseteq t \wedge P(e)]$
- b. POST (“PERFECT”) \rightsquigarrow
 $\lambda P \lambda t \exists e [\tau(e) < t \wedge P(e)]$
- c. INCLUDED (“IMPERFECTIVE”) \rightsquigarrow
 $\lambda P \lambda t \exists e [t \subseteq \tau(e) \wedge P(e)]$

According to (54a), the run time of an event e in the extension of the VP is *contained within* a reference time t . This relation characterizes the perfective aspect found in sentences such as *Dudkin arrived last year*, where we understand the arrival to have taken place within a time denoted by *last year*. According to (54b), the run time of an event e in the extension of the VP *precedes* a reference time t . This relation characterizes the perfect aspect found in sentences such as *Dudkin had already arrived at 8*, where we understand the arrival to have taken place prior to the time denoted by *at 8*. Finally, according to (54c), the run time of an event e in the extension of the VP *contains* a reference time t . This relation

²¹ An event’s run time is encoded by the trace function τ , which assigns to an eventuality in its domain the time interval at which the eventuality takes place (Link 1987).

characterizes the imperfective aspect found in sentences such as *Dudkin was reading War and Peace at 8*, where we understand the reading event to hold throughout the time denoted by *at 8*.

Several comments are in order with regard to the meaning in (54c). To begin with, note that the formula in (54c) existentially quantifies over an event in the extension of VP. Therefore, even if (54c) accounts for the inference that the reading event in a sentence like *Dudkin was reading War and Peace at 8* holds throughout the time denoted by *at 8*, it incorrectly predicts that this sentence entails that Dudkin finished reading the novel (some time after 8). This problem was called ‘the imperfective paradox’ by Dowty (1979) and arguably motivates a modal reanalysis of (54c). Disregarding this problem for now, (54c) still does not account for the Russian imperfective because we have seen data in which the Russian imperfective would be characterized by the meaning in (54a) or (54b), in addition to (54c). For example, consider (55), where we infer that an arrival took place within the time denoted by *včera* (‘yesterday’). Among the meanings in (54), one would have to say that (54a) is at play in (55).

- (55) *Včera k nam přezžal otec.*
 Yesterday to us arrive.IPF-PST.3S father
 ‘Father came to see us yesterday.’

The meaning in (54a), however, does not adequately characterize the discourse in (56) and the sentence in (57) given that the reference time in (56b) is the time of the coming home event described in (56a), while the reference time in (57) is the time denoted by *v vosem' časov včera* (‘yesterday, at eight o’clock’). Instead, the

meaning in (54b) is at play in (56b) because the dropping-off event is understood to precede the coming home event, while the meaning in (54c) is at play in (57) because we understand the reading event to hold throughout the time denoted by the adverbial.

- (56) a. *My pozdno pri-š-l-i domoj.*
 We late PFV-come-PST-2P home.
 ‘We came home late.’
- b. *My zavozi-l-i produkty k otcu.*
 We drop.off.IPF-PST-2P products to father
 ‘We had dropped off groceries at my father’s.’
- (57) *V vosem' časov včera Marija čita-la 'Vojnu i mir'.*
 At eight o'clock yesterday Maria read.IPF-PST.3S War and Peace
 ‘Yesterday, at eight o'clock, Maria was reading *War and Peace*.’

Given such data, Paslawska and von Stechow 2003 disregard the Russian imperfective from their analysis, claiming that “there is no such thing as the meaning of the [Russian] imperfective; this ‘aspect’ is really a non-aspect” (Paslawska and von Stechow 2003, pp. 336).

Contra Paslawska and von Stechow, Grønn (2003) proposes that the Russian imperfective does, in fact, fall under the typology of aspectual markers in (54). As illustrated below in (58), the proposal is that the Russian imperfective encodes the general relation of overlap between the run time of an event e in the extension of the VP and a reference time t (cf. Klein 1995).

- (58) OVERLAP (“RUSSIAN IMPERFECTIVE”) \rightsquigarrow
 $\lambda P \lambda t \exists e [\tau(e) \circ t \wedge P(e)]$

The idea is that the Russian imperfective is underspecified and independent rules

strengthen the meaning in (58) to either (54a) or (54c).²² The question that arises, then, concerns the specific formulation of these strengthening rules. As will become clear later in this chapter, this question inevitably comes up on any analysis of the Russian imperfective and I will address it in §2.2. Instead, I would like to point out two other non-trivial issues that arise from the meaning in (58). The first issue concerns data like (56), where the Russian imperfective behaves like the English pluperfect. As already mentioned, the meaning in (54b) is arguably at play in this example, but (54b) is incompatible with (58). While this is not a knockdown argument against (58), it nevertheless requires one to have a different analysis of the imperfective in (56). Without such an analysis, however, (56) reaffirms Paslawska and von Stechow's worry that there is that there is no one relation that could adequately characterize the Russian imperfective—even if this relation is as general as the one in (58).

Another challenge to Grønn's analysis comes from the aforementioned observation that a meaning like (58) does not account for the imperfective paradox. This challenge is especially relevant here because when (58) is strengthened to (54a), i.e. when it encodes the relation $\tau(e) \subseteq t$, Grønn wants an imperfective sentence to entail the described event was completed (Grønn 2003, pp. 33-34); when (58) is strengthened to (54c), i.e. when it encodes the relation $t \subseteq \tau(e)$, Grønn does not want an imperfective sentence to entail that the

²² Although Grønn's formulation differs from what is provided in (58), the differences are not crucial for the present purposes.

described event was completed.²³ Grønn writes: “To implement this modal element, one could replace the imperfective condition $e \circ t$ with a disjunction $t \subseteq e \vee e \subseteq t$. The modality could then be smuggled into the first disjunct” (Grønn 2003, pp. 58). Such a move, however, would undermine the elegance of Grønn’s underspecification idea. In fact, if one subscribes to the disjunctive approach, the imperfective might as well include a third disjunct, namely $e < t$, to account for cases in which the imperfective is on a par with the English perfect, viz. the problematic example in (56). However, the meaning of the Russian imperfective would then be a disjunct of the meanings in (54) and thereby reaffirm Paslawska and von Stechow’s position. That is, the meaning of the Russian imperfective would be compatible with nearly all the possible relations between the reference time and the time of the described event and would thus be ‘nearly meaningless’.

A different type of a disjunctive analysis is proposed by Borik (2006). She proposes that the Russian imperfective is the unmarked member of a *privative opposition*, i.e. the imperfective is the negation of the perfective. In this way, she departs from Jakobson’s idea that two contrasting categories stand in a *subordinate opposition*. Her proposed meaning of the perfective is provided in (59). Interestingly, this meaning is *birelational*—it encodes a relation between the speech time (‘S’) and the reference time (‘R’) and a relation between the event time (‘E’) and the reference time (‘R’).²⁴

²³ For this to happen, interpretation would have to take place after an underspecified meaning has been strengthened; see Sonnenhauser 2006 where such an approach to the Russian imperfective is made explicit.

²⁴ As will be discussed in Chapter 3, Kamp and Reyle’s (1993) analysis of aspect is also birelational, though for reasons different from Borik’s.

- (59) Perfective aspect in Russian is defined by the configuration
 $S \cap R = \emptyset \ \& \ E \subseteq R$ (Borik 2006, pp.187)

The first temporal relation, $S \cap R = \emptyset$ (i.e. ‘the speech time and the reference time do not overlap’) is quite odd to see in the meaning of an aspectual marker because it leads to the unprecedented view that aspect, and in particular the perfective, is a deictic expression. This relation, however, is arguably motivated by the well-known fact discussed in Chapter 1 that an event described by a perfective sentence never overlaps the speech time: when a perfective predicate is in the past tense, the described event is prior to the speech time and when in the present tense, the described event is located after the speech time. The second condition, on the other hand, $E \subseteq R$ (i.e. ‘the event time is included in the reference time’) is found in Paslawska and von Stechow’s meaning of the perfective in (54a) to account for the ‘complete event’ interpretation associated with this aspect.²⁵

Moving on to the Russian imperfective, Borik defines this aspect in (60). Since the meaning is the negation of a conjunction, it entails that whenever at least one of the conditions is not met, the imperfective is used.

- (60) Imperfective aspect in Russian is defined by the configuration
 $\neg(S \cap R = \emptyset \ \& \ E \subseteq R)$, or $S \cap R \neq \emptyset \ \vee \ E \not\subseteq R$ (Borik 2006, pp.187)

According to Borik, the progressive interpretation emerges when the perfective relation $E \subseteq R$ fails to hold. The implicit assumption here is that the only

²⁵ Borik assumes existential quantification over E, R and (surprisingly) S (Borik 2006, pp. 192).

possible relation that could emerge when $E \subseteq R$ fails is the “progressive configuration $R \subseteq E$ ” (Borik 2006, pp. 187). Why this should be is unclear. That is, why should $R \subseteq E$ rather than, e.g. $E < R$, which is often used to define the perfect, emerge when $E \subseteq R$ fails to hold? One could, of course, make the claim that E and R can only be ordered by the inclusion relation. However, this claim would need an independent argument and no such argument is provided by Borik. Instead, Borik concludes that her analysis “successfully captures the correlation between progressive and imperfective” and explains why “the perfective aspect can never emerge with the progressive configuration” (Borik 2006, pp. 187).

Konstatacija fakta, according to Borik, emerges when the other condition encoded by the perfective, namely $S \cap R \neq \emptyset$, fails to hold, i.e. when the reference time *does* overlap the reference time. As noted by Grønn 2003, there are two problems for this part of the analysis. The first is that Borik must assume that the condition $E \subseteq R$ always holds when $S \cap R \neq \emptyset$ does not. This assumption, however, is not justified by her meaning in (60), which allows for the possibility that *both* perfective conditions fail to hold. In addressing this objection, Borik claims that the relation $E \subseteq R$ holds by default when the first conjunct of the perfective meaning is negated. In other words, Borik claims that the progressive reading is semantically marked compared to konstatacija fakta. While this generalization may be true²⁶, the notions of ‘default’ and ‘semantic markedness’

²⁶ It is, for example, in accordance with the view advocated by Forsyth (1970), who claims that sentences with konstatacija fakta exemplify: “such a common use of imperfective forms that...it can in fact be argued that this is the essential and only *inherent* meaning of the imperfective, from which the other ‘meanings’...are derived.” On the other hand, Forsyth’s view has been challenged

have no formal status in her analysis and are therefore stipulations that further illustrate the difficulties that *konstatacija fakta* creates for an analyst working on the Russian imperfective. Things are made worse by the fact that even if we grant Borik her assumption, the relations $S \cap R \neq \emptyset$ and $E \subseteq R$ still do not derive the correct results. At best, these relations can derive the “Present Perfect reading of *IpF*”, which Borik incorrectly identifies with *konstatacija fakta*. While *konstatacija fakta* often does, in fact, behave like the present perfect, viz. (61) below, it need not, viz. (56) above.

- (61) *Kto čita-l 'Kapitanskiju dočku'?*
 Who read.IPF-PST.3S Captain's Daughter
 ‘Who has read *Captain's Daughter*?’ (Glovinskaja 1982, pp. 122).

In sum, Borik’s analysis is questionable for various reasons. However, it is important because it provides an example of what a truth-conditional analysis that subscribes to *privative opposition* is like. Grønn (2003) notes that one should not exclude the possibility of defining aspect in Russian in this way and suggests that “if we go beyond the aspectual configuration proper and include, say, a parameter such as [+Temporal anchoring], or [+Sequencing] (Barentsen 1998), we could possibly make a privative analysis viable” (pp. 107). While I am open to this possibility, it seems like an extremely difficult challenge; adding additional parameters suggests further disjunctions in the meaning of the imperfective, which in turn increases the amount of possible interpretations and thus the number of default rules and stipulations.

by Elena Paducheva, who argues that the progressive is “the basic meaning for Russian *impfv*” (Paducheva 1992b, pp. 77; see also Paducheva 1996, 2006).

Let us now consider an analysis of the Russian imperfective proposed by Hana Filip (Filip 1993; 1999, 2000) which aims to account for the observation that the imperfective can, though need not, lead to a complete event interpretation. She proposes the imperfective operator in (62) which “combines with predicates of states, processes or events and yields the corresponding predicates of partial states, processes or events...” (Filip 2000, pp. 42).^{27,28}

$$(62) \quad \text{IPF} \rightsquigarrow \lambda P \lambda e [P(e) \wedge \text{PART}(P)]$$

This partiality (or partitivity) is encoded by the predicate PART, which Filip defines as in (63). Crucially note that PART does not specify a particular event part, which is intended to preserve the idea that “...the Imperfective expresses no specific reference to the completeness of the event” (Comrie 1976, pp. 113) and is therefore ‘indefinite’ (Leinonen 1982, Dickey 1995; 2000).²⁹

$$(63) \quad \text{PART} \rightsquigarrow \lambda P \lambda e' [\exists e [P(e) \wedge e' \sqsubseteq e]]$$

There are several questions for Filip’s analysis. As was mentioned earlier in this section, an analysis of the past perfect and the progressive interpretations arguably requires relating the described event to a reference time. Therefore, it remains an open question whether such a relation could be implemented into

²⁷ Filip’s meaning in (62) should really be the one in (i):

$$(i) \quad \text{IPF} \rightsquigarrow \lambda P \lambda e [\text{PART}(P, e)]$$

²⁸ See Piñon 2001 for a similar analysis of the Polish imperfective.

²⁹ As noted by Maslov (1959, pp. 309), this idea goes back to Razmusen (1891), who claims that the imperfective expresses “an action considered only from the point of view of its concrete, denotative features...without reference to its totality” (cited from Forsyth 1970, pp. 8).

Filip's analysis so that the correct predictions are made. The task of showing how this can be done is—in large part—the topic of Chapter 3 and I shall not say anything about this issue here. The other question concerns Filip's formulas above, which do not capture what is intended. The problem is evident when one asks the following question: Are the events in the extension of VP 'completed'? If the answer is 'yes', then given the existential quantification in (63), Filip's analysis runs into the same problem as the previous analyses that we have looked at; it does not account for the imperfective paradox. If, on the other hand, the answer is 'no', then PART is redundant in the denotation of IPF (cf. Parsons 1990 analysis of the English progressive).

In §2.3, I propose that the events in the extension of VP are, in fact, 'completed' and circumvent the imperfective paradox by adopting Landman's (1992) *stage-of* relation which allows one to talk about the possible developments of an event. In the remainder of the section, I would like to explain why I think Filip's intended analysis is well suited to account for some of the *konstatacija fakta* data that we have looked at. To do so, it will be important to get away from the intuitive, yet highly unstable notion of 'completion', which is typically used to define *konstatacija fakta*.³⁰ The importance of this can be seen when we compare the examples below, in (64)-(66). In (64), the imperfective predicate *xlebal iz moej čaški* ('supped from my bowl') is said to exemplify *konstatacija fakta* because the event of supping from the bear's bowl is understood to be 'completed.'

³⁰ cf. *celnost'* in Bondarko and Bulanin 1967 and its translated counterpart 'totality' in Forsyth 1970.

- (64) *Bol'šoj medved' vzja-l svoju čašku, vzgljanu-l*
 Big bear PFV.take-PST.3S his bowl PFV.look-PST.3s
i zareve-l strašnym golosom: — kto xleba-l
 and PFV.roar-PST.3S terrible voice who eat.IPF-PST.3S
iz moej čaški?
 from my bowl
 'The big bear took his bowl, looked inside and roared in a terrible voice:
 "Who has supped from my bowl?"' (Chvany 1985, pp. 260)

'Completed', however, cannot mean the same thing in (64) as it does in (65) and (66), where 'completed' means that the event reached its *telos*—i.e. in (65), 'completed' means that the father entered the place where the speaker was situated; in (66), 'completed' means that the novel was read in its entirety.

- (65) *K nam priezža-l otec, no vskore u-exa-l.*
 To us arrive.IPF-PST.3S father but in.a.rush PFV-go-PST.3S
 'Father came/had come to see us, but went away again soon' (Rassudova 1968).
- (66) *Kto čita-l 'Kapitanskiju dočku'?*
 Who read.IPF-PST.3S Captain's Daughter
 'Who has read *Captain's Daughter*?' (Glovinskaja 1982, pp. 122).

Since *xlebal iz moej čaški* ('supped from my bowl') in (64) is an atelic VP, 'completed' must mean something like *a supping from a bowl took place and then it stopped* (cf. the term 'bounded'). But if that is right, then saying (64) exemplifies *konstacaja fakta* is not very informative since past events in general can be characterized in this way, regardless of the aspect used.

In order to better understand the Russian imperfective I would like to suggest that—instead of using the general notion of *completion* to characterize events described by *telic* and *atelic* VPs—we focus on cases in which an imperfective sentence has a telic VP and it therefore makes sense to talk about an

event's *culmination*. Moreover, I suggest that we should more carefully differentiate cases in which a sentence *entails* that the described event culminated from cases in which a sentence merely *implicates* this. This, in turn will allow us to answer the question below, in (67).

- (67) When does the Russian imperfective give rise to an entailment that the described event *culminated*?

In the next section, I use well-known tests involving cancelability and non-veridicality to motivate the generalization in (68).

- (68) *Culmination entailment generalization*
The combination of the Russian imperfective with a base VP gives rise to an entailment that a described event culminated only when the base VP is an achievement.

To the best of my knowledge, the generalization above is novel.³¹ More importantly, it constitutes evidence that Filip's analysis is correct in spirit: the culmination entailment is expected when IPF combines with achievement VPs because such VPs describe atomic events and thus the only event that could make an imperfective sentence true is an event in the extension of the VP. On the other hand, the culmination entailment does not arise when IPF combines with non-achievement VPs because such events describe non-atomic events and any part of an event in the extension of the VP makes an imperfective sentence true.

³¹ Although according to Grønn 2008, Hobæk-Haff 2005 makes a similar claim w.r.t. *l'imparfait narratif* in French.

2.2 Culmination properties of the Russian imperfective

2.2.1 Motivating the culmination entailment hypothesis

Let us begin by reconsidering Rassudova's sentence in (69), where the imperfective sentence has an achievement VP. Here, the father is understood to have arrived, before leaving shortly thereafter.

- (69) *K nam priezža-l otec, no vskore u-exa-l.*
 To us arrive.IPF-PST.3S father but in.a.rush PFV-go-PST.3S
 'Father came/had come to see us, but went away again soon' (Rassudova 1968).

This sentence clearly entails that the event described by the imperfective sentence culminated—i.e. (69) is false if the father did not enter the place where the speaker was situated. It is not clear, however, whether it is the imperfective VP *priezžal* ('arrived') that leads to such an entailment; the perfective sentence *no vskore uexal* ('but he left soon') makes it impossible to tell since one cannot leave a location if he did not arrive there first.

One reason to think that *priezžal* ('arrived') leads to such an entailment comes from the observation that if we take the perfective sentence out and replace it with the statement *no on ne smog najti naš dom* ('but was unable to find our house') as in (70), the resulting sentence is odd. This contrasts with the English sentence in (71), where the progressive does not lead to an entailment that arrival culminated and therefore it makes sense to assert that the father was unable to find the speaker's house.

- (70) #K nam **priežža-l** otec, no on ne smog najti
 To us arrive.IPF-PST.3S father but he not able find
 naš dom.
 our house
 ‘Father came/had come to see us, but was unable to found our house.’

- (71) Father was coming to see us, but was unable to found our house.

Other parallel examples of imperfective sentences in which a culmination entailment is found are provided in (72) and (73). In (72), the entailment is that the groceries were dropped off. For this reason, (72) cannot be followed up by a statement which implies that the groceries were on their way but never made it.

- (72) My *pozдно pri-š-l-i* domoj. **Zavozi-l-i**
 We late PFV-come-PST-2P home. Drop.off.IPF-PST-2P
 produkty k otcu.
 products to father
 ‘We came home late. We had dropped off groceries at my father’s.’

In (73), the entailment is that (i) Maria received flowers from Dudkin and (ii) Maria was invited to the theater by Dudkin. Consequently, (73) cannot be followed up by statements which imply that Dudkin was unsuccessful in his attempt to give Maria flowers or that he was not able to invite her to the theater.

- (73) *Nedelju nazad Marija po-celova-l-a* Dudkina. Ved' on
 Week ago Maria PFV-kissed-PST.3s-FEM Dudkin VED' he
dari-l ej cvety i **priglaš-a-l** ee v teatr.
 give.IPF-PST.3s her flowers and invite.IPF-PST.3s her to theater
 ‘A week ago, Maria kissed Dudkin. After all, he had given her flowers and had invited her to the theater’ (Altshuler 2009a, pp. 5)

Given the data above, I conclude that the combination of the Russian imperfective with a base VP could give rise to an entailment that a described

event culminated. Moreover, I propose that such an entailment comes about only when the base VP is an achievement. The VP *priežžat'* ('arrive') in (69) is a 'true achievement'—it is never coerced into an accomplishment, viz. (74).

- (74) #*Smotri—vot priežža-et Sergej.*
 Look there arrive.IPF-PRS.3S Serge
 'Look—Serge arrives.' (Stephen Dickey, p.c.)

Unlike *priežžat'* ('arrive'), *zavozit'* ('drop off'), *darit'* ('give as present') and *priglašat'* ('invite') can be interpreted as accomplishment VPs. For example, *zavozit'* is interpreted as an achievement VP in (72), i.e. it describes the culmination of a delivery (or a dropping off), and this is why there is an entailment that the described event culminated. In (75), however, *zavozit'* is interpreted an accomplishment VP, i.e. it describes the preparatory process of a delivery, and this is why there is no entailment that the described event culminated.

- (75) *Smotri—vot Sergej zavoz-it produkty k otcu.*
 Look there Serge drop.off.IPF-PRS-1S products to father
 'Look—Serge is delivering groceries to father.'

Similarly, *darit'* ('give as present') is interpreted as an achievement VP in (73), i.e. it describes the culmination of a giving, but it is interpreted as an accomplishment VP in (76), i.e. it describes the preparatory process of a giving. As a result, there is culmination entailment in (73), but not in (76).

- (76) *Smotri—vot Sergej darit ej cvety.*
 Look there Serge give.IPF-PRS.3S her flowers
 'Look—Serge is giving her flowers.'

With regard to *priglašat'* ('invited'), it is interpreted as an achievement VP in (73), i.e. it describes the culmination of an invitation, but it is interpreted as an accomplishment VP in (77), i.e. it describes the preparatory process of an invitation.³² As a result, there is culmination entailment in (73), but not in (77).

- (77) *Smotri—vot Sergej priglašajet ee v teatr.*
 Look there Serge invite.IPF-PST.3s her to theater
 'Look—Serge is giving her flowers.'

Let us now move on to consider imperfective sentences with accomplishment VPs that are never interpreted as achievements. Such sentences, I claim, never entail that the described event culminated. This is supported by Leinonen's (1982) observation about (78): even though the most salient interpretation is one in which the reader finished reading *The Fortress*, this interpretation is "contingent on there not being a disclaimer of the finishing in an appended remark."

- (78) *Ja uže odnaždy čita-l Krepost'.*
 I already once read.IPF-PST.3S Fortress
 'I have already read *The Fortress* once' (Leinonen 1982, pp. 187).

What Leinonen has in mind is that a follow-up to (78), viz. (79) below, is felicitous. This, in turn, arguably shows that the culmination inferred in (78) can be cancelled and therefore does not constitute an entailment.

³² This claim is supported by Maslov's (2004) characterization of verbs like *priglašat'* ('invited') as "glagoly neposredstvennogo, nepreryvnogo éffekta" (Maslov 2004, pp. 86). Maslov's idea is that such verbs often have an 'instantaneous effect', even though they have flexible temporal constituencies (cf. Apresjan 1995 and Israeli 2001).

- (79) *Xotja ja ne do-čita-l do konca.*
 Even.though I he PFV-read-PST.3S until end
 ‘Even though I did not finish it.’

If that is right, then the felicity of the follow-up above also suggests that the English translation of (78)—which entails that the speaker read the novel in its entirety—is incorrect (or misleading). For this reason, I will—from here on out—translate sentences such as (78) as in (80), which contains a parenthetical *at least some of*.³³

- (80) *Ja uže odnaždy čita-l Krepost’.*
 I already once read.IPF-PST.3S Fortress
 ‘I have already read (at least some of) *The Fortress* once.’

In sum, the data considered in this section provide evidence for the following empirical generalization, which is the backbone for the analysis proposed later in this chapter.

- (81) *Culmination entailment generalization*
 The combination of the Russian imperfective with a base VP gives rise to an entailment that a described event culminated only when the base VP is an achievement.

Grønn (2003), however, provides some apparent counter-examples to (81), adopting a much stronger generalization: the culmination inference associated with the imperfective aspect is never defeasible (Grønn 2003, pp. 75-80). To begin with, Grønn considers the pair of sentences in (82) and (83) below. He claims that *konstatacija fakta* in (83) can be shown to differ pragmatically from ‘partitive’ atelic predicates in languages like Norwegian, viz. (82).

³³ See Paduceva 1992a for a discussion of the difficulties in translating *konstatacija fakta* sentences.

- (82) a. *Jeg leste i 'Krig og Fred' {en gang / for 5 ar siden}.*
 I read in War and Peace a time for 5 years ago
 'I read a (small) part of *War and Peace* {once/5 years ago}.'
- b. *Jeg leste bare noen sider.*
 I read only some pages
 'I only read a few pages' (Grønn 2003, pp. 79).
- (83) a. *Ja {odnaždy/pjat' let nazad} čita-l 'Vojnu i mir'.*
 I once five years ago read.IPF-PST.3S War and Peace
 '{Once/five years ago} I read *War and Peace*.'
- b. *#Pro-čita-l tol'ko neskol'ko stranic.*
 PFV-read-PST.3S only few pages
 'I read only a few pages' (Grønn 2003, pp. 79-80).

Grønn claims that the preposition 'i – in' in (82a) forces the VP to be activity-denoting and thus allows for only a part of the book to be read. Consequently, the second sentence in the Norwegian example is a natural follow-up of the first sentence. In contrast, the Russian discourse sounds odd according to Grønn, which would be unexpected if (83a) merely implicated the culmination of the event.

Most native speakers of Russian, however, find (83b) to be perfectly fine and those that find it slightly odd claim that inserting *no* ('but') at the beginning of (83b) renders it acceptable. Note that the insertion of *no* ('but') makes the discourse more fluid; it does not constitute a repair strategy. For example, if one changed the imperfective verb *čital* ('read') in (83a) to its perfective counterpart *pročital* (and thereby guarantee an entailment that the reading culminated), the insertion of *no* ('but') would not improve the infelicitous status of (83b).

Grønn's second piece of data is illustrated in (84), which has the particle *uže* ('already'). He claims that this particle rules out the progressive interpretation

and thereby forces konstatacija fakta. In turn, Grønn observes that denying that the described event (i.e. the room cleaning) culminated renders the discourse incoherent. Therefore, it appears that we have evidence for the view that a culminated event inference could constitute an entailment (or at the very least, something stronger than a defeasible inference) in cases where an imperfective sentence has a non-achievement VP (e.g. *ubirat' kvartiru* ‘tidy the flat’).

- (84) #*Anja uže ubira-l-a kvartiru, no ne ubra-l-a.*
 Anna already clean-IPF-PST.3S-FEM apartment but not
ubra-l-a.
 PFV-clean-PST.3S-FEM
 ‘Anna has already tidied the flat, but she didn’t tidy it’ (Grønn 2003, pp. 79).

Before addressing the infelicity of (84), it is important to note that there is good reason to believe that the adverbial *uže* (‘already’) does not, in fact, rule out the progressive interpretation. For example, the Russian sentence in (85), which can only have a progressive interpretation, is perfectly natural with this particle.³⁴

- (85) a. *Kogda ja pri-še-l domoj,*
 When I PFV-come-PST.1S home
 ‘When I came home,
- b. *Dudkin uže spa-l i vide-l*
 Dudkin already sleep-IPF-PST.3S and see-IPF-PST.3S
košmarnyj son.
 scary dream
 ‘Dudkin was already sleeping and having a nightmare.’

³⁴ Note that it has been claimed *uže* (‘already’) is ambiguous (Paducheva 1996). However, as far as I can see, there is no reason to assume that *uže* in (84) is different from *uže* in (85b).

With this in mind, let us return to the infelicity in (84). If *uže* ('already') does not rule out the progressive interpretation, then why should a follow-up that denies an event's culmination be odd? At this moment this is not clear.³⁵ However, note that the progressive rendition of (84) is also infelicitous:

(86) #*Anna was already tidying her flat (when Dudkin came in), but she didn't tidy it.*

This suggests that the infelicity of (84) is independent of whether the event described by *ubirala kvartiru* ('tidy a flat') has culminated, in which case it does not bear on the generalization in (81). Further evidence that (84) is special in some way comes from the observation that a prepositional phrase like *do konca* ('completely') in the denial of (84) renders this discourse acceptable, viz. (87) below.

(87) *Anja uže ubira-l-a kvartiru, no tak i ne*
 Anna already clean.IPF-PST.3s-FEM apartment but still and not
ubra-l-a ee do konca.
 PFV-clean-PST.3s-FEM it until end
 'Anna was already engaged in tidying the flat, but she still hasn't tidied it completely' (Olga Kagan, p.c.).

³⁵ According to Roger Schwarzschild (p.c.), the infelicity of (84) may have to do with using contrast where the points of contrast are inflectional, cf. #*I wasn't sitting in his seat but I'm sitting in it*, where the intended interpretation is that the speaker is sitting in some man's seat at the speech time though the speaker was not sitting in it at some time prior to the speech time. Alternatively, the infelicity of (84) may be linked to the imperfective being a modal operator (see §2.3). As is well known, modals are heavily context dependent (Kratzer 1977; 1981), yet one cannot say (i) below to mean 'it's legal for me to drive home, but I cannot because I don't have the ability'. Similarly, one cannot say (ii) to mean 'given the law, I don't have to do my homework, but given my desire to pass, I do have to'. This suggests that an explanation for why (i) and (ii) are odd may naturally extend to explain the oddness of (84).

- (i) #I can drive home but I can't drive home.
- (ii) #I have to do my homework but I don't have to do it.

In light of the fact that *uže* ('already') does not rule out the progressive interpretation, one may question whether the felicitous follow-up in (79) does, in fact, constitute evidence that the culmination inference in (78) is defeasible (as has been claimed above). As noted by Grønn, such follow-ups could force an interpretation of the imperfective that is distinct from *konstatacija fakta*. For example, it is possible that (79) triggers an interpretation of (78) that is translatable with the English progressive, viz. (88) or perhaps even the perfect progressive, viz. (89).

- (88) I was already reading *The Fortress* once.
 (89) I have already been reading *The Fortress* once.

Note, however, that the imperfective sentence in (90b) below also has a culminated event inference that can be felicitously followed-up by (79). And as illustrated by the infelicity of (91b) and (91c) below, which are taken to be continuations of (91a), we could not say that (79) forces an interpretation of (90) that is translatable with the English progressive or the English perfect progressive. I take this to be tentative evidence for the culmination entailment hypothesis in (81).

- (90) a. *Dudkin zna-et, kto takaja Nataša Rostova,*
 Dudkin know.IPF-NPST.3S who this Natasha Rostova
 'Dudkin knows who Natasha Rostova is,
 b. *on čita-l 'Vojnu i mir'.*
 he read.IPF-PST.3S 'War and Peace
 he read *War and Peace*'.
- (91) a. Dudkin knows who Natasha Rostova is,
 b. #he was reading *War and Peace*.
 c. #he had been reading *War and Peace*.

The strongest evidence for (81), however, comes from considering the imperfective in the scope of negation, viz. (92).

- (92) *Ja ne čita-l Krepost'.*
 I not read.IPF-PST.3S Fortress
 'I haven't read (any of) *The Fortress*.'

If the affirmative counterpart of (92) were to entail that the described event culminated, then we would expect that (92) would have the interpretation in (93) below, where negation of the perfective VP results in the denial of the culmination of the event. However, as pointed out by Forsyth (1970), negation of the imperfective leads to the denial of the entire event (see also Paducheva 1996 and references therein for more discussion).³⁶ It does not lead to the denial of an event's culmination unless, of course, the described event *is* a culmination, viz. (94).

- (93) *Ja ne pro-čita-l Krepost'.*
 I not PFV-read-PST.3S Fortress
 'I haven't read (all of) *The Fortress*.'
- (94) *K nam ne priezža-l otec.*
 To us not arrive.IPF-PST.3S father
 'Father did not come/had not come to see us.'

The observed facts about negation extend to other non-veridical, non-truth-functional operators.³⁷ For example, compare (95) and (96), which illustrate

³⁶ Note that Grønn (2003) is well aware of the negation data discussed here, which makes his generalization particularly striking (see Paducheva 2006 for more discussion). He stipulates that *konstatacija fakta* does not occur in the scope of negation (and presumably every other non-veridical operator; see the discussion below). The question, of course, is: why not?

³⁷ To the best of my knowledge, such operators were first discussed by Montague (1969); see also Zwarts 1995 and Giannakidou 1999.

the imperfective and perfective respectively in the scope of *otkazat'sja* ('refuse') and *bojat'sja* ('be afraid'). The sentence in (95) is true just in case Dudkin refused (or was afraid) to read any part of the novel; a situation in which Dudkin agreed (or was not a afraid) to read a page of *War and Peace* but refused (or was afraid) to read any more than that would render this sentence false. On the other hand, the sentence in (96) is true just in case Dudkin refused (or was afraid) to read all of the novel; a situation in which Dudkin agreed (or was not a afraid) to read a page of *War and Peace* but refused (or was afraid) to read any more than that would render this sentence true.

- (95) *Dudkin {otkaza-l-sja / boja-l-sja} čitat'*
 Dudkin refuse-PST.3S-REFL be.afraid-PST.3S-REFL read.IPF.INF
'Vojnu i mir'.
 War and peace
 'Dudkin {refused/was afraid} to read (any part of) *War and Peace*.'
- (96) *Dudkin {otkaza-l-sja / boja-l-sja}*
 Dudkin refuse-PST.3S-REFL be.afraid-PST.3S-REFL
pro-čitat' 'Vojnu i mir'.
 PFV-read.IPF.INF War and peace
 'Dudkin {refused/was afraid} to read (all of) *War and Peace*.'

I conclude this section by reconsidering konstatacija fakta data in which an event's culmination is presupposed. Recall that in (97a), the speaker asserts that he wrote his first love letter in a particular tavern. In (97b), the speaker elaborates that a pencil was used.

- (97) a. *V ètoj porternoj ja na-pisal pervoe ljubovnoe pis'mo*
 In this tavern I PFV-write-PST.1S first love letter
k Vere.
 to Vera
 'In this tavern, I wrote my first love letter to Vera.'

- b. *Pisa-l* *karandaš-om.*
 Write.IPF-PST.1S pencil-INST
 ‘I wrote it in pencil’ (Forsyth 1970, pp. 86).

A question that arises is whether the elaboration in (97b) must necessarily concern the entire letter-writing event described in (97a). Given the proposed culmination generalization, we expect a ‘no’ answer because the VP in (97b) can never be used as an achievement. The follow-up to (97b) below confirms this prediction. In particular, the felicity of (98) shows that (97b) can elaborate on a part of the letter-writing event described in (97a), namely the part that was written in pencil.³⁸

- (98) *Xotja* *konec do-pisa-l* *ručkoj.*
 Even.though end PFV-write-PST.1S pen
 ‘The end, however, I wrote in pen.’

In sum, I have argued in this section that imperfective sentences with achievement VPs entail that the described event culminated. Other imperfective sentences can also have this inference, though it is not an entailment since it can be cancelled and it is not denied in non-veridical contexts. These facts motivate the culmination entailment generalization in (81), repeated below in (99).

- (99) *Culmination entailment generalization*
 The combination of the Russian imperfective with a base VP gives rise to an entailment that a described event culminated only when the base VP is an achievement.

³⁸ This of course assumes that (98) does not trigger an interpretation of (97b) that is translatable with the English progressive. This assumption is warranted by the infelicity of (i), below.

- (i) a. In this tavern, I wrote my first love letter to Vera.
 b. #I was writing it in pencil/#I had been writing it in pencil.

As will be shown in §2.3, a partitive operator along the lines of Filip’s IPF can account for the generalization above. What a partitive operator does not explain, however, is why the imperfective often leads to a defeasible inference that the described event culminated. This question is the topic of the next sub-section.

2.2.2 Culmination and defeasibility

As we have seen, the imperfective in Russian often leads to a defeasible inference that the described event culminated. In this section, I take a closer look at the sort of contexts in which such an inference is found. The discussion found in Gasparov 1990 is directly relevant. He writes: “The past event may receive an ‘existential’ [=konstatacija fakta] interpretation, as a result of the use of [the imperfective], only if the time span within which the event occurred in the past is sufficiently broad” (Gasparov 1990, pp. 199). Relating Gasparov’s insight to the data below, in (100) and (101), the idea is that there can be a culminated event inference in (100) because a day is “sufficiently broad” for one to clean up the apartment. No such inference can be found in (101), however, because an instant (or a very short interval of time) such as the one described by *v vosem’ časov* (‘at eight o’clock’) is not enough time for one to clean up the apartment.

(100) *Anja ubira-l-a kvartiru včera.*
 Anna clean-IPF-PST.3S-FEM apartment yesterday
 ‘Anna cleaned up (at least some of) the apartment yesterday.’

(101) *Anja ubira-l-a kvartiru v vosem’ časov včera.*
 Anna clean-IPF-PST.3S-FEM apartment at eight hour yesterday
 ‘Anna was cleaning up the apartment yesterday at eight.’

Gasparov's idea seems right. In fact, it is hard to see how it could fail to be right. Nevertheless, it does not explain why (100) does, in fact, have the culmination event inference, while e.g. the English sentence in (102) below does not.

(102) Anna was cleaning up the apartment yesterday...

According to Smith (1994), the culminated event inference in examples like (100) is a positive pragmatic inference that draws on "information made visible by the viewpoint [=grammatical aspect]" (Smith 1994, pp. 240).³⁹ By 'positive', Smith has in mind an inference that results from a pragmatic principle (or 'convention' in her terms), according to which "a speaker says as much as is needed." Unfortunately, Smith is not explicit about how the culminated event inference arises from this pragmatic principle, which mirrors Grice's Maxim of Quantity below (Grice 1989).

(103) *Maxim of Quantity*

- a. Make your contribution to the conversation as informative as necessary.
- b. Do not make your contribution to the conversation more informative than necessary.

Smith's claim is *prima facie* surprising because it seems highly unlikely that (103) could account for the culminated event inference in (100). To see why, consider a parallel example in (104), which entails that Dora has three kids. In this

³⁹ The claim that konstatacija fakta constitutes a pragmatic inference was also claimed by Durst-Anderson (1992) and Paducheva (2006); see also Paducheva 1986, Glovinskaja 1989 and Bondarko 1990, where such a claim is implied.

example, we infer that Dora has *exactly* three kids, even though the information that Dora has four kids is compatible with (104). Such is the case because the Maxim of Quantity tells us that if Dora had four kids, we would have said (105) instead, which entails that Dora has four kids and would thus be more informative.

(104) Dora has three kids.

(105) Dora has four kids.

By analogy, if we wanted to convey the information that an event of cleaning up the apartment culminated, then we would use the perfective, which would entail this. Since the perfective is not used in (100), we conclude by the Maxim of Quantity that an event of cleaning up the apartment did not culminate. This, however, is the opposite of what we want and illustrates the puzzle surrounding (100), summarized by the following question: why would an imperfective sentence implicate an event's culmination when its perfective counterpart entails it?

To the best of my knowledge, no adequate answer has been provided to this question. In what follows, I would like to suggest some possible approaches to answering it. In doing so, I hope to show that there is no single source for the culmination implicature found in imperfective sentences.

To begin with, I would like to consider the idea that pragmatic strengthening in examples like (100) is intimately tied to 'competition' between the imperfective and perfective aspect (cf. Grønn 2003; 2007). More specifically, I would like to explore the following idea:

(106) *Indirect strengthening approach*

In contexts where a complete event interpretation is felicitous but the perfective cannot be used, strengthen the truth-conditions of an imperfective sentence so that a culminated event interpretation follows. In all other contexts, do nothing.

To see the motivation behind (106), consider the pair of sentences in (107) and (108), which differ solely in that the former is perfective and the latter is imperfective. The former entails that an opening-the-window event culminated, while the latter implicates this (cf. *Ja otryval okno, no ne smog ego otryt'* 'I was opening the window, but was unable to open it').

(107) *Ja otkryl okno.*
 I PFV.clean-PST.3S window
 'I (have) opened the window.'

(108) *Ja otkr-yva-l okno.*
 I clean-IPF-PST.3S window
 'I opened (at least some of) the window.'

Interestingly, only the sentence in (108) would be a felicitous response to the question "Why is it so cold in here?" in a context where all the windows are closed. Such is the case because (107) has the additional inference that the window is open at the speech time. For this reason, (107) would be preferred to (108) as a response to the question "Why is it so cold in here?" in a context where a window is open.

Data such as (107) and (108) has motivated some researches to conclude that the perfective/imperfective contrast in Russian is analogous to the contrast between the result/experiential perfect in English (cf. Hulanicki 1973; see also Hopper 1982, Thelin 1990, Grønn 2003, Mittwoch 2008, Altshuler, to appear).

That is, the contrast above is reminiscent of the two readings available in (109), discussed in Chapter 1. According to result perfect reading, “the announcement is only in order as long as there is spilled coffee around” (Higginbotham 2008, pp. 176). The experiential perfect reading, on the other hand, can be paraphrased as “been there, done that” and is especially salient with nuclear stress on *have* or as an answer to the following question: “What are some of the things that you have done as a waiter that have gotten you fired?”

(109) I have spilled coffee.

Let us now return to (107) and consider it in light of (106). The idea is that in a context where, e.g. the question in (110) has been asked and the window is closed, (107) would be ruled out by for the reasons mentioned above. Consequently, if a speaker wanted to answer (110) by conveying the proposition that he opened the window, the imperfective would have to be used, viz. (108). If that is right, then it seems plausible to conclude that it is the ruling out of the perfective in (107) that triggers pragmatic strengthening of the imperfective in (108).

(110) Why is it so cold in here?

Further evidence that pragmatic inferences associated with the Russian imperfective are intimately tied to its perfective counterpart comes from the discourse below, in (111). This discourse entails that the guests arrived at Krylov’s residence (viz. the achievement VP *prixodit'* ‘come’) and implicates that

they left prior to the cleaning. This implication is often referred to as the *annulled result* inference that is often associated with the imperfective aspect.⁴⁰

- (111) *Krylov ubra-l kvartiru. Za čas do togo, k nemu*
 Krylov PFV-clean-PST.3S apartment. From hour to that to him
prixodi-l-i gosti.
 come.IPF-PST-3P guests
 ‘Krylov cleaned up the apartment. An hour before that guests had visited him (and then left).’

The discourse in (111) has the annulled result inference because its perfective counterpart would entail that the guests were at Krylov’s house at the time of the cleaning event (cf. Grønn 2003, pp. 230-244); see below, where (112) is a bit odd because people don’t typically clean when they have guests over.

- (112) *?Krylov ubra-l kvartiru. Za čas do togo, k nemu*
 Krylov PFV-clean-PST.3S apartment. From hour to that to him
priš-l-i gosti.
 PFV.come-PST-3P guests
 ‘Krylov cleaned up the apartment. An hour before that guests had visited him.’

In other words, we can derive the annulled result inference in the following way:

- (113) Deriving the annulled result inference in (111)
 a. If we wanted to assert that the guests were at Krylov’s house at the time of the cleaning event, then we would use the perfective.
 b. We did not use the perfective.
 c. Therefore, the guests were not at Krylov’s house at the time of the cleaning event.

⁴⁰ See Forsyth 1970 for a comprehensive discussion; see also e.g. Durst-Anderson 1992, Smith 1994, Paducheva 1996 and Grønn 2003.

In sum, the analyses of (107) and (111) subscribe to the idea that only the Russian perfective could give rise to the result perfect interpretation and this triggers pragmatic strengthening or an annulled result inference with the imperfective. In turn, it has been observed by Comrie (1976) that a result perfect interpretation is not possible with the future tense. For example, compare (109) with (114) below, which only has the experiential perfect interpretation.

(114) I will have spilled coffee.

Therefore, we would not expect pragmatic strengthening or the annulled result inference when an imperfective sentence is in the future. As illustrated in (115) and (116), this prediction is borne out. In particular, there is no inference in (115) that the speaker will open the window (entirely) and there is no inference in (116) that the guests will ever leave Anna's house.⁴¹

(115) *Ja budu otkr-yva-t' okno.*
I will open-IPF-PST.3S window
'I will be opening the window.'

(116) *S trex do njapti k Ane budut prixodit' gosti.*
From three to five to Anna will come-IPF-INF guests
'Guests will visit Anna from three to five.'

In addition to tense, the lexical properties of a VP also determine whether the result perfect interpretation is possible. In particular, the result perfect interpretation is only possible with VPs that have the property of having well-

⁴¹ The observation that the culminated event inference does not arise with imperfective sentences that have the future tense goes back to Glovinskaja 1982 (see also Paducheva 1996; 1998; 2006, and Grønn 2003). Glovinskaja characterizes this observation as the one of the most outstanding issues in research on Slavic aspect (Glovinskaja 2001, pp. 178; see also Grønn 2003, pp. 152-155 for discussion).

defined *temporary* consequent states (cf. ‘target state’ in Parsons 1990)—e.g. this property is characteristic of VPs like *clean the room* and *arrive*, but not, e.g. *read War and Peace* or *kiss Tabitha* (cf. Dowty 1979, pp. 255). Therefore, we would not expect pragmatic strengthening or the annulled result inference when an imperfective sentence has a VP that has the property of having well-defined *temporary* consequent states. As illustrated in (117), only the latter prediction is borne out. That is, (117) could not possibly have an annulled result inference because the consequent state of Maria reading *War and Peace* cannot be annulled—this consequent state is permanent. The surprising observation is that (117) does, in fact, have the inference that Maria finished reading *War and Peace*.

- (117) *Marija čita-l-a* ‘*Vojnu i mir*’ v prošlom godu.
 Maria read.IPF-PST.3S-FEM War and Peace in last year
 ‘Maria (had) read (at least some of) *War and Peace* last year.’

This observation is surprising because the perfective counterpart of (117) could not have a result perfect interpretation. This means that if the perfective counterpart of (117) were to be ruled out in favor of (117), it would be for reasons that have nothing to do with the result perfect. Given (106), the question that arises is: What type of context *would* rule out the perfective counterpart of (117) in favor of (117)? The only type of context that comes to mind would be one in which a culminated event interpretation is infelicitous (for whatever reason). Given (106), this incorrectly predicts that there is no pragmatic strengthening in (117).

At this point, it is not clear how to account for the culminated event inference in (117). However, it seems clear that some other pragmatic

strengthening strategy is involved. In fact, I believe that there are quite a few pragmatic strengthening strategies involved with imperfective sentences. Consider, for example, the discourse in (118a,b), where the imperfective sentence in (118b) has a culminated event inference. In particular, one infers that the described subjects read a book about the Titanic and this was the reason that they did not drown.

- (118) a. *Mne prisni-l-os', čto my v lodke, potom ona*
 Me PFV.dream-PST.1S-RFL that we in boat then she
perevernulas', i vse krome nas
 PFV.turn.over-PST.3S-RFL and everyone except us
u-tonu-l-i.
 PFV-drown.PST-2P
 ‘We dreamed that we were in a boat, then it turned over, and everyone except us drowned.’
- b. *My čita-l-i knigu pro Titanik, i èto nas spaslo.*
 We read.IPF-PST-2P book about Titanic and this us saved
 ‘We had read (at least some of) a book about the Titanic and this saved us.’

Notice that like (117), (118b) has a VP—namely *čitat' knigu pro Titanik* (‘read a book about the Titanic’)—which lacks the property of having a well-defined *temporary* consequent state. However, unlike the perfective counterpart of (117), the perfective counterpart of (118b) is ruled out due to discourse connectivity. As illustrated below, the perfective counterpart of (118b) in (119b) renders the discourse odd because we infer that the described subjects read a book about the Titanic *after* the boat turned over—it is, as it were, the subjects were in the water, reading a book in order to save themselves.

- (119) a. *Mne prisni-l-os', čto my v lodke, potom ona*
 Me PFV.dream-PST.1S-RFL that we in boat then she
perevernulas', i vse krome nas
 PFV.turn.over-PST.3S-RFL and everyone except us
u-tonu-l-i.
 PFV-drown.PST-2P
 'We dreamed that we were in a boat, then it turned over, and everyone except us drowned.'
- b. #*My pro-čita-l-i knigu pro Titanik, i èto nas spaslo.*
 We PFV-read-PST-2P book about Titanic and this us saved
 'We read a book about the Titanic and this saved us.'

As will be thoroughly discussed in Chapter 3, perfective sentences describe events that *follow* salient events previously mentioned in the discourse context. As such, the perfective is inappropriate in (119b). Given (106), this means that the imperfective—which crucially does not describe events that follow previously mentioned discourse events—is pragmatically strengthened in this context and we account for why there is a culminated event inference in (118b).

Let us now move on to consider the discourse in (120), where we see yet another pragmatic strengthening strategy involving the Russian imperfective.

- (120) a. *V ètoj porternoj ja na-pisal pervoe ljubovnoe pis'mo*
 In this tavern I PFV-write-PST.1S first love letter
k Vere.
 to Vera
 'In this tavern, I wrote my first love letter to Vera.'
- b. *Pisa-l karandaš-om.*
 Write.IPF-PST.1S pencil-INST
 'I wrote it in pencil' (Forsyth 1970, pp. 86).

In the literature on discourse coherence⁴², (120) would be characterized as involving an ELABORATION relation, which characterizes a particular way in which successive utterances are connected to form a coherent discourse. In particular, ELABORATION holds when two sentences describe the same event. Assuming that events described by (120a) and (120b) are the same, the culminated event inference in (120b)—i.e. that the speaker wrote the entire love letter in pencil—is derived as follows⁴³:

- (121) PREMISE 1: The perfective sentence in (120a) describes an event e and entails that e culminated.
 PREMISE 2: The imperfective sentence in (120b) describes an event e' and is compatible with e' having culminated.
 PREMISE 3: ELABORATION relation holds in (120) and therefore $e' = e$.
-

∴ e' culminated

I end this section by coming back to Rassudova's (1968) examples below, which were discussed at the outset of §2.1.

- (122) *K nam priezža-l otec, no vskore u-exa-l.*
 To us arrive.IPF-PST.3S father but in.a.rush PFV-go-PST.3S
 'Father came/had come to see us, but went away again soon' (Rassudova 1968).

- (123) *K nam priexa-l otec, no vskore u-exa-l.*
 To us PFV.arrive-PST.3S father but in.a.rush PFV-go-PST.3S
 'Father came/had come to see us, but went away again soon.'

In this section, we saw a number of differences between the imperfective and perfective aspect. These differences are concerned with (at least): (i) the

⁴² See e.g. Hobbs 1979, 1990; Lascarides and Asher 1993; Kehler 2002.

⁴³ A more precise rendition of (121) is provided in Chapter 3, where I combine the proposed semantics of the Russian imperfective with a theory of discourse coherence.

culmination entailment property, (ii) discourse connectivity to prior discourse, and (iii) result vs. experiential perfect interpretation. The difference with regard to (i) is neutralized in the examples above because they contain achievement VPs. There cannot be a difference with regard to (ii) because the sentences are discourse initial. Finally, the difference with regard to (iii) is neutralized by the follow-up *no vskore uexa-l* ('but left in a rush'), which is incompatible with the father being present at the speaker's house. Given the neutralization, it is extremely difficult (perhaps impossible) to state the difference between (122) and (123).⁴⁴

2.3 A modal analysis of IPF and PROG

In this section I build on Hana Filip's (Filip 1993; 1999; 2000) proposal that Russian has a partitive imperfective operator, IPF, which combines with a VP and returns a VP-event *part*. In §2.3.1, I discuss Landman's (1992) *stage-of* relation, which is a special case of a *part-of* relation; it allows one talk about the possible developments of an event. In §2.3.2, I propose that IPF combines with a VP and returns a VP-event stage.⁴⁵ Assuming that an event described an achievement VP comprises a stage that develops into itself in the world of evaluation (and presumably every other possible world), it is correctly predicted that IPF of an

⁴⁴ Another difference between the perfective and the imperfective concerns discourse connectivity to subsequent discourse, i.e. the perfective moves the reference time forward, while the imperfective does not (see Chapter 3 for more discussion). This difference is neutralized in (122) and (123) by *no vskore* ('but in a rush'), which triggers narrative progression.

⁴⁵ See Kagan 2007b for an alternative, modal analysis of the Russian imperfective using Dowty's 1979 semantics. This analysis is not adopted here because a neo-Davidsonian framework—to which Dowty does not subscribe—will be adopted in Chapters 3 and 4 to account for the discourse properties of aspectual markers.

achievement VP leads to the culmination entailment. On the other hand, assuming that events described by non-achievement VPs comprise multiple stages, it is correctly predicted that IPF of a non-achievement VP does not lead to the culmination entailment because any one of the VP-event stages satisfies the truth-conditions of IPF.

The proposed analysis naturally extends to the English progressive. I propose the progressive operator, PROG, encodes a more constrained *stage-of* relation: an event is a stage of another event only if the former is a proper part of the latter. This explains why a progressive sentence cannot make reference solely to an event's culmination, i.e. an event of the kind described by an achievement VP; PROG of an achievement VP leads to coercion (Moens and Steedman 1988). In this way, the English progressive differs from the imperfective in Russian and other Eastern Slavic languages, which are discussed after an analysis of the Russian data is provided.

Finally, in §2.3.3, I show how the proposed analysis can be extended to the imperfective aspect in Western Slavic languages (Czech, Slovak, Slovene) and languages that are transitioning between Eastern and Western Slavic (Serbo-Croatian, Polish). I present data from Dickey 2000, which shows that the imperfective in these language patterns more with the English progressive rather than its perfective counterpart when it comes to its culmination properties.

2.3.1 Landman's 'stage-of' relation

Landman (1992) proposes that sets of events can be ordered by a 'part-of' relation and a 'stage-of' relation. The latter is a special case of the former since

“to be a stage, a part has to be big enough and share enough with [an event] e so that we can call it a less developed version of e ” (Landman 1992: 23). Rothstein (1999) provides the following example which nicely illustrates the intuition behind Landman’s idea: “My frying onions and my listening to the radio may both be part of the event of my making fried rice, but only the first is a stage of it” (Rothstein 1999, pp. 411). Such is the case because an event of frying onions “shares” quite a bit with a rice frying event—onions are a key ingredient for fried rice. Moreover, frying onions is a “big enough” event that we can imagine it develop into an event which culminates in fried rice. On the other hand, it would be odd to say that listening to the radio could develop into an event which culminates in fried rice because the two events share nothing in common.

Note that Landman’s ‘stage-of’ relation is compatible with the event structure introduced in Chapter 1. Consider the following passage from Moens and Steedman (1988, pp. 18): “Any or all of [parts of an event] may be compound: for example, the preparation leading to the culmination of *reaching the top of Mt. Everest* may consist of a number of discrete steps of climbing, resting, having lunch, or whatever...” Combining this idea with Landman’s *stage-of* relation, I will henceforth refer to the ‘discrete steps’ of a preparation e as *stages* when they are big enough and share enough with e so that we can call it a less developed version of e . This is captured by the event structure below in Fig. 3, where the preparatory process consists of a series of stages and their consequent states:

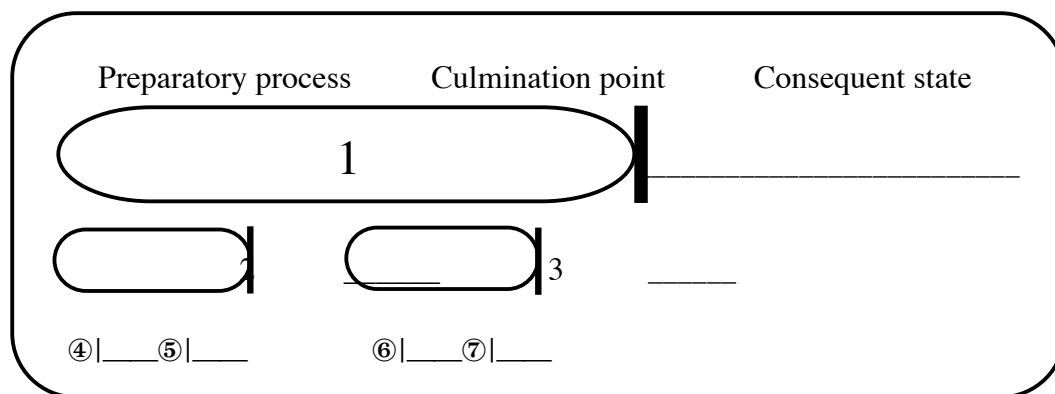


Figure 3: Fine-grained preparatory process

Two comments are in order about the event structure above, in Fig. 3. To begin with, I assume that the precise number and quality of the stages is not encoded in the lexicon and is determined by the context.⁴⁶ For example, consider the discourse in (124), which describes a house-building event and so-called *planning stages* of this event (Landman 1992), i.e. stages which describe the process leading to the physical labor involved in building a house.

- (124) John built a house last year. First he got an architect to draw up a plan. Next he hired a contractor. At the end he was very pleased. (Bittner 2008, pp. 21)

But, of course, building a house does not require that there be planning stages. Although people typically do plan out such an arduous task, John may have built a house in the spur of the moment:

⁴⁶ A possible exception comes from a VP like *walk*, whose truth-conditions, according to Dowty (1979), require that there be at least two steps.

- (125) Earlier today, John built a curious looking house. When he was walking in the woods, he noticed four large stones lying on the ground. He formed a cube-like structure by standing them up next to each other. Subsequently, he went to the lake for a water break. He found some hay on the way to the lake, and went back to his creation. He made a rooftop out of this hay. Finally, he drilled a hole in one of the stones, went through it and fell asleep inside.

The other comment about the event structure in Fig. 3 concerns the idea that natural language expressions make reference to consequent states of stages.⁴⁷ Arguably the clearest evidence for this position comes from perfect progressive sentences, viz. (126). Here, *has been building a splendid mansion* arguably describes the consequence of some stage of a mansion-building event. As implied by the elaboration in this sentence, the consequence is a Gothic structure made of stone.

- (126) From this lodge I turned into the field opposite to Ingress Park, where Mr. Alderman Harmer **has been building a splendid mansion**: it is entirely of stone, and is in the Gothic style (Loudin 2010).

Moreover, as will be shown in Chapter 3, the idea that natural language expressions make reference to consequent states of stages allows us to account for the discourse properties of the English progressive and the Russian imperfective, while maintaining the modal analysis pursued here.

The modal analysis assumes, following Landman, that English has a progressive operator, PROG, which combines with a base VP and makes reference to a VP-event stage. Landman's idea was that a progressive sentence is

⁴⁷ This idea contrasts the position taken by Rothstein (2004) who writes: "If e is itself an activity event, then the process stages of e will be the stages which have the characteristics of the activity component of e. If e is an accomplishment event, then the process stages of e will be the stages which the characteristics of the activity component of e" (pp. 47).

true if a VP-event stage develops into an event of the kind denoted by VP. With activity VPs, PROG's contribution is trivial since events described by activity VPs are *culminative*—e.g. a stage of a walking-a-dog-in-the-park event always develops into a walking-a-dog-in-the-park event because a stage of walking-a-dog-in-the-park *is* a walking-a-dog-in-the-park event. That is, (127a) symmetrically entails (127b).⁴⁸

- (127) a. Yesterday morning Mary was walking her dog in the park.
 b. Yesterday morning Mary walked her dog in the park.

Things are less trivial, however, when the input to PROG is an accomplishment VP. To see why, consider the VP *write a letter*, which describes a letter-writing event. No matter what stage of this event is chosen, it need not 'develop' into a letter-writing event since the two are not identical—e.g. a stage of a letter-writing event may constitute writing a salutation. However, if someone writes a salutation, that does not guarantee them writing a letter—the letter writer may be interrupted by all sorts of external circumstances. Put differently, (128a) does not entail (128b). This is the so-called *imperfective paradox* mentioned in §2.1.2.

- (128) a. Abelard was writing a letter to Heloise's uncle, the Canon.
 b. Abelard wrote a letter to Heloise's uncle, the Canon.

⁴⁸ Note that Dowty 1979 claims that (127a) is true if Mary took only a single step; a single step is the minimal *stage* of a walking event. However, (127b) is false in such a context according to Dowty. Intuitions are not clear about this, but if Dowty is right then while (127b) entails (127a), (127a) does not entail (127b). See Rothstein 2004 for more discussion.

In order to account for this paradox, Landman (1992) proposes—in the spirit of Dowty 1979—that a progressive sentence is true not only if a VP-event stage develops into an event of the kind denoted by VP, but that this development occur in *some possible world* and in particular, a world that is *near enough* to the world of evaluation.⁴⁹ The intuition behind this idea is that what we assert in sentences like (128a) is that there is an ongoing event, which we judge very likely to turn into an event of the kind denoted by the VP *wrote a letter to Heloise's uncle*. If Abelard gets interrupted in letter writing by external circumstances, then the event warranting the assertion in (128a) won't be a stage of an actual event of the writing-a-letter kind; it would be stage of a letter-writing event in a world similar to ours.

Landman's idea is made more precise by the meaning of PROG below, in (129), which combines with a VP and requires that there be an event e' in the world of evaluation w_0 that is a stage of a VP-event e in a 'near enough' world w . This requirement is encoded by the STAGE relation, whose semantics are spelled out in (130): $\text{STAGE}(e', e, w_0, w)$ is true iff (i) the history of the world denoted by w is the same as the world of evaluation denoted by w_0 up to and including the run time of the event denoted by e' , (ii) the world denoted by w is a reasonable option for the event denoted by e' , (iii) the event denoted by e is instantiated in the world denoted by w , and (iv) the event denoted by e' is a part of the event

⁴⁹ In addition to Landman's theory, there have been many other implementations of Dowty's idea (see e.g. Bonomi 1997a and Portner 1998). These other implementations are compatible with what is presented here.

denoted by e .⁵⁰

(129) $\text{PROG} \rightsquigarrow \lambda P \exists e \exists e' \exists w [\text{STAGE}(e', e, w_0, w) \wedge P(e, w)]$

(130) $\llbracket \text{STAGE}(e', e, w_0, w) \rrbracket^{20, g} = 1$ iff (i)-(iv) holds:

- (i) the history of $g(w)$ is the same as the history of $g(w_0)$ up to and including $\tau(g(e'))$
- (ii) $g(w)$ is a reasonable option for $g(e')$ in $g(w_0)$
- (iii) $g(e)$ is instantiated in $g(w)$
- (iv) $g(e') \sqsubseteq g(e)$

As in Landman 1992, the meaning of PROG above crucially relies on the notion of a *reasonable option*, viz. (130ii).⁵¹ The main motivation for this concerns our intuition that a sentence like (131) below is false when uttered in the following context: “Mary is violently opposed to Roman occupation of her part of Gaul, and one day decides that it is her duty to do as much damage to the army as she can; she enters the town barracks one day at noon and attacks whomever she sees. There is really no chance that she can wipe out the well-trained local garrison, much less the whole army” (Portner 1998, pp. 9).

(131) Mary was wiping out the Roman army (Landman 1992, pp. 18).

Without (130ii), (131) would be predicted to be true in the context provided because there is an event e' of Mary killing a few soldiers in the world of

⁵⁰ Note that Landman’s meaning for PROG is more complex, involving a *continuation branch* function that allows one to trace how an event that is instantiated in the world of evaluation develops in some possible world. Although this additional complexity is well motivated, it is outside the scope of this chapter.

⁵¹ In Landman’s theory this notion is left as theoretical primitive. For an analysis in which this notion follows from independent constraints see Portner 1998.

evaluation w_0 that is part of an event e in which Mary wipes out the Roman army in a possible world w whose history is the same as w_0 up to and including the run time of e' . However, given the current meaning of PROG, (131) is predicted to be false in the context provided because a world in which Mary wipes out the Roman army is not a reasonable option for an event of Mary killing a few soldiers in the world of evaluation.

Two other important consequences follow from the meaning in (129). The first consequence is that it explains the well-known observation that (for the most part) only eventive VPs are compatible with the progressive⁵²:

- (132) a. *John is knowing the answer.
 b. John is running.
 c. John is building a house (Dowty 1979, pp. 55).

The explanation goes as follows. The STAGE relation is dynamic in nature, characterizing an event's change (or development). States, however, are static in nature, i.e. if a stative predicate P holds at an interval i , each instant within i looks identical with respect to P and therefore there is no way of determining change (or development) with respect to P during i . Since PROG encodes the STAGE relation, it fails to make reference to a VP-event stage when it combines with a stative VP (i.e. since states don't have stages), thereby rendering the sentence infelicitous.

⁵² Some well-known counter-examples are provided in (i). See Landman 2008 for a recent discussion of these cases.

- (i) a. The socks are lying under the bed.
 b. One corner of the piano is resting on the bottom step (Dowty 1979, pp. 173).

What about achievement VPs? What happens when they are the input to PROG? This question is difficult to answer because while the received wisdom has always been that such VPs do not happily combine with the progressive, viz. (133), there are plenty of counterexamples, viz. (134).⁵³

- (133) a. #Jane is reaching the summit of the mountain.
 b. #Mary is spotting her friend at the party (Rothstein 2004, pp. 36).
- (134) a. Susan was arriving at the station when she heard that trains to Jerusalem had been cancelled because of the state of the line.
 b. Dafna is finding her shoes.
 c. Fred and Susan are finally leaving.
 d. The old man is dying.
 e. The plane is landing.
 f. Jane is just reaching the summit (Rothstein 2004, pp. 36).

An important observation to make with regard to the sentences in (134) is that—although these sentences have achievement VPs—they behave as though they are accomplishment-like. Rothstein (2004) provides the following paraphrase for the first part of the sentence in (134a): “there was an event going on which if not interrupted culminated in Mary’s arrival at the station...” (Rothstein 2004, pp. 48). According to this paraphrase, *was arriving* in (134) is interpreted differently from *arrived* in *Maria arrived at the station*; it is on a par to *was getting closer to* as in *Mara was getting closer to the station*.

To account for the data above, Rothstein first proposes that events described by achievement VPs do not have stages. She writes: “Achievements are too short: they do not extend over time but are instantaneous events, and thus stages cannot be distinguished” (Rothstein 2004, pp. 12). In turn, Rothstein

⁵³ In fact, a google search reveals that sentences like (134) are likely the norm, not the exception.

proposes that when achievement VPs combine with the progressive, they are subject to a type-shifting rule that makes them accomplishment like. In particular, the events described by the type-shifted VP have stages (Rothstein 2004, pp. 48-50; see also Moens and Steedman 1988, de Swart 1998 and Bary 2009 for various other implementations of this idea).⁵⁴

Another hypothesis, which will be crucial to the analysis proposed in the next subsection, is that achievement VPs describe events that do, in fact, have stages. In particular, they describe events that comprise atomic stages—they ‘develop’ into themselves in the world of evaluation and presumably in every other possible world. In turn, PROG fails to make reference to such a stage given its revised semantics below, in (135) and (136). The crucial revision concerns (136iv), which says that an event denoted by e' is a proper part of the event denoted by e . The idea is that since events described by achievement VPs don’t have proper parts, PROG of an achievement VP triggers coercion whereby the described event has a preparatory process (and thus proper parts).

(135) $\text{PROG} \rightsquigarrow \lambda P \exists e \exists e' \exists w [\text{STAGE}^*(e', e, w_0, w) \wedge P(e, w)]$

(136) $\llbracket \text{STAGE}^*(e', e, w_0, w) \rrbracket^{20:g} = 1$ iff (i)-(iv) holds:

- (i) the history of $g(w)$ is the same as the history of $g(w_0)$ up to and including $\tau(g(e'))$
- (ii) $g(w)$ is a reasonable option for $g(e')$ in $g(w_0)$
- (iii) $g(e)$ is instantiated in $g(w)$
- (iv) $g(e') \sqsubset g(e)$

⁵⁴ This, of course, leads to the question of why achievement VPs are coerced in certain contexts but not others—e.g. it is not immediately clear why achievement VPs can be coerced. See Moens and Steedman 1988 and de Swart 1998 for more discussion.

At first blush, it is not immediately clear whether (129) or (135) ought to be adopted. At least not when we only consider data involving the English progressive. However, when we compare the English progressive to the Russian imperfective—as will be done in the next sub-section—it becomes clear that the difference between (132) and (135) is what characterizes the different culmination properties of these two aspects. In particular, the central claim of this chapter is that the English PROG has the meaning in (136), while the Russian IPF has the meaning in (132).

2.3.2 Parameterizing the ‘stage-of’ relation

I begin this section by accounting for the generalization below, in (137), which was motivated in §2.2.

- (137) *Culmination entailment generalization*
 The combination of the Russian imperfective with a base VP gives rise to an entailment that a described event culminated only when the base VP is an achievement.

I propose that that Russian has the partitive imperfective operator in (138), which combines with a VP and requires that there be an event e' in the world of evaluation w_0 that is a stage of a VP-event e in a ‘near enough’ world w . This requirement is encoded by the STAGE relation, discussed in the previous subsection (viz. the discussion of (132)).

(138) IPF $\rightsquigarrow \lambda P \exists e' \exists e \exists w [\text{STAGE}(e', e, w_0, w) \wedge P(e, w)]$

(139) $[[\text{STAGE}(e', e, w_0, w)]^{20,g} = 1$ iff (i)-(iv) holds:

- (i) the history of $g(w)$ is the same as the history of $g(w_0)$ up to and including $\tau(g(e'))$
- (ii) $g(w)$ is a reasonable option for $g(e')$ in $g(w_0)$
- (iii) $g(e')$ is instantiated in $g(w)$
- (iv) $g(e') \sqsubseteq g(e)$

Applying this analysis to the example below, in (140), IPF combines with the VP *priežžat* ('arrive') and requires that there be an event e' in the world of evaluation w_0 that is a stage of a VP-event e in a 'near enough' world w . If we assume that an event such as an arrival comprises an atomic stage, then this requirement is trivial. That is, if we assume that an atomic stage is one that develops into itself in the world of evaluation (and presumably every other possible world), we expect (140) to entail that the father arrived at the location of the speaker.

(140) *K nam priežža-l otec.*
 To us arrive.IPF-PST.3S father
 'Father came/had come to see us.'

Moreover, assuming that the perfective aspect has the meaning in (141)⁵⁵, we have an explanation for why culmination differences between the imperfective

⁵⁵ This meaning is a gross simplification; the requirement imposed PFV, namely that an event in the extension of VP hold in the world of evaluation, should be seen as one of the many constraints imposed on the meanings of the 20-plus perfective prefixes in Russian. Other constraints that deal with discourse connectivity are discussed in Chapter 3 and formalized in Chapter 4.

and perfective are neutralized with achievement VPs, cf. (140) and (142), where the father is understood to have arrived in both cases.

(141) PFV $\rightsquigarrow \lambda P \exists e [P(e, w_0)]$

(142) *K nam priexa-l otec.*
 To us PFV.arrive-PST.3S father
 ‘Father came/had come to see us.’

IPF applied to an accomplishment VP, however, does not lead to a culmination entailment assuming that accomplishment events have at last two stages. For example, consider (143), which has the accomplishment VP *čítat' Krepost'* (‘read *The Fortress*’). Given the meaning of IPF in (138), we correctly predict (143) to entail that a VP-event stage culminated and crucially not that a VP-event culminated, as is the case with its perfective counterpart in (144).

(143) *Ja uže odnaždy čita-l Krepost'.*
 I already once read.IPF-PST.3S Fortress
 ‘I have already read (at least some of) *The Fortress* once.’

(144) *Ja uže odnaždy pro-čita-l Krepost'.*
 I already once PFV-read-PST.3S Fortress
 ‘I have already read *The Fortress* (completely) once.’

Let us now move on to explain the difference between (140) and the progressive sentence in (145) below, which has the following paraphrase: “there was an event going on which if not interrupted culminated in Mary’s arrival at the station...” (Rothstein 2004: 48). According to this paraphrase, *was arriving* in (145) is interpreted differently from *arrived*, viz. *Maria arrived at the station*; it is on a par with *was getting closer to*, viz. *Mara was getting closer to the station*.

(145) Mary was arriving at the station (when her cell phone went off).

The interpretation in (145) is expected given the meaning of PROG in (146). Crucially notice that unlike IPF, PROG encodes the STAGE^* relation, whose semantics require that an event denoted by e' be a proper part of the event denoted by e , viz. (147iv). This means that PROG requires that there be a proper part of a VP-event. Assuming that events described by achievement VPs such as *arrive* are atomic, coercion (or type shifting) takes place whereby *was arriving* behaves as an accomplishment-like VP, i.e. as one that describes an event with a preparatory process.

(146) $\text{PROG} \rightsquigarrow \lambda P \exists e' \exists e \exists w [\text{STAGE}^*(e', e, w_0, w) \wedge P(e, w)]$

(147) $\llbracket \text{STAGE}^*(e', e, w_0, w) \rrbracket^{\text{no.g}} = 1$ iff (i)-(iv) holds:

- (i) the history of $g(w)$ is the same as the history of $g(w_0)$ up to and including $\tau(g(e'))$
- (ii) $g(w)$ is a reasonable option for $g(e')$ in $g(w_0)$
- (iii) $g(e)$ is instantiated in $g(w)$
- (iv) $g(e') \sqsubset g(e)$

Note that the proposed analysis of (145) differs from what has previously been proposed in the literature. Recall that Rothstein (2004) proposes that achievement VPs are subject to a type-shifting rule when they combine with PROG because events described by such VPs do not have stages. This idea is similar in spirit to the original proposal made by Moens and Steedman (1988), who argued that PROG of an achievement VP leads to coercion because the input to PROG is a preparation and events described by an achievement VP do not have a

preparation. While such proposals accounts for the English data, viz. (145), they cannot account for (140). That is, if we follow Rothstein and assume that events described by achievement VPs do not have stages, then we cannot hold the view that IPF makes reference to a VP-event stage; if it did, then analogous to PROG, we would expect there to be coercion (or type shifting) of some sort in (140). On the other hand, if we assume—as I have done—that events described by achievement VPs comprise atomic stages, then we can maintain the view that both IPF and PROG make reference to a VP-event stage; the sole difference is that the former operator requires a *stage* and the latter a *proper-stage*.

It is also important to note that IPF of an achievement VP can be coerced due to an independent trigger. For example, consider (148), where the perfective VP *otkryl Ameriku* ('discovered America') provides the necessary trigger. In particular, the perfective is used to assert that an event of discovering America was instantiated and that Columbus was happy on a different occasion. Subsequently, the imperfective VP *otkryval Ameriku* ('discovered America') is used to talk about the occasion during which Columbus was happy. Without coercion, we would have the following contradiction: *Columbus was happy not when he discovered America, but when he discovered it*. To avoid this, the imperfective VP *otkryval Ameriku* ('discovered America') is coerced in such a way that we infer that Columbus was happy during the preparation leading to the discovery rather than the discovery itself.

- (148) *O, bud'te uvereny, čto Kolumb by-l sčastliv ne togda,*
 O rest assured that Columbus be.IPF-PST.2S happy not then
kogda otkry-l Ameriku, a kogda otrkr-yva-l ee.
 when PFV.open.PST.3S America but when open-IPF-PST.3S it
 'Oh, rest assured that Columbus was happy not when he discovered
 America, but while he was discovering it' (Dostoevskij, *Idiot*; quoted by
 Vinogradov 1972 and cited in Rassudova 1984, pp. 15).

I end this section by noting an outstanding issue for the analysis proposed in this section. As discussed in the previous subsection, a key consequence of Landman's analysis is that it explains the well-known observation that (for the most part) only eventive VPs are compatible with the progressive. Such is the case because the *stage-of* relation does not characterize states, which are static in nature. Since Landman's analysis has been extended to the Russian imperfective, one would expect that only eventive VPs are compatible with the imperfective. However, this is not true. All sentences with stative VPs are taken to be imperfective. For example, consider (149a). Although this sentence does not have an overt aspectual marker, we know that this sentence exemplifies the imperfective aspect because the state of being sick is understood to be 'ongoing' at the speech time, cf. (149b) which has the perfective prefix *za-* and the interpretation is future oriented. Similarly, we know that the eventive sentence in (150a) exemplifies the imperfective aspect because the book-reading event is understood to be 'ongoing' at the speech time, cf. (150b) which has the perfective prefix *pro-* and the interpretation is future oriented.

- | | | | |
|-------|----|---|--------------|
| (149) | a. | <i>Anja bole-et.</i>
Anna sick.IPF-PRS.3S
'Anna is sick.' | IMPERFECTIVE |
| | b. | <i>Anja za-bole-et.</i>
Anna PFV.sick-PRS.3S
'Anna will become sick.' | PERFECTIVE |
| (150) | a. | <i>Anja čita-et knigu.</i>
Anna read.IPF-PRS.3S book
'Anna is reading a book.' | IMPERFECTIVE |
| | b. | <i>Anja pro-čita-et knigu.</i>
Anna PFV-read-PRS.3S book
'Anna will read a book.' | PERFECTIVE |

All in all, (149a) and (150a) fit the same descriptive bill—i.e. they are sentences which exemplify an ‘ongoing’ interpretation and are therefore taken to be imperfective (see Chapter 1 for other tests of imperfectivity). However, this does not mean both sentences involve IPF. After all, the notion of ‘imperfective’—a descriptive notion that characterizes various data—differs from IPF, which is a formal object used to account for various data. *Prima facie*, there is nothing wrong with saying that in (150a), IPF plays the role of making reference to a VP-event stage and the tense plays the role of locating this stage at the speech time; in (149a), however, the meaning of the VP makes reference to a state and the tense locates this state at the speech time. Surely this is a possible analysis of the data and one that will later be adopted in Chapter 4. For the current purposes, such an analysis shows that there is no *prima facie* objection to the view that the meaning of an imperfective sentence could, but need not involve IPF.

2.3.3 An initial typology of Slavic languages

Dickey (1995; 2000) argues that in addition to Russian, Bulgarian and Ukrainian are languages in which it is possible to get *konstatacija fakta* with achievement VPs.⁵⁶ Dickey groups these languages into the ‘Eastern group’ and calls these languages ‘Eastern Slavic’. He first provides the Russian examples in (151) below, which entail that the described event culminated whether or not the particle *uže* ‘already’ is present. With regard to (151b), Dickey claims that some informants say that the perfective would be more natural, but other informants indicate that “impv is acceptable and in fact preferable to the pv, noting that the pv could only be appropriate in other contexts, such as if the speaker is still lying on the ground and says *I’ve fallen from this tree*” (Dickey 2000, pp. 99). This is not surprising given the discussion in §2.2.2, where we saw that the perfective often behaves like the result perfect in English.

(151) RUSSIAN

- a. *Odanždy on uže poluča-l vygovor za opozdanie.*
 Once he already receive.IPF-PST.3S reprimand for being.late
 ‘He has already once received a reprimand for being late.’
 (Rassudova 1968, cited in Dickey 2000, pp. 98).
- b. *V detstve odnaždy ja padal s ètogo dereva.*
 In youth once I fall.IPF-PST.1S from this tree
 ‘As a child I once fell from this tree.’

⁵⁶ Dickey also provides data from Belarusian (unconfirmed from native speakers), which allegedly shows that imperfective of an achievement denoting VP also leads to *konstatacija fakta*.

The Ukrainian and Bulgarian equivalents of (151) are provided in (152) and (153) respectively. The crucial observation to make is that both languages use the imperfective aspect to assert that the described event culminated.⁵⁷

(152) UKRAINIAN

- a. *Oдного разу він вже отримував попередження*
 One time he already receive.IPF.PST.3S reprimand
pro zapiznennja
 for being.late
 ‘He has already once received a reprimand for being late.’ (Dickey 2000, pp. 98).
- b. *У дитинстві одного разу я падав з цього дерева.*
 In childhood one time I fall.IPF.PST.1S from this tree
 ‘As a child I once fell from this tree.’

(153) BULGARIAN

- a. *Vednâž veče e polučaval zebeležka za zakâslenie.*
 Once already he receive.IPF.PST.3S reprimand for being.late
 ‘He has already once received a reprimand for being late.’ (Dickey 2000, pp. 98).
- b. *Kato malâk vednâž padah ot tova dârvo.*
 As child once fall.IPF.PST.1S from this tree
 ‘As a child I once fell from this tree.’ (Stankov 1976, pp. 48, cited from Dickey 2000, pp. 98).

The data above shows that Eastern Slavic languages other than Russian have the imperfective operator, IPF, defined in the previous section. Table 1 below shows an initial typology (to be amended) in which Eastern Slavic IPF encodes STAGE, while the English PROG encodes STAGE*.

⁵⁷ Note that the perfective could be used in these examples as well and this would not change the truth conditions. With regard to (153a), Todor Koev (p.c.) notes that the use of the perfective would get rid of an implicature that is present otherwise, namely that the agent in question would receive a reprimand again.

STAGE	STAGE*
Eastern Slavic IPF	English PROG

Table 1: Initial Typology (to be amended)

Interestingly, the imperfective aspect in other Slavic languages patterns with the English PROG, rather than Eastern Slavic IPF. For example, consider the data below, in (154)-(158). These data show that the perfective aspect must be used in Serbo-Croatian, Slovene, Slovak, Czech and Polish to assert that the described event was culminated.

(154) SERBO-CROATIAN

- a. *Več je jedom* {^{OK}*dobio* / #*dobijao*}
 Once he already PFV.receive.PST.3S receive.IPF.PST.3s
prigovor za zakašnjenje.
 reprimand for being.late
 ‘He has already once received a reprimand for being late.’
- b. *Kao dete sam jednom* {^{OK}*pao* / #*padao*}
 As child I once PFV.fall.PST.1S fall.IPF.PST.1S
s tog drveta.
 from this tree
 ‘As a child I once fell from this tree’ (Dickey 2000, pp. 101).

(155) SLOVENE

- a. *Enkrat je že* {^{OK}*dobil* / #*dobival*}
 Once he already PFV.receive.PST.3S receive.IPF.PST.3s
ukor zaradi zamude.
 reprimand for being.late
 ‘He has already once received a reprimand for being late’.
- b. *Kot otrok sem* {^{OK}*padel* / #*padal*} *s*
 As child I PFV.fall.PST.1S fall.IPF.PST.1S from
tega drevesa.
 this tree
 ‘As a child I once fell from this tree’ (Dickey 2000, pp. 101).

(156) SLOVAK

- a. *Raz už* {^{OK}*dostal* / #*dostaval*}
 Once already PFV.receive.PST.3S receive.IPF.PST.3s
pokarhanie za spozdnenie.
 reprimand for being.late
 ‘He has already once received a reprimand for being late’.
- b. *Ako chlape raz* {^{OK}*spadol* / #*padal*} *zo stromu.*
 As child once PFV.fall.PST.1S fall.IPF.PST.1S from tree
 ‘As a child I once fell from this tree’ (Dickey 2000, pp. 101).

(157) CZECH

- a. *Raz už* {^{OK}*dostal* / #*dostaval*}
 Once already PFV.receive.PST.3S receive.IPF.PST.3s
napomenutí za spoždění.
 reprimand for being.late
 ‘He has already once received a reprimand for being late’.
- b. *Jako dítě jsem jednou* {^{OK}*spadl* / #*padal*}
 As child I once PFV.fall.PST.1S fall.IPF.PST.1S
z toho stromu.
 from that tree
 ‘As a child I once fell from this tree’ (Dickey 2000, pp. 101).

(158) POLISH

- a. *Raz już* {^{OK}*dostał* / ??*dostawał*}
 Once already PFV.receive.PST.3S PFV.receive.PST.3s
naganę za spóźnienie.
 reprimand for being.late
 ‘He has already once received a reprimand for being late’.
- b. *Jako dziecko raz* {^{OK}*spadłem* / **spadałem*}
 As child once PFV.fall.PST.1S fall.IPF.PST.1S
z tego drzewa.
 from that tree.
 ‘As a child I once fell from this tree’ (Dickey 2000, pp. 101).

Although Dickey does not appeal to notions such as ‘culmination’, ‘entailment’ or ‘assertion’ to describe the data, he uses the contrast between (151)-(153) and (154)-(158) to argue that Slovene, Slovak and Czech form a distinct natural class of Slavic languages, the ‘Western group’, in which imperfective of an

achievement VP is not possible on an episodic interpretation (cf. the use of the adverbial *once* in the data above to force this interpretation); Serbo-Croatian and Polish—which are argued to be in transition between Western and Eastern Slavic—pattern with the Western group in this regard.⁵⁸

As shown by the data below, in (159)-(161), coercion takes place in Western Slavic languages when the imperfective is used with achievement VPs. In particular, the Czech and Serbo-Croatian sentences in (159) and (160) show cases where the imperfective happily combines with achievement VPs, but this yields habitual and iterative interpretations respectively. On the other hand, the Polish sentence in (161a) shows a case where the described event is on a par with an event described by an accomplishment VP rather than achievement VP (cf. (161b)). This is reminiscent of the English data considered earlier in this chapter, whereby progressive of an achievement VP like *arrive* leads to coercion.

(159) CZECH

Ta sebevražda byla možna z rodu sebevražď, jaké
 That suicide was possible of kind suicide that
páchávali *pruští* *důstojníci, zanechaní v pokoji sami s*
 commit.IPF.PST.3S Prussian officers left in room alone with
revolverem.
 revolver
 ‘The suicide was perhaps the kind of suicide committed by Prussian officers left alone in a room with a revolver’ (Jirotko 1964, pp. 99).

⁵⁸ Dickey reports that “some informants consider the impv in...e.g. [(158a)]...to be possible, although very uncommon and/or colloquial (hence the double question mark)” (Dickey 2000, pp. 102). Polish seems to generally reject imperfective of an achievement VP (on an episodic interpretation), but this rejection is not as strict as in Serbo-Croatian, Slovene, Slovak and Czech (see for example (161b)), where there have been no attested cases of this kind. Dickey suggests that this is “perhaps connected with the fact that Pol is aspectually a transitional zone between East Slavic...and the Cz-Sk-Sn group” but nevertheless concludes that “Pol patterns essentially like the western group” (Dickey 2000, pp. 102).

(160) SERBO-CROATIAN

Dva puta se budio te noći
 Two times he wake.up.IPF.PST.3S the night
 ‘He woke up twice during the night (Dickey 2000).

(161) POLISH

- a. *Dokładnie w chwili, kiedy wystrzel-iwa-ł korek od*
 Exactly in moment when popped-IPF-PST.3S cork from
szampana, Konrad dźął księcia.
 champagne Konrad PFV.stab.PST.3S prince
 ‘Exactly at the moment when the champagne cork was popping,
 Konrad stabbed the prince.’
- b. *Wystrzeli-ł korek od szampana,*
 PFV-popped-PST.3S cork from champagne
 ‘The champagne cork popped’ (Labenz 2004, pp. 61).

Given these considerations, I conclude that like the English PROG, Western Slavic IPF encodes STAGE*, viz. Table 2 below. This correctly predicts that Western Slavic IPF never leads to an entailment that the described event culminated and that when it combines with an achievement VP, coercion takes place.

STAGE	STAGE*
(i) Eastern Slavic IPF	(i) English PROG (ii) Western Slavic IPF

Table 2: Initial Typology (to be amended)

In Chapter 3, another parameter will be added to the typology above, namely a relation that constrains the temporal location of the described event and accounts for the discourse properties of aspectual markers. This relation will be argued to

distinguish IPF in both the Eastern and Western Slavic varieties from the English PROG.

2.4 A note on habituality

In this section, I would like to briefly discuss the habitual interpretation, which traditionally has been thought to be a core property of the imperfective aspect cross-linguistically (Comrie 1976). In the literature on Russian aspect, this is the generally held view for the following reason: whereas the imperfective can give rise to the habitual interpretation in most contexts, viz. (162), perfective sentences have the habitual interpretation only if the sentence (i) is in the present tense and (ii) has an adverb of quantification, viz. (163). That is, although imperfectivity is not a necessary condition for habituality in Russian, it is a sufficient condition. In contrast, perfectivity is not a necessary or a sufficient condition for habituality in Russian.

- (162) Imperfective habitual
- a. *(Inogda) on govori-t o reformax.*
 Sometimes he tell-IPF-NPST.3S about reforms
 ‘(Sometimes) he talks about reforms.’
- b. *(Inogda) on pogovar-iva-l o reformax.*
 Sometimes he tell-IPF-PST.3S about reforms
 ‘(Sometimes) he talked about reforms’ (Jakobson 1956, pp. 137).
- (163) Perfective habitual
- a. *Inogda on po-govori-t o reformax.*
 Sometimes he PFV-tell-NPST.3S about reforms
 ‘Sometimes he {would talk/talks} about reforms.’
- b. *#Inogda on po-govari-l o reformax.*
 Sometimes he PFV-tell-PST.3S about reforms
 ‘Sometimes he talked about reforms’ (Jakobson 1956, pp. 137).

The data above has led researchers to seek a unified semantic account of the imperfective such that it predicts both an episodic and a habitual interpretation. Recently, Ferreira (2005) proposed that the difference between an episodic and a habitual interpretation reduces to the number (singular/plural) of the event that is quantified over: whereas an episodic interpretation involves quantification over a singular event, the habitual interpretation involves quantification over plural events.⁵⁹ VP-denotations, on Ferreira's analysis, may contain singular as well as plural events. The denotations combine with one of three specialized versions of IPF: (i) IPF_{sg}, which selects sets of singular events, (ii) IPF_{pl}, which selects sets of plural events and (iii) IPF, which selects sets of (singular or plural) events. Ferreira argues that this three-way distinction "is similar to what happens in the nominal domain, where we find determiners like *some*, which combines with both singular and plural noun phrases ('some boy/some boys'), *every*, which combines only with singular noun phrases ('every boy/*every boys'), and *many*, which only combines with plural noun phrases ('*many boy/many boys')" (Ferreira 2005, pp. 100). Moreover, Ferreira provides data showing that all three imperfective operators are attested in natural language: simple eventive sentences in the present tense in English only give rise to habitual readings "suggesting that IPF_{pl}, in this case a phonetically null operator, is part of their logical form"; simple present sentences in Romance are ambiguous between episodic and habitual readings "suggesting that IPF is available for these languages"; Turkish forms with *-yor* only gave rise to an episodic interpretation

⁵⁹ For other proposals see e.g. Bonomi 1997b, Cipria and Roberts 2000, Deo 2009, Bary 2009.

in earlier stages of the language, thus providing “an example of a morpheme instantiating IPF_{sg.}”

Given Ferriera’s analysis, IPF in Russian would certainly fall into the category of imperfective operators which select either sets of singular or plural events (see Kagan 2008 for an analysis along these lines). In fact, given Dickey’s (2000) discussion of habituality in Ukrainian and Bulgarian (see e.g. the data below), it seems safe to generalize such an analysis to IPF in Eastern Slavic.

(164) UKRANIAN

Ja zvyčajno {#kupyv/ ^{OK}kupuvav} kovbasu.
 I usually PFV.buy.PST-1S buy.IPF.PST-1S salami
 ‘I usually bought salami.’ (Dickey 2000, pp. 74).

(165) BULGARIAN

Za včera obiknoveno si {#kupih/ ^{OK}kupuvah} salam.
 For dinner usually I PFV.buy.PST-1S buy.IPF.PST-1S salami
 ‘For dinner I usually bought salami.’ (Dickey 2000, pp. 74).

The idea would be to say that an imperfective sentence in Eastern Slavic makes reference to either (i) an event that holds in the world of evaluation and which is a stage of an event that culminates in a ‘near enough’ world or (ii) a series of events which hold in the world of evaluation and which are stages of events that culminate in a ‘near enough’ world (cf. Anand and Hacquard 2009). This idea, of course, makes IPF more Jakobsonian in spirit: not only does it fail to express “specific reference to the completeness of the event”, but it is “indifferent” to the distinction between singularity/plurality (Rassudova 1968, pp. 49).

Independent evidence for such an analysis comes from the observation that the imperfective in Russian, Ukrainian and Bulgarian must be used in

questions involving the indefinite, polarity-sensitive item *ever*. As illustrated below in (166)-(168), this even includes cases in which the interlocutor asks about whether an event described by an achievement VP had ever been instantiated.

(166) RUSSIAN

Ty kogda-nibud' {#prygnu-l/ ^{OK}pryga-l} s
 You ever PFV.jump-PST.2S jump.IPF-PST.2S from
trampolina?
 diving.board
 'Have you ever dived off a diving board?' (Dickey 2000, pp. 104)

(167) UKRAINIAN

Vy kolynebud' {#pirnuly/ ^{OK}pirnaly} z
 You ever PFV.jump-PST.2S jump.IPF-PST.2S from
trampolinu?
 diving.board
 'Have you ever dived off a diving board?' (Dickey 2000, pp. 104)

(168) BULGARIAN

{#Skočil/ ^{OK}Skačal} li si njakoga v basejn ot
 PFV.jump-PST.2S jump.IPF-PST.2S Q you ever in pool from
trampolin?
 diving.board
 'Have you ever dived off a diving board?' (Dickey 2000, pp. 104)

The Russian *kogda-nibud'* ('ever'), as well as its many *-nibud'* relatives (e.g. *kto-nibud'* 'someone', *kuda-nibud'* 'somewhere', *čej-nibud'* 'someone's', *naskol'ko-nibud'* 'to some degree', etc.) have received a fair amount of attention in the recent literature. As proposed by Pereltsvaig (2008), these expressions are dependent indefinites: they introduce a variable whose value co-varies with the value of the variable that is introduced by a licensing operator which takes wider scope (cf. Yanovich 2005). In examples such as those above, Pereltsvaig proposes that the dependent variable introduced by *-nibud'* co-varies with an event variable

introduced by an aspectual operator, which is only possible if there are a plurality of events. Assuming that an imperfective operator is compatible with a plurality of events, but a perfective operator is not, the contrast in (166)-(168) is expected.

Despite the evidence provided by the data above, it is worth noting that Filip (2009) argues against an analysis that derives habituality from IPF, claiming that there “is no necessary (formal) connection between habituality or sentential genericity and aspect; habituality/genericity is best viewed as a category in its own right, rather than a member of some other category system” (pp. 4).⁶⁰ Filip’s conclusion is based on various empirical generalizations. For the sake of brevity, I will consider what I take to be the most compelling generalization, provided in (169).⁶¹

(169) Imperfective and perfective verb forms can both be used for the expression of generic/habitual statements.

Filip makes this generalization based on Czech data, which shows that the perfective is a sufficient (though not necessary) condition for habituality in this language. Note that (169) goes back to at least Stunová (1986), who argues based on a corpus study that in habitual contexts “a relatively strong predominance of the Russian imperfective is observed, while in the same speech context, Czech

⁶⁰ See Boneh and Doron 2008 where the same conclusion is reached based on Polish, Hebrew and Romance data. See also Bittner 2008 for a relevant discussion of habitual markers in Kalaallisut.

⁶¹ Filip’s other generalizations are outlined in (i)-(iii):

- (i) Habitual and perfective markers also co-occur on the same verb form.
- (ii) Apart from the ‘habitual’ subcategory, other subcategories of the imperfective, namely the progressive and non-progressive, have realizations that are used in habitual/generic statements.
- (iii) Habitual and imperfective markers may freely co-occur in a single verb form and each makes an independent contribution to the meaning of a sentence.

shows a quite high frequency of perfective forms” (pp. 468). For example, consider the Russian and Czech discourses in (170) and (171) respectively.

(170) RUSSIAN

On oblada-l udivitel'noj sposobnost'ju: za den'
 He have-IPF-PST.3S remarkable ability in day
molode-l ili stare-l let na dvadcat'.
 be.younger-IPF-PST.3S or be.older-IPF-PST.3s years in twenty
 ‘He had a remarkable ability: in a day, he {would get/got} younger or
 older by about twenty years’ (Ěrenburg, *Padanie Pariža*; Stunová 1986,
 pp. 486).

(171) CZECH

Mě-l podivuhodnou schopnost: za den
 Have-IPF-PST.3s remarkable ability in day
om-lád-l nebo ze-stár-l o dvacet let.
 PFV-be.younger-PST.3s or PFV-be.older-PST.3S in twenty years
 ‘He had a remarkable ability: in a day, he {would get/got} younger or
 older by about twenty years’ (Translation of Russian text; Stunová 1986,
 pp. 486).

In the Russian discourse above the imperfective predicates *molodel* (‘get younger’) and *starel* (‘get older’) describe a habit of getting younger or older by twenty years in a single day. In the Czech translation, however, we find the perfective predicates *omládl* (‘get younger’) and *zestárl* (‘get older’). Stunová writes: “The imperfective in Czech would suggest that there was a process going on and nothing would be said about the attained state [of being younger or older]” (pp. 486-87).

Note that Czech is not the only language in which the perfective aspect is preferred to the imperfective aspect when expressing habituality. As noted by Dickey (2000), Western Slavic generally has this property. As illustrated below in

(172) and (173), the Slovak and Slovene use the perfective to express habituality.⁶²

(172) SLOVAK

Matka sa vždy postarala o to, aby deti mali
 Mother always PFV.take.care.PST.3S.FEM about that children had
čisté košiel'ky.
 clean shirts
 'Mother always took care that the children had clean shirts.' (Isačenko 1960, pp. 429, cited from Dickey 2000, pp.72).

(173) SLOVENE

Vsak dan je skrivaj skočil k njemu.
 Every day he skipped PFV.skip.PST.3S to him
 'Every day he skipped to his place on the sly' (Dejanova 1967, pp. 53, cited from Dickey 2000, pp.72)

All in all, Western Slavic often prefers the perfective when describing a habit. In turn, Filip argues that if habituality were a core property of the imperfective, then this observation would be mysterious since Western Slavic has the imperfective as a possible resource. Filip claims that it is more likely that the habitual interpretation is derived another way, e.g. via a generic operator of some sort (cf. Carlson 1977), and that this operator could combine with perfective or imperfective forms. A crucial premise in Filip's argument is the idea that there is a single imperfective operator cross-linguistically and if we grant her this assumption, then the argument is compelling. But why should we grant her this premise? Given aforementioned data involving the Eastern Slavic imperfective in habitual contexts, as well as Dickey's data considered in the previous section, it seems highly unlikely that there is a single imperfective operator across Slavic (let

⁶² As discussed by Dickey (2000, pp. 71-81) it is less clear how Polish and Serbo-Croatian express habituality because these languages are in transition between Eastern and Western Slavic.

alone across genetically unrelated languages). It seems much more productive to adopt a typological approach to the imperfective and adopt a Ferriera-type analysis for some Slavic languages (i.e. those in the Western Group) but not others (i.e. those in the Eastern Group). Further cross-linguistic research will hopefully validate this position.

2.5 Summary and looking ahead

A central puzzle in research on Slavic aspect concerns cases where the imperfective seems to function like its perfective counterpart. In particular, cases in which the imperfective leads to an inference that the described event was *completed*. Such cases are puzzling because they contradict the well-documented cases in which the imperfective leads to an inference that the described event was *not completed*.

In this chapter I suggested that the Russian imperfective could be understood more adequately if—instead of using the general notion of *completion* to characterize events described by *telic* and *atelic* VPs (as is often done)—we focus on cases in which an imperfective sentence has a telic VP and it therefore makes sense to talk about an event’s *culmination*. Moreover, I suggested that we should differentiate cases in which a sentence *entails* that the described event culminated from cases in which a sentence *implicates* this.

Using the notions of *culmination* and *entailment* to describe the Russian data, I addressed the questions below, in (174):

- (174) a. When does the Russian imperfective lead to an inference that a described event culminated?
 b. What meaning predicts the answer to (174a)?

The main contribution of this chapter is the generalization in (175):

- (175) *Culmination entailment generalization*
 The combination of the Russian imperfective with a base VP gives rise to an entailment that a described event culminated only when the base VP is an achievement.

The generalization in (175) gives part of the answer to (174a) and leads to the view that the culmination properties of the perfective and the imperfective aspect in Russian are neutralized when the base VP denotes a set of achievement events. The generalization in (175) does not fully answer (174a) because it says nothing about cases in which the Russian imperfective leads to an implicature that the described event culminated. Although such cases were discussed in this chapter and some steps were taken towards analyzing them, the following question—to a large extent—remains a puzzle: why would an imperfective implicate an event's culmination when its perfective counterpart entails it?

To account for the generalization in (175) and thereby shed light on (174b), I build on Hana Filip's (Filip 1993; 1999; 2000) proposal that Russian has a partitive imperfective operator, IPF. Using Landman's (1992) *stage-of* relation to talk about the possible developments of an event, I propose that IPF combines with a VP and returns a VP-event stage. Assuming that an event described by an achievement VP comprises a stage that develops into itself in the world of evaluation (and presumably every other possible world), it is correctly predicted

that IPF of an achievement VP leads to the culmination entailment. On the other hand, assuming that events described by non-achievement VPs comprise multiple stages, it is correctly predicted that IPF of a non-achievement VP does not lead to the culmination entailment because any one of the VP-event stages satisfies the truth-conditions of IPF.

Moreover, I proposed that the English progressive operator, PROG, encodes a more constrained *stage-of* relation: an event is a stage of another event if the former is a proper part of the latter. This explains why a progressive sentence cannot make reference to an event of the kind described by an achievement VP; PROG of an achievement VP leads to coercion (Moens and Steedman 1988). In this way, the English progressive differs from the imperfective in Russian and other Eastern Slavic languages, which were discussed after an analysis of the Russian data was provided. I also showed how the proposed analysis can be extended to the imperfective aspect in Western Slavic languages (Czech, Slovak, Slovene) and languages that are transitioning between Eastern and Western Slavic (Serbo-Croatian, Polish). In these languages, the imperfective patterns more with the English progressive rather than its perfective counterpart when it comes to its culmination properties.

An important observation that is not explained by the proposed analysis is that aspectual expressions are discourse markers (Jespersen 1924). Work in the 1980s by Hans Kamp, Erhard Hinrichs, Barbara Partee, Bonnie Webber and others has showed that aspectual expressions constrain the temporal location of a described event relative to a salient time previously mentioned in a discourse.

This has led to *time-relational* analyses in which “aspect has a double job to do: select the respective part of the sentence base encoded by the predicate and relate it to the topic time as the time the predication is asserted to be valid” (Sonnenhauser 2006, pp. 118). Time relational analyses have already been considered in this chapter, but will be considered in much more detail in the next chapter. I argue that the discourse properties of the Russian imperfective motivate a particular type of a time relational analysis in which aspect is *birelational*: it requires two inputs—a grammatically constrained *time* interval and a salient discourse *state*—relative to which a described eventuality is located.

Chapter 3

Discourse connectivity puzzle for a theory of aspect

3.1 Introduction

In Chapter 2, I proposed meanings for two partitive aspectual operators, IPF and PROG, which combines with a VP and return a VP-event stage. The proposed analysis captures Comrie's 1976 oft-cited metaphorical generalization that the imperfective and the progressive "look at the situation from the inside" (pp. 4). An important observation that is not captured by the proposed analysis, however, is that aspectual markers have a discourse function. This observation goes back to at least Jespersen 1924, who wrote:

"...[aorist and imperfect] correspond to the two meanings of E. *then*, (1) next after that, as in "then he went to France"...and (2) 'at that time' as in "then he lived in France" [= "he lived in France then"]. The aorist carries the narrative on, it tells us what happened next, the imperfect lingers over the conditions as they were at that time..." (Jespersen 1924, pp. 276).

Kamp and Rohrer (1983) were pioneers in proposing a formal analysis of aspectual meaning that incorporates Jespersen's insight. This analysis was monumental in the development of Discourse Representation Theory, discussed in the next section, according to which the meaning of a sentence is not solely determined by the truth-conditions of that sentence. The discourses in (176) and (177) provide motivation for this view. Here, it is extremely difficult to state a

truth-conditional difference between the French passé simple sentence in (176) and the imparfait sentence in (177).⁶³

(176) *Marie téléphona.*

Marie phone.PST.PFV.3S

‘Marie made a phone call’ (Kamp and Rohrer 1983, pp. 253).

(177) *Marie téléphonait.*

Marie phone.PST.IPF.3S

‘Marie was making a phone call’ (Kamp and Rohrer 1983, pp. 253).

To account for the intuition that (176) and (177) mean different things, Kamp and Rohrer suggested that the meaning of a sentence is determined by the context change potential of that sentence. This idea is motivated by the observation that when (176) and (177) are embedded within a discourse, viz. (178) and (179), there is a clear truth-conditional difference. While the discourse in (178) is true only if Marie made a phone call after Pierre entered, the discourse in (179) is true only if Marie was making a phone call at the time of Pierre’s entrance.

(178) *Pierre entra.* *Marie téléphona.*

Pierre enter.PST.PFV.3S Marie phone.PST.PFV.3S

‘Pierre entered. Marie made a phone call’ (Kamp and Rohrer 1983, pp. 253).

(179) *Pierre entra.* *Marie téléphonait.*

Pierre enter.PST.PFV.3S Marie phone.PST.IPF.3S

‘Pierre entered. Marie was making a phone call’ (Kamp and Rohrer 1983, pp. 253).

⁶³ Note that Kamp and Rohrer call the passé simple and imparfait tenses rather than aspects. The traditional view is to say that the passé simple and imparfait are hybrid categories and that the distinction between the two is aspectual because they both make reference to a time in the past (cf. Grønn 2008).

To account for the data above, Kamp and Rohrer built on Kamp 1979 and proposal that aspectual markers encode a relation between a described eventuality and a narrative placeholder, which following Reichenbach 1947, Kamp and Rohrer call the *reference point*. Their idea was that difference in (178) and (179) is due to the *passé simple* and *imparfait* encoding different relations between a described eventuality and the reference point. In effect, Kamp and Rohrer propose to treat aspect as a discourse marker: it constrains the temporal location of a described event within a story.

A question that comes up for Kamp and Rohrer's analysis concerns the nature of the reference point. Kamp and Rohrer's analysis treats it as a previously mentioned *event* (e.g. Pierre's entrance in (178) and (179)). On this view, aspect encodes a relation between events. However, if we assume that eventualities can be mapped onto their run times, then there does not seem to be any important difference between Kamp and Rohrer's analysis and one which says that aspect encodes a relation between a VP-eventuality and a previously mentioned discourse *time* (e.g. the time of Pierre's entrance in (178) and (179)). Important differences arise if, as first proposed by Hinrichs (1981; 1986), the reference point constitutes a time that *follows* a previously mentioned discourse event (e.g. in (178) and (179), the reference point would be a time after Pierre's entrance). As we will see later in this chapter, the choice in what constitutes a reference point is intimately related to the following questions: (i) are times denoted by adverbs (and other temporal expressions) grammatical manifestations of a reference point?

and (ii) what role does world knowledge play in determining the temporal ordering of events in a discourse?

Various answers have been proposed to these questions. One of the contributions of this chapter is to present novel data from Russian that discriminates between the proposed answers. To fully appreciate the data, I first discuss three influential approaches to aspect and temporal anaphora in narrative discourse. These approaches agree with Kamp and Rohrer that a notion such as *reference point* is needed to account for temporal interpretation, but differ in the details. According to the first approach, advocated by Hans Kamp and colleagues (Kamp and Reyle 1993; Kamp, van Genabith, and Reyle 2005; henceforth: Kamp *et al.*), a reference point is provided by the discourse context—it constitutes a previously mentioned event (Kamp and Reyle 1993) or a previously mentioned time (Kamp, van Genabith, and Reyle 2005) that described events follow and described states overlap. The reference point is distinguished from a so-called *location time*, which is specified by grammatical expressions such as adverbs and is “to be seen as the time when the event is said to occur and...the time at which the state is said to hold.” This dichotomy motivates the view that eventualities relate to times specified by an adverb differently from the way that eventualities are related to times provided by the discourse context. As a result, a *birelational* analysis of aspect is adopted—aspect relates a described eventuality to two temporal parameters.

According to the second approach, first proposed by Erhard Hinrichs (Hinrichs 1981; 1986) and later extended by Barbara Partee (Partee 1984), David

Dowty (1986) and Bonnie Webber (Webber 1988), a reference point can be provided by the discourse context or specified by a grammatical expression. If provided by the discourse context, the reference point constitutes a time “just after” a previously mentioned discourse event (Partee 1984, Dowty 1986) or a consequent state of a previously mentioned discourse event (Webber 1988). If provided by a grammatical expression, the reference point constitutes a time that is denoted by the grammatical expression. This more general notion of a reference point motivates the view that eventualities are related to times specified by an adverb in the same way that they are related to times provided by the discourse context. As a result, a *unirelational* analysis of aspect is adopted—aspect relates a described eventuality relative to a single temporal parameter.

The third and final approach discussed in this chapter, developed by Andrew Kehler (Kehler 2002), combines Hinrichs’ analysis of temporal anaphora with work on discourse coherence by Hobbs (1979, 1990) and Lascarides and Asher (1993). Kehler proposes that tense meaning gives rise to certain temporal relations between eventualities, which may, in turn, be further refined by independently motivated temporal constraints imposed by so-called *coherence relations*. These relations characterize the possible ways in which successive utterances can be connected to form a coherent discourse (cf. Hobbs 1979, 1990). A consequence of Kehler’s analysis is that world knowledge, rather than reference points and aspectual distinctions, often determines the temporal ordering of eventualities.

After introducing these three approaches, I discuss how Russian data bears on the various points that the three approaches disagree on. Particular attention is paid to the Russian imperfective, which is remarkable because it relates distinct event parts to a reference point. Which event part is at play depends on how the reference point is specified. If it is specified by an adverbial, then a VP-event stage is located in time. If, on the other hand, it is specified by the discourse context, then a consequent state of a VP-event stage is located in time. Based on these observations, I propose in the spirit of the Kamp *et al.* approach that the Russian imperfective aspect is *birelational*: it requires two inputs—a grammatically constrained *time* interval and a salient discourse *state*—relative to which a described eventuality is located. After presenting the proposed analysis, I show how it generalizes to the English progressive and the imperfective in other Slavic languages.

3.2 Discourse Representation Theory

An attempt to systematically predict the different discourse properties of aspectual markers, viz. the passé simple and imparfait in French, was a chief motivation for Hans Kamp and colleagues to develop a framework that explicitly deals with the dynamics of discourse. Kamp called this framework *Discourse Representation Theory* ('DRT'). In this sub-section, I give a brief introduction to DRT, discussing only those ideas that will later play a prominent role in comparing various

approaches to temporal anaphora.⁶⁴ Some of the discussion in this sub-section, as well as in §3.3, follows closely to that of Chapter 3 in Bary 2009. For comprehensive introductions to DRT, the reader is referred to Kamp and Reyle 1993, Kamp and van Eijck 1996, Kamp, van Genabith, and Reyle 2005, and Geurts and Beaver 2007.

DRT is rooted in the assumption that natural language utterances are interpreted in a continually evolving discourse. In particular, the interpretation process involves the hearer constructing and representing the discourse—as he encounters it. Viewing interpretation as an incremental procedure allows one to account for the observation that the interpretation of a given sentence is often dependent on previously mentioned discourse information. This is clearly visible in sentences that have *anaphoric expressions*, i.e. expressions that inherit their value from the discourse context. Consider, for example, the discourse in (180).

- (180) a. Jones owns a Porsche.
 b. It fascinates him (after Kamp and Reyle 1993, pp. 60).

The interpretation of (180b) is only possible if a discourse context, viz. (180a), has been established. Otherwise, it would not be clear what the pronouns *it* and *he* refer to; grammatical information such as gender and animacy would not be enough to render (180b) felicitous if it were uttered discourse initially or out-of-the-blue unless some accommodation takes place (cf. Partee 1973).

⁶⁴ For example, the notion of ‘accessibility’, which is central to DRT, is not discussed here because it will not play a significant role in the discussion of temporal anaphora. The same goes for the DRS construction algorithm proposed by Kamp and Reyle (1993).

Anaphoric expressions such as *he* and *it* pose a challenge to the idea that predicate logic alone can be used to represent the truth-conditions of a given sentence. For example, as illustrated in (181), we can easily represent the truth-conditions of (180a) and (180a,b), viz. (181a) and (181b) respectively.⁶⁵ However, it is less clear how (180b) should be represented.

- (181) a. $\exists e \exists x [\text{own}(e, j, x) \wedge \text{porsche}(x)]$
 b. $\exists e \exists x \exists e' [\text{own}(e, j, x) \wedge \text{porsche}(x) \wedge \text{fascinates}(e', x, j)]$

DRT offers one possible solution to this problem by locating the meaning of individual sentences in the change that results from interpreting the sentence in a discourse, e.g. interpreting (181b) given its input context described by (181a). Semantic representations in this theory are specified in terms of a language of *Discourse Representation Structures* (DRSs). A DRS is an ordered pair that consists of (i) a (possibly empty) set U_K of *discourse referents* (henceforth: drefs), i.e. the ‘universe’ of K that represents the objects talked about in a given discourse (cf. Karttunen 1976) and (ii) a set CON_K of conditions on drefs, i.e. a set of atomic formulae that represent constraints (properties or relations) on the objects talked about in a given discourse.

As an illustration of the DRS language, consider the representation of (9a) below:

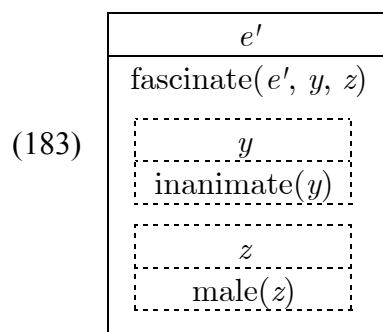
⁶⁵ In (181) ignore the contribution of tense and aspect. Moreover, I use $e, e', e'', \dots, e_1, e_2, e_3 \dots$ as drefs for eventualities (events and states). I will continue to do so when the event-state distinction is not relevant. However, for theories that appeal to this distinction in their ontology, I will use $e, e', e'', \dots, e_1, e_2, e_3 \dots$ to stand for events and $s, s', s'', \dots, s_1, s_2, s_3 \dots$ to stand for states.

(182)

$e \ u \ v$
$u = \text{jones}$
$\text{porsche}(v)$
$\text{own}(e, u, v)$

The DRS above contains three drefs: e standing for an event introduced by the VP *own*, u standing for an individual introduced by the name *Jones* and v standing for an individual introduced by the indefinite DP *a Porsche*. The descriptive information is encoded by the three conditions: $u = \text{jones}$, $\text{porsche}(v)$ and $\text{own}(e, u, v)$. According to these three conditions, u stands for the individual Jones, v stands for an individual that has the property of being a Porsche and e stands for an event of owning between two individuals. The semantics of DRT says that (182) is true in a model \mathfrak{M} iff there is a function f that maps the drefs e , u , and v onto entities in the domain of \mathfrak{M} in such a way that $f(u)$ is the individual Jones who owns $f(v)$, $f(v)$ has the property of being a Porsche and of being owned by $f(u)$, and $f(e)$ is an event of owning between $f(u)$ and $f(v)$. In this way, it follows from the definition of truth that a sequence of conditions gets the meaning that predicate logic would express by means of a conjunction. The same is true of existential quantification: drefs get their existential import indirectly—i.e. it follows from the definition of truth that *there be a* function that verifies the DRS in a model \mathfrak{M} .

Let us now consider (180b), which is interpreted in the context of (180a), i.e. the context represented in (182).⁶⁶ Following the two-stage presupposition-as-anaphora version of DRT (van der Sandt 1992), the preliminary representation of (180b) is provided below, in (183). As noted by Bary (2009) this version of DRT is standard nowadays (see e.g. Kamp, van Genabith, and Reyle 2005 for more discussion) and although it will not play a crucial role in the analysis proposed in this thesis, it will allow us to compare and contrast various theories of temporal anaphora in a clear and an instructive way.

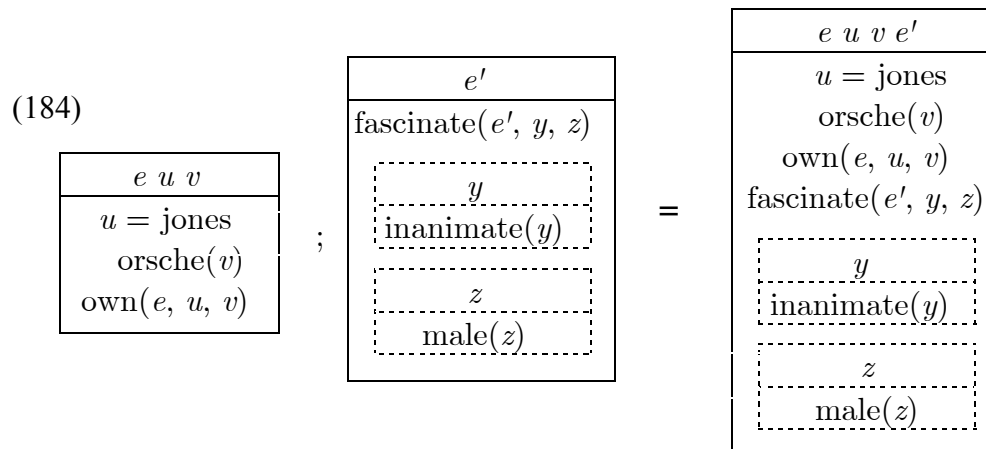


The preliminary DRS above contains three conditions: the simple condition fascinate(e' , y , z) and two complex conditions in the dashed boxes, which correspond to the anaphoric expression *he* and *it*. Unlike *a Porsche* or *Jones*, these anaphoric expressions come with the following special instruction: introduce a dref and resolve this dref to a salient dref in the input context.

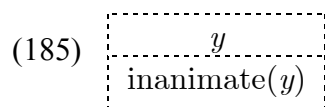
In order to resolve the anaphora, the preliminary DRS in (183) is first *merged* with its input context, i.e. the DRS in (182). Merge, indicated by ‘;’, is a

⁶⁶ As noted by Kamp and Reyle (1993), this is a simplification since the context for the interpretation of a given a sentence does not only contain the information provided by previous discourse, but also background knowledge.

function from a pair of an input DRS K_1 (viz. (182)) and a DRS K_2 (viz. the preliminary DRS in (183)) to an output DRS K_3 that consists of (i) the union of U_{K_1} and U_{K_2} and (ii) the union of CON_{K_1} and CON_{K_2} . An illustration of the merging operation is provided below, in (184).

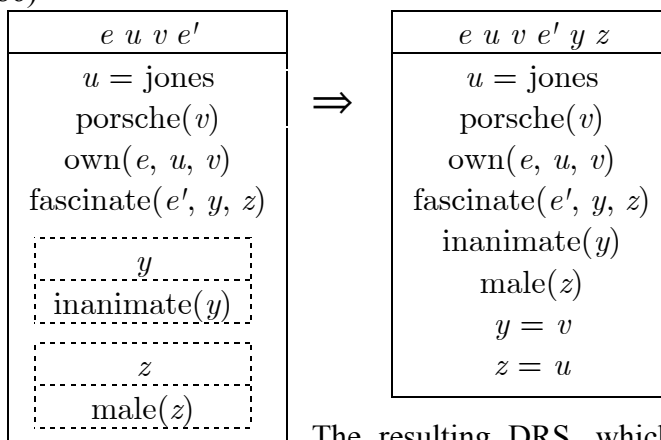


In the output DRS (i.e. the rightmost one in (184)), the anaphoric elements are not yet resolved. This happens in the second stage via a resolution algorithm that identifies anaphoric drefs with their antecedents. In the present example, the condition below, in (185), indicates that we have to resolve y to a salient dref already introduced in the discourse that represents an inanimate individual.



The only possible candidate is v , which stands for an individual with the property of being a Porsche. Consequently, y is resolved to v by equating the latter to the former. Similarly, z looks for a dref that stands for a male individual. The only possible candidate is u , which stands for the individual Jones. Consequently, z is resolved to u by equating the latter to the former:

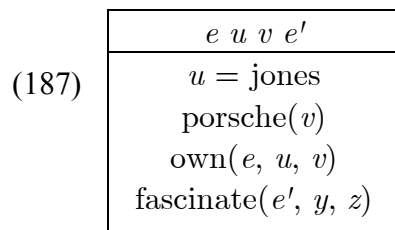
(186)



The resulting DRS, which can be simplified as in

(187) below, no longer contains anaphoric conditions. It is a *resolved DRS* to

which the truth definition of DRT applies.



In sum, note that (187) is truth-conditionally equivalent to the aforementioned formula below, in (188).

(188) $\exists e \exists x \exists e' [\text{own}(e, j, x) \wedge \text{porsche}(x) \wedge \text{fascinates}(e', x, j)]$

This desired result was achieved by locating the meaning of individual sentences in the change that results from interpreting the sentence in a discourse, e.g. interpreting (180b) given its input context described by (180a). In other words, the crucial innovation of DRT is that the meaning of a sentence is its context change potential. As we shall see in the next section, this way of thinking about meaning not only allows us to account for nominal anaphora, but also temporal anaphora.

As a preview, recall the examples in (189) and (190) from Kamp and Rohrer 1983, which differ according to whether Marie made a phone call prior to Pierre's entrance or during this event.

- (189) a. *Pierre entra.*
 Pierre enter.PST.PFV.3S
 'Pierre entered.'
- b. *Marie téléphona.*
 Marie phone.PST.PFV.3S
 'Marie made a phone call.'
- (190) a. *Pierre entra.*
 Pierre enter.PST.PFV.3S
 'Pierre entered.'
- b. *Marie téléphonait.*
 Pierre enter.PST.IPF.3S
 'Marie was making a phone call.'

The French passé simple and imparfait pose a challenge similar to the one posed by *he* and *it*.⁶⁷ For example, as illustrated in (191) and (192), we can represent the truth-conditions of (189a) and (190a), viz. (191a) and (191b) respectively. Moreover, we can represent the truth-conditions of the entire discourses, viz. (191b) and (192b). However, it is less clear how (189b) and (190b) should be represented. In particular, it is not clear how we could package the information that the phone call *followed* the entering in (189), viz. the relation $e < e'$ in (191b), and the information that the phone call was *ongoing* when the entering took place in (190), viz. the relation $e \subseteq e'$ in (192b).

⁶⁷ For more discussion of similarities between nominal and temporal anaphora see e.g. Partee 1973; 1984, Webber 1988, Nelken and Francez 1997 and Kratzer 1998. For an extension to the modal domain, see Stone 1997.

- (191) a. $\exists e[\text{enter}(e, j) \wedge e < \text{speech time}]$
 b. $\exists e \exists e'[\text{enter}(e, j) \wedge \text{phone}(e', m) \wedge e < \text{speech time} \wedge e' < \text{speech time} \wedge e < e']$
- (192) a. $\exists e[\text{enter}(e, j) \wedge e < \text{speech time}]$
 b. $\exists e \exists e'[\text{enter}(e, j) \wedge \text{phone}(e', m) \wedge e < \text{speech time} \wedge e' < \text{speech time} \wedge e \subseteq e']$

I now turn to various approaches to solving this puzzle within DRT.

3.3 The birelational approach

In this section I discuss an approach advocated by Hans Kamp and colleagues according to which aspect is a key player in constraining the temporal location of a described eventuality. The innovation of their analysis is that aspect is proposed to be *birelational*: it relates a described eventuality relative to two temporal parameters. I begin by discussing Kamp and Reyle's (1993) analysis, in which the two temporal parameters are independent of each other and in which the event-state distinction plays a crucial role in accounting for temporal anaphora in narrative discourse. Kamp and Reyle's (1993) analysis is reformulated in the two-stage presupposition-as-anaphora version of DRT introduced in the previous subsection. This will allow us to compare their analysis—in a straightforward way—to the analysis advocated by Kamp, van Genabith, and Reyle (2005), where the two-stage presupposition-as-anaphora version of DRT is adopted. According to this latter analysis, the two temporal parameters are related to each other and

the event-state distinction plays a lesser role in accounting for temporal anaphora in narrative discourse.

3.3.1 Kamp and Reyle 1993

Kamp and Reyle 1993 introduced the notion of a *location time* to describe the time that is specified by a temporal location adverb (or some other grammatical expression); it is “to be seen as the time when the event is said to occur and...the time at which the state is said to hold.” They observe that events and states relate differently to the location time, providing the examples below:

- (193) Mary wrote a letter on Sunday (Kamp and Reyle 1993, pp. 511).
 (194) Mary was ill on Sunday (Kamp and Reyle 1993, pp. 513).

In (193), we understand the time of the letter-writing event to be contained within the time denoted by *on Sunday*. Put differently, we understand the letter-writing event to culminate within the location time. For this reason, (195) is not a felicitous discourse.

- (195) #Yes, Mary wrote a letter on Sunday. In fact, she began writing it on Saturday and did not finish it until Monday (after Dowty 1986, cited in Bary 2009, pp. 32).

In contrast to (195), the sentence in (196) leaves open whether the whole illness takes place on Sunday or had started on a previous day and continues into Monday (and beyond). For this reason, (195) and (196) are felicitous discourses.

- (196) Mary was ill on Sunday. But by Sunday night she had recovered (Kamp and Reyle 1993, pp. 513).

- (197) Yes, Mary was ill on Sunday. In fact, she fell ill on Saturday and did not recover until Monday (after Dowty 1986, cited in Bary 2009, pp. 32).

Based on the data above, Kamp and Reyle conclude that states overlap their location time and that “This means that our representation of state-describing sentences with temporal adverbs will be less informative than those for sentences which represent events, since a described event will be represented as actually included in the time of the adverb” (Kamp and Reyle 1993, pp. 514). Kamp and Reyle’s location time rules are summarized in (198) below.⁶⁸

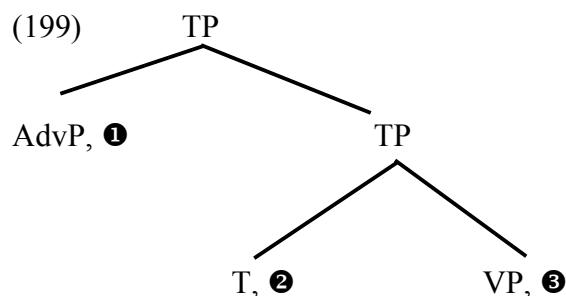
(198) *Location time rule*

If a VP describes an event e , the time of e is included in the location time;
if a VP describes a state s , the time of s overlaps the location time.

In order to see (198) at play, consider the DRSs in (200a) and (200b) which are representations of (193) and (194) given the syntactic representation in (199).⁶⁹ The DRSs are truth-conditionally equivalent to the formulas in (201a) and (201b) respectively.

⁶⁸ A viable alternative to (198) is to say that if a sentence describes an eventuality v , the time of v is included in the location time. Such a hypothesis does not rule out the possibility of a state extending beyond the location time if we assume that states are homogenous (Dowty 1986, Krifka 1989). See §3.4.2 for more discussion.

⁶⁹ Note the conditions in the DRSs are represented alongside a number. These numbers are not part of the DRT-language but are used for illustrative purposes to indicate (roughly) which lexical item is responsible for what condition(s). See Chapter 4 for a compositional analysis, which following Muskens 1995; 1996 combines λ -calculus of Montague Grammar (Montague 1970a,b; 1973) with DRSs of DRT.



	<i>e t u v</i>
1	on Sunday(<i>t</i>)
2	$t < \tau(e_0)$
	$\tau(e) \subseteq t$
3	$u = \text{mary}$ $v = \text{letter}$ write(<i>e</i> , <i>u</i> , <i>v</i>)

	<i>s t u</i>
1	on Sunday(<i>t</i>)
2	$t < \tau(e_0)$
	$\tau(s) \circ t$
3	$u = \text{mary}$ be.ill(<i>s</i> , <i>u</i>)

- (201) a. $\exists e \exists t \exists x [t < \tau(e_0) \wedge \tau(e) \subseteq t \wedge \text{letter}(x) \wedge \text{write}(e, m, x)]$
 b. $\exists s \exists t [t < \tau(e_0) \wedge \tau(s) \circ t \wedge \text{be.ill}(s, m)]$

Several comments are in order with respect to the DRSs above. The first concerns the condition on *Sunday*(*t*). According to this condition, *t* stands for a time that has the property of being a Sunday; it does not say anything about the semantics of *on* and *Sunday*. This is the topic of Chapter 4, where a semantics of temporal location adverbs is provided. For the time being, I will follow Kamp and Reyle in writing conditions introduced by adverbial expressions, viz. (200)—e.g. in *July*(*t*), *last.week*(*t*), *now*(*t*), *on.February.15.1981*(*t*), etc.

The second set of comments concerns the condition $t < \tau(e_0)$. As is standard in event-semantics, I assume that τ is a trace function assigning to an eventuality in its domain the time interval at which the eventuality takes place

(Link 1987). Moreover, I assume that e_0 describes the speech event (and $\tau(e_0)$ is therefore its run time of the speech event). This differs from Kamp and Reyle's (1993) analysis where n (abbreviating "now") is used for the speech time; there is no such thing as "the speech event" in their analysis. While nothing that will be said in this section rides on this distinction, it will be important in Chapter 4, where I argue that the adverb *now* is an event anaphor and the speech event may serve as its antecedent.

The third comment concerns cases where a temporal location adverb is not present, viz. Partee's (1973) influential example in (202):

(202) I did not turn off the stove (Partee 1973, pp. 602).

As observed by Partee, (202) is typically understood as pertaining to some contextually salient time, even if no such time is explicitly provided. In light of this example, Kamp and Reyle propose that "when the sentence contains no temporal adverb, then the time of the eventuality will be represented as unspecified except for the information carried by the tense" (pp. 529). Thus the sentence in (202) is represented as in (203), where the past tense still introduces the condition $t < \tau(e_0)$, even if there is no constraint on t ; this dref remains unspecified.

(203)

$t \ u \ v$				
$t < \tau(e_0)$				
$u = \text{agent of } e_0$				
$\text{stove}(v)$				
\neg	<table border="1"> <tr> <td style="text-align: center;">e</td> </tr> <tr> <td style="text-align: center;">$\tau(e_0) \subseteq t$</td> </tr> <tr> <td style="text-align: center;">$\text{turn.off}(e, u, v)$</td> </tr> </table>	e	$\tau(e_0) \subseteq t$	$\text{turn.off}(e, u, v)$
	e			
	$\tau(e_0) \subseteq t$			
$\text{turn.off}(e, u, v)$				

The fourth and final comment concerns a question that Kamp and Reyle pose themselves: since the DRSs in (200a) is truth-conditionally equivalent to the DRS below, in (204), what evidence do we have for saying that tense introduces the condition $t < \tau(e_0)$ rather than $e < \tau(e_0)$?

(204)

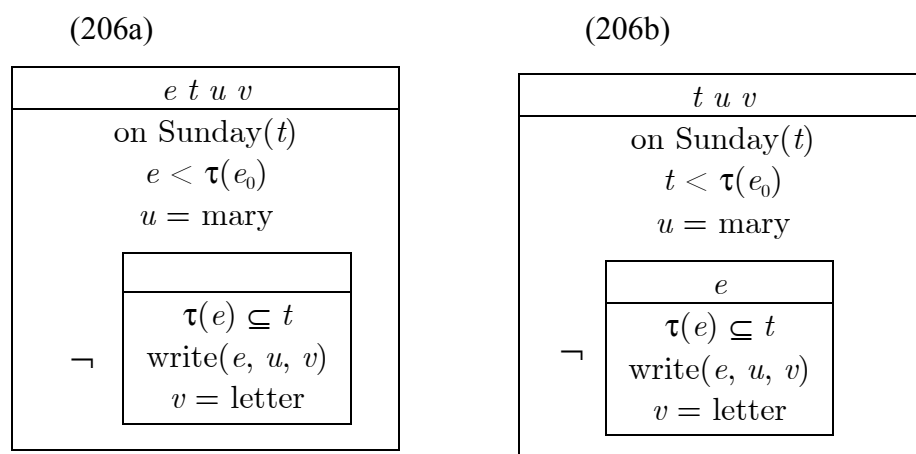
$e \ t \ u \ v$
$\text{on Sunday}(t)$
$e < \tau(e_0)$
$\tau(e) \subseteq t$
$u = \text{mary}$
$v = \text{letter}$
$\text{write}(e, u, v)$

The evidence that Kamp and Reyle provide concern negative statements like (205), which assert there is no event of a certain kind, e.g. an event of writing a letter on Sunday.

(205) Mary didn't write a letter on Sunday.

If we assume that the past tense introduces the condition $e < \tau(e_0)$ and that it has scope over negation (as is typically assumed), then we would not be able to make

the correct prediction; (205) would be predicted to assert that *there was* an event e of a certain type that preceded the speech event, viz. (206a) below. On the other hand, if the past tense introduces the condition $e < \tau(e_0)$, then e would be introduced by the VP, which is in the scope of negation. Consequently, as illustrated in (206b), the correct predictions are made.



A different type of argument for the same position is provided by Wolfgang Klein (Klein 1994), who provides the following example:

- (207) a. What did you notice when you looked into the room?
 b. There was a book on the table. It was in Russian.

Suppose that a judge asks the question in (207a) and that a witness answers this question with (207b). Further suppose that the when-clause in (207a) fixes the location time for (207b), i.e. the time about which the witness is asked to speak (cf. ‘topic time’ in Klein 1994).⁷⁰ Clearly, if the book was in Russian at some time

⁷⁰ It is not clear here whether this assumption is warranted given Kamp and Reyle’s notion of a *location time*. In particular, it can be argued that the *when*-clause in (207a) provides a *reference point* instead; see discussion later in this chapter about whether there is empirical motivation for distinguishing between a *location time* and a *reference point*.

before the speech event, it is still in Russian at the speech time. Therefore, if tense were to encode a relation between the speech event and time of being in Russian, then we would expect to have a present tense in the second part of the answer in (207b), viz. *It is in Russian*. However, since the past tense is used, we have evidence that tense does not constitute such a relation. On the other hand, if we assume that tense constitutes a relation between a the speech event and the location time, as proposed by Kamp and Reyle, then the use of the past tense is expected since the location time (i.e. the time of looking into the room) is completely in the past (i.e. entirely before the speech event).

In sum, we have seen evidence for the notion of a *location time*, which is often specified by grammatical expressions such as temporal location adverbs. This time is introduced by the tense, which relates it to the speech event. In turn, a VP relates the location time to the time of the described eventuality. If the VP is eventive, then described event is contained within the location time and if it is stative, then the described state overlaps the location time. With this in mind, let us now move on and consider cases in which the temporal location for the described eventuality is provided by the discourse context, rather than a grammatical expression.

Kamp and Reyle consider (208), where we understand that a man entered the White Hart when he was sick. Moreover, we understand that Bill served this man a beer *after* he entered the White Hart.

- (208) a. A man entered the White Hart alone.
 b. He was ill.
 c. Bill served him a beer (after Kamp and Reyle 1993, pp. 521).

The crucial thing to notice is that there are no overt grammatical cues that determine the temporal location of the eventualities. Building on work by Kamp 1979 and Kamp and Rohrer 1983, Kamp and Reyle conclude from this that a described state must hold throughout a contextually provided event, while a described event must follow a contextually provided event. This contextually provided event—which, following Reichenbach 1947, Kamp and Reyle call *the reference point*—serves as a placeholder for where a narrative has developed. In (208b) and (208c), the reference point is the entering event described in (208a) since the state of being ill and the event of serving beer are located relative to this event. Note that states do not serve as reference points (cf. Hinrichs 1981; 1986). Evidence for this view comes from the fact that stative VPs do not move the narrative forward—i.e. the beer-serving event is not ordered with respect to the state of being sick.

(209) *Reference point rule*

- a. The part of the discourse preceding S contains an earlier event-sentence in the past tense. For this case we stipulate that the reference point be the discourse referent representing the event described by the most recent past tense event-sentence before S (Kamp and Reyle 1993, pp. 545).
- b. Events succeed the reference point; states include the reference point (Kamp and Reyle 1993, pp. 522).

Before seeing how Kamp and Reyle’s generalizations, summarized above in (209), are applied to account for (208) within DRT, it is important to see that our understanding of the eventuality ordering in discourses like (208) is, in fact, conditioned by grammatical rules rather than world knowledge. Kamp and Reyle address this issue when they write: “Surely a man would not be expected to

change his clothes while or immediately after entering a pub and surely he would be served a beer only once he is properly inside. But it is not just world knowledge that is involved here. For when plausibility considerations based on world knowledge go against the formal discourse principles...there is a real conflict” (Kamp and Reyle 1993, pp. 522). Kamp and Reyle provide a discourse such as (210) below, which differs from (208) in that the events described in (208a) and (208b) have been switched around:

- (210) a. The publican of the White hart served a customer a beer.
 b. The man was wearing a black jacket.
 c. #He entered the pub alone (after Kamp and Reyle 1993, pp. 521).

If world knowledge alone was responsible for the eventuality ordering, then the discourse above would be felicitous—i.e. it would be interpreted on a par with (208). However, the fact that it is infelicitous supports Kamp and Reyle’s idea that grammatical rules are at play—i.e. they force an interpretation in which the man was first served a beer and then went inside the pub.⁷¹

I now turn to outline Kamp and Reyle’s analysis of (208). In doing so, I assume that the rule in (209a) is a default. This is in according with Kamp and Reyle, who claim that in some cases, the reference point can also be “the location time of the most recent past tense state-sentence” or “some new arbitrary time (represented by a new discourse referent)” (Kamp and Reyle 1993, pp. 545). Presumably, the latter option is chosen in discourse initial utterances (see Chapter 4 for a discussion of this point).

⁷¹ As was noted in Chapter 1 (fn. 3), (210) is felicitous for those speakers of English for whom the past perfect is never obligatory. For these speakers, (210c) is understood as adding explanatory background to the text.

Let us first consider a preliminary DRS of (208a,b) below, in (211), which results from merging a DRS of (208a) with a preliminary DRS of (208b).

(211)

e_1	t_1	u_1	v_1	s_1	t_2
					$t_1 < \tau(e_0)$
					$\tau(e_0) \subseteq t_1$
					$\text{man}(u_1)$
					$v_1 = \text{white hart}$
					$\text{enter}(e_1, u_1, v_1)$
					$t_2 < \tau(e_0)$
					$\tau(s_1) \circ t_2$
					$\text{be.ill}(s_1, y_1)$
					$e_2 \subseteq s_1$
					y_1
					$\text{male}(y_1)$
					e_2

The DRS above includes two complex conditions. The first condition, specifying the gender features of the anaphoric dref y_1 , is introduced by the pronoun *he* and should be familiar from the previous sub-section. It is included here to provide a means of comparison to the other complex condition, which introduces the anaphoric dref e_2 . This dref serves the role of Kamp and Reyle's reference point. Note that unlike the other complex condition, which places a constraint on y_1 , this complex condition does not place a constraint on e_2 . Such is the case because the rules governing the resolution of e_2 are independently stipulated by Kamp and Reyle. According to these rules, and in particular (209a), e_2 must be resolved to

“the event described by the most recent past tense event-sentence.”⁷² In the present case, this means that e_2 is resolved to (the only other previously mentioned event) e_1 . This is illustrated below, in (212b), which contains a resolved DRS of (208a,b). Crucially notice the condition $e_1 \subseteq s_1$, which is obtained after e_2 is resolved to e_1 . This condition is in accordance with (209b) and entails that the state s_1 of being ill held throughout the entering event e_1 , as desired. Moreover, notice that the described state s_1 is also related relative to the location time t_2 , which is unspecified because there is no adverbial present. The two conditions, $e_1 \subseteq s_1$ and $\tau(s_1) \circ t_2$, illustrate Kamp and Reyle’s proposed *birelational analysis*: a VP relates a described eventuality s_1 relative to two parameters, namely a reference point e_1 and a location time t_2 .

(212a)

e_1 t_1 u_1 v_1 s_1 t_2
$t_1 < \tau(e_0)$
$\tau(e_0) \subseteq t_1$
$\text{man}(u_1)$
$v_1 = \text{white hart}$
$\text{enter}(e_1, u_1, v_1)$
$t_2 < \tau(e_0)$
$\tau(s_1) \circ t_2$
$\text{be.ill}(s_1, y_1)$
$e_2 \subseteq s_1$
y_1
$\text{male}(y_1)$
e_2

 $y_1 := u_1$
 $e_2 := e_1$
 \Rightarrow

(212b)

e_1 t_1 u_1 v_1 s_1 t_2
$t_1 < \tau(e_0)$
$\tau(e_0) \subseteq t_1$
$\text{man}(u_1)$
$v_1 = \text{white hart}$
$\text{enter}(e_1, u_1, v_1)$
$t_2 < \tau(e_0)$
$\tau(s_1) \circ t_2$
$\text{be.ill}(s_1, u_1)$
$e_1 \subseteq s_1$

⁷² Note that Kamp and Reyle (1993) assume for the sake of simplicity that the reference point is not resolved in discourse initial utterances.

Let us now move on to consider the preliminary DRS of (208a,b,c) below, in (213a). As in (212a), there are two complex conditions in (213a), which introduce anaphoric drefs x_1 and e_3 respectively. There are two things to note with regard to the resolution of these drefs. The first concerns the resolution of x_1 : there is nothing indicated by the condition $\text{male}(x_1)$ that rules out x_1 being resolved to y_1 (rather than u_1 as desired). This has motivated researchers to impose structure on the universe of a DRS. In this way, anaphora resolution rules could be specific about which drefs can and cannot serve as antecedents, cf. Kamp and Reyle's stipulated rule in (209a), which implicitly assumes that the universe of a DRS is structured in a particular way.⁷³ The second thing to notice is that although the dref s_1 , standing for the state of being ill, is introduced into the universe, it cannot serve as the reference point. This follows from the fact that the anaphoric dref is an event. Given this fact, e_3 is resolved as before (i.e. to the entering event e_1) and given the condition $e_3 < e_2$, which is in accordance with (209b), it is correctly predicted that the beer-serving event followed the entering event, viz. (213b).

⁷³ See e.g. Beaver 1999 and Bittner 2001 for formally explicit theories of anaphora resolution.

(213a)

e_1	t_1	u_1	v_1	s_1	t_2	e_2	t_3	y_1	z_1
					$t_1 < \tau(e_0)$				
					$\tau(e_0) \subseteq t_1$				
					$\text{man}(u_1)$				
			$v_1 = \text{white hart}$						
					$\text{enter}(e_1, u_1, v_1)$				
					$t_2 < \tau(e_0)$				
					$\tau(s_1) \circ t_2$				
					$\text{be.ill}(s_1, u_1)$				
					$e_1 \subseteq s_1$				
					$t_3 < \tau(e_0)$				
					$\tau(e_2) \subseteq t_3$				
					$y_1 = \text{bill}$				
					$\text{beer}(z_1)$				
					$\text{serve}(e_2, y_1, x_1, z_1)$				
					$e_3 < e_2$				
					x_1				
					$\text{male}(x_1)$				
					e_3				

 $x_1 := u_1$ $e_3 := e_1$ \Rightarrow

(213b)

e_1	t_1	u_1	v_1	s_1	t_2	e_2	t_3	y_1	z_1
					$t_1 < \tau(e_0)$				
					$\tau(e_0) \subseteq t_1$				
					$\text{man}(u_1)$				
			$v_1 = \text{white hart}$						
					$\text{enter}(e_1, u_1, v_1)$				
					$t_2 < \tau(e_0)$				
					$\tau(s_1) \circ t_2$				
					$\text{be.ill}(s_1, u_1)$				
					$e_1 \subseteq s_1$				
					$t_3 < \tau(e_0)$				
					$\tau(e_2) \subseteq t_3$				
					$y_1 = \text{bill}$				
					$\text{beer}(z_1)$				
					$\text{serve}(e_2, y_1, u_1, z_1)$				
					$e_1 < e_2$				

In sum, Kamp and Reyle propose that a crucial meaning component of a VP is to constrain the temporal location of a described eventuality relative to not only the location time, which is often specified by an adverbial expression, but also a reference point, which is specified by the discourse context. If the VP is eventive, then a described event is contained within a location time and succeeds a reference point. If the VP is stative, then described state overlaps a location time and contains a reference point. In light of this analysis, there are various questions that arise. The first question is whether we can reanalyze the data considered in this section by appealing to a single temporal parameter, e.g. a time that generalizes over both a location time and a reference point. As will be shown in

§3.4, the answer to this question is ‘yes’ as long as we revise Kamp and Reyle’s assumption that a reference point constitutes a previously mentioned *event*.

The other question that arises is how to analyze discourses such as (214) and (215), which differ from (208) in that (214b) contains a progressive sentence and (215b) contains a pluperfect sentence.

- (214) a. A man entered the White Hart.
 b. He was singing a song.
 c. Bill served him a beer.

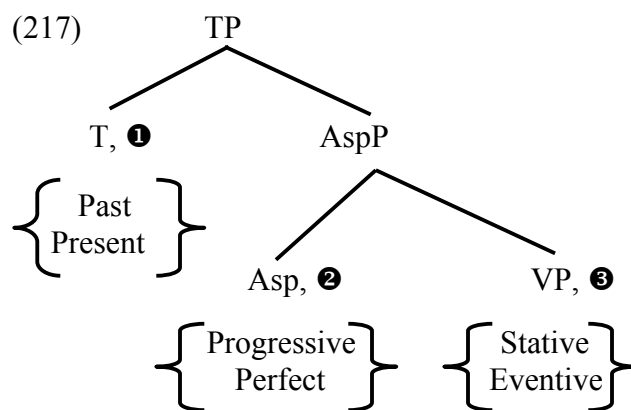
- (215) a. A man entered the White Hart.
 b. He had given a speech.
 c. Bill served him a beer.

As noted by Hinrichs (1981; 1986), such discourses are intriguing because without the progressive and the pluperfect marking in (214b)/(215b), we would understand the described events as following the entering event described in (214a)/(215a), viz. (216) below. As it stands, however, the singing is understood to hold throughout the entering and so does the consequent state of the speech giving. Moreover, (214b) and (215c) do not trigger a narrative progression, i.e. the beer-serving is understood to be located relative to the entering rather than the singing and speech-giving. All in all, the sentences in (215b) and (215b) behave like stative sentences.

- (216) a. A man entered the White hart.
 b. {He sang a song/gave a speech}
 c. Bill served him a beer.

In order to account for the discourses in (214) and (215), while maintaining their analysis of discourses such as (208) and (216), Kamp and Reyle propose that it is not VP that constrains the temporal location of a described eventuality, but rather the features [+/- stative], which may appear on different phrases in the syntactic tree—e.g. [- stative] appears on the VP in (216b) and therefore has eventive-like properties; [+ stative] appears on the aspectual phrase (AspP) in (214b) and (215b) and therefore they have stative-like properties. In order to predict which features go where Kamp and Reyle assume an intricate theory of feature percolation. Following Klein 1994 and others, I shall instead assume that VPs only provide information about the eventuality-type and AspPs constrain the temporal location of the eventuality described by VPs. This means that English sentences in the simple past, viz. (208) and (216), have covert aspectual markers in the head of AspP.⁷⁴

This idea will be made formally explicit in Chapter 4. For the time being, consider the revised syntactic architecture below in (217) and the resolved DRSs for (214a,b) and (215a,b) in (218a) and (218b) respectively.



⁷⁴ This assumption is quite standard in the literature on English aspect see e.g. Szabó 2004 and Landman 2008.

(218a)

	e_1	t_1	u_1	v_1	s_1	t_2	s_1	e_2	z_1
①									$t_1 < \tau(e_0)$
②									$\tau(e_1) \subseteq t_1$
									$\text{man}(u_1)$
③									$v_1 = \text{white hart}$ $\text{enter}(e_1, u_1, v_1)$
①									$t_2 < \tau(e_0)$
②									$\tau(s_1) \circ t_2$ $e_1 \subseteq s_1$
									$\text{song}(z_1)$
③									$s_1 = \text{PROG}(\text{sing}(e_2, u_1, z_1))$

(218b)

	e_1	t_1	u_1	v_1	s_1	t_2	s_1	e_2	z_1
①									$t_1 < \tau(e_0)$
②									$\tau(e_1) \subseteq t_1$
									$\text{man}(u_1)$
③									$v_1 = \text{white hart}$ $\text{enter}(e_1, u_1, v_1)$
①									$t_2 < \tau(e_0)$
②									$\tau(s_1) \circ t_2$ $e_1 \subseteq s_1$ $s_1 = \text{CONS}(e_2)$
									$\text{speech}(z_1)$
③									$\text{give}(e_2, u_1, z_1)$

According to the DRS in (218a), the effect of the progressive is to introduce a state that characterizes the singing event ‘in progress’ (cf. Moens and Steedman’s 1988 notion of a ‘progressive state’). Like other states, the singing state overlaps the location time, viz. the condition $\tau(s_1) \circ t_2$, and contains the reference point, viz. the condition $e_1 \subseteq s_1$. This correctly predicts that the singing was ongoing at some unspecified time t_2 and crucially that it held throughout the entering event e_1 . The question, of course, is what is the semantics of PROG? Assuming that we are after a compositional analysis, e_2 must be related to s_1 in some way, but the condition $s_1 = \text{PROG}(\text{sing}(e_2, u_1, z_1))$ does not indicate what that relation is. To the best of my knowledge, there has not been a satisfactory answer to this question (cf. discussion by Kamp and Reyle 1993, pp. 575-577). Researchers working to account for the discourse properties of the progressive

have simply assumed that the progressive describes a state without further comment, while researchers working on the modal properties of the progressive have given a semantics for PROG without any mention of the discourse properties of this aspect.⁷⁵

One of the major contributions of this thesis is that I provide an analysis of aspectual markers that accounts for both their modal and discourse properties. In particular, I propose in §3.7 that the imperfective and the progressive both refer to a VP-event stage and a state such that the latter is the consequent state of the former. This idea is motivated by Kamp and Reyle's analysis of the perfect in (218b).⁷⁶ Here we see that the VP introduces a speech-giving event and the perfect introduces a state that is the consequent state of this event (cf. Moens and Steedman 1988; Webber 1988).⁷⁷ In turn, this state, like other states, overlaps the location time (viz. the condition $\tau(s_1) \circ t_2$) and contains the reference point (viz. the condition $e_1 \subseteq s_1$). This correctly predicts that the consequent state of the speech-giving was ongoing at some unspecified time t_1 and crucially that it held throughout the entering event e_1 . In turn, this entails that the speech-giving preceded the entering as desired, viz. Fig. 4.

⁷⁵ One exception that I know of is Dowty 1986, which assumes the modal analysis of the progressive offered in Dowty 1979 and attributes the stative-like behavior of the progressive in a discourse to the subinterval property. See §3.4.2 for more discussion.

⁷⁶ The analysis of the perfect represent Kamp and Reyle's analysis found in §5.3.4 (Kamp and Reyle 1993, pp. 570-593). This analysis is later extended to account for flashback discourses (Kamp and Reyle 1993, pp. 570-593); see Altshuler, to appear for more discussion.

⁷⁷ In the terms of Kamp *et al.*, this introduced state *abuts* the speech-giving event.

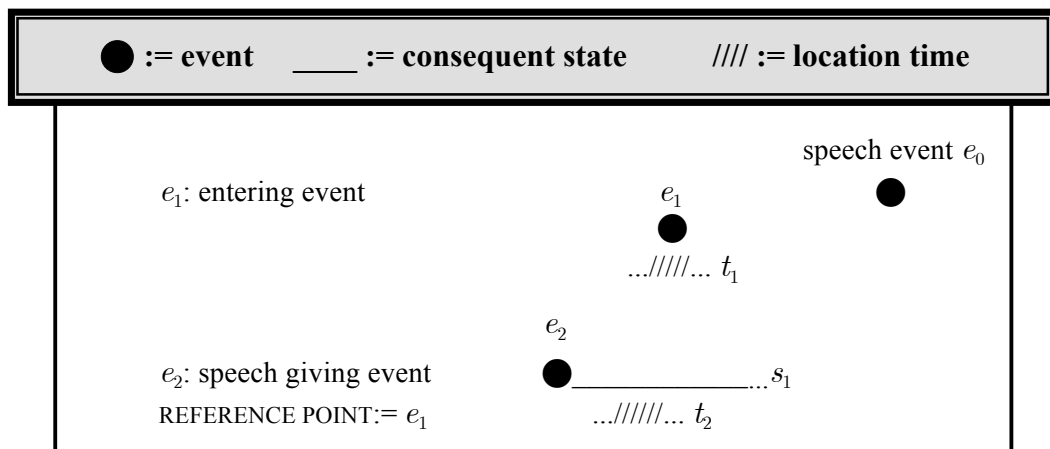


Figure 4: Temporal ordering of eventualities given the DRS in (218b)

3.3.2 Kamp, van Genabith, and Reyle 2005

Kamp, van Genabith, and Reyle (2005) provide an analysis of temporal anaphora that differs from the one offered by Kamp and Reyle (1993) in various respects. The chief difference is that the location time plays a more prominent role. As illustrated by their rules below in (48), a reference point constitutes a *salient* location time previously mentioned in the discourse, rather than an event introduced by a preceding sentence, cf. (49). Moreover, the reference point is no longer related to an eventuality described by a VP, but rather to a location time provided by the tense.

(219) Reference point rule (Kamp, van Genabith, and Reyle 2005)

- a. The part of the discourse preceding S contains an earlier event-sentence in the past tense. For this case we stipulate that the reference point be the discourse referent representing a *salient* location time described by a past tense event-sentence before S.
- b. The location time of a described event succeeds the reference point; the location time of a described state includes the reference point.

(220) Reference point rule (Kamp and Reyle 1993)

- a. The part of the discourse preceding S contains an earlier event-sentence in the past tense. For this case we stipulate that the reference point be the discourse referent representing the event described by the most recent past tense event-sentence before S (Kamp and Reyle 1993, pp. 545).
- b. While events succeed the reference point, states include it.

To illustrate the difference between the rules in (219) and (220), let us compare how these rules are applied to the aforementioned discourse below, in (221).

- (221) a. A man entered the White Hart.
 b. He was ill.
 c. Bill served him a beer (Kamp and Reyle 1993, pp. 521).

Consider the preliminary DRSs below in (222a) and (222b), which provide representations of (221a,b) according to the rules in (219) and (220) respectively. Since nominal anaphora is not important to the comparison at hand, I assume that it has been resolved, viz. the condition $\text{be.ill}(s_1, u_1)$.

(222a) Kamp and Reyle 1993

e_1	t_1	u_1	v_1	s_1	t_2
	$t_1 < \tau(e_0)$				
	$\tau(e_1) \subseteq t_1$				
	$\text{man}(u_1)$				
	$v_1 = \text{white hart}$				
	$\text{enter}(e_1, u_1, v_1)$				
	$t_2 < \tau(e_0)$				
	$\tau(s_1) \circ t_2$				
	$\text{be.ill}(s_1, u_1)$				
	$e_2 \subseteq s_1$				
					e_2

(222b) Kamp, van Genabith, and Reyle 2005

e_1	t_1	u_1	v_1	s_1	t_2
	$t_1 < \tau(e_0)$				
	$\tau(e_1) \subseteq t_1$				
	$\text{man}(u_1)$				
	$v_1 = \text{white hart}$				
	$\text{enter}(e_1, u_1, v_1)$				
	$t_2 < \tau(e_0)$				
	$t_2 \subseteq \tau(s_1)$				
	$\text{be.ill}(s_1, u_1)$				
					t_3
					$\rho(t_2, t_3)$

The first thing to notice is that the state of being ill s_1 is related differently to the (unspecified) location time t_2 in (222a) and (222b). As discussed in the previous sub-section, Kamp and Reyle propose to relate a described state to its location time via the overlap relation, viz. $\tau(s_1) \circ t_2$ in (222a). Kamp, van Genabith, and Reyle (2005), on the other hand, relate a described state to its location time via the inclusion relation, viz. $t_2 \subseteq \tau(s_1)$ in (222b). This is necessary to accommodate the rules in (219).⁷⁸ To see why, consider the complex condition in (222b) which introduces an anaphoric time t_3 and the condition $\rho(t_2, t_3)$, representing an underspecified relation ρ between t_2 and t_3 . According to (219a), t_3 must be resolved to a salient location time previously mentioned in the discourse. Since t_1 is the only possible antecedent for t_3 , we identify the former with the latter. Moreover, given (219b), we resolve ρ to the inclusion relation, which means that t_1 is contained within t_2 , viz. (223b) below:

(223a) Kamp and Reyle 1993

e_1	t_1	u_1	v_1	s_1	t_2
	$t_1 < \tau(e_0)$				
	$\tau(e_1) \subseteq t_1$				
	$\text{man}(u_1)$				
	$v_1 = \text{white hart}$				
	$\text{enter}(e_1, u_1, v_1)$				
	$t_2 < \tau(e_0)$				
	$\tau(s_1) \circ t_2$				
	$\text{be.ill}(s_1, u_1)$				
	$e_1 \subseteq s_1$				

(223b) Kamp, van Genabith, and Reyle 2005

e_1	t_1	u_1	v_1	s_1	t_2
	$t_1 < \tau(e_0)$				
	$\tau(e_1) \subseteq t_1$				
	$\text{man}(u_1)$				
	$v_1 = \text{white hart}$				
	$\text{enter}(e_1, u_1, v_1)$				
	$t_2 < \tau(e_0)$				
	$t_2 \subseteq \tau(s_1)$				
	$\text{be.ill}(s_1, u_1)$				
	$t_1 \subseteq t_2$				

⁷⁸ Kamp, van Genabith, and Reyle (2005) do not address the data discussed in the previous section which motivated the view that states overlap their location time.

As illustrated below in Fig. 5, the correct eventuality ordering is predicted by (223b), i.e. the state of being ill holds throughout the entering event. Such is the case because if $\tau(e_1)$ is contained within t_1 , t_2 is contained within $\tau(s_1)$, and t_1 is contained within t_2 , it must be the case that $\tau(e_1)$ is contained within $\tau(s_1)$. On the other hand, if t_2 merely overlapped $\tau(s_1)$, as we would expect given Kamp and Reyle's analysis, then it would no longer follow that $\tau(e_1)$ is contained within $\tau(s_1)$; $\tau(s_1)$ could also precede or follow $\tau(e_1)$.

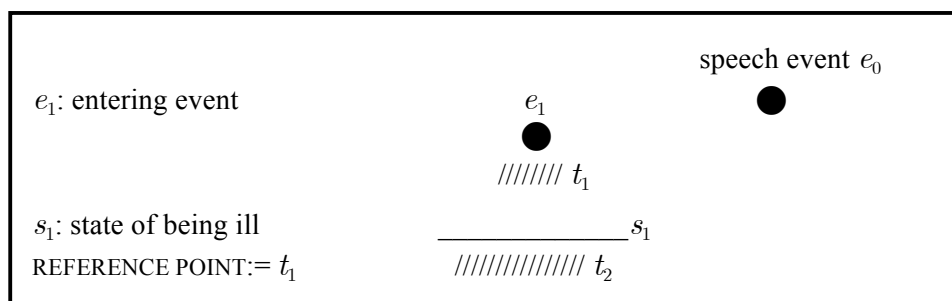


Figure 5: Temporal ordering of eventualities given the DRS in (223b)

Let us now move on to consider (221c). The preliminary DRSs are provided below in (224a) and (224b), reflecting the two analyses under consideration.

(224a) Kamp and Reyle 1993

e_1	t_1	u_1	v_1	s_1	t_2	e_2	t_3	y_1	z_1
					$t_1 < \tau(e_0)$				
					$\tau(e_1) \subseteq t_1$				
					$\text{man}(u_1)$				
					$v_1 = \text{white hart}$				
					$\text{enter}(e_1, u_1, v_1)$				
					$t_2 < \tau(e_0)$				
					$\tau(s_1) \circ t_2$				
					$\text{be.ill}(s_1, u_1)$				
					$e_1 \subseteq s_1$				
					$t_3 < \tau(e_0)$				
					$\tau(e_2) \subseteq t_3$				
					$y_1 = \text{bill}$				
					$\text{beer}(z_1)$				
					$\text{serve}(e_2, y, u_1, z_1)$				
					$e_3 < e_2$				
					e_3				

(224b) Kamp, van Genabith, and Reyle 2005

e_1	t_1	u_1	v_1	s_1	t_2	e_2	t_3	y_1	z_1
					$t_1 < \tau(e_0)$				
					$\tau(e_1) \subseteq t_1$				
					$\text{man}(u_1)$				
					$v_1 = \text{white hart}$				
					$\text{enter}(e_1, u_1, v_1)$				
					$t_2 < \tau(e_0)$				
					$t_2 \subseteq \tau(s_1)$				
					$\text{be.ill}(s_1, u_1)$				
					$t_1 \subseteq t_2$				
					$t_3 < \tau(e_0)$				
					$\tau(e_2) \subseteq t_3$				
					$y_1 = \text{bill}$				
					$\text{beer}(z_1)$				
					$\text{serve}(e_2, y, u_1, z_1)$				
					t_4				
					$\rho(t_3, t_4)$				

Since (221c) involves an eventive VP *serve beer*, the difference between the two DRSs above reduces to reference point resolution. Recall that according to Kamp and Reyle's (1993) analysis, this involves choosing an antecedent event that was most 'recently' introduced. Since states are irrelevant in the resolution procedure, the antecedent event in (224a) must be e_1 . Kamp, van Genabith, and Reyle's (2005) analysis, on the other hand, involves finding a salient location time. Thus both events and states are irrelevant in the calculation of a reference point. Without specifying what constitutes a 'salient' location time, both t_1 and t_2 are possible candidates given (219a). For the sake of illustration, let us assume that t_2 is chosen and thus t_4 is identified with it. Given (219b), we know that t_2 must

therefore precede t_3 . As illustrated below in Fig. 6, the correct predictions are made given this resolution—i.e. the beer-serving event e_2 is predicted to follow entering event and nothing is said about whether was ill at this time. Such is the case because if $\tau(e_1)$ is contained within t_2 and $\tau(e_2)$ is contained within t_3 , which follows t_2 , it must be the case that $\tau(e_2)$ follows $\tau(e_1)$; $\tau(e_2)$ may either overlap $\tau(s_1)$ or follow it since $\tau(s_1)$ contains t_2 .

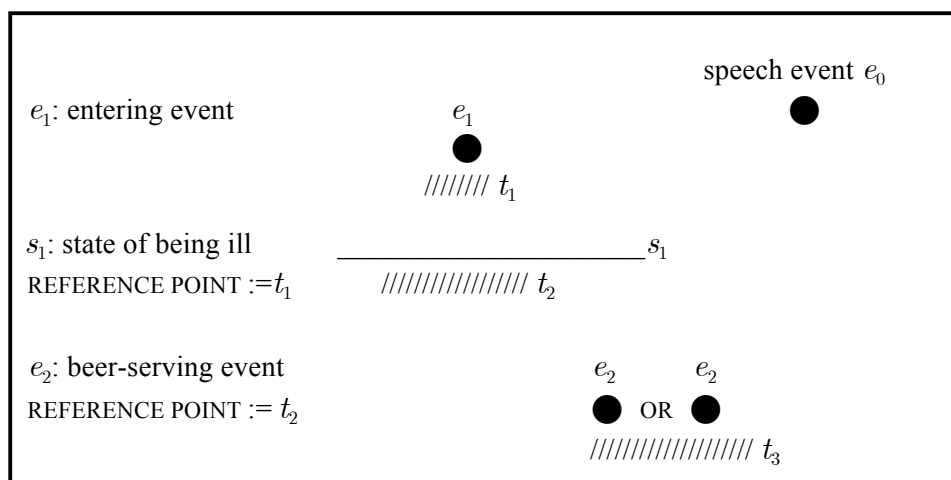


Figure 6: Temporal orderings of events once the DRS in (224b) is resolved

What if the reference point in (224b) is resolved to t_1 rather than t_2 ? That is, if the location time of the beer-serving event is ordered with respect to the location time of the entering event rather than the location time of the state of being ill? Given Fig.6 above, one could see that the same predictions would be made. Such is the case because if $\tau(e_1)$ is contained within t_1 and $\tau(e_2)$ is contained within t_3 , which follows t_1 , it must be the case that $\tau(e_2)$ follows $\tau(e_1)$;

$\tau(e_2)$ may either overlap $\tau(s_1)$ or follow it since $\tau(s_1)$ contains t_2 , which in turn contains t_1 .

It is important to note, however, that the choice of a reference point is not always arbitrary on Kamp, van Genabith, and Reyle's (2005) analysis as it may seem from the above discussion. For example, consider the discourse in (225), where the times of the described events correlated in the order of appearance.

- (225) a. A man entered the White Hart.
 b. Bill served him a beer.
 c. The man thanked him.

When resolving the reference point in (225c), the location time in (225b) must be chosen as an antecedent; choosing the location time in (225a) would make too weak a prediction, namely that the thanking event described in (225c) followed the entering event described in (225a). The intuition that the thanking happened after the beer-serving described in (225b) would not be accounted for. What, in theory, would require the correct resolution is not explicitly addressed by Kamp, van Genabith, and Reyle, who resort to the cover term 'salient' in (219a). However, one could easily imagine a default rule that would make reference to 'recency', viz. (220a).

In sum, the analyses advocated by Kamp and Reyle 1993 and Kamp, van Genabith, and Reyle 2005 differ in what constitutes a reference point and whether the reference point is related to the location time. According to the former analysis, a reference point is a previously mentioned discourse event and the

temporal parameters are independent of each other. A consequence of this is that the event-state distinction plays an especially crucial role in the way the reference point is resolved. According to the latter analysis, the reference point constitutes a previously mentioned location time and the two temporal parameters are therefore related. As a result, the event-state distinction is insignificant when it comes to resolution of a reference point. This distinction is, however, crucial when it comes to how a described eventuality is related to a location time. As was pointed out with reference to the DRSs in (222), the analysis only works if states are assumed to contain (rather than overlap) their location time. This assumption, however, needs further support given the discussion in the previous subsection, where we saw that an example like (226) does not entail that John was in the hospital throughout March.⁷⁹

(226) John was in the hospital in March.

Despite their differences the analyses are similar insofar as they distinguish a reference point, which is provided by the discourse context, from a location time, which is specified by grammatical expressions such as adverbs. This dichotomy motivates the view that eventualities relate to times specified by an adverb differently from the way that eventualities are related to times provided by the discourse context. As a result, a *birelational* analysis in which a described eventuality is related relative to two temporal parameters. In the next section, I show how a *unirelational* analysis aims to explain similar data.

⁷⁹ One possibility would be to say that *in March* should be analyzed as *at some time in March* or *sometime in March*. See Chapter 4 for more discussion of adverbial meaning.

3.4 The unirelational approach

3.4.1 Partee 1984

Following work by Hinrichs (1981), Partee (1984) proposes that a reference point (“reference time” in her terms) can be provided by the discourse context or specified by a grammatical element. In particular, the idea is that eventive sentences ‘update’ the reference point to a time “just after” the described event, whereas states do not ‘update’ the reference point.⁸⁰ This corresponds to the observation that eventive sentences move the narrative forward, while stative sentences do not. Like eventive sentences, temporal adverbs also ‘update’ the reference point, namely to a time that they denote—e.g. *February 15, 1981* denotes February 15, 1981, which in turn serves as the ‘updated’ reference point. Finally, as in the analysis provided by Kamp, van Genabith, and Reyle 2005, described events are required to hold within a reference point, while described states are required to hold throughout a reference point.

There are two important consequences of Partee’s proposed analysis. The first consequence can be shown by applying it to the first two sentences of the now familiar discourse in (227). A preliminary DRS of (227) is provided in (228a) and the resolved DRS in (228b).

⁸⁰ As noted by Dowty (1986), “just after” (or “immediately after” in Dowty’s terms) is deliberately vague. The reason, is that the reference time “is only determined by the hearer’s understanding of the nature of events being described in a narrative, the overall degree of detail in which events are being described, and common knowledge about the usual temporal relationships among events...The point is that...reference times “immediately” follow one another in the sense that each successive sentence presents the very next event that transpires that is important enough to merit the speaker’s describing it to the hearer, given the purpose of the narration” (Dowty 1986, pp. 47); cf. Kamp’s 1979 proposal that successive events are “punctual” in that “no event of crucial importance to the narrative overlaps with the two successive events or intervenes temporally between them” (Dowty 1986, pp. 47).

- (227) a. A man entered the White Hart.
b. He was ill.

(228a)

e_1	t_1	u_1	v_1	s_1	t_2
	$t_1 < \tau(e_0)$				
	$\tau(e_1) \subseteq t_1$				
	$\text{man}(u_1)$				
	$v_1 = \text{white hart}$				
	$\text{enter}(e_1, u_1, v_1)$				
	$\tau(e_1) < t_2$				
	$t_3 < \tau(e_0)$				
	$t_3 \subseteq \tau(s_1)$				
	$\text{be.ill}(s_1, u_1)$				
				t_3	

 $t_3 := t_2$ \Rightarrow

(228b)

e_1	t_1	u_1	v_1	s_1	t_2
	$t_1 < \tau(e_0)$				
	$\tau(e_1) \subseteq t_1$				
	$\text{man}(u_1)$				
	$v_1 = \text{white hart}$				
	$\text{enter}(e_1, u_1, v_1)$				
	$\tau(e_1) < t_2$				
	$t_2 < \tau(e_0)$				
	$t_2 \subseteq \tau(s_1)$				
	$\text{be.ill}(s_1, u_1)$				

The first thing to notice in (228a) is the condition $\tau(e_1) < t_2$, which represents the idea that an eventive sentence ‘updates’ the reference point to a time *after* the event that it describes. Secondly, notice that the run time of s_1 contains an anaphoric dref t_3 . Given Partee’s analysis, t_2 is t_3 ’s antecedent because it is a time *after* the previously mentioned discourse event and there is no intervening time introduced by an adverb. After the resolution, viz. (228b), the DRS entails that the state of being sick is after the entering event. Crucially, nothing is said about whether the state of being sick overlaps the entering event, viz. Fig. 7 below, where the dotted lines represent a possible continuation of s_1 .

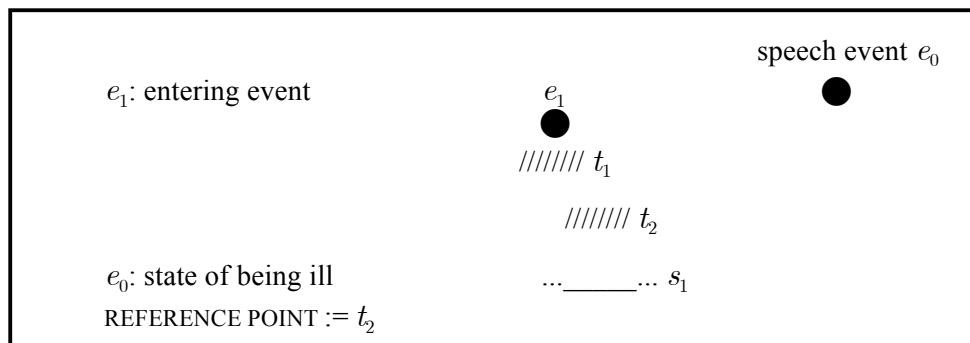


Figure 7: Temporal orderings of events given (228b)

The fact that a described state is not entailed to overlap a previously mentioned discourse event is one of the crucial consequences of Partee's (and Hinrichs') analysis and one way in which it differs from Kamp *et al*'s analysis. Given the inferences in (227), this seems like a reason to adopt Kamp *et al*'s analysis. However, consider the discourse below in (229), where the state of it being pitch dark cannot be understood as overlapping the event of switching off the light (or any other event previously mentioned in the discourse). Instead, the state of being pitch dark is understood to follow the event of switching off the light. Without further assumptions, this inference is predicted to be possible by the Partee's analysis, but is mysterious on Kamp *et al*'s analysis.

- (229) Jameson entered the room, shut the door carefully, and switched off the light. It was pitch dark around him because the Venetian blinds were closed (Hinrichs 1981, cited in Partee 1984, pp. 254).

An important observation about (229), however, is that the state of being pitch dark and the event of turning off the lights are intimately related: the former describes a consequent state of the latter. In turn, this fact forces the interpretation in which the state follows the event in question. After all, a consequent state *must*

follow the event that it caused by. Given this observation, Kamp *et al.* could stipulate that their default rules are overridden by extra-linguistic reasoning. Given this override, Kamp *et al.*'s analysis would allow for the introduction of a new reference point that is contained by the described state (see e.g. Kamp and Reyle 1993, pp. 545). If such an analysis is on the right track, the natural question that arises is if there are cases in which a state is understood as following a salient event without the two being intimately related, i.e. so that there is nothing to override the default rules. Given Partee's analysis, we expect that there should be no problem constructing such a case, which would then tease apart the two accounts. However, as noted by Kamp, van Genabith, and Reyle 2005, "...when one looks more closely at examples that might help to decide between the two accounts, one finds that the crucial judgments not only tend to be delicate and unstable, but also that they are influenced by factors that neither account takes into consideration" (Kamp, van Genabith, and Reyle 2005, pp. 81).

The type of factors that Kamp, van Genabith, and Reyle have in mind have to do with extra-linguistic reasoning noted with regard to (229) which will be considered in detail in §3.5. For the time being, let us move on and consider a feature of Partee's analysis that makes it *prima facie* more desirable than Kamp *et al.*'s analysis: it does not require two temporal parameters to account for discourses like (230) and (231). These two discourses differ solely in whether there is an adverb in the b-sentence. While (230) entails that a man met Obama a week before he entered the White House, (231) entails that a man met Obama after he entered the White House.

- (230) a. Yesterday a man entered the White House.
 b. He met Obama the week before.
- (231) a. Yesterday a man entered the White House.
 b. He met Obama.

Partee's analysis straightforwardly accounts for the contrast in (230) and (231) as follows. Since (230b)/(231b) is an eventive sentence, the described event must be contained within the reference point. In (231b), this reference point is specified by the adverbial expression *the week before*, which means that the meeting event took place within the time denoted by *the week before*, i.e. a week prior to him entering the White House. This idea is captured by the DRS in (232a) as follows: since adverbs have the function of updating the reference point, i.e. making the time that they denote salient for anaphoric pick-up, t_4 is resolved to t_3 (Partee 1984, pp. 258). In (231b), on the other hand, the reference point is specified by the discourse context, which means that the meeting event took place at a time that follows his entrance the White House. The DRS in (232b) captures this idea as follows: since eventive sentence have the function updating the reference point to time after the described event, the anaphoric dref t_3 is resolved to a time after the entering event e_1 , namely t_2 .

(232a)

e_1	t_1	u_1	v_1	t_2	e_2	t_3	z_1
	$t_1 < \tau(e_0)$						
	yesterday(t_1)						
	$\tau(e_1) \subseteq t_1$						
	man(u_1)						
	$v_1 = \text{white house}$						
	enter(e_1, u_1, v_1)						
	$\tau(e_1) < t_2$						
	$t_3 <_{\text{week before}} \tau(e_1)$						
	$t_4 < \tau(e_0)$						
	$\tau(e_2) \subseteq t_4$						
	$z_1 = \text{obama}$						
	meet(e_2, u_1, z_1)						
				t_4			

(232b)

e_1	t_1	u_1	v_1	t_2	e_2	z_1
	$t_1 < \tau(e_0)$					
	yesterday(t_1)					
	$\tau(e_1) \subseteq t_1$					
	man(u_1)					
	$v_1 = \text{white house}$					
	enter(e_1, u_1, v_1)					
	$\tau(e_1) < t_2$					
	$t_3 < \tau(e_0)$					
	$\tau(e_2) \subseteq t_3$					
	$z_1 = \text{obama}$					
	meet(e_2, u_1, z_1)					
					t_3	

In contrast to the Partee’s analysis, Kamp *et al*’s analysis requires additional assumptions to account for the discourse in (230). As illustrated by the preliminary DRS below in (233a), which represents Kamp and Reyle’s analysis of (230), there is no possible antecedent for e_3 ; resolving this event to either e_2 or e_1 leads to a contradiction given the conditions $t_2 <_{\text{week before}} \tau(e_1)$ and $\tau(e_2) \subseteq t_2$. This triggers an override of the default rules and, according to Kamp and Reyle, a previously mentioned location time serves as the reference point (see Kamp and Reyle 1993, pp. 545). In other words, Kamp and Reyle’s idea is that an adverb may override the typical, temporal flow of a narrative.

In contrast to the DRS in (233a), the DRS below in (233b) represents Kamp, van Genabith, and Reyle’s analysis of (230). Here, the idea that an adverb may override the typical, temporal flow of a narrative is also adopted. Recall that according to the default rules, t_3 should be resolved to t_1 and ρ should be specified

in such a way so that t_2 follows t_1 . Resolving it in this way, however, would lead to a contradiction given the conditions $t_2 <_{\text{week before}} \tau(e_1)$ and $\tau(e_2) \subseteq t_2$. Therefore, the default rules are overridden and ρ is specified in such a way so that t_2 precedes t_1 .

(233a) Kamp & Reyle 1993

(233b) Kamp, van Genabith, and Reyle (2005)

e_1	t_1	u_1	v_1	e_2	t_2	z_1
	$t_1 < \tau(e_0)$					
	yesterday(t_1)					
	$\tau(e_1) \subseteq t_1$					
	man(u_1)					
	$v_1 = \text{white house}$					
	enter(e_1, u_1, v_1)					
	$t_2 < \tau(e_0)$					
	$t_2 <_{\text{week before}} \tau(e_1)$					
	$\tau(e_2) \subseteq t_2$					
	$z_1 = \text{obama}$					
	meet(e_2, u_1, z_1)					
	$e_3 < e_2$					
						e_3

e_1	t_1	u_1	v_1	e_2	t_2	z_1
	$t_1 < \tau(e_0)$					
	yesterday(t_1)					
	$\tau(e_1) \subseteq t_1$					
	man(u_1)					
	$v_1 = \text{white house}$					
	enter(e_1, u_1, v_1)					
	$t_2 < \tau(e_0)$					
	$t_2 <_{\text{week before}} \tau(e_1)$					
	$\tau(e_2) \subseteq t_2$					
	$z_1 = \text{obama}$					
	meet(e_2, u_1, z_1)					
						t_3
						$\rho(t_3, t_2)$

Let us now consider the consider the discourse in (234), which is crucially different from (230) because the adverb *at noon* (unlike *the week before*) is compatible with the meeting event described in (234b) taking place *after* the entering event described in (234a). As result, the adverb does not override the typical, temporal flow of a narrative—we infer in (234) that the meeting did, in fact, take place after the entering.

- (234) a. Yesterday a man entered the White House.
 b. He met Obama at noon.

The discourse above is interesting because whereas Kamp *et al.*'s analysis predicts it straightforwardly, Partee's analysis needs additional assumptions. To see why, consider the preliminary DRSs below in (235a) and (235b), which represents Kamp and Reyle's and Kamp, van Genabith, and Reyle's analyses of (234) respectively. Resolving the anaphoric dref e_3 to e_1 in (235a), as we would expect given Kamp and Reyle's default rules, makes the correct predictions. Similarly, if we resolve the anaphoric dref t_3 to t_1 and the relation ρ to $<$ in (235b), as we would expect given Kamp, van Genabith, and Reyle's default rules, the correct predictions are made.

(235a) Kamp & Reyle 1993

e_1	t_1	u_1	v_1	e_2	t_2	z_1
	$t_1 < \tau(e_0)$					
	yesterday(t_1)					
	$\tau(e_1) \subseteq t_1$					
	man(u_1)					
	$v_1 = \text{white house}$					
	enter(e_1, u_1, v_1)					
	$t_2 < \tau(e_0)$					
	at.noon(t_2)					
	$\tau(e_2) \subseteq t_2$					
	$z_1 = \text{obama}$					
	meet(e_2, u_1, z_1)					
	$e_3 < e_2$					
	e_3					

(235b) Kamp, van Genabith, and Reyle (2005)

e_1	t_1	u_1	v_1	e_2	t_2	z_1
	$t_1 < \tau(e_0)$					
	yesterday(t_1)					
	$\tau(e_1) \subseteq t_1$					
	man(u_1)					
	$v_1 = \text{white house}$					
	enter(e_1, u_1, v_1)					
	$t_2 < \tau(e_0)$					
	at.noon(t_2)					
	$\tau(e_2) \subseteq t_2$					
	$z_1 = \text{obama}$					
	meet(e_2, u_1, z_1)					
					t_3	
					$\rho(t_3, t_2)$	

Consider now the DRS in (236), which represents Partee's analysis of (234). Given the discussion of (230), we would expect the anaphoric dref t_4 to be resolved to t_3 , which is the time denoted by the adverbial. However, this would

not predict that the meeting took place after the entering since there are many times prior to the entering that have the property of being noon.

(236)

e_1	t_1	u_1	v_1	t_2	e_2	t_3	z_1
$t_1 < \tau(e_0)$ yesterday(t_1) $\tau(e_1) \subseteq t_1$ man(u_1) $v_1 = \text{white house}$ enter(e_1, u_1, v_1) $\tau(e_1) < t_2$ at.noon(t_3) $t_4 < \tau(e_0)$ $\tau(e_2) \subseteq t_4$ $z_1 = \text{obama}$ meet(e_2, u_1, z_1)							
<div style="border: 1px dashed black; padding: 5px; display: inline-block;"> t_4 </div>							

A possible reply is that the semantics of *at noon* is more complicated than the other adverbs that we have considered. In particular, *at noon* in (234) it refers to the nearest noon after the event of entering e_1 (cf. Kamp and Reyle's 1993 analysis of *on Sunday*). If that is the case, then it is the anaphoricity of *at noon* that triggers narrative progression in (234).⁸¹

In sum, discourses like (230) and (234) reveal interesting differences between Partee's analysis and Kamp *et al*'s analysis. The discourse in (230) is interesting because (230b) contains the adverb *the week before*, which is incompatible with narrative progression. Partee's analysis deals with this

⁸¹ See Chapter 4 where such an analysis of *at noon* is pursued. There I will also argue that the adverbial expression *that same day*, which is also compatible with narrative progression, cannot be accounted for by Partee's analysis.

discourse straightforwardly because a described eventuality is located relative to a single parameter, which can be specified by an adverb or the discourse context. Kamp *et al*'s analysis, however, needs to make some non-trivial assumptions because a described eventuality is located relative to two parameters, yet only one is at play in (230b). With regard to the discourse in (234), Partee's analysis needs to make non-trivial assumptions because both the adverb and the discourse context seem to play a role in specifying the temporal location of the eventuality described by (234b). Kamp *et al*'s birelational analysis, however, is tailored to account for discourses like (234b).

In light of these observations and the fact that Partee's analysis is more elegant—i.e. it only posits a single temporal parameter—one may be inclined to adopt it over the Kamp *et al*'s analysis.⁸² Such an inclination may also be motivated since it is not clear that positing an additional temporal parameter buys you all that much. One thing that an extra parameter buys you is a more straightforward analysis of (234). However, this point may be moot if—as mentioned above—the narrative progression is driven by the anaphoricity of *at noon*. An additional parameter also buys the generalization that a described state overlaps a previously mentioned discourse event. In fact, according to Hans Kamp (p.c.), this generalization is the main motivation for adopting a birelational analysis. In the next section, I briefly consider David Dowty's (1986) proposal that this generalization follows from considerations independent of narrative progression rules.

⁸² In fact, if you look at the literature on temporal anaphora that adopts the notion of a *reference point*, most authors subscribe to a Partee-like analysis. The one exception that I know of comes from Nelken and Francez (1997); see also Altshuler 2009a;b.

3.4.2 Dowty 1986

Dowty 1986 proposes a variant of Partee's analysis in which both eventive and stative sentences are true at a reference time interval i , which by default, is provided by an adverb; otherwise the reference point is "a time which immediately follows the reference time of the previous sentence" (Dowty 1986 pp. 45). Let us apply this analysis to the discourses below, in (237) and (238).

- (237) a. John entered the president's office.
 b. The president walked over to him (Dowty 1986, pp. 47).
- (238) a. Mary entered the president's office.
 b. There was a bound copy of the president's budget on his desk (Dowty 1986, pp. 49).

In both (237b) and (238b), the reference time is a time which immediately follows the entering event described in (237a) and (238a). Assuming that (237b) is true at a reference time interval i , it follows from Dowty's meaning of an achievement or an accomplishment sentence⁸³ that (237b) is false at all superintervals of i . Therefore, if two accomplishment/achievement describing sentences occur successively in a discourse, viz. (237a,b), "they are not only asserted to be true at successive but non-overlapping intervals, there cannot even be overlapping intervals at which the two are true which are *not* explicitly asserted" (Dowty 1986, pp. 48). In contrast, assuming that (238b) is true at a reference interval i , it

⁸³ Dowty proposes that a sentence ϕ is an accomplishment/achievement (or *kinesis*) iff it follows from the truth of ϕ at a reference time interval i that ϕ is false at all subintervals of i .

follows from Dowty's meaning of a stative sentence⁸⁴ that (238b) may be true at an superinterval of *i*. That is, it is compatible with the truth-conditions of (238b) that the described state overlaps with a previously mentioned discourse event (e.g. the event described by (238a)), though this is not entailed. This inference, according to Dowty, follows from world knowledge about a state's run time. He writes: "we are expected to assume...[in 238b]...that this was not the first moment that it [i.e. the president's budget] was there: it was no doubt there before Mary's entry" (Dowty 1986, pp. 49).

Dowty's analysis of (237) and (238) is simple and effective. Moreover, Dowty shows that his analysis can be extended to aspectual markers. Dowty proposes that aspectual markers change the aktionsart value of a given sentence. For example, Dowty's analysis of the progressive is as follows. Consider an accomplishment or an achievement sentence *S*, which is true at a reference time interval *i* iff it is false at all subintervals of *i*. The progressive applied to *S* is true at an interval *i* iff there is an interval *i'* properly containing *i* such that *S* is true at *i'* (Dowty 1986, pp. 44). In other words, Dowty proposes that progressive sentences exhibit the subinterval property characteristic of stative sentences and thereby explains their aforementioned parallels when embedded within a discourse—e.g. in (239b) the described eventualities are understood to overlap the entering event described in (239a).

- (239) a. A man entered the White hart.
 b. He was {breathing heavily/sick}.

⁸⁴ Dowty proposes that a sentence ϕ is stative true iff it follows from the truth of ϕ at an interval *i* that ϕ is true at all subintervals of *i*.

Despite the elegance of Dowty's analysis, I argue in §3.6 that it cannot adequately account for sentences with the Russian imperfective.⁸⁵ Such sentences are remarkable because they behave like eventive sentences when the reference time is specified by adverbs, but like stative sentences when the reference time is specified by the discourse context. In the next section, I examine some examples that are problematic not only for Dowty's analysis, but also Partee's and Kamp *et al*'s.

3.4.3 Webber 1988

Webber 1988 compares the discourse in (242) to those in (240) and (241). In (242), we see the familiar narrative progression analyzed by Kamp *et al*, Hinrichs, Partee and Dowty, whereby the flower picking is understood to take place after the flower shop entering. In (240) and (241), however, the narrative progression seems “out of whack”.⁸⁶ In (240), the piano and kazoo playing are understood as being co-temporal, while in (241), the flower picking is understood as being part of the preparatory process of the flower buying.⁸⁷

⁸⁵ Another potential problem for Dowty's analysis concerns the pluperfect sentence such as (i).

- (i) a. John hurried to Mary's house after work.
- b. But Mary had left for dinner (after Dowty 1986, pp. 47).

Following Reichenbach (1947), Dowty assumes that the perfect “places the event of its clause at a time *i'* before the reference time *i*” (pp. 47). Since the reference point in (ib) is a time that immediately follows the hurrying event described in (ia), (i) is predicted to entail that the leaving precedes some time which immediately follows the hurrying event. In response to these weak truth conditions, which are compatible with the two events described in (i) overlapping, Dowty writes (pp. 48): “Since the language has independent and unambiguous means for expressing simultaneity of events...the past perfect is conversationally implicated to exclude this possibility”.

⁸⁶ Note that Partee was well aware of such discourses stating that her analysis is meant to account for only narrative discourses of which (240) and (241) are not (see Partee 1984, pp. 16).

⁸⁷ Spejewski 1994 provides the example in (i), which is similar to (240) in that the described eventualities are understood to be co-temporal. One crucial difference is that (ib) contains a stative

- (240) a. John played the piano.
 b. Mary played the kazoo (Webber 1988, pp. 66).
- (241) a. John bought some flowers.
 b. He picked out three red roses, two white ones and one pale pink (Webber 1988, pp. 67).
- (242) a. John went into the florist shop.
 b. He picked out three red roses, two white ones and one pale pink (Webber 1988, pp. 67).

In order to account for (240) and (241), one could stipulate that the default rules used to account for (242) are overridden (cf. the discussion concerning (229)). However, it is non-trivial to say (i) what would cause the override in (240) and (241) and (ii) what the override would be like—i.e. what rules would explain the inferences in (240) and (241). Webber’s goal is ambitious, namely to make headway in providing answers to both (i) and (ii). Since (i) will be discussed in the next section, I will only outline Webber’s answer to (ii), which inspires the analysis that I later propose. Webber follows Partee 1984 in assuming a unified notion of a reference point, whereby it can be provided by the discourse context or specified by an adverbial. The crucial point of departure concerns Partee’s idea that eventive sentences ‘update’ the reference point to a time “just after” the described event. Although Webber does not deny this as a possibility, viz. the discourse in (242), she aims to generalize Partee’s idea by appealing to Moens and Steedman’s (1988) event structure. In particular, she proposes that the reference point constitutes some part (or “phase” in Webber’s terms) of a

sentence that describes the event in (ia). As such, (i) is straightforwardly accounted for by Kamp *et al*’s analysis.

- (i) a. Maria gave a single yell.
 b. It was very loud (Spejewski 1994, pp. 12).

previously mentioned event, i.e. a preparatory process, a consequent state or the entire event nucleus.

Applying this idea to the discourse in (240), the reference point in (240b) is the entire event nucleus described by the sentence in (240a), namely the piano playing event. Given that events are contained within their reference times, it follows that the kazoo-playing event described in (240b) is contained within (and possibly co-temporal with) the piano-playing event. This idea is illustrated by the DRSs below, where the $\beta(e_3)$ represents an underspecified part of e_3 , i.e. $\beta(e_3) \in \{e_3 \cup \text{PREP}(e_3) \cup \text{CONS}(e_3)\}$. In the case at hand, $\beta(e_3)$ is specified to e_3 , which in turn is resolved to e_1 . This leads to the condition $t_2 = \tau(e_1)$, viz. (243b).

(243a)

e_1	t_1	u_1	v_1	e_2	t_2	y_1	z_1
	$t_1 < \tau(e_0)$						
	$\tau(e_1) \subseteq t_1$						
	$u_1 = \text{john}$						
	the piano(v_1)						
	play(e_1, u_1, v_1)						
	$t_2 < \tau(e_0)$						
	$\tau(e_2) \subseteq t_2$						
	$y_1 = \text{mary}$						
	the kazoo(z_1)						
	play(e_2, u_1, z_1)						
				e_3			
				(dashed box)			
				$t_2 = \tau(\beta(e_3))$			

 $e_3 := e_1$ $\beta := \text{entire nucleus}$ \Rightarrow

(243b)

e_1	t_1	u_1	v_1	e_2	t_2	y_1	z_1
	$t_1 < \tau(e_0)$						
	$\tau(e_1) \subseteq t_1$						
	$u_1 = \text{john}$						
	the piano(v_1)						
	play(e_1, u_1, v_1)						
	$t_2 < \tau(e_0)$						
	$\tau(e_2) \subseteq t_2$						
	$y_1 = \text{mary}$						
	the kazoo(z_1)						
	play(e_2, u_1, z_1)						
					$t_2 = \tau(e_1)$		

With regard to the discourses in (241) and (242), let us disregard issues concerning plurality and consider the simpler versions of these discourses in (244)

and (246) respectively. As shown by the DRSs of (244) in (245), $\beta(e_3)$ is specified to the preparatory process of e_3 . Given that e_3 is resolved to e_1 and its run time is identified with the reference point t_2 , it is correctly predicted that the picking out event described in (244b) is contained within the preparatory process of the buying event described in (244a). This entails that Mary picked out a flower before the buying event culminated.

- (244) a. John bought a flower.
 b. Mary picked it out.

(245a)

e_1	t_1	u_1	v_1	e_2	t_2	y_1
						$t_1 < \tau(e_0)$
						$\tau(e_1) \subseteq t_1$
						$u_1 = \text{john}$
						$\text{flower}(v_1)$
						$\text{buy}(e_1, u_1, v_1)$
						$t_2 < \tau(e_0)$
						$\tau(e_2) \subseteq t_2$
						$y_1 = \text{mary}$
						$\text{pick.out}(e_2, y_1, v_1)$

e_3						
$t_2 = \tau(\beta(e_3))$						

$e_3 := e_1$

$\beta := \text{prep. process}$

\Rightarrow

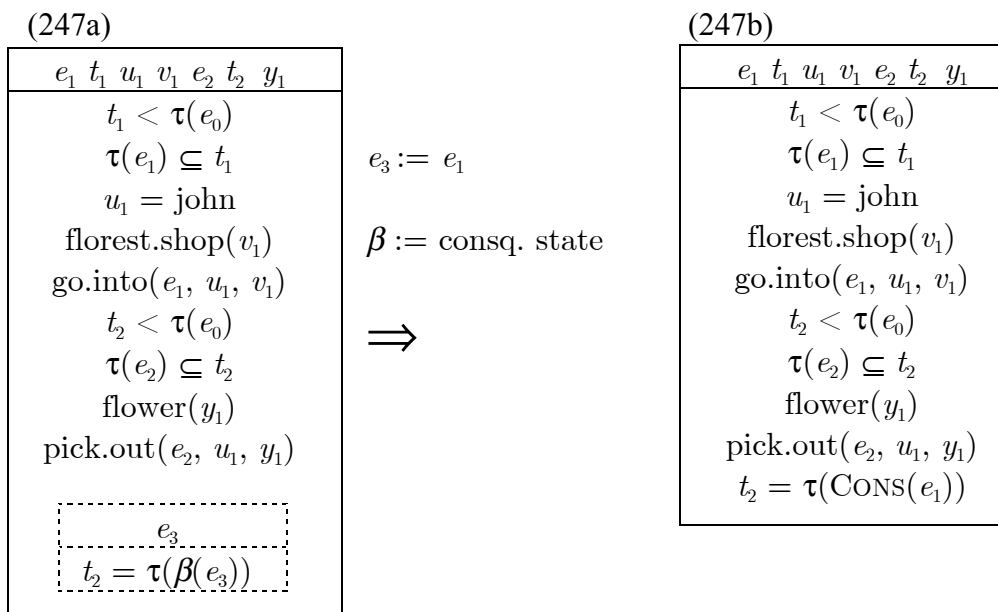
(245b)

e_1	t_1	u_1	v_1	e_2	t_2	y_1
						$t_1 < \tau(e_0)$
						$\tau(e_1) \subseteq t_1$
						$u_1 = \text{john}$
						$\text{flower}(v_1)$
						$\text{buy}(e_1, u_1, v_1)$
						$t_2 < \tau(e_0)$
						$\tau(e_2) \subseteq t_2$
						$y_1 = \text{mary}$
						$\text{pick.out}(e_2, y_1, v_1)$
						$t_2 = \tau(\text{PREP}(e_1))$

On the other hand, $\beta(e_3)$ is specified to the consequent state of e_2 in (247).

Given that e_3 is resolved to e_1 and its run time is identified with the reference point t_2 , it is correctly predicted that the picking out event described in (246b) is contained within the consequent state of buying event described in (246a). This entails that John picked out a flower after he entered the flower shop.

- (246) a. John went into a florist shop.
 b. He picked out a flower.



In sum, Webber proposes to explain the inferences in (240)-(242) by generalizing Partee's analysis. In particular, she proposes that the reference point constitutes some part of a previously mentioned event, i.e. the entire event nucleus viz. (240), the preparatory process viz. (241), or the consequent state viz. (242). A question that comes up is what determines which part is chosen. In the next section, I outline an analysis of temporal anaphora in which such a question takes center stage.

3.5 Kehler's coherence driven approach

Kehler's (2002) approach to temporal anaphora is guided by the following assumptions: (i) the notion of a *reference point* should be invoked only when necessary and (ii) world knowledge often determines the temporal ordering of eventualities. These assumptions are motivated, in part, by the data below in

(248)-(251) (cf. Lascarides and Asher 1992 for similar examples; see also Smith 2003), which show that a sequence of two eventive sentences in the past tense can lead to a multitude of interpretations in which the described events are ordered in every possible way with respect to each other. In (248), we see the familiar narrative progression where the times of the described events correspond in the order that they appear; in (249), we see the opposite event ordering that is characteristic of discourses with the pluperfect^{88,89}; in (250) we see a sequence of two eventive sentences describing the same event; (251) leaves open how the described events are ordered with respect to each other.

- (248) a. Max slipped.
 b. He spilt a bucket of water (Kehler 2002, pp. 193).
- (249) a. Max spilt a bucket of water.
 b. He tripped on his shoelace (Kehler 2002, pp. 193).
- (250) a. Max spilt a bucket of water.
 b. He spilt it all over the rug (Kehler 2002, pp. 193).
- (251) a. Max spilt a bucket of water.
 b. John dropped a jar of cookies. (Kehler 2002, pp. 193).

⁸⁸ In fact, many native speakers feel that the perfect auxiliary *had* is necessary in discourses like (249). Kamp and Reyle (1993) share this judgment, marking discourses such as (249) as infelicitous. I agree that (249) is somewhat odd (though not awful); I find it much more acceptable in dialogues like (i). Interestingly, the perfect auxiliary *had* is infelicitous in this instance; however, see (ii).

- (i) a. SPEAKER A: Max spilt a bucket of water.
 b. SPEAKER B: What the hell happened?
 c. SPEAKER A: He (#had) tripped on his shoelace!
- (ii) a. SPEAKER A: Max failed the exam.
 b. SPEAKER B: What the hell happened?
 c. SPEAKER A: He {#had gone to the wrong classroom/hadn't gone to class}.

⁸⁹ This discourse is used by Kehler to argue against Webber's (1988) analysis discussed in the previous section. Similar discourses in (i) and (ii) are used by Spejewski 1994 to argue against Partee 1984 and Dowty 1986. Note, however, that many native speakers of English find (i) and (ii) odd, adding that they need a pluperfect, viz. *It had been six inches too long* in (i) and *It had been in a crystal beaker* in (ii).

- (i) Jackie sawed off the end of the shelf. It was six inches too long to fit next to her bed.
 (ii) The magician poured a silver liquid into the bowl. It was in a crystal beaker.

To account for the data above, Kehler first proposes to treat tense as *absolute*—tense constitutes a relation a between the event time and the speech time. As illustrated by Kehler’s table below (Kehler 2002, pp.190), the notion of *reference point* does not factor into the analysis.⁹⁰

TENSE	RELATIONS	EXAMPLE
Present	$E =_t S$	<i>I see</i>
Past	$E <_t S$	<i>I saw</i>
Future	$E >_t S$	<i>I will see</i>

Table 1: Kehler’s meanings of simple tenses (to be amended)

Applying the past tense meaning to the discourses in (248)-(251), it is predicted that they all have the same temporal interpretation, namely an interpretation in which the described events took place prior to the speech event and are unordered with respect to each other. This accounts for Kehler’s observation that a sequence of two eventive sentences in the past tense can lead to a multitude of interpretations in which the described events are ordered in every possible way with respect to each other.

The inferred event ordering in (248)-(251), according Kehler, comes from the temporal constraints imposed by so-called *coherence relations*, which characterize the possible ways in which successive utterances can be connected to form a coherent discourse (cf. Hobbs 1979, 1990). A particular coherence relation is inferred based on various factors. Chief among these is world knowledge. Moreover, as pointed out by Kehler, the inferred coherence relation “must be

⁹⁰ In §1.2.1 we saw an argument from Kamp and Reyle 1993 and Klein 1994 against treating tense in this way. For the purposes of the illustration, I disregard these arguments.

consistent with any temporal relations imposed by the tenses used and thus these temporal relations may constrain the set of coherence relations that can be inferred” (Kehler 2002, pp. 191). The coherence relations below, which Kehler uses to analyze (248)-(251) among other phenomena (e.g. VP-ellipsis, gapping, extraction and the interpretation of pronouns), are all compatible with the temporal relation imposed by the simple tenses; they are to be read as follows: *if a coherence relation ρ holds between a pair of sentences S_1 and S_2 , then the eventualities E_1 and E_2 described by S_1 and S_2 respectively are ordered by the relation ρ' .*

(252) OCCASION(S_1, S_2) $\rightarrow E_1 <_t E_2$

(253) EXPLANATION(S_1, S_2) $\rightarrow E_1 >_t E_2$

(254) ELABORATION(S_1, S_2) $\rightarrow E_1 =_t E_2$

(255) PARALLEL(S_1, S_2) \rightarrow no constraint

According to Kehler, the OCCASION relation is characterized by a series of eventualities that are connected through a chain of final and initial states (cf. Lascarides and Asher’s 1992 NARRATION relation). This relation may be causal, though need not be. An example of this relation is the aforementioned discourse in (248), where we infer that Max’s slipping caused him to spill the bucket of water.

The EXPLANATION relation is like the OCCASION relation except that the event ordering is reversed—the event described by the initial sentences explains, or is caused by, the event described by the subsequent sentence. An example of

this relation is the aforementioned discourse in (249), where we infer that Max's spilling was caused by his tripping.

The ELABORATION relation is unlike the OCCASION and EXPLANATION relations because it relates two sentences that describe the same event. The aforementioned discourse in (250) exemplifies this relation because (250a) and (250b) describe the same spilling event.

Finally, the PARALLEL relation relates sentences that share a common topic. Moreover, according to Kehler, this relation “does not impose constraints on the temporal relations between the events beyond those provided the tenses themselves (pp. 192).” For example, in (251), the sentences share a common topic of being answers to a question like “What bad things happened to Max today?” and leaves open how the described events are related to each other.

In sum, Kehler's analysis of the discourses in (248)-(251) does not appeal to the notion of a reference point, but rather relies on (i) the meaning of the past tense, which locates an event prior to the speech time, and (ii) the coherence relations in (252)-(255), which are all compatible with the past tense and are thus inferred based on world knowledge. One problem with Kehler's analysis is that it does not explain why the OCCASION relation is typically inferred when we have a sequence of two eventive sentences. For example, the analysis does not explain the aforementioned observation that (256) is infelicitous. Recall that the point of this example was to show that world knowledge alone does not determine the temporal ordering of eventualities and that a notion such *reference point* is needed.

- (256) a. The publican of the White hart served a customer a beer.
 b. The man was ill.
 c. #He entered the pub alone (after Kamp and Reyle 1993, pp. 521).

Although Kehler does not offer a solution to this problem⁹¹, he does appeal to reference points to account for the contrast in event ordering in (257) and (258) below.

- (257) a. Max slipped.
 b. He spilt a bucket of water (Kehler 2002, pp. 193).
- (258) a. Max slipped.
 b. He had spilt a bucket of water (Kehler 2002, pp. 193).

Recall that in (257), the spilling is understood to follow the slipping, but in (258), the event ordering is reversed. Such is the case due the perfect auxiliary *had*, which according to Kehler always forces the EXPLANATION relation.⁹² To formalize this generalization, Kehler proposes to extend his analysis of tense as follows:

TENSE	RELATIONS	EXAMPLE
Present	$E =_t S$	<i>I see</i>
Past	$E <_t S$	<i>I saw</i>
Future	$E >_t S$	<i>I will see</i>
Past Perfect	$E <_t R <_t S$	<i>I had seen</i>
Future Perfect	$E <_t R >_t S$	<i>I will have seen</i>

Table 2: Kehler's meanings of simple tenses (final version)

⁹¹ See Lascarides and Asher 1993 where this problem is addressed by positing axioms that entail that the OCCASION relation (NARRATION in their terms) is inferred by default.

⁹² Note that this generalization is not captured by Dowty's 1986 analysis of the perfect; see fn. 86.

The perfect, according to Kehler, is a complex tense that has an anaphoric component: it involves a reference point, which occurs after the event time (cf. Reichenbach 1947). In sentences like (258b), Kehler assumes that the reference point is the slipping event described in (258a) and given the meaning of the past perfect, it is correctly predicted that the spilling event precedes the slipping. Moreover, since this event ordering is only compatible with the EXPLANATION relation, we derive the generalization that the semantics of the past perfect eliminates all other coherence relations. The same is true of the future perfect, which also encodes the relation $E <_t R$.

In sum, Kehler's analysis can be described as "all or nothing"—either coherence relations do all the work, as in (248)-(251), or the semantics of tense does all the work, as in (258). While I believe that the interaction between grammatical rules and coherence relations is much more intricate than what is proposed by Kehler, I also believe that a lot is to be gained from the general approach of using tense semantics and coherence theory to explain temporal interpretation in a given discourse. In §3.7, I will propose an analysis of the Russian imperfective that adopts this approach. In particular, I propose that the Russian imperfective rules out the OCCASION relation and discuss why a particular relation other than OCCASION is favored in a particular discourse. In the next section, I discuss how the Russian imperfective discriminates between the various approaches to temporal anaphora that have been discussed up to this point.

3.6 The Russian imperfective meets the unirelational approach

In §3.1, I discussed reasons for thinking that one of the semantic functions of aspect is to constrain the temporal location of a described eventuality. In §3.3-§3.5, I compared unirelational analyses in which a described eventuality is related to a *reference point* and birelational analyses in which a described eventuality is related to a *location time* in addition to a *reference point*. The comparison suggested that the unirelational analysis should be adopted because (i) it is more elegant and (ii) its seeming problems could be explained on independent grounds. In this section I present a puzzle for a *unirelational* analysis of aspect. In presenting the puzzle, I will adopt a modified version of the Partee-Webber approach to temporal anaphora that subscribes to the rules below, in (259). Note that these rules are designed in such a way as to give the unirelational analysis the ‘best chance’ at accounting for the data that is to follow. In passing, I will discuss why tweaking these rules in various ways would not help to account for the puzzle.

(259) *Reference point rule*⁹³

- a. A temporal adverb supplies a reference point that refers to the time denoted by that adverb. The discourse context supplies a reference point when a temporal adverb is not present in a given sentence. In such a case, the reference point refers to the duration of the consequent state of a salient event previously mentioned in the discourse.
- b. Events described by a given sentence are contained within a reference point; described states hold throughout a reference point.

⁹³ Here I ignore the fact that grammatical elements other than adverbials (e.g. *when-clauses*) could also supply a reference point (see e.g. Partee 1984 for more discussion).

To see the fruits of (259) consider the flashback discourse in (260), which consists of a series of perfective sentences.⁹⁴ The initial two sentences in this discourse entail that the flower-giving event precedes the kissing event. However, without the temporal location adverbial in (260b), the understood event ordering is reversed: the flower-giving is understood to follow the kissing. Moreover, the perfective clauses in (260b,c) form a narrative progression—i.e. the theater-inviting event is understood to follow the flower-giving.

- (260) a. *Nedelju nazad Marija po-celova-l-a Dudkina.*
 Week ago Maria PFV-kissed-PST.3S-FEM Dudkin
 ‘A week ago, Maria kissed Dudkin.’
- b. *Za nedelju do toga on po-dari-l ej cvety*
 From week to that he PFV-give-PST.3S her flowers
 ‘A week before that he had given her flowers’
- c. *i priglasil ee v teatr.*
 PFV.invite-PST.3S her to theater
 and (then) had invited her to the theater.’

The rules in (259) explain the inferences in (260) as follows. The flower-giving event described in (260b) is located within the time denoted by an adverb, namely a time that precedes the kissing event by a week (see Fig. 8 below); when the adverbial is not present, the reference point is supplied by the context and the flower-giving event is located within the duration of the consequent state of the kissing event (see Fig. 9 below).⁹⁵ Similarly, the theater-inviting event described

⁹⁴ Chvany (1985, 1990) was the first to discuss Russian aspect in flashback discourses. See also Kamp & Rohrer 1983 for a discussion of flashback discourses in French, and Kamp and Reyle 1993 and Parsons 2002 for English.

⁹⁵ Here I follow Kamp and Reyle 1993 and assume that we can identify the ‘salient’ antecedent in a given sentence based on our intuitions about the temporal ordering of eventualities—e.g. we know that the consequent state of the kissing event serves as the antecedent in (88b) since we understand the flower-giving event to follow the kissing event (when there is no adverb present).

in (260c) is contained within the duration of the consequent state of the flower-giving event described in (260b).

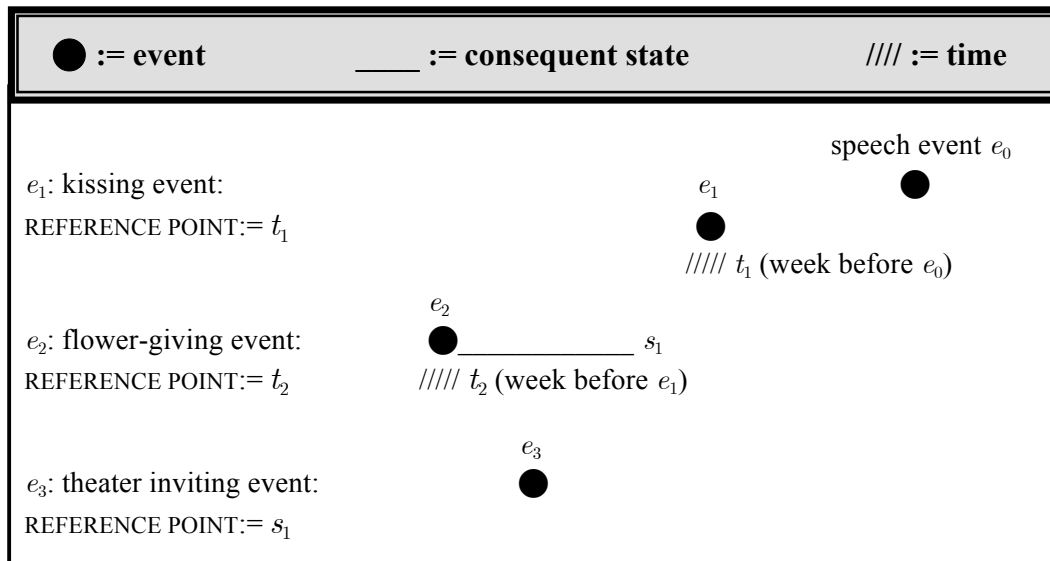


Figure 8: Temporal ordering of events with the adverbial in (260b)

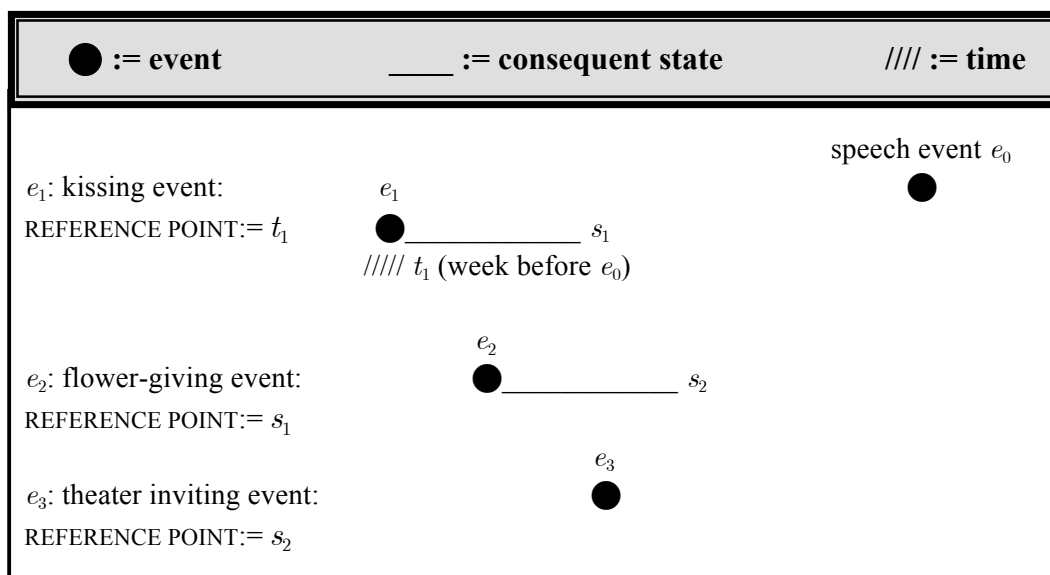


Figure 9: Temporal ordering of events without the adverbial in (260b)

Let us now move on and consider the flashback discourse in (261), which is like (260), except that (261b) and (261c) are imperfective sentences.

- (261) a. *Nedelju nazad Marija po-celova-l-a Dudkina.*
 Week ago Maria PFV-kissed-PST.3S-FEM Dudkin
 ‘A week ago, Maria kissed Dudkin.’
- b. *Za nedelju do toga on dari-l ej cvety*
 From week to that he give.IPF-PST.3S her flowers
 ‘A week before that he had given her flowers’
- c. *i priglaš-a-l ee v teatr.*
 and invite.IPF-PST.3S her to theater
 and had invited her to the theater.’

Although there is no order that the events described in (261b) and (261c) are understood to have occurred in, both are understood to precede the kissing event in (261a)—i.e. (261) is false if, prior to the kissing event, Maria did not successfully receive flowers from Dudkin and did not receive a theater invitation from him. Interestingly, if the temporal location adverbial in (261b) were not present, the understood event ordering in (261a,b) would remain unaltered.

Let us first consider how we could account for the latter observation, namely that without the adverb in (261b), the flower-giving event is understood as preceding the kissing event. Given the rules in (259), the most straightforward idea is to treat the Russian imperfective like the English perfect. That is, we could say that the base VP in (261b) describes a flower-giving event and the Russian imperfective describes the consequent state of this event (viz. the discussion of (215), pp. 132-136). In turn, the described consequent state, like other states, contains the reference point given (259b). Given (259a), this reference time constitutes the duration of the consequent state of the kissing event. From this it

follows that the consequent state of the flower-giving event contains the consequent state of the kissing event.

This idea is captured by the DRS below in (262) and an illustration of the temporal ordering of eventualities is provided in Fig. 10. Note that for the time being, I disregard the modal properties of the imperfective.

(262)	$e_1 \ t_1 \ u_1 \ v_1 \ s_1 \ t_2 \ s_1 \ e_2 \ z_1$
	$t_1 < \tau(e_0)$
	week.ago(t_1)
	$\tau(e_1) \subseteq t_1$
	$u_1 = \text{maria}$
	$v_1 = \text{dudkin}$
	kiss(e_1, u_1, v_1)
	$t_2 < \tau(e_0)$
	$\tau(\text{CONS}(e_1)) \subseteq \tau(s_1)$
	$s_1 = \text{CONS}(e_2)$
	$z_1 = \text{flowers}$
	give(e_2, v_1, z_1, u_1)

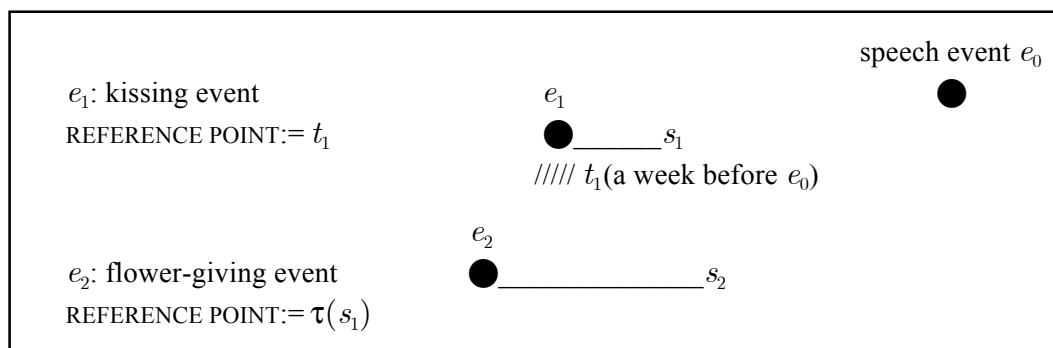


Figure 10: Temporal ordering of eventualities given (262)

In sum, the idea summarized below in (263) is to treat the imperfective aspect as a stativizer: it introduces a consequent state of a VP-event and this state is related to the reference point. Independent evidence for (263) comes from (261b,c). Assuming that the flower-giving event cannot be an antecedent to

subsequent discourse, i.e. it does not count as a salient event since its consequent state is made salient by the imperfective, the rule in (259a) forces us to choose some other salient event in evaluating (261c). The only other option is the kissing event described in (261a). This means that the reference point in (261b) and (261c) is the same and explains the aforementioned observation that there is no order that the events described in (261b) and (261c) are understood to have occurred in—i.e. they are not evaluated relative to each other, but rather to same reference point.

(263) *Hypothesized analysis of the Russian imperfective*

The Russian imperfective combines with a VP and relates the consequent state of an event in the extension of VP to the reference point in accordance with the rule in (259b).

Despite its initial success, (263) cannot be maintained along with a unirelational analysis of aspect. To see why not, reconsider the discourse in (264) and the observation about this discourse in (265).

- (264) a. *Nedelju nazad Marija po-celova-l-a Dudkina.*
 Week ago Maria PFV-kissed-PST.3S-FEM Dudkin
 ‘A week ago, Maria kissed Dudkin.’
- b. *Za nedelju do togo on dari-l ej cvety*
 From week to that he give.IPF-PST.3S her flowers
 ‘A week before that he had given her flowers’
- c. *i priglaš-a-l ee v teatr.*
 and invite.IPF-PST.3S her to theater
 and had invited her to the theater.’

(265) *Observation*

(264b) entails that the described event culminated within the time denoted by the temporal location adverbial—i.e. (264b) is false if Maria did not receive flowers from Dudkin a week before the kissing event.

The observation above is problematic because given (263), the reference point in (264b)—i.e. the time denoted by the adverb—must be contained within the state described by the imperfective, namely the consequent state of the flower-giving event. As illustrated below in Fig. 11 this wrongly predicts that the consequent state of the flower-giving event—rather than the flower-giving event itself—took place a week before the kissing event.

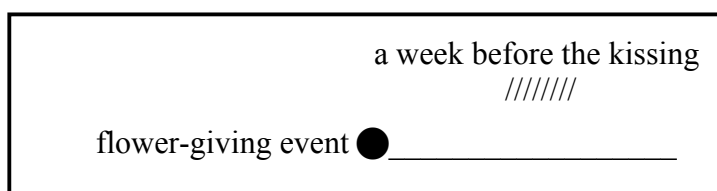


Figure 11: Wrong prediction given (263)

To make the correct prediction, we would need to adopt (266), which would allow us to say that the flower-giving event—rather than the consequent state of this event—is contained within the time denoted by the adverb.

(266) *Hypothesized analysis of the Russian imperfective*

The Russian imperfective combines with a VP and relates an event in the extension of VP to the reference point in accordance with the rule in (159b).

However, if (266) were right and we wanted to maintain a unirelational analysis of aspect, we could no longer subscribe to (263). This is problematic because we need (263), rather than (266) to analyze (264b) without the adverb; (266) would lead to the wrong prediction that the flower-giving event followed the kissing event. Moreover, the fact that the flower-giving event described in (264b) does

not serve as an antecedent for the clause in (264c) would be mysterious given (266).

In sum, the Russian imperfective raises the following puzzle for a unirelational analysis of aspect:

(267) *Unirelational analysis of the Russian imperfective*

To make the correct predictions, we need say that the Russian imperfective combines with a VP and makes reference to an event e in the extension of VP and its consequent state s ; e is related to a reference point r if r is specified by a temporal adverb; s is related to r if r is specified by the discourse context.

Assuming that events and states are related differently to the reference point, viz. (259b), it follows from (267) that the Russian imperfective necessitates two incompatible relations relative to a single parameter. This problematic conclusion is why a unirelational analysis of the Russian imperfective is not possible.

It is, of course, possible to question the initial premise in (267), namely that the Russian imperfective makes reference to a described event and its consequent state. However, one would then have to find a different way to explain the observations about (264). Crucially, if this ‘different way’ assumes a single temporal parameter P , then it is inevitable that it will run into the same problem as (267), namely that the Russian imperfective necessitates two incompatible relations relative to P . This is even true of Webber’s (1988) analysis, which has wiggle room with regard to reference time choice. The problem is that there is no wiggle room when it comes to the observation in (265). That is, Webber must assume that the flower-giving event described in (264b) is contained within the reference point to account for (265). But if that is the case, and we want a uniform

semantics for the imperfective, the flower-giving event must also be contained within the reference point in (268b) below, which is the adverb-less version of (264b). The question, then, is: what choice in reference point would validate such a relation in (268b)?

- (268) a. *Nedelju nazad Marija po-celova-l-a Dudkina.*
 Week ago Maria PFV-kissed-PST.3S-FEM Dudkin
 ‘A week ago, Maria kissed Dudkin.’
- b. *On dari-l ej cvety...*
 He give.IPF-PST.3S her flowers
 ‘He had given her flowers...’

Recall that according to Webber’s analysis, the reference point is one of the following: the preparatory process, the consequent state, or the entire nucleus of a previously mentioned discourse event. The latter two options would clearly make the wrong prediction. With regard to the first option, it would correctly predict that the flower-giving event occurred before the kissing event culminated. However, it would make the incorrect prediction that the flower-giving overlapped (or was part of) the preparatory process of the kissing.

The Russian imperfective is also problematic for Dowty’s (1986) analysis, according to which the *aksionart* value of a given sentence determines whether we infer that the described eventuality extends beyond its reference point. This analysis worked quite well for a sentence in the English progressive because the semantics of this aspect required the sentence to be stative, which in turn lead to the correct predictions given what we know about stative sentences. However, when applied to an imperfective sentence, Dowty’s analysis fails to make the correct predictions because the *aktionsart* value of an imperfective sentence is

variable. It is eventive-like when the reference point is specified by an adverb, but is stative-like when the reference point is specified by the discourse context.

In sum, the Russian imperfective is puzzling on a unirelational analysis because it necessitates two incompatible relations relative to a single parameter. In the next section, I propose a birelational analysis in the spirit of Kamp *et al.*, which combines the hypotheses in (263) and (266). The proposal is summarized in (269):

(269) *Birelational analysis of the Russian imperfective*

The Russian imperfective combined with a VP makes reference to a VP-event *e* and its consequent state *s*; *e* is related to a time that functions like Kamp *et al.*'s location time and *s* is related to a state that often functions like Webber's consequent-state-as-a-reference-point.

An important consequence of the proposal above is that it predicts that there are two situations that make an imperfective sentence true: the described event *overlaps* or *precedes* a previously mentioned discourse event. Using the insight from the literature on discourse coherence (see §3.5), I will propose that the latter situation typically involves an inference in which two events are causally related, invoking the EXPLANATION relation, while the former situation typically does not involve a causal relation, invoking the ELABORATION or the BACKGROUND relation. The OCCASION (or NARRATION) relation is ruled out by the proposed semantics of the imperfective, accounting for the observation that the Russian imperfective is not found in narrative contexts.

3.7 Towards a birelational analysis of Russian IPF and English PROG

In Chapter 2, I proposed a meaning for IPF that does not constrain the temporal location of a described eventuality. The goal of this section is to propose a *birelational meaning*, i.e. meaning in which the temporal location of described eventualities is constrained relative to two inputs. I say “described eventualities” rather than “a described eventuality” because as argued for in the previous section, IPF makes reference to both an event and its consequent state. The idea will be that IPF combines with a VP and relates (i) a VP-event stage to a time input that functions like Kamp *et al.*’s location time and (ii) the consequent state of that VP-event stage to a state input that functions like Webber’s consequent-state-as-a-reference-point.

Looking ahead, the proposed meaning of IPF will look as follows:

$$(270) \quad \lambda P \lambda s \lambda t. [e', e, w \mid \tau(e') \subseteq t, \tau(s) \subseteq \tau(\text{CONS}(e')), \\ \text{STAGE}(e', e, w_0, w)] ; P(e, w)$$

A few comments are in order. To begin with, note that the representation in (270) is the linear version of (271).

$$(271) \quad \lambda P \lambda s \lambda t. \begin{array}{|c|} \hline e', e, w \\ \hline \tau(e') \subseteq t \\ \tau(s) \subseteq \tau(\text{CONS}(e')) \\ \text{STAGE}(e', e, w_0, w) \\ \hline \end{array} ; P(e, w)$$

Such representations are commonly used in the literature on DRT⁹⁶ to show the meanings of sub-sentential expressions. Following Muskens 1995; 1996, I assume that they do not get a direct interpretation, but rather serve as syntactic sugar that abbreviates more elaborate terms of a typed λ -calculus. Muskens' abbreviations are introduced in Chapter 4, where meanings for tense and adverbs are proposed and combined with the meaning of aspect proposed here to give a formally explicit theory of temporal interpretation in narrative discourse.⁹⁷ As such, this section does not address where IPF get its inputs from. Instead, this section shows that if we assume that the *t* argument functions like Kamp *et al.*'s location time and the *s* argument functions like Webber's consequent-state-as-a-reference-point, then we can account for the discourse properties of IPF, while maintaining the modal analysis put forth in Chapter 2. Moreover, I show how, given these assumptions, (270) can be extended to account for the English progressive and the imperfective in other Slavic languages. In what follows, I will refer to the *t* argument as *location time* and the *s* argument as *topic state*.

3.7.1 Birelational meaning of IPF and PROG

The analysis of IPF proposed in this section is largely motivated by the discourse in (264), repeated below in (272). Recall that although there is no order that the events described in (272b) and (272c) are understood to have occurred in, both are

⁹⁶ See e.g. Latecki and Pinkal 1990, Asher 1993, Muskens 1995, 1996, Hardt 1996, Stone and Hardt 1997, Stone 1997, Blackburn and Bos 2006, among many others.

⁹⁷ An important innovation introduced by Muskens is that drefs are treated as constants (rather than variables, as is the case in classic DRT). Since Muskens' system is introduced in Chapter 4, I will disregard this innovation here for the purposes of simplicity.

understood to precede the kissing event in (272a)—i.e. (272) is false if, prior to the kissing event, Maria did not receive flowers from Dudkin and did not receive a theater invitation from him. Moreover, if the temporal location adverbial in (272b) were not present, the understood event ordering in (272a,b) would remain unaltered.

- (272) a. *Nedelju nazad Marija po-celova-l-a Dudkina.*
 Week ago Maria PFV-kissed-PST.3S-FEM Dudkin
 ‘A week ago, Maria kissed Dudkin.’
- b. *Za nedelju do toga on dari-l ej cvety*
 From week to that he give.IPF-PST.3S her flowers
 ‘A week before that he had given her flowers’
- c. *i priglaš-a-l ee v teatr.*
 and invite.IPF-PST.3S her to theater
 and had invited her to the theater.’

Let us first consider how we could account for the inference in (272b), namely that Maria successfully received flowers from Dudkin within the time denoted by the adverb *za nedelju do toga*. The nuts and bolts of my proposal are as follows. An imperfective operator IPF combines with VP and requires that a VP-event stage be contained within the location time. Applying this idea to (272b), we would say that IPF combines with *darit' cvety* (‘give flowers’) and requires that a stage of a flower-giving event be contained within the time interval denoted by the adverbial that serves as the location time, namely the time interval denoted by *za nedelju do toga* (‘a week before that’).

Fig. 12 illustrates the parallel between the Russian perfective and imperfective in (272a) and (272b) respectively: in both cases, an event is contained within the location time. The crucial difference is that IPF makes

reference to a VP-event *stage* rather than a VP-event. However, as we saw in Chapter 2, this difference is neutralized in cases such as (272b), where the imperfective sentence has an achievement VP.

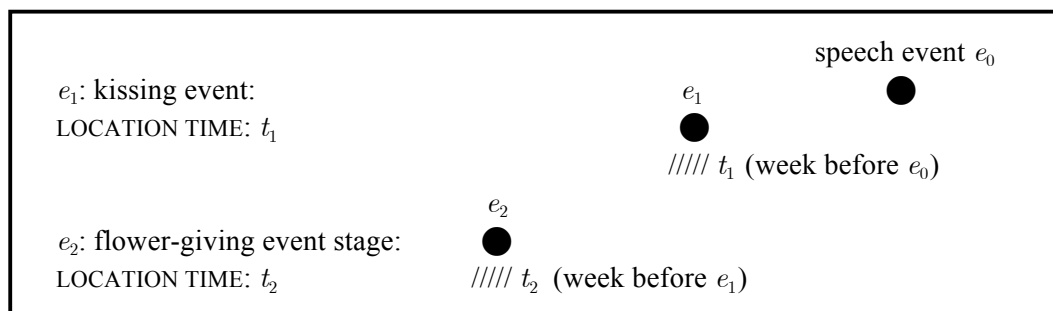


Figure 12: Locating a VP-event stage within the LOCATION TIME

In sentences like (273), however, this difference is not neutralized. According to the proposed analysis, this sentence entails that *some* VP-event stage culminated within the time described by *nedelju nazad* ('a week ago') and crucially not that the VP-event culminated within this time.

- (273) *Nedelju nazad Marija čita-l-a 'Vojnu i mir.'*
 Week ago Maria read.IPF-PST.3S-FEM War and Peace
 'A week ago, Maria read (at least some of) *War and Peace*.'

This prediction is captured by the imperfective operator in (274), where the t argument is intended to serve as the location time. According to (274), a VP-event stage e' holds in the world of evaluation w_0 and is contained within the location time t .

- (274) *Unirelational imperfective operator (1st version)*
 $\lambda P \lambda t.[e', e, w \mid \tau(e') \subseteq t, \text{STAGE}(e', e, w_0, w)] ; P(e, w)$

What the operator above does not capture—and what makes the puzzle described in §3.6 so intriguing—is the observation that without the temporal adverb in (272b), the understood event ordering remains unaltered. That is, the flower-giving event is still understood to precede the kissing event, viz. (275).

- (275) a. *Nedelju nazad Marija po-celova-l-a Dudkina.*
 Week ago Maria PFV-kissed-PST.3S-FEM Dudkin
 ‘A week ago, Maria kissed Dudkin.’
- b. *On dari-l ej cvety...*
 He give.IPF-PST.3S her flowers
 ‘He had given her flowers...’

In order to make the correct prediction about (275), I propose that IPF requires that a consequent state of a VP-event stage contain the topic state, i.e. a salient consequent state previously mentioned in the discourse. The idea is, then, that the discourse properties of the Russian imperfective follow from relating two consequent states: one described by IPF and one supplied by the discourse context. For example, we would say that IPF in (275b) combines with *darit' cvety* (‘give flowers’) and requires that a consequent state of a flower-giving event stage contain a topic state, which refers to the consequent state of a kissing event in (275a).

As illustrated below in Fig. 13, the flower-giving event precedes the kissing event because the consequent state of the kissing event is contained within the consequent state of the flowering giving event stage.

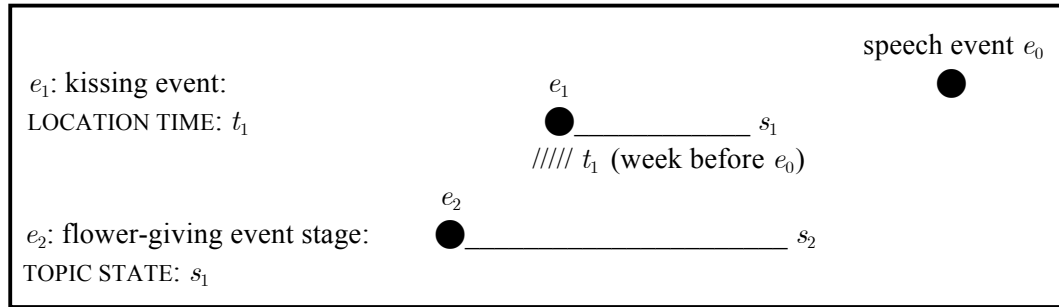


Figure 13: Locating the consequent state of a VP-event stage within the TOPIC STATE

This prediction is captured by the imperfective operator in (276), where the s argument is intended to serve as the topic state. Note that CONS is a function from an event to the consequent state of that event.

(276) *Unirelational imperfective operator (2nd version)*

$$\lambda P \lambda s.[e', e, w \mid \tau(s) \subseteq \tau(\text{CONS}(e')), \text{STAGE}(e', e, w_0, w)] ; P(e, w)$$

When the imperfective operator in (276) is combined with the imperfective operator in (274), we get the *birelational* imperfective operator in (277).

(277) *Birelational imperfective operator*

$$\lambda P \lambda s \lambda t.[e', e, w \mid \tau(e') \subseteq t, \tau(s) \subseteq \tau(\text{CONS}(e')), \\ \text{STAGE}(e', e, w_0, w)] ; P(e, w)$$

The imperfective operator above is birelational because in addition to requiring a VP-event stage to be contained within a location time t , it requires a consequent state of a VP-event stage to contain a topic state s . In this way, IPF involves both temporal information and information about discourse connectivity. The related questions that arise for (277) are: (i) where does IPF get its two inputs from and (ii) how do these two inputs manage to function like Kamp *et al.*'s location time

and Webber's consequent-state-as-a-reference-point? As noted in the introduction to this section, these questions will be addressed in Chapter 4. For the time being, I would like to address several other questions that come up for (277). One question concerns the well-known generalization in (278):

- (278) GENERALIZATION ABOUT SUBSEQUENT DISCOURSE
The imperfective does not trigger narrative progression.

This generalization is motivated for the aforementioned observation that there is no order that the events described in (279b) and (279c) are understood to have occurred in.

- (279) a. *Nedelju nazad Marija po-celova-l-a Dudkina.*
Week ago Maria PFV-kissed-PST.3S-FEM Dudkin
'A week ago, Maria kissed Dudkin.'
- b. *Za nedelju do toga on dari-l ej cvety*
From week to that he give.IPF-PST.3S her flowers
'A week before that he had given her flowers'
- c. *i priglaša-l ee v teatr.*
and invite.IPF-PST.3S her to theater
'and had invited her to the theater.'

Moreover, it is motivated by the discourse in (280), where only the perfective is compatible with the narrative chain of events triggered by *srazu* ('right away').

- (280) a. *Lev ko mne {^{OK}priexa-l/ #priežža-l}*
Lev to me PFV.arrive-PST.3S PFV.arrive-PST.3S
'Lev arrived at my place'
- b. *i srazu poše-l kušat'.*
and right.away PFV.go-PST.3S eat
'and went to go eat right away.'

The IPF in (277) accounts for the generalization in (278) as follows. Even though the operator in (277) makes reference to the consequent state of a VP-event stage—viz. $\tau(\text{CONS}(e'))$ —this state is not introduced into the universe of the DRS. Given the syntax of DRT, this means that the consequent state of a VP-event stage does not serve as an antecedent for subsequent discourse. Therefore, when searching for a topic state in (279c), the consequent state of the flower-giving event cannot be chosen. The only possible antecedent is the consequent state in (279a), which I assume is made salient by the perfective aspect. From this it follows that the flower-giving and the theater-inviting events are located with respect to the same topic state, namely the consequent state of the kissing event. Since both events contain this topic state, there is no order that the events described in (279b) and (279c) are understood to have occurred in. This, in turn, explains, why Kehler’s PARALLEL relation discussed in §3.5, repeated below in (281), is inferred in (279b,c).

(281) $\text{PARALLEL}(S_1, S_2) \rightarrow \text{no constraint}$
 (where S_1 and S_2 share a common topic)

Another question regarding (277) concerns how it accounts for discourses like (282), where the salient interpretation is one in which the event of the speaker coming in overlaps the event of Dudkin reading a *War and Peace*.

- (282) a. *Včera ja vo-še-l v svoju komnatu.*
 Yesterday I PFV-came.in-PST.1s in self room
 ‘Yesterday, I came into my room.’
- b. *Dudkin tam čita-l Vojnu i mir.*
 Dudkin there read.IPF-PST.3s War and Peace
 ‘Dudkin was there reading *War and Peace*.’

As illustrated in Fig. 14 below, this event ordering is compatible with IPF, and in particular, with the relation $\tau(s) \subseteq \tau(\text{CONS}(e'))$. Here we see the consequent state of the coming in event being co-temporal with the consequent state of the reading event stage. From this, it follows that the reading event stage overlaps the coming in event as desired.

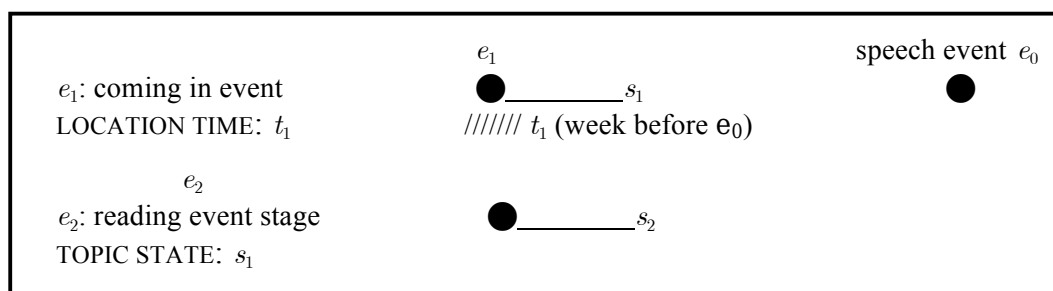


Figure 14: $\tau(\text{TOPIC STATE}) \subseteq \tau(\text{consequent state of VP-event stage})$

Given this analysis of (282), the question that comes up is why this discourse does not have the interpretation parallel to (275), namely that the reading event described in (282b) took place *prior* to the coming in event described in (282a). After all, the proposed meaning of IPF allows this interpretation as well. Conversely, why doesn't (275) have the interpretation parallel to (282), namely that the flower-giving event described in (275b) overlaps the kissing event described in (275a)? The view advocated here is that there are, in fact, two possible event orderings that make (275) and (282) true. However, one of the possibilities is ruled out by world knowledge. With regard to (275), it seems rather unlikely that one kisses someone as they are receiving flowers. Instead, one typically (i) chooses to give flowers as a consequence of being kissed or (ii) kisses someone as a consequence of receiving flowers. The former option

corresponds to Kehler's OCCASION relation discussed in §3.5 and repeated below in (283), while the latter corresponds to Kehler's EXPLANATION relation, repeated below in (284). The idea is that the semantics of IPF rules out the relation in (283), but is compatible with the relation in (284), which is inferred given world knowledge.

(283) $\text{OCCASION}(S_1, S_2) \rightarrow E_1 <_t E_2$
 (where the event described by S_2 explains, or is caused by, the event described by S_1)

(284) $\text{EXPLANATION}(S_1, S_2) \rightarrow E_1 >_t E_2$
 (where the event described by S_1 explains, or is caused by, the event described by S_2)

Let us now move on to (282), where the overlapping reading is derived as follows: the OCCASION relation in (283) is ruled out by the semantics of IPF and world knowledge rules out the EXPLANATION relation in (284), i.e. it would be odd to think that the coming in and the reading are somehow causally linked.⁹⁸ The only remaining relations that are compatible with the meaning of IPF are provided in (285) and (286). The ELABORATION relation in (285) is ruled out because (282a) and (282b) do not describe the same event. The BACKGROUND relation in (286), on the other hand, fits perfectly. This relation was not discussed by Kehler, but it is frequently used in the literature on discourse coherence to account for discourses like *Max opened the door. The room was pitch dark* (Lascarides and Asher 1993, pp. 1). The idea behind this relation is that the

⁹⁸ One could, of course, imagine a situation in which e.g. the speaker is a detective and comes into his own room to figure out whether Dudkin was there earlier. In such a context, however, the event ordering in (282) would be on a par with (275).

eventuality described by S_2 “is the ‘backdrop’ or circumstances under which the event [described by S_1] occurred” (Lascarides and Asher 1993, pp. 4).

(285) $\text{ELABORATION}(S_1, S_2) \rightarrow E_1 =_t E_2$
 (where S_1 and S_2 describe the same event)

(286) $\text{BACKGROUND}(S_1, S_2) \rightarrow E_1 \circ_t E_2$
 (where S_2 describes the backdrop for the event described by S_1)

Let us now consider an imperfective sentence where the ELABORATION relation is chosen. An example of this sort is provided in (287), which was discussed in Chapter 2.

- (287) a. *V ètoj porternoj ja na-pisal pervoe ljubovnoe pis'mo*
 In this tavern I PFV-write-PST.1S first love letter
k Vere.
 to Vera
 ‘In this tavern, I wrote my first love letter to Vera.’
- b. *Pisa-l karandaš-om.*
 Write.IPF-PST.1S pencil-INST
 ‘I wrote it in pencil’ (Forsyth 1970, pp. 86).

The ELABORATION relation is inferred here because (287a) and (287b) describe the same event. Note that this relation is compatible with the meaning of IPF because IPF allows the consequent state of the letter-writing event described in (287a) to be co-temporal with the consequent state of the letter-writing event described in (287b) and, therefore, the two events may be identical. A particularly interesting consequence of analyzing (287) in this way is that we have an explanation for why there is a strong intuition that (287b) is an instance of *konstatacija fakta*: if (287a) entails that the described event e culminated, then

identifying e with the event e' described in (287b) leads to the inference that e' culminated as well. A summary of how this inference comes about is summarized in (288).

(288) PREMISE 1: The semantics of the perfective aspect in (287a) leads to the entailment that the described event e culminated.

PREMISE 2: The semantics of the imperfective aspect in (277b) rules out the OCCASION relation, i.e. it leads to the entailment that the described event e' does not follow e .

PREMISE 3: If e' does not follow e , then e' must precede, overlap or be identified with e .

PREMISE 4: The ELABORATION relation holds in (287), which means that $e' = e$.

∴ e' culminated (by PREMISE 1 and PREMISE 4)

In sum, the birelational meaning of IPF in (277) accounts for the generalization in (289), which has received very little attention in the literature in comparison to the generalization in (278), but which is nevertheless a core property of the imperfective aspect that any proper analysis must account for.

(289) GENERALIZATION ABOUT PRECEDING DISCOURSE

The imperfective leads to an entailment that the described event *does not follow* an event that is made salient by an expression that triggers narrative progression (e.g. the perfective).

It follows from (289) that there are two situations that make an imperfective sentence true. I argued that world knowledge determines whether a VP-event stage *overlaps* or *precedes* a previously mentioned discourse event. The latter typically involves an inference in which two events are causally related, invoking the EXPLANATION relation, while the former typically does not involve a causal

relation, invoking the ELABORATION or the BACKGROUND relation.

I end this section by raising the following question that comes up for the birelational analysis proposed here: Are all aspectual operators birelational or do they have different semantic types? Rather than addressing this question explicitly, I would like to show what a birelational analysis of English progressive is like. Subsequently, in the next section, I discuss how a birelational analysis applies to the imperfective in other Slavic languages.

Consider the proposed meaning of the English progressive operator in (290):

$$(290) \text{ Birelational progressive operator} \\ \lambda P \lambda s \lambda t. [e', e, w \mid \tau(e') \subseteq t, \tau(s) = \tau(\text{CONS}(e')), \\ \text{STAGE}^*(e', e, w_0, w)] ; P(e, w)$$

There are two crucial differences between the progressive operator in (290) and the imperfective operator in (277). The first has to do with the STAGE* relation in (290) versus the STAGE relation in (277). This difference was discussed in Chapter 2 and I will not say anything more here. The other difference concerns how the consequent state of the VP-event stage is related to the state argument. Whereas the imperfective encodes a subset relation—allowing for two possible temporal orderings of events, viz. Fig. 13 and Fig. 14—the progressive encodes an identity relation, thereby allowing for only one possible temporal ordering. For example consider the discourse in (291). Applied to the VP in (291b), the birelational progressive operator would require that the consequent state of letter writing event stage be co-temporal with the state argument. Assuming this

argument serves as the consequent state the coming home event in (291a), it is correctly predicted that the letter writing and the coming home events overlap; see Fig. 15.

- (291) a. Heloise came home at 2 in the morning.
 b. Abelard was writing a letter to her uncle, the Canon.

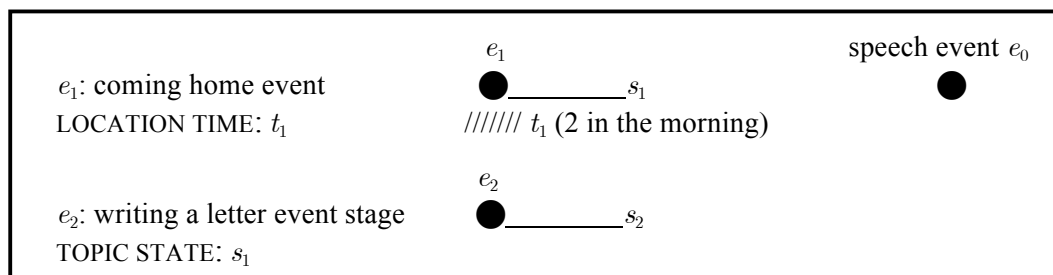


Figure 15: $\tau(\text{TOPIC STATE}) = \tau(\text{consequent state of VP-event stage})$

3.7.2 Extending the typology

In Chapter 2 I discussed the imperfective aspect in various Slavic languages and proposed an initial typology in which Eastern Slavic IPF encodes STAGE, while the Western Slavic IPF and English PROG encodes STAGE*.

STAGE	STAGE*
(i) Eastern Slavic IPF	(i) English PROG (ii) Western Slavic IPF

Table 3: Initial Typology (to be amended)

In this section I propose to extend the typology above by adding an additional parameter, namely the relation between a topic state s and the consequent state of a VP-event stage e . As illustrated below in Table 4, I hypothesize that IPF in all

Slavic languages encode the relation $\tau(s) \subseteq \tau(\text{CONS}(e'))$, differing solely in whether they encode *STAGE* or *STAGE**. On the other hand, as was shown in the previous section, *PROG* differs from *IPF* in that it encodes the relation $\tau(s) = \tau(\text{CONS}(e'))$. Moreover, like Western Slavic *IPF* and unlike Eastern Slavic *IPF*, *PROG* encodes *STAGE**. I leave it open for future research whether there is an aspectual operator that encodes $\tau(s) = \tau(\text{CONS}(e'))$ and *STAGE*. Such an operator would describe a VP-event stage that overlaps a previously mentioned discourse event and need not lead to coercion (or type shifting) when combining with an achievement VP.

	STAGE	STAGE*
$\tau(s) \subseteq \tau(\text{CONS}(e'))$	Eastern Slavic <i>IPF</i>	Western Slavic <i>IPF</i>
$\tau(s) = \tau(\text{CONS}(e'))$???	English <i>PROG</i>

Table 4: Typology extended (final version)

The first piece of evidence that Slavic languages other than Russian encode the relation $\tau(s) \subseteq \tau(\text{CONS}(e'))$ comes from the Ukrainian, Bulgarian, Polish and Czech translations of the Russian discourse in (292), where $\tau(s) \subset \tau(\text{CONS}(e'))$ holds, i.e. the consequent state of a reading event stage contains the topic state, namely the consequent state of Dudkin entering the castle.

(292) RUSSIAN

- a. *Dudkin za-še-l v zamok.*
Dudkin PFV-go-PST.3S into castle
'Dudkin entered the castle.'
- b. *On čita-l brošjuru ob ètom zdanii.*
He read.IPF-PST.3S brochure about this building
'He had read (at least some of) a brochure about this building.'
(Altshuler to appear, pp. 7)

(293) UKRANIAN

- a. *Dudkin zajšov do zamku.*
Dudkin PFV.go.PST.3S into castle
'Dudkin entered the castle.'
- b. *Vin čytav brošuru pro cju budivlju.*
He read.IPF-PST.3S brochure about this building
'He had read (at least some of) a brochure about this building.'

(294) BULGARIAN

- a. *Dudkin vlezè v zamuk-a.*
Dudkin PFV.go.PST.3S into castle-the
'Dudkin entered the castle.'
- b. *Toj bese cel brošura za тази sgrada.*
He was read.IPF brochure about this building
'He had read (at least some of) a brochure about this building.'

(295) POLISH

- a. *Dudkin wszedł do zamku.*
Dudkin PFV.go.PST.3S into castle
'Dudkin entered the castle.'
- b. *Czytał broszurę o tym budynku.*
Read.IPF-PST.3S brochure about this building
'He had read (at least some of) a brochure about this building.'

(296) CZECH

- a. *Dudkin vešel do zámku.*
Dudkin PFV.go.PST.3S into castle
'Dudkin entered the castle.'
- b. *Četl brožuru o této budově.*
Read.IPF-PST.3S brochure about this building
'He had read (at least some of) a brochure about this building.'

Other examples of where we see the relation $\tau(s) \subset \tau(\text{CONS}(e'))$ comes

from Ukrainian and Bulgarian translations of the Russian example in (297). In

these examples, the consequent states of the flower-giving and theater-inviting event stages are contained within the topic state, namely the consequent state of Maria kissing Dudkin.⁹⁹

(297) RUSSIAN

- a. *Nedelju nazad Marija po-celova-l-a Dudkina.*
 Week ago Maria PFV-kissed-PST.3S-FEM Dudkin
 ‘A week ago, Maria kissed Dudkin.’
- b. *On dari-l ej cvety*
 He give.IPF-PST.3S her flowers
 ‘He had given her flowers’
- c. *i priglaš-a-l ee v teatr.*
 and invite.IPF-PST.3S her to theater
 and had invited her to the theater.’

(298) UKRANIAN

- a. *Tyžden' tomu Marija pociluvala Dudkina.*
 Week ago Maria PFV.kissed.PST.3S.FEM Dudkin
 ‘A week ago, Maria kissed Dudkin.’
- b. *Vin daruvav jij kvity.*
 He give.IPF.PST.3S her flowers
 ‘He had given her flowers’
- c. *ta zaprošuvav jiji do teatru.*
 and invite.IPF.PST.3S her to theater
 and had invited her to the theater.’

(299) BULGARIAN

- a. *Predi edna sedmica, Marija seluna Dudkin.*
 Before one week Maria PFV-kissed-PST.3S.FEM Dudkin
 ‘A week ago, Maria kissed Dudkin.’
- b. *toj i bese podarjaval cvetja?*
 he her was give.IPF.3s flowers
 ‘A week before that he had given her flowers’
- c. *i ja beshe kanil na teatur.*
 and her was invite.IPF.3S to theater
 and had invited her to the theater.’

⁹⁹ Note that the imperfective sentences in these discourses describe atomic events, which in turn renders these discourses infelicitous in Western Slavic languages (see Chapter 2 for more discussion). As a result, I limit the data to Eastern Slavic.

The second and final piece of evidence that Slavic languages other than Russian encode the relation $\tau(s) \subseteq \tau(\text{CONS}(e'))$ comes from the Ukrainian, Bulgarian, Polish and Czech translations of the Russian discourse in (300), where $\tau(s) = \tau(\text{CONS}(e'))$ holds, i.e. the consequent state of a reading event stage is identified with the topic state, namely the consequent state of the entering event.

(300) RUSSIAN

- a. *Včera ja vo-še-l v svoju komnatu.*
 Yesterday I PFV-came.in-PST.1S in self room
 ‘Yesterday, I came into my room.’
- b. *Dudkin tam čita-l Vojnu i mir.*
 Dudkin there read.IPF.PST.3S War and Peace
 ‘Dudkin was there reading *War and Peace*.’

(301) UKRANIAN

- a. *Včora ja zajšov do svojeji kimnaty.*
 Yesterday I PFV.came.in-PST.1S in self room
 ‘Yesterday, I came into my room.’
- b. *Dudkin tam čytav Vijnu i myr.*
 Dudkin there read.IPF.PST.3S War and Peace
 ‘Dudkin was there reading *War and Peace*.’

(302) BULGARIAN

- a. *Vcera vljazox v staja-ta si.*
 Yesterday PFV.came.in.PST.1S in room-the my
 ‘Yesterday, I came into my room.’
- b. *Tam Dudkin cetese ‘Vojna i Mir’.*
 There Dudkin read.IPF.PST.3S War and Peace
 ‘Dudkin was there reading *War and Peace*.’

(303) POLISH

- a. *Wczoraj, wchodzilem do mojego pokoju.*
 Yesterday PFV-came.in-PST.1S in self room
 ‘Yesterday, I came into my room.’
- b. *Dudkin byl tam i czytał ‘Wojne i Pokoj’.*
 Dudkin be.IPF.PST.3s there and read.IPF.PST.3S War and
 Peace
 ‘Dudkin was there reading *War and Peace*.’

(304) CZECH

- a. *Včera jsem vešel do místnosti.*
 Yesterday I PFV.came.in-PST.1S in room
 ‘Yesterday, I came into my room.’
- b. *Dudkin byl tam a četl Vojnu a mír.*
 Dudkin be.IPF.PST.3S there and read.IPF.PST.3S War and
 Peace
 ‘Dudkin was there reading *War and Peace*.’

3.8 Summary and looking ahead

This chapter extended the modal analysis of the imperfective and the progressive proposed in Chapter 2 to account for the discourse properties of these two aspects. My analysis synthesized Landman’s insight that the progressive relates two events via a *stage-of* relation with Kamp *et al*’s insight that progressive sentences describe a state and thereby do not trigger narrative progression. In particular, I proposed that IPF and PROG combine with a VP and describe a consequent state of a VP-event stage. In turn, I argued that aspectual operators denote *birelational* functions: they require two inputs—a *time* and a *state*. The former input is related to the described VP-event stage and the latter input is related to the consequent state of the VP-event stage. The typology that resulted from this analysis sets the stage for future cross-linguistic work that attempts to provide meanings of aspectual markers using the ingredients provided here.

In the next chapter, I propose that the time input required by an aspectual operator is supplied by the tense, though its value is constrained (sometimes completely determined) by temporal location adverbs. Moreover, I propose that the state input required by an aspectual operator is supplied by temporal location

adverbs. An important consequence of the analysis is that the supplied state determines—to a large extent—whether narrative progression is possible.

Chapter 4

Adverbial Transparency Theory

4.1 Introduction

In Chapter 3, I proposed an analysis of the aspectual operators IPF and PROG in which they are birelational: they require (i) a time input, which is contained a VP-event stage and (ii) a state input, which holds throughout the consequent state of that VP-event stage. I showed that if assume that the time input functions like Kamp *et al.*'s location time and the state input functions like Webber's consequent-state-as-a-reference-point, then we can account for the discourse properties of the Russian imperfective and the English progressive, while maintaining the modal analysis put forth in Chapter 2. The goal of this chapter is to answer the following two related questions: (i) where do aspectual phrases get their two inputs from and (ii) how do these two inputs manage to function like Kamp *et al.*'s location time and Webber's consequent-state-as-a-reference-point?

In what follows, I propose that the time input is supplied by the tense, though its value is constrained (sometimes completely determined) by temporal location adverbs. This part of the analysis is quite standard. The novel contribution concerns the state input. I propose that temporal location adverbs supply the state input and thereby determine—to a large extent—whether narrative progression is possible. In particular, I propose that some temporal location adverbs retrieve a state dref anaphorically from the discourse context,

while other temporal location adverbs introduce a new state dref into the discourse context (i.e. the universe of a DRS) and leave it unspecified. The idea is that when a state dref is retrieved anaphorically from the discourse context, narrative progression follows from independent rules of anaphora resolution. On the other hand, when a new state dref is introduced into the discourse context and left unspecified, the temporal location of a described eventuality is fixed solely by the time input, which may, but need not, be compatible with narrative progression.

The proposed theory—which I call the Adverbial Transparency Theory—is not simply a proposal to fill in the gaps left by the birelational analysis of aspect proposed in Chapter 3. It is independently motivated. Consider the discourse in (305), where we see a typical case of narrative progression—i.e. the times of the events described in (305b) follow the cleaning event described in (305a). This event ordering is not due to world knowledge since people typically begin work after being hired. To describe such a scenario, the past perfect would be used, viz. (306b).

- (305) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. My wife hired her and gave her a check for one month in advance.
- (306) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. My wife had hired her and had given her a check for one month in advance.

Interestingly, adding the adverb *that same day* to (305b) does not alter the narrative progression—the adverb is, as it were, ‘transparent to the progress’. As

illustrated below, in (307), specifying that the hiring place on that same day as house cleaning does not block the additional inference that the hiring took place after the house cleaning.¹⁰⁰

- (307) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. **That same day**, my wife hired her and had given her a check for one month in advance.

The transparency of *that same day* is also evident in non-narrative contexts. For example, consider the discourse in (308), where we infer a PARALLEL discourse relation (cf. the discussion in Chapter 3). That is, the event of making Puerto Rican food that is described in (308a) serves as the topic for both the sentence in (308b) and the sentence (308c). As a result, there is no order that events described in (308b) and (308c) are understood to have occurred in, though both are understood to follow the event described in (308a). Crucially, as illustrated in (309), specifying that the event described in (308c) took place on that same day as the event described in (308b) does not provide any new information that is not already inferred in (308).

- (308) a. My mother made a lot of good Puerto Rican food last week.
 b. Two days ago, Jessica ate chicken and plantains.
 c. Sam ate rice and beans.
- (309) a. My mother made a lot of good Puerto Rican food last week.
 b. Two days ago, Jessica ate chicken and plantains.
 c. **That same day**, Sam ate rice and beans.

¹⁰⁰ The discourses below illustrate that the same can be said about related adverbs like *that same week* and *that same month*.

- (i) a. Stella cleaned our house the week before your birthday. She made everything sparkle.
 b. **That same week**, my wife hired her and gave her a check for one month in advance.
- (ii) a. Stella cleaned our house the month before your birthday. She made everything sparkle.
 b. **That same month**, my wife hired her and gave her a check for one month in advance.

In sum, (307) and (309) show that *that same day* is ‘transparent’ to rules that account for temporal ordering of eventualities described in a discourse. This is especially puzzling in narrative discourses such as (307), as well as (310) and (311) below, where the events described in the b-sentences are understood to follow the events described in the a-sentences.

- (310) a. On May 12, 1984, Barrie tried everything on our menu.
 b. **That same day**, she offered to write a review of the crème brûlée for the local paper.
- (311) a. On May 12, 1984, Ellie signed up for the maximum number of allowed courses and was assigned to a dormitory.
 b. **That same day**, she found a job working afternoons as a cashier at the Roost, a popular sandwich and malt shop across from the campus.

Recall that according to the unirelational approach discussed extensively in Chapter 3, a described eventuality is related to a reference point, whose value is fixed by a temporal location adverb (if there is one). For example, according to the unirelational approach, the events described in (307b), (310b) and (311b) are contained within the time denoted by *that same day*, which serves as the reference point. A naïve semantics for this adverbial would say that it denotes a 24-hour interval of time previously mentioned in the discourse. In the discourses at hand, it would denote May 12, 1984. While this correctly predicts that the events described in (307b), (310b) and (311b) took place on this day, nothing is said about how these events are ordered with respect to the events described in (307a), (310a) and (311a) respectively, which also take place on May 12, 1984.

The Adverbial Transparency Theory proposes to account for (307), (310) and (311) as follows: *that same day*—like all temporal location adverbials—has both an explicitly temporal component and a discourse component that determines whether narrative progression is possible. The temporal component of *that same day* says that the time input required by an aspectual phrase is a 24-hour interval of time previously mentioned in this discourse. The discourse component of *that same day*, on the other hand, retrieves a state *dref* anaphorically from the discourse context. As illustrated below in Fig. 16, the correct predictions are made about (307) given that (i) the time is resolved to May 12, 1984, (ii) the state is resolved to the consequent state of the cleaning event described in (307a) and (iii) the offering event described in (307b) is contained within both the resolved time and state.¹⁰¹

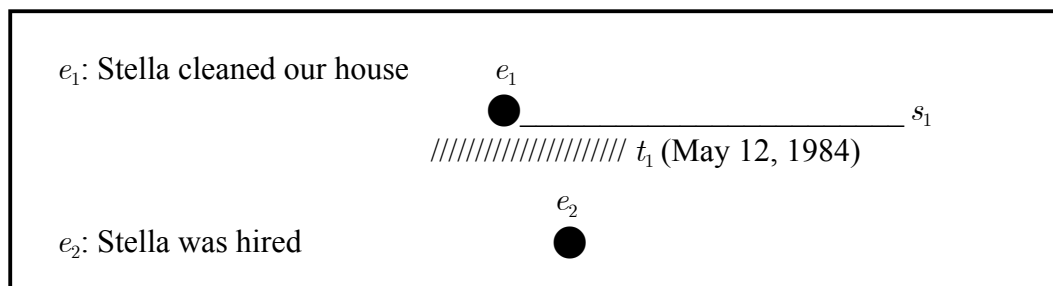


Figure 16: Temporal orderings of events in (307)

Using the discourse in (307) as the base case, the next section outlines some key assumptions about the formal language used to make the Adverbial Transparency Theory formally explicit. Subsequently, in §4.3, I extend the

¹⁰¹ As for (309), the idea would be as follows: (i) the temporal component of *that same day* picks out the time denoted by *two days ago* in (309b), (ii) the state component of *that same day* picks out the consequent state of the food-making event described in (309a) and (iii) the rice-and-beans-eating event described in (309c) is contained within both the resolved time and state.

analysis of (307) to account for the discourses below, which were discussed in great detail in Chapter 3. These discourses provide a challenge to the proposed theory because, while (312b,c) and (313b,c) do not have adverbs, there is narrative progression.

- (312) a. 12 marta 1984 goda *Marija po-celova-l-a* *Dudkina.*
 12 May 1984 year Maria PFV-kissed-PST.3S-FEM Dudkin
 ‘On May 12, 1984 Maria kissed Dudkin.’
- b. *On dari-l* *ej cvety*
 He give.IPF-PST.3S her flowers
 ‘He had given her flowers’
- c. *i priglaš-a-l* *ee v teatr.*
 and invite.IPF-PST.3S her to theater
 and had invited her to the theater.’
- (313) a. A man entered the White hart on May 12, 1984.
 b. He was ill.
 c. Bill served him a beer (after Kamp and Reyle 1993, pp. 521).

Following work by Carlota Smith (Smith 1977; 1978), I will propose that semantically, there is always an adverb present. For example, episodic sentences in the past tense that do not have an overt adverb combine with a silent ‘narrative’ adverbial operator (cf. Bäuerle’s 1979 silent ‘once’). The crucial property of this operator is to supply a state input required by an aspectual phrase and link this state to prior discourse. In this way, it has a similar semantics to *that same day*. Its crucial difference is that it does not constrain the value of the time input required by an aspectual phrase.

In §4.4, I show how the Adverbial Transparency Theory could be extended to *yesterday/tomorrow* and *the previous day/the next day*. These adverbials are chosen because they allow me to lay the groundwork for how

deictic and anaphoric adverbials are accounted for by the theory. *The previous day* and *the next day* are especially interesting because the former describes a time that is incompatible with narrative progression, while the latter describes a time that triggers narrative progression. This raises the non-trivial question of how to capture the differences between these adverbs and *that same day*, which is neither incompatible to narrative progression nor is it a narrative progression trigger. I propose that unlike *that same day*, *the previous day* and *the next day* introduce an unspecified state into the discourse context (i.e. the universe of the DRS) that is not linked to prior discourse. Moreover, I propose that the anaphoricity, as well as the (in)compatibility of these adverbs with narrative progression contexts, is solely determined by the time input that it supplies to an aspectual phrase.

In §4.5, I discuss how the proposed analysis could be extended to account for *today* and *on Sunday*, whose semantics is complicated by the fact they are compatible with the past, present and future tenses. The semantics of *on Sunday* is especially complicated because on its anaphoric usage, this adverb is transparent to narrative progression. Building on Kamp and Reyle 1993, I show how the Adverbial Transparency Theory can account for this usage of *on Sunday* and discuss the difficulties of providing one, uniform meaning that also accounts for its deictic usage.

In §4.6, I show how the Adverbial Transparency Theory also allows us to account for a particular usage of *now*, often found in free indirect discourse, in which it has an affinity for stative sentences. I build on Kamp and Reyle's (1993) proposal that *now* is a perspective setting anaphor whose value is constrained by

tense and propose a meaning that is (i) compatible with both the past and present tenses and (ii) has the same semantic type and uses the same ingredients as other temporal location adverbs. In particular, *now* has both an explicitly temporal component and perspective shifting discourse component. These components conspire to impose the following two requirements: (i) search for a topical event that serves as the ‘current perspective’ and (ii) describe what took place throughout this topical event. These two requirements capture *now*’s anaphoric nature and—given the proposed aspectual constraints on narrative progression—they lead to a contradiction with eventive, but not stative VPs.

Finally, in §4.7, I discuss another usage of *now*, often found in ‘broadcaster talk’ and in stage directions. The interesting properties of this *now* are (i) that it moves the story forward irrespective of whether the sentence that it occurs in is eventive or stative, viz. *the next day* and (ii) it leads to a change-of-state implication, i.e. that the described eventuality did not take place prior to some salient event previously mentioned in the discourse. I suggest that these properties of *now* are accounted for if we assume that in addition to retrieving a state dref anaphorically from the discourse context, it imposes the following requirement: the eventuality described by an aspectual phrase is contained within the retrieved state. I end this chapter by using data from Mel’chuk 1985 to argue that Russian morphologically distinguishes the two usages of *now*.

4.2 The framework

In this section, I briefly outline Muskens' (1995) Compositional DRT (henceforth CDRT) that underlies the analysis proposed in this chapter. This framework is chosen because it allows us to provide dynamic meanings of temporal expressions as terms in a typed λ -calculus. And while other compositional presentations of DRT exist¹⁰², I find Muskens' presentation especially straightforward.

Muskens starts from the assumption that DRSs constitute a binary relation between input and output assignments (embeddings in DRT terms). This relation is responsible for the dynamic nature of DRT. Assignments are functions from the set of drefs to the domain. A DRS K is a pair of a set of drefs δ, \dots, δ' (i.e. the universe of K) and a set of conditions C, \dots, C' . As illustrated below, in (314), the meaning of a DRS K is the set of pairs of assignments $\langle f, g \rangle$ such that g differs from f at most with respect to the values that they assign to the drefs in the universe of K , written $f[\delta, \dots, \delta']g$, and g makes the conditions of K true (cf. Groenendijk and Stokhof 1991).

$$(314) \quad \begin{array}{l} \text{a.} \quad \llbracket [\delta, \dots, \delta' \mid C, \dots, C'] \rrbracket^{20} = \\ \text{b.} \quad \{ \langle f, g \rangle \mid f[\delta, \dots, \delta']g \ \& \ g \in \llbracket C \rrbracket^{20} \cap \dots \cap \llbracket C' \rrbracket^{20} \} \end{array}$$

CDRT mimics the dynamic nature of DRT in type logic by adopting assignments in the object language. In particular, the set of primitive types—i.e.

¹⁰² Cf. λ -DRT of Pinkal and Bos (Latecki and Pinkal 1990, Bos et al. 1994, Blackburn and Bos 2006), Groenendijk and Stokhof's DPL (Groenendijk and Stokhof 1990; 1991), Asher's (1993) bottom-up DRT and the compositional version of DRT proposed by van Eijck and Kamp (1997). These other proposals could be adapted along similar lines to what is presented here.

one that includes individuals (type \mathbf{e}), intervals of time (type \mathbf{i}), eventualities (type $\mathbf{\epsilon}$), possible worlds (type $\mathbf{\omega}$) and truth-values (type \mathbf{t})—is enriched with type \mathbf{s} for *environments*.¹⁰³ Environments “...are very much like the program states that theoretical computer scientists talk about, which are lists of the current values of all variables in a given program at some stage of its execution” (Muskens 1996, pp. 11). In this chapter, I assume the set of primitive types below, which is similar to what is provided in Muskens 1995, with the exception that I distinguish between events (type $\mathbf{\epsilon}$) and states (type $\mathbf{\sigma}$).

DEFINITION 1 (Types)

- $e, i, \epsilon, \sigma, \omega, t, s \in \text{Typ}$
- $(\mu\alpha) \in \text{Typ}$, if $\mu, \alpha \in \text{Typ}$

Once environments are made part of the object language, the DRS in (315a) can be viewed as an abbreviation for the type $s(\text{st})$ expression below, in (315b), where i and j are variables over environments. Note that drefs are now functions that take an environment as an argument and return an object in that environment. Assuming that this object can be of any type, drefs are type $s\alpha$, where $\alpha \in \text{Typ}$. Moreover, conditions are treated as predicates of environments, i.e. expressions of type st .

$$(315) \quad \begin{array}{ll} \text{a.} & [\delta_{s\alpha}, \dots, \delta'_{s\alpha} \mid C_{st}, \dots, C'_{st}] := \\ \text{b.} & \lambda i \lambda j. i[\delta, \dots, \delta'] j \wedge C_j \wedge \dots \wedge C'_j \end{array}$$

¹⁰³ The term *environment* comes from Stone 1997 and Stone and Hardt 1999; Muskens uses the loaded notion *state* instead.

Unlike (314a), (315a) no longer gets a direct interpretation. Rather, the form that it abbreviates, namely (315b), gets assigned an interpretation. The meaning of a sentence ϕ is a relation that holds between environments i and j just in case j is an environment that might result from the interpretation of ϕ in environment i .

Below, I provide examples of expressions of various types that are found in the analysis that follows.

DEFINITION 2

For any type $\alpha \in \text{Typ}$, there is a denumerable set of α -constants Con_α and a denumerably infinite set of α -variables Var_α , including the following sets:

- $\text{Con}_e = \{\text{sue, white hart, ...}\}$
- $\text{Con}_i = \{\text{may.12.1984, ...}\}$
- $\text{Con}_{et} = \{\text{man, ..., article, ...}\}$
- $\text{Con}_{it} = \{\text{day, ..., week, ...}\}$
- $\text{Con}_{(e(\varepsilon(\omega t)))} = \{\text{enter, ..., leave.home, ...}\}$
- $\text{Con}_{(e(\sigma(\omega t)))} = \{\text{be.ill, ..., be.ready, ...}\}$
- $\text{Con}_{(e(e(\varepsilon(\omega t))))} = \{\text{hire, ...read, ...}\}$
- $\text{Con}_{(e(e(\sigma(\omega t))))} = \{\text{love, ...have, ...}\}$
- $\text{Con}_{se} = \{u_1, u_2, \dots, u'_1, u'_2, \dots\}$
- $\text{Con}_{si} = \{t_1, t_2, \dots, t'_1, t'_2, \dots\}$
- $\text{Con}_{s\varepsilon} = \{e_1, e_2, \dots, e'_1, e'_2, \dots\}$
- $\text{Con}_{s\sigma} = \{s_1, s_2, \dots, s'_1, s'_2, \dots\}$
- $\text{Con}_{s\omega} = \{w_1, w_2, \dots, w'_1, w'_2, \dots\}$
- $\text{Var}_{(si(s(st)))} = \{Q, Q', \dots\}$
- $\text{Var}_{(s\sigma(s(st)))} = \{R, R', \dots\}$
- $\text{Var}_{(s\varepsilon(s\omega(s(st))))} = \{S, S', \dots\}$
- $\text{Var}_{(s(e(s\omega(s(st))))} = \{P, P', \dots\}$
- $\text{Var}_s = \{i, i', \dots, j, j', \dots, k, k'\}$
- $\text{Var}_{si} = \{t, t', \dots\}$
- $\text{Var}_{s\varepsilon} = \{e, e', \dots\}$
- $\text{Var}_{s\sigma} = \{s, s', \dots\}$
- $\text{Var}_{s\omega} = \{w, w', \dots\}$

Let us now move on to consider abbreviations that are relevant to the analysis proposed in this chapter. I begin with the abbreviation below, in Def. 3, which expresses that i differs from j at most with respect to the values that they assign to δ . Note that ST is a predicate that is true of drefs, i.e. it stands for the predicate “is a dref of type ($s\alpha$)”. This predicate is used by Muskens to ensure

that drefs and environments behave as variables and assignments respectively (see AX1-AX3 in Muskens 1995, pp. 6-7).

DEFINITION 3

If δ is term of type $s\alpha$, where $\alpha \in \text{Typ}$, then $i[\delta]_j$ abbreviates the conjunction of:

- (i) $\forall \delta'_{s\alpha} [[\text{ST}_{(s\alpha)t}(\delta') \wedge \delta' \neq \delta] \rightarrow \delta'(j) = \delta'(i)]$ and
- (ii) the conjunction of $\forall \delta'_{s\beta} [\text{ST}_{(s\beta)t}(\delta') \rightarrow \delta'(j) = \delta'(i)]$ for all $\beta \in \text{Typ} - \{\alpha\}$

Def. 4 below provides Muskens' abbreviations for DRS conditions. Note that the abbreviations for the complex conditions in (vi) and (vii) will not play a role in this section. They do, however, come into play when the meaning for *on Sunday* is proposed in §4.5.

DEFINITION 4 (DRT abbreviations)

- i. $\mathfrak{R}\{\delta_{sa}, \dots, \delta'_{sa}\} := \lambda i. \mathfrak{R}(\delta i, \dots, \delta' i)$ e.g. $\text{man}\{u_1\} := \lambda i. \text{man}(u_1 i)$
 $\delta_{sa} = \delta'_{sa} := \lambda i. \delta i = \delta' i$ e.g. $t_1 = t_2 := \lambda i. t_1 i = t_2 i$
 $\alpha_a^\circ := \lambda i. \alpha$ e.g. $\text{sue}^\circ := \lambda i. \text{sue}$
- ii. $C_{st}, C'_{st} := \lambda i. C i \wedge C' i$ (conjoined condition)
- iii. $K_{sst} ; K'_{sst} := \lambda i \lambda j. \exists k [K i k \wedge K' j k]$ (sequencing)
- iv. $[| C_{st}, \dots, C'_{st}] := \lambda i \lambda j. i = j \wedge C j \wedge \dots \wedge C' j$ (text box)
- v. $[\delta_{sa}, \dots, \delta'_{sa} | C_{st}, \dots, C'_{st}] :=$ (update with test)
 $\lambda i \lambda j. i[\delta, \dots, \delta']_j \wedge C j \wedge \dots \wedge C' j$
- vi. $\neg K_{sst} := \lambda i. \neg \exists j [K i j]$ (DRT negation)
- vii. $K_{sst} \Rightarrow K'_{sst} := \lambda i. \forall j [K i j \rightarrow \exists k [K' j k]]$ (DRT implication)

Let us now move on and consider in more detail the proposed temporal ontology. As mentioned above, I assume an ontology consisting of time intervals, events and states of type \mathbf{i} , $\mathbf{\varepsilon}$ and $\mathbf{\sigma}$ respectively. Accordingly, the basic domains D_i , D_ε and D_σ are sets of time intervals, events and states respectively. Following Muskens 1995, I assume that D_i is ordered by the *complete precedence* relation

$<$, which is a constant of type $(\mathbf{i(it)})$. This relation is then used to define the relations below (cf. van Benthem 1983).¹⁰⁴

DEFINITION 5

$$t \leq t' \quad := \quad t < t' \vee t = t'$$

$$t \sqsubseteq t' \quad := \quad \forall t'' [t' < t'' \rightarrow t < t''] \wedge \forall t'' [t'' < t' \rightarrow \forall t'' < t]$$

Moreover, I assume that D_{ε} and D_{σ} are ordered by the part-of relation \sqsubseteq , which is subject to the constraint in Def. 6.¹⁰⁵ Note that in this definition, I assume a domain of eventualities D_v , where $D_{\varepsilon} \cup D_{\sigma} \subseteq D_v$ and $D_{\varepsilon} \cap D_{\sigma} = \emptyset$ (cf. Bach 1981). Moreover, I assume that the domains of eventualities and time intervals are linked through a temporal trace function τ , which takes an eventuality and returns its run time (Link 1987). That is, τ is a constant of type \mathbf{vi} , where $\mathbf{v} \in \{\varepsilon, \sigma\}$.

DEFINITION 6

For all eventualities n and $n' \in D_v$: if $n \sqsubseteq n'$ then $\tau(n) \subseteq \tau(n')$

Finally, as in Muskens 1995, I assume that each eventuality has many possible futures, and therefore each eventuality occurs in many possible worlds (cf. Dowty 1979). Given the temporal trace function, each possible eventuality inherits the relations in Def. 5. In what follows, I will write the more concise formula $t < e$ to abbreviate $t < \tau(e)$. Similarly, I will write $e \subseteq t$ for $\tau(e) \subseteq t$

¹⁰⁴ Muskens defines other relations as well. However, only the ones provided here are relevant to the proposed analysis.

¹⁰⁵ Note that for sake of simplicity, I assume that the domains of eventualities are domains of singular eventualities. If plurality is added to the theory, a Boolean structure needs to be imposed on top of the structures introduced here (Hinrichs 1985, Krifka 1989).

and $t \subseteq s$ for $t \subseteq \tau(s)$. Finally, I will use the abbreviations in (316) when the run time of two eventualities are related to each other:

- (316) a. $\tau(e) \subseteq \tau(s) \quad := \quad e \subseteq_t s$
 b. $\tau(s) = \tau(s') \quad := \quad s \approx_t s'$

In the remainder of this section, I would like propose an analysis for the discourse in (317), which is a simplified version of (307), discussed in the previous section. The proposed analysis of this discourse serves two purposes: (i) it further illustrates CDRT and (ii) it provides an illustration of the Adverbial Transparency Theory that will be extended in the subsequent sections.

- (317) a. Sue cleaned our house on May 12, 1984.
 b. That same day, Lev hired her.

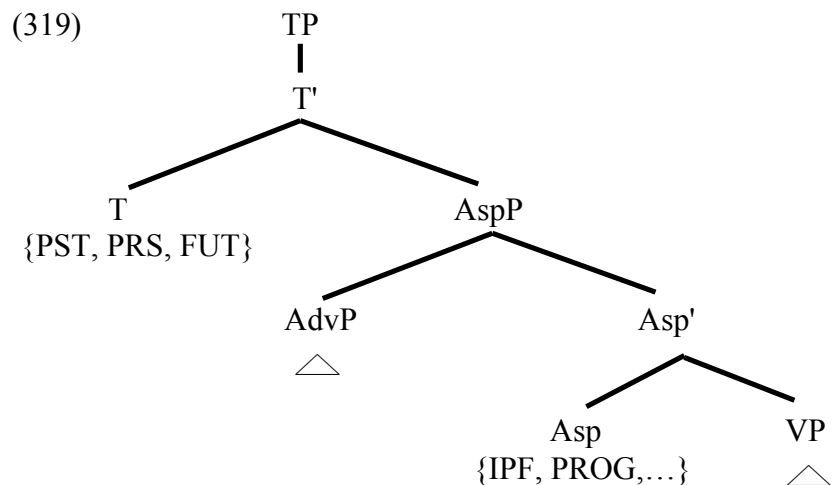
To begin with, I propose to treat (317) as arising from the syntactic representation in (318).

(318) Syntactic representation of (317)

- a. $[_{TP}[_{T'} \text{PST}^{t_1}[_{AspP}[_{AdvP} \text{on May 12}^{t_2, s_2} \text{1984}^{t_2, s_2}][_{Asp'} \text{PFV}^{e_3, s_3}[_{VP} \text{Sue}^{u_4} \text{clean our house}]]]]]]$;
 b. $[_{TP}[_{T'} \text{PST}^{t_5}[_{AspP}[_{AdvP} \text{that same day}^{t_2, s_3}][_{Asp'} \text{PFV}^{e_6, s_6}[_{VP} \text{Lev}^{u_7} \text{hire her}^{u_4}]]]]]]$

Several comments are in order. First, I assume for the sake of simplicity that anaphoric relationships are indicated in the syntax. I follow Barwise 1987, Muskens 1995 and others in indexing antecedents with superscripts and anaphoric expressions with subscripts, further requiring that (i) no two superscripts be the same and (ii) for each subscript n , where $0 < n$, there be a corresponding superscript n . Finally, I assume that the speech event can serve as event

antecedent even though it is not introduced into the discourse context, i.e. the speech event is always accessible (Kamp and van Eijck 1996)¹⁰⁶; this is indicated by the subscript e_0 . The second comment concerns the assumed phrase structure, illustrated below in the more familiar tree-format. As is standard to do, I assume that a sentence makes up a tensed phrase (TP), with a tense operator in the head of TP. Moreover, I assume that the sister to T is an aspectual phrase (AspP), which has an adverbial phrase (AdvP) in its specifier. Finally, I assume that a verb phrase (VP) is the sister to the head of AspP, where aspectual operators reside.



Since the analysis proposed in this chapter is not concerned with meanings of nominal expressions, I will not provide meanings of VP-internal expressions, but rather start at the VP-level and work up to the TP-level.¹⁰⁷ Moreover, I will treat all temporal adverbial expressions as syntactically on a par, i.e. as adverbial

¹⁰⁶ Presumably the same is true for the speaker, the actual world, among other coordinates that are associated with the context of utterance. For the purposes here, however, only the speech event is relevant.

¹⁰⁷ I refer the reader to Muskens 1996 for an analysis of nominal expressions within CDRT; see also Brasoveanu 2007.

phrases, without providing the external structure of such expressions. This, of course, is a gross idealization since an expression like *now* surely has a different syntax from *on May 12th, 1984* and *a week before that*. For the current purposes, however, all that matters is that these expressions are of the same semantic type. Finally, I make the standard assumption that English sentences in the ‘simple’ past have covert aspectual operators in the head of AspP. Following Szabó 2004, Landman 2008 and others, I assume that eventive sentences, viz. (317a,b), have a covert perfective operator (PFV) whose overt counterpart is found in many of the world’s languages.

Let us now proceed to derive the meaning of the discourse in (317). Working bottom up, (320) provides the meaning of the VP in (318a), which is an abbreviation for the expression in (321) of type $(s\epsilon(s\sigma(sst)))$.

$$(320) \quad [{}_{VP} \text{ Sue}^{u_4} \text{ clean our house}] \rightsquigarrow \lambda e \lambda w.[u_4 \mid u_4 = \text{sue}^\circ, \text{clean.our.house}\{u_4, e, w\}]$$

$$(321) \quad \lambda e \lambda w \lambda i \lambda j. i[u_4]j \wedge u_4j = \text{sue} \wedge \text{clean.our.house}(u_4j, ej, wj)$$

The meaning of PFV is provided in (322), which is an abbreviation for the expression in (323). Notice that this meaning is birelational—the introduced event is contained within a time and a state argument.¹⁰⁸ Moreover, as in Chapter 3, I assume that CONS is a function from events to their consequent states, i.e. it is a

¹⁰⁸ Note that PFV does not really introduce an event, but rather a function e_3 from an environment to an event in that environment. For simplicity of exposition, however, I will continue to refer to e_3 as ‘event’. Similarly, for the time and state arguments t and s , which are really functions of type s_i and s_σ respectively.

constant of type $\mathbf{e}\sigma$. Finally, I assume that w_0 is a function from environments to the world of evaluation, i.e. it is constant of type $\mathbf{s}\omega$.

$$(322) \quad [\text{Asp PFV}^{e_3, s_3}] \rightsquigarrow \\ \lambda P \lambda s \lambda t. [e_3, s_3 \mid e_3 \subseteq t, e_3 \subseteq_t s, \text{CONS}\{e_3\} = s_3] ; P(e_3, w_0)$$

$$(323) \quad \lambda P \lambda s \lambda t \lambda i \lambda j. \exists k [i[e_3, s_3]k \wedge e_3 k \subseteq tk \wedge e_3 k \subseteq_t sk \wedge \text{CONS}(e_3 k) = s_3 k \\ \wedge P(e_3, w_0)kj]$$

Let us now move on to consider the meaning of *on May 12th 1984* in (324), which is an abbreviation for the expression in (325).

$$(324) \quad [\text{AdvP on May 12}^{\text{th}} \text{1984}^{t_2, s_2}] \rightsquigarrow \\ \lambda R \lambda t. [t_2, s_2 \mid t_2 = t, t_2 = \text{may.12.1984}^\circ] ; R(s_2, t)$$

$$(325) \quad \lambda R \lambda t \lambda i \lambda j. \exists k [i[t_2, s_2]k \wedge t_2 k = tk \wedge t_2 k = \text{may.12.1984} \wedge R(s_2, t)kj]$$

One function of *May 12th 1984* is to introduce a time that names May 12, 1984. In this way, *May 12th 1984* is semantically on a par with the proper name *Sue*, viz. (320); they are both rigid designators. For this reason Kamp and Reyle (1993) call such adverbials ‘calendar name adverbials’. The introduced time t_2 is also identified with a time argument t , which (as we will see) is supplied by the tense operator. Following Kamp and Reyle 1993, I assume that the identity relation between these two times is contributed by the preposition *on* (cf. *after* and *before*, which contribute the precedence relation).

The other function of calendar name adverbials is to supply the state input required by an aspectual phrase. Rather than linking this state to prior discourse, calendar name adverbials introduce a new state dref into the discourse context

(i.e. the universe of the DRS). Crucially, this *dref* remains unspecified and therefore does not play a significant role in locating an eventuality described by an aspectual phrase. This corresponds to the idea that calendar name adverbials often ‘override’ the typical, temporal flow of a narrative because they are often incompatible with narrative progression. This is illustrated by the contrast in (326)-(327).

- (326) a. On May 12th, 1984 John woke up extremely ill.
 b. He started drinking like there was no tomorrow.
- (327) a. On May 12th, 1984 John woke up extremely ill.
 b. On December 12st, 1983 he started drinking like there was no tomorrow.

The discourse in (326) illustrates the typical, temporal flow of a narrative: we understand John to have begun drinking after waking up. The discourse in (327), on the other hand, is a bit odd. Nevertheless, it is clear that the temporal flow of the narrative is interrupted by the adverbial: we understand John to have begun drinking five months prior to him waking up. The claim here is that this is the result of the adverb (i) describing a time during which an eventuality took place and (ii) nullifying the possibility of this eventuality being located relative to a topical state.

The final ingredient in deriving the meaning of (318a) is the past tense operator in the head of TP. As illustrated in (328), PST supplies the time required by an adverbial phrase. More specifically, it introduces a time that precedes the speech event. Note that I assume that e_0 is a constant function from environments

to the speech event, i.e. it is constant of type $s\epsilon$. The reader can check that (328) is an abbreviation for the expression in (329).

$$(328) \quad [{}_T \text{PST}^{t_1}] \rightsquigarrow \lambda Q.[t_1 \mid t_1 < e_0] ; Q(t_1)$$

$$(329) \quad \lambda Q \lambda i \lambda j. \exists k [i[t_1]k \wedge t_1 k < e_0 k \wedge Q(t_1)kj]$$

When we combine the meanings in (320), (322), (324) and (328), we get the meaning in (330), which as abbreviation for the expression in (331) of type sst . Note that I will henceforth use the convention of putting conditions that contain antecedents for subsequent discourse, viz. $\text{CONS}\{e_3\} = s_3$, at the end of the formula.

(330) Meaning of (318a)

$$[{}_{\text{TP}}[{}_T \text{PST}^{t_1} [{}_{\text{AspP}} [{}_{\text{AdvP}} \text{ on May } 12^{\text{th}} 1984^{t_2, s_2}] [{}_{\text{Asp}} \text{PFV}^{e_3, s_3} [{}_{\text{VP}} \text{Sue}^{u_4} \text{ clean our house}]]]]] \rightsquigarrow$$

$$[t_1, t_2, s_2, e_3, s_3, u_4 \mid t_1 < e_0, t_2 = t_1, t_2 = \text{may.12.1984}^\circ, e_3 \subseteq t_1, e_3 \subseteq_t s_2,$$

$$u_4 = \text{sue}^\circ, \text{clean.our.house}\{u_4, e_3, w_0\}, \text{CONS}\{e_3\} = s_3]$$

$$(331) \quad \lambda i \lambda j. i[t_1, t_2, s_2, e_3, s_3, u_4]j \wedge t_{1j} < e_{0j} \wedge t_{2j} = t_{1j} \wedge t_{2j} = \text{may.12.1984}$$

$$\wedge e_{3j} \subseteq t_{1j} \wedge e_{3j} \subseteq_t s_{2j} \wedge u_{4j} = \text{sue} \wedge \text{clean.our.house}(u_{4j}, e_{3j}, w_0j)$$

$$\wedge \text{CONS}(e_{3j}) = s_{3j}$$

Given the identity condition $t_2 = t_1$ contributed by *on May 12th 1984*, the meaning in (330) can be reduced to the meaning in (332). Whenever possible, I will provide reduced meanings from here on out.

(332) Reduced meaning of (318a)

$$[t_1, s_2, e_3, s_3, u_4 \mid t_1 < e_0, t_1 = \text{may.12.1984}^\circ, e_3 \subseteq t_1, e_3 \subseteq_t s_2,$$

$$u_4 = \text{sue}^\circ, \text{clean.our.house}\{u_4, e_3, w_0\}, \text{CONS}\{e_3\} = s_3]$$

According to (332), there is a time interval before the speech event that is May 12th, 1984. A house-cleaning event took place within this interval as well as within the duration of some unspecified state. Finally, the consequent state of the house-cleaning event is introduced and serves as a topic state for subsequent discourse.

I end this section by finishing the derivation for the discourse in (317). This involves providing the meaning of (318b), repeated below in (333b), and merging this meaning with (330).

(333) Syntactic representation of (317)

- a. $[_{TP}[_{T'} PST^{t_1}[_{AspP}[_{AdvP} \text{ on May 12}^{t_2, s_2} 1984]_{[Asp'} PFV^{e_3, s_3}[_{VP} \text{ Sue}^{u_4} \text{ clean our house}]]]]]$;
 b. $[_{TP}[_{T'} PST^{t_5}[_{AspP}[_{AdvP} \text{ that same day}^{t_2, s_3}]_{[Asp'} PFV^{e_6, s_6}[_{VP} \text{ Lev}^{u_7} \text{ hire her}^{u_4}]]]]]$

Below, I provide the meanings of the expressions in (333b) that have not yet been analyzed. I begin with the VP-meaning in (334), which serves an abbreviation for the expression in (335).

$$(334) \quad [_{VP} \text{ Lev}^{u_7} \text{ hire her}^{u_4}] \rightsquigarrow \lambda e \lambda w.[u_7 \mid u_7 = \text{lev}^\circ, \text{hire}\{u_7, u_4, e, w\}]$$

$$(335) \quad \lambda e \lambda w \lambda i \lambda j. i[u_7]j \wedge u_{7j} = \text{lev} \wedge \text{hire}(u_{7j}, u_{4j}, ej, wj)$$

Moving on to the AdvP *that same day*, its meaning is provided in (336), which serves as an abbreviation for the expression in (337). The DRS in (336) is a text box—it contains two anaphoric drefs t_2 and s_3 , which are coindexed with the drefs introduced by *on May 12th 1984* and PFV respectively. This is in accordance with the intuitions mentioned in the previous section, namely that *that*

same day not only refers to a previously mentioned interval of time that has the property of being a day, but it also hooks up to a previously mentioned consequent state which serves as the topic state. As we will see shortly, this latter function of *that same* is what accounts for its transparency to narrative progression.

$$(336) \quad [\text{AdvP that same day}_{t_2, s_3}] \rightsquigarrow \\ \lambda R \lambda t. [\mid t_2 = t, \text{day}\{t_2\}] ; R(s_3, t)$$

$$(337) \quad \lambda R \lambda t \lambda i \lambda j. \exists k [i = k \wedge t_2 k = tk \wedge \text{day}(t_2 k) \wedge R(s_3, t) k j]$$

When we combine the meanings above with those proposed earlier in this section, we get the following meaning of (333b):

(338) Meaning of (333b)

$$[\text{TP} [\text{T}' \text{PST}^{t_5} [\text{AspP} [\text{AdvP that same day}_{t_2, s_3}] [\text{Asp}' \text{PFV}^{e_6, s_6} [\text{VP Lev}^{u_7} \text{hired her}_{u_4}]]]]] \rightsquigarrow \\ [t_5, e_6, s_6, u_7 \mid t_5 < e_0, t_2 = t_5, \text{day}\{t_2\}, e_6 \subseteq t_5, e_6 \subseteq_t s_3, u_7 = \text{lev}^\circ, \\ \text{hire}\{u_7, u_4, e_6, w_0\}, \text{CONS}\{e_6\} = s_6]$$

Merging (338) with (330) yields the meaning below, in (339), where superfluous information has been eliminated.

(339) Reduced meaning of (333a,b)

$$[t_1, s_2, e_3, s_3, u_4, e_6, s_6, u_7 \mid \\ \text{a.} \quad t_1 < e_0, t_1 = \text{may.12.1984}^\circ, e_3 \subseteq t_1, e_3 \subseteq_t s_2, u_4 = \text{sue}^\circ, \\ \quad \text{clean.our.house}\{u_4, e_3, w_0\}, \text{CONS}\{e_3\} = s_3, \\ \text{b.} \quad e_6 \subseteq t_1, e_6 \subseteq_t s_3, u_7 = \text{lev}^\circ, \text{hire}\{u_7, u_4, e_6, w_0\}, \text{CONS}\{e_6\} = s_6]$$

The formula in (339a) corresponds to the aforementioned truth-conditions for (317a). The formula in (339b) corresponds to the truth-conditions for (317b). It

says that a hiring event took place some time within May 12th, 1984 as well as within the consequent state of the house-cleaning event. Finally, the consequent state of the hiring event is introduced and serves as a topic state for subsequent discourse (if there was any). This captures our intuitions about the discourse in (317), illustrated below, in Fig. 17.

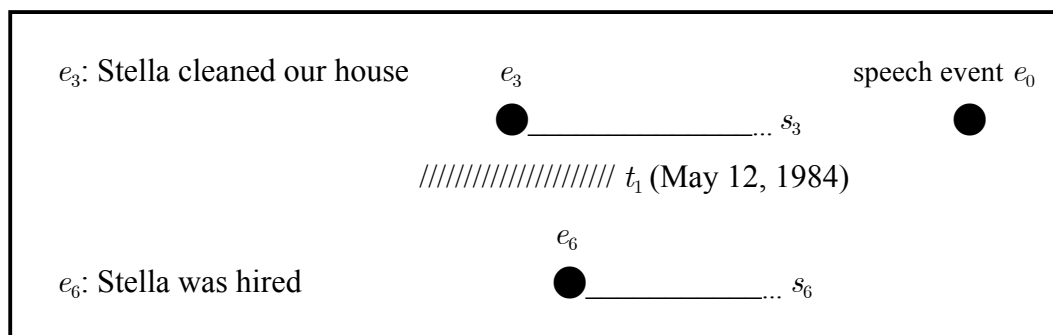


Figure 17: Temporal orderings of events in (317)

4.3 Silent narrative adverbial

Smith 1977 observed that on an episodic or a habitual interpretation, the sentence in (340) “does not give enough information for temporal interpretation” when uttered discourse initially. According to Smith, “a full interpretation” of (340) is only possible in a context which provides enough linguistic or extralinguistic information (pp. 571); cf. Partee’s 1973 example *I didn’t turn off the stove* discussed in Chapter 3, where one accommodates that the assertion concerns the recent past.

(340) #Seth planted roses (Smith 1977, pp. 568).

Smith's position is restated by Kamp and Reyle 1993, who write: "While it is a convention of narrative fiction that the first sentence need not be anchored to some specific reference time, the first sentence of a discourse concerning the affairs of this world, in particular when it concerns our daily lives, is in general not free of this constraint... (pp. 529)."

Ever since Partee 1973, theories of temporal interpretation typically account for the infelicity of (340) by appealing to the idea that tense is anaphoric, e.g. it is pronoun-like, requiring an antecedent, or it is quantifier-like, where the domain of quantification makes explicit reference to prior discourse. This view, however, is not in accordance with the Adverbial Transparency Theory introduced in the previous section. According to this theory, it is the adverb, rather than the tense, which is anaphoric.

Extending the Adverbial Transparency Theory to account for (340), I propose that episodic sentences in the past tense that do not have an overt adverbial in the syntax, have a silent 'narrative' operator present in the logical form (cf. Bäuerle's 1979 silent 'once'). This idea follows Smith's (1977) proposal that that semantically speaking, there is always an adverb present:

"There is an important difference between the syntax and semantics of temporal specification. Tense is the only temporal expression that is necessary in a sentence that is syntactically well-formed; but for a sentence to be semantically well-formed, from the temporal point of view, it must have both tense and a time adverbial" (Smith 1977, pp. 570).

The meaning of the silent 'narrative' operator, NARR, is made precise in (341).¹⁰⁹

The chief function of NARR is to retrieve a state anaphorically from the discourse

¹⁰⁹ For the sake of brevity, I will only provide DRT abbreviations from here on out.

context, which explains why (340) is infelicitous discourse initially: there is no state antecedent available. Moreover, like the adverbials discussed in the previous section, NARR introduces a time that is identified with the time argument supplied by the tense. Unlike other adverbials, however, the introduced time does not play a significant role in locating the described eventuality because it remains unspecified (cf. Kamp and Reyle 1993, pp. 528-529).

(341) $[\text{AdvP NARR}^{t_n}_{s_m}] \rightsquigarrow \lambda R \lambda t. [t_n | t_n = t] ; R(s_m, t)$

Let us now consider cases in which which NARR is embedded within a discourse. In particular, let us derive the meaning of the Russian discourse below, discussed in Chapter 3, which does not have overt adverbials in (342b) and (342c). Recall that although there is no order that the events described in (342b) and (342c) are understood to have occurred in, both are understood to precede the kissing event in (342a)—i.e. (342) is false if, prior to the kissing event, Maria did not receive flowers and a theater invitation from Dudkin.

- (342) a. 12 marta 1984 goda *Marija po-celova-l-a* *Dudkina.*
 12 May 1984 year Maria PFV-kissed-PST.3S-FEM Dudkin
 ‘On May 12, 1984 Maria kissed Dudkin.’
- b. *On dari-l* *ej cvety*
 He give.IPF-PST.3S her flowers
 ‘He had given her flowers’
- c. *i priglaš-a-l* *ee v teatr.*
 and invite.IPF-PST.3S her to theater
 and had invited her to the theater.’

I begin the derivation by providing the syntactic representation of (342) in (343), where *i* (‘and’) is translated as ; (Muskens 1995).

(343) Syntactic representation of (317)

- a. $[_{TP}[_{T'} PST^{t_1}[_{AspP}[_{AdvP} 12 \text{ maja } 1984 \text{ goda}^{t_2}][_{Asp'} PFV^{e_3, s_3} \text{ Marija}^{u_4} \text{ celovat'} \text{ Dudkin}^{u_5}]]]]]$;
 12 May 1984 year Maria kiss Dudkin
- b. $[_{TP}[_{T'} PST^{t_6}[_{AspP}[_{AdvP} NARR^{t_7} s_3][_{Asp'} IPF^{e', e_8} \text{ onu}_5 \text{ darit'.cvety } \text{ eju}_4]]]]]$;
 he give.flowers her
- c. $[_{TP}[_{T'} PST^{t_9}[_{AspP}[_{AdvP} NARR^{t_{10}} s_3][_{Asp'} IPF^{e', e_{11}} \text{ onu}_5 \text{ priglasit'.v.teater } \text{ ee}_4]]]]]$;
 he invite.to.theater her

Note that the choice of indices in (343) is constrained by the proposed meanings of PFV and IPF in (344) and (345). In particular, PFV introduces a consequent state in the universe of the DRS that serves as a possible antecedent for subsequent discourse. IPF, on the other hand, does not introduce a consequent state in the universe of the DRS. Therefore, NARR in (343b) and NARR in (343c) must be co-indexed with PFV in (343a).

$$(344) \quad [_{Asp} PFV^{e_n, s_n}] \rightsquigarrow \lambda P \lambda s \lambda t. [e_n, s_n \mid e_n \subseteq t, e_n \subseteq_t s, \text{CONS}\{e_n\} = s_n] ; P(e_n, w_0)$$

$$(345) \quad [_{Asp} IPF^{e'_n, e_n, w_n}] \rightsquigarrow \lambda P \lambda s \lambda t. [e'_n, e_n, w_n \mid e'_n \subseteq t, s \subseteq_t \text{CONS}\{e'_n\}, \text{STAGE}\{e'_n, e_n, w_0, w_n\}; P(e_n, w_n)]$$

Given the meanings above, along with the meanings of the other expressions discussed in the previous section, (343a) has the meaning in (346), where superfluous information has been eliminated.

(346) Meaning of (343a)

$$[t_1, s_2, e_3, s_3, u_4, u_5 \mid t_1 < e_0, t_1 = \text{may.12.1984}^\circ, e_3 \subseteq t_1, e_3 \subseteq_t s_2, u_4 = \text{maria}^\circ, u_5 = \text{dudkin}^\circ, \text{kiss}\{u_4, u_5, e_3, w_0\}, s_3 = \text{CONS}\{e_3\}]$$

According to (346), there is a time interval before the speech event that is May

12, 1981. Dudkin kissed Maria within this interval, as well as within some unspecified state s_2 . Finally, the consequent state of the kissing event is a state s_3 , which serves as an antecedent for subsequent discourse.

Let us now illustrate the contribution of NARR in deriving the meaning of (343b). When the meaning of Asp' in (347) is combined with the meaning of NARR in (341), we get the meaning in (348). NARR's contribution is to retrieve a state dref from the discourse context, e.g. in the discourse at hand, NARR retrieves the consequent state of kissing event.

- (347) $[\text{Asp}' \text{IPF}^{e'_3, e_3, w_8} \text{onu}_5 \text{darit'.cvety eju}_4] \rightsquigarrow$
 $\lambda s \lambda t. [e'_8, e_8, w_8 \mid e'_8 \subseteq t, s \subseteq_t \text{CONS}\{e'_8\}, \text{STAGE}\{e'_8, e_8, w_0, w_8\},$
 $\text{give.flowers}\{u_5, u_4, e_8, w_8\}]$
- (348) $[\text{AspP} [\text{AdvP} \text{NARR}^{t_7 s_3}] [\text{Asp}' \text{IPF}^{e'_3, e_3, w_8} \text{onu}_5 \text{darit'.cvety eju}_4]] \rightsquigarrow$
 $\lambda t. [t_7, e'_8, e_8, w_8 \mid t_7 = t, e'_8 \subseteq t, s_3 \subseteq_t \text{CONS}\{e'_8\},$
 $\text{STAGE}\{e'_8, e_8, w_0, w_8\}, \text{give.flowers}\{u_5, u_4, e_8, w_8\}]$

When the past tense operator, PST, combines with (348), we get the meaning in (349), where superfluous information is once again has been eliminated.

- (349) Meaning of (343b)
 $[t_6, e'_8, e_8, w_8 \mid t_6 < e_0, e'_8 \subseteq t_6, s_3 \subseteq_t \text{CONS}\{e'_8\},$
 $\text{STAGE}\{e'_8, e_8, w_0, w_8\}, \text{give.flowers}\{u_5, u_4, e_8, w_8\}]$

Following the same recipe used to derive (349), the meaning of (343c) is as follows:

- (350) Meaning of (343c)
 $[t_9, e'_{11}, e_{11}, w_{11} \mid t_9 < e_0, e'_{11} \subseteq t_9, s_3 \subseteq_t \text{CONS}\{e'_{11}\},$
 $\text{STAGE}\{e'_{11}, e_{11}, w_0, w_{11}\}, \text{invite.to.theater}\{u_5, u_4, e_{11}, w_{11}\}]$

Once we merge (350) with (349) and (346), we get the meaning in (351):

(351) Meaning of (343a,b,c)

- $[t_1, s_2, e_3, s_3, u_4, u_5, t_6, e'_8, e_8, w_8, t_9, e'_{11}, e_{11}, w_{11} \mid$
- a. $t_1 < e_0, t_1 = \text{may.12.1984}^\circ, e_3 \subseteq t_1, e_3 \subseteq_t s_2, u_4 = \text{maria}^\circ,$
 $u_5 = \text{dudkin}^\circ, \text{kiss}\{u_4, u_5, e_3, w_0\}, s_3 = \text{CONS}\{e_3\},$
 - b. $t_6 < e_0, e'_8 \subseteq t_6, s_3 \subseteq_t \text{CONS}\{e'_8\}, \text{STAGE}\{e'_8, e_8, w_0, w_8\},$
 $\text{give.flowers}\{u_5, u_4, e_8, w_8\},$
 - c. $t_9 < e_0, e'_{11} \subseteq t_9, s_3 \subseteq_t \text{CONS}\{e'_{11}\}, \text{STAGE}\{e'_{11}, e_{11}, w_0, w_{11}\},$
 $\text{invite.to.theater}\{u_5, u_4, e_{11}, w_{11}\}]$

The formula in (351a) corresponds to the aforementioned truth-conditions for (342a). The formula in (351b) corresponds to the truth-conditions for (342b). It says that there is an interval of time t_6 that precedes the speech event e_0 . Moreover, there is an event e'_8 that takes place within t_6 such that (i) the consequent state of e'_8 contains s_3 (i.e. the consequent state of the kissing event e_3 that serves as the topic state) and (ii) e'_8 is a stage of an event e_8 of Dudkin giving flowers to Maria. Whereas (i) correctly predicts that the flower-giving event did not follow the kissing event¹¹⁰, (ii) correctly predicts that the flower-giving event culminated given that an achievement VP is used to describe this event.

The formula in (351c) corresponds to the truth-conditions for (342c). It says that there is an interval of time t_9 that precedes the speech event e_0 . Moreover, there is an event e'_{11} that takes place within t_9 and such that (i) the consequent state of e'_{11} contains s_3 (i.e. the consequent state of the kissing event e_3 that serves as the topic state) and (ii) e'_{11} is a stage of an event e_{11} of Dudkin

¹¹⁰ See Chapter 3 (§3.7.1) for an explanation of why we infer in (342) that the flower-giving event preceded (rather than overlapped) the kissing event.

inviting Maria to the theater. (i) correctly predicts that the theater-inviting event did not follow the kissing event and that there is no order that the theater-inviting and the flower-giving events are predicted to have occurred in. On the other hand, (ii) correctly predicts that the theater-inviting event culminated given that an achievement VP is used to describe this event.

I end this section by showing how the analysis of the Russian discourse could be extended to the English discourse in (352), which played a prominent role in Chapter 3.

- (352) a. On May 12th 1984, a man entered the White Hart.
 b. He was ill.
 c. Bill served him a beer (after Kamp and Reyle 1993, pp. 521).

To begin with, I assume (352) has the syntactic representation in (353):

(353) Syntactic representation of (352)

- a. $[_{TP}[_{T'} PST^{t_1} [_{AspP}[_{AdvP} \text{on May 12 1984}^{t_2}][_{Asp'} PFV^{e_3, s_3} \text{ a man}^{u_4} \text{ enter White Hart}^{u_5}]]]]$
 b. $[_{TP}[_{T'} PST^{t_6} [_{AspP}[_{AdvP} NARR^{t_7} s_3][_{Asp'} STATE^{s_8} \text{ he} u_4 \text{ be.ill}]]]]$
 c. $[_{TP}[_{T'} PST^{t_9} [_{AspP}[_{AdvP} NARR^{t_{10}} s_3][_{Asp'} PFV^{e_{11}, s_{11}} \text{ Bill}^{u_{12}} \text{ serve.beer him} u_4]]]]$

As before, I make the standard assumption that (353a,b,c) have covert aspectual operators in the head of AspP. If we assume that PFV is at play in (353a,c), then (353a) has the meaning in (354), while (353c) has the meaning in (355).

(354) Meaning of (353a)

$$[t_1, s_2, e_3, s_3, u_4, u_5 \mid t_1 < e_0, t_1 = \text{may.12.1984}^\circ, e_3 \subseteq t_1, e_3 \subseteq_t s_2, \\ \text{man}\{u_4\}, u_5 = \text{white hart}^\circ, \text{enter}\{u_4, u_5, e_3, w_0\}, s_3 = \text{CONS}\{e_3\}]$$

(355) Meaning of (353c)

$$[t_9, e_{11}, s_{11}, u_{12} \mid t_9 < e_0, e_{11} \subseteq t_9, e_{11} \subseteq_t s_3, u_{12} = \text{bill}^\circ, \\ \text{serve.beer}\{u_{12}, u_4, e_{11}, w_0\}, s_{11} = \text{CONS}\{e_{11}\}]$$

With regard to (353b), I assume that the covert operator in the head of AspP, which I have called STATE, has the meaning in (356). According to (356), STAT combines with stative VPs and requires that a VP-state contains both the state and time arguments.

$$(356) \quad [{}_{\text{AspP}} \text{STATE}^{\text{st}}] \rightsquigarrow \lambda S \lambda s \lambda t. [s_n \mid t \subseteq s_n, s \subseteq_t s_n] ; S(s_n, w_0)$$

Given the meaning above, (353b) has the meaning in (357).

$$(357) \quad \underline{\text{Meaning of (353b)}} \\ [t_6, s_8 \mid t_6 < e_0, t_6 \subseteq s_8, s_3 \subseteq_t s_8, \text{be.ill}\{u_4, s_8, w_0\}]$$

Once we merge (357) with (355) and (354), we get the meaning in (358):

$$(358) \quad \underline{\text{Meaning of (353a,b,c)}} \\ [t_1, s_2, e_3, s_3, u_4, u_5, t_6, s_8, t_9, e_{11}, s_{11}, u_{12} \mid \\ \text{a. } t_1 < e_0, t_1 = \text{may.12.1984}^\circ, e_3 \subseteq t_1, e_3 \subseteq_t s_2, \text{man}\{u_4\}, \\ u_5 = \text{white hart}^\circ, \text{enter}\{u_4, u_5, e_3, w_0\}, s_3 = \text{CONS}\{e_3\}, \\ \text{b. } t_6 < e_0, t_6 \subseteq s_8, s_3 \subseteq_t s_8, \text{be.ill}\{u_4, s_8, w_0\}, \\ \text{c. } t_9 < e_0, e_{11} \subseteq t_9, e_{11} \subseteq_t s_3, u_{12} = \text{bill}^\circ, \text{serve.beer}\{u_{12}, u_4, e_{11}, w_0\} \\ s_{11} = \text{CONS}\{e_{11}\}]$$

The formula in (358a) corresponds to the truth-conditions for (352a). It says that there is a time interval before the speech event that is May 12^h, 1984. A man entered the White Hart within this interval, as well as within some unspecified state s_2 . Finally, the consequent state of the entering event is a state s_3 , which serves as an antecedent for subsequent discourse.

The formula in (358b) corresponds to the truth-conditions for (352b). It says that there is some unspecified time interval before the speech event

throughout which the man was ill. Moreover, this state of being ill held throughout a previously mentioned state, namely the consequent state of the entering event. From this it follows that the man was sick at the time of his entering the White Hart.

The formula in (358c) corresponds to the truth-conditions for (352c). It says that there is some unspecified time interval before the speech event within which Bill served the man a beer. Moreover, the serving event occurs within a previously mentioned state, namely the consequent state of the entering event. From this it follows that the beer was served after the man entered the White Hart.

4.4 *Yesterday/tomorrow and the previous day/the next day*

The goal of this section is to show how the Adverbial Transparency Theory could be extended to *yesterday/tomorrow* and *the previous day/the next day*. These adverbials are chosen because they allow me to compare and contrast how deictic and anaphoric adverbials are accounted for by the theory developed thus far.¹¹¹ *The next day* is an especially interesting case because it describes a time that triggers narrative progression and therefore raises the non-trivial question of whether this adverbial is transparent to narrative progression, viz. *that same day*.

I begin by considering *yesterday*, whose meaning is always dependent on the context of utterance. In particular, it denotes the day before the speech event. For example, if (359) were to be uttered on May 12, 1984, then *yesterday* would refer to May 11, 1984.

¹¹¹ The Adverbial Transparency Theory could easily be extended to account for many other temporal location adverbials not considered here. For a nice overview see Vegnaduzzo 2001.

(359) Lev saw Dina yesterday.

There are two other key observations about *yesterday*. One is that *yesterday* puts a 24-hour bound on the time at which a described event took place.¹¹² Therefore, when I utter (359) on May 11, 1984, (359) is true if Lev saw Dina at some time within a 24-hour interval of time. Moreover, like calendar name adverbials, *yesterday* often ‘overrides’ the typical flow of a narrative because it is often incompatible with narrative progression. Recall that in (360) we understand John to have begun drinking after waking up. In (361), however, we understand John to have begun drinking the day prior to him waking up.

(360) a. This morning John woke up extremely ill.
b. He started drinking like there was no tomorrow.

(361) a. This morning John woke up extremely ill.
b. Yesterday, he started drinking like there was no tomorrow.

To account for these observations about *yesterday*, I propose the meaning in (362).

(362) $[\text{AdvP } \textit{yesterday}^{t_n, s_n}] \rightsquigarrow$
 $\lambda R \lambda t. [t_n, s_n | t_n = t, \text{day}\{t_n\}, t_n <_{\text{day}} e_0] ; R(s_n, t)$

According to (362), *yesterday* is like the other adverbs discussed thus far in that it combines with an aspectual phrase and has the following two functions: (i)

¹¹² To describe adverbials which “put bounds” on the time at which a described event took place, Barbara Partee introduced the notion of a *frame adverbial* Partee 1984, pp. 257; see also Bennett and Partee 1972/1978 and references therein). Since the Adverbial Transparency Theory does not have anything novel to say about the distinction between frame and non-frame adverbials, I have resorted to the more general notion of a *temporal location adverbial* which subsumes both kinds.

introduce a new time dref that stands for the 24-hour interval denoted by *day* and precedes the speech event by a day and (ii) supply a state input required by an aspectual phrase. As was the case with *on May 12, 1984*, the supplies state input comes in the form of a new, unspecified dref. As such, it does not play a significant role in locating the described eventuality.

Note that given the relations $t_n = t$ and $t_n <_{\text{day}} e_0$, as well as the fact that t is supplied by the tense, it follows from (362) that *yesterday* is only compatible with the past tense. While this is the desired result, the relation $t_n <_{\text{day}} e_0$ also renders the contribution of the past tense superfluous. For example, according to the theory advocated here, the sentence in (359) has the meaning below, in (363), where the contribution of the past tense is redundant.

$$(363) \quad [\text{TP}[\text{T}' \text{PST}^{t_1}[\text{AspP}[\text{AdvP } \text{yesterday}^{t_2, s_2}][\text{Asp}' \text{PFV}^{e_3, s_3} \text{ Lev}^{u_4} \text{ see Dina}^{u_5}]]]] \rightsquigarrow \\ [t_1, t_2, s_2, e_3, s_3, u_4, u_5 \mid t_1 < e_0, t_2 = t_1, \text{day}\{t_2\}, t_2 <_{\text{day}} e_0, e_3 \subseteq t_1, \\ e_3 \subseteq_t s_2, u_4 = \text{lev}^\circ, u_5 = \text{dina}^\circ, \text{see}\{u_4, u_5, e_3, w_0\}, s_3 = \text{CONS}\{e_3\}]$$

Rather than seeing this as a disadvantage of the theory, I assume that it is a remarkable property of English that a sentence which contains an adverb like *yesterday* must also contain the past tense (cf. Partee 1973, pp. 604).

With the meaning of *yesterday* on board, it is now easy to extend the analysis to *tomorrow* and *the previous day*. As illustrated in (364), the adverb *tomorrow* has the same meaning as *yesterday* with the caveat that temporal ordering between the speech event and the introduced time dref is reversed. This accounts for the observation that *tomorrow* is only compatible with the future tense.

$$(364) \quad [{}_{\text{AdvP}} \text{tomorrow}^{t_n, s_n}] \rightsquigarrow \\ \lambda R \lambda t [t_n, s_n | t_n = t, \text{day}\{t_n\}, \tau\{e_0\} <_{\text{day}} t_n] ; R(s_n, t)$$

With regard to *the day before*, it is an anaphoric adverbial and is treated on a par with pronouns. As illustrated below, in (365), the semantic function of the *previous day* is to retrieve an antecedent time dref t_m , which serves as the anchor for the introduced time t_n .

$$(365) \quad [{}_{\text{AdvP}} \text{the previous day}^{t_n, s_n} t_m] \rightsquigarrow \\ \lambda R \lambda t [t_n, s_n | t_n = t, \text{day}\{t_n\}, t_n <_{\text{day}} t_m] ; R(s_n, t)$$

In this way, *the previous day* differs from *yesterday* and *tomorrow*, which do not retrieve a time dref anaphorically from the discourse context because the speech event time serves as the anchor for introduced time t_n . This explains the observation that a discourse initial sentence with *yesterday* or *tomorrow* is felicitous while a discourse initial sentence with *the previous day* is not. Moreover, the contrast below, in (366) and (367), is accounted for. In (366b) we see the deictic adverb *yesterday* and the lobster-eating event is understood to be a day prior to the speech event. In (367b), however, we see *yesterday*'s anaphoric counterpart and the lobster-eating event is understood to be a day prior to the calamari-eating event.

- (366) a. On March 12, 1984 I ate calamari.
b. Yesterday, I ate lobster.

- (367) a. On March 12, 1984 I ate calamari.
b. The previous day, I ate lobster.

An interesting issue comes up when we consider an adverb like *the next day*. Given the analysis of *the previous day* in (365), one would expect it to have the meaning in (368), which is exactly like (365), except that it is future oriented.

$$(368) \quad [_{\text{AdvP}} \text{the next day}^{t_n, s_n} t_m] \rightsquigarrow \\ \lambda R \lambda t. [t_n, s_n \mid t_n = t, \text{day}\{t_n\}, t_m <_{\text{day}} t_n] ; R(s_n, t)$$

While I believe that (368) is, in fact, the correct meaning, it is non-trivial to see why (369) could not be the meaning for *the next day*.

$$(369) \quad [_{\text{AdvP}} \text{the next day}^{t_n, t_m, s_k}] \rightsquigarrow \\ \lambda R \lambda t. [t_n \mid t_n = t, \text{day}\{t_n\}, t_m <_{\text{day}} t_n] ; R(s_k, t)$$

According to the meaning above, *the next day* does not introduce a new state dref, but rather retrieves a state dref anaphorically from the discourse context. From this, it follows that *the next day* is transparent to narrative progression in the same way as *that same day*. The difference is, of course, that unlike *that same day*, *next day* introduces a time dref that triggers narrative progression.

When looking at discourses like (370), it is impossible to discriminate between the meanings in (368) and (369). Here the event described in (370b) is understood to follow the event described in (370a). Assuming that Sunday is chosen as an antecedent in (370b), both (368) and (369) would predict that *the day after* denotes the Monday after the Sunday and we therefore expect narrative progression. The additional information that would be contributed by (369), namely that the hiring took place within a topical state, i.e. the consequent state of the house-cleaning event, is compatible with the narrative progression but redundant.

- (370) a. Stella cleaned my house on Sunday.
 b. The next day, I hired her.

Discourses which contain stative sentences, however, show why (368) ought to be favored over (369). Consider the discourse below, in (371), where we infer that Stella called the doctor when she was sick, namely on May 12, 1984, and that on May 13, 1984, she was healthy.

- (371) a. On May 12, 1984, Stella called a doctor.
 b. She was sick with the flu.
 c. The next day, she was healthy.

The syntactic representation of (371) below, in (372), assumes that *the next day* has the meaning in (369). In particular, it assumes that *the next day* is transparent to narrative progression—i.e. it retrieves a topical state dref anaphorically from the discourse context. Assuming that such a state is made salient by PFV, *the next day* retrieves the consequent state of the calling event s_3 (viz. the indexation on the next day^{t₁₀}_{t₂,s₃} in (372c)).

(372) Syntactic representation of (371) given (369)

- a. [TP[T' PST^{t₁} [AspP[AdvP on May 12 1984^{t₂,s₂}][Asp' PFV^{e₃,s₃} Stella^{u₄} call a doctor^{u₅}]]]]
 b. [TP[T' PST^{t₆} [AspP[AdvP NARR^{t₇}_{s₃}][Asp' STATE^{s₈} she^{u₄} be.sick.with.the.flu]]]]
 c. [TP[T' PST^{t₉} [AspP[AdvP the next day^{t₁₀}_{t₂,s₃}][Asp' STATE^{s₁₁} she^{u₄} be.healthy]]]]

As illustrated in (373), the representation above leads to the wrong prediction that Stella was healthy when she called a doctor.¹¹³

¹¹³ Note that if *the next day* were to retrieve the state of Stella being sick (rather than the consequent state of the calling event) from the discourse context, the wrong prediction would still be made. In particular, it would be predicted that Stella was healthy when she was sick with the flu.

(373) Meaning of (372a,b,c)

$$[t_1, s_2, e_3, s_3, u_4, u_5, t_6, s_8, t_9, t_{10}, s_{11} \mid$$

- a. $t_1 < e_0, t_1 = \text{may.12.1984}^\circ, e_3 \subseteq t_1, e_3 \subseteq_t s_2, u_4 = \text{stella}^\circ,$
 $\text{doctor}\{u_5\}, \text{called}\{u_4, u_5, e_3, w_0\}, s_3 = \text{CONS}\{e_3\},$
- b. $t_6 < e_0, t_6 \subseteq s_8, s_3 \subseteq_t s_8, \text{be.sick.with.the.flu}\{u_4, s_8, w_0\},$
- c. $t_9 < e_0, t_{10} = t_9, \text{day}\{t_{10}\}, t_2 <_{\text{day}} t_{10} t_9 \subseteq s_{11}, s_3 \subseteq_t s_{11},$
 $\text{be.healthy}\{u_4, s_{11}, w_0\}]$

In contrast to (372), consider the syntactic representation of (371) below, in (374), which assumes that *the next day* has the meaning in (368). The crucial difference is that *the next day* introduces a new state dref that is not linked to prior discourse (viz. the indexation on the next day^{t₁₀,s₁₀}t₂ in (374c)).

(374) Syntactic representation of (371) given (368)

- a. $[_{\text{TP}}[_{\text{T}} \text{PST}^{t_1} [_{\text{AspP}}[_{\text{AdvP}} \text{on May 12 1984}^{t_2, s_2}][[_{\text{Asp}} \text{PFV}^{e_3, s_3} \text{Stella}^{u_4} \text{call a doctor}^{u_5}]]]]]$
- b. $[_{\text{TP}}[_{\text{T}} \text{PST}^{t_1} [_{\text{AspP}}[_{\text{AdvP}} \text{NARR}^{t_7} s_3][[_{\text{Asp}} \text{STATE}^{s_8} \text{she}^{u_4} \text{be.sick.with.the.flu}]]]]]$
- c. $[_{\text{TP}}[_{\text{T}} \text{PST}^{t_1} [_{\text{AspP}}[_{\text{AdvP}} \text{the next day}^{t_{10}, s_{10}} t_2][[_{\text{Asp}} \text{STATE}^{s_{11}} \text{she}^{u_4} \text{be.healthy}]]]]]$

As illustrated in (375), the representation above leads to the correct prediction that Stella was healthy on the day after May 12th, 1984.

(375) Meaning of (372a,b,c)

$$[t_1, s_2, e_3, s_3, u_4, u_5, t_6, s_8, t_9, t_{10}, s_{10}, s_{11} \mid$$

- a. $t_1 < e_0, t_1 = \text{may.12.1984}^\circ, e_3 \subseteq t_1, e_3 \subseteq_t s_2, u_4 = \text{stella}^\circ,$
 $\text{doctor}\{u_5\}, \text{called}\{u_4, u_5, e_3, w_0\}, s_3 = \text{CONS}\{e_3\},$
- b. $t_6 < e_0, t_6 \subseteq s_8, s_3 \subseteq_t s_8, \text{be.sick.with.the.flu}\{u_4, s_8, w_0\},$
- c. $t_9 < e_0, t_{10} = t_9, \text{day}\{t_{10}\}, t_2 <_{\text{day}} t_{10} t_9 \subseteq s_{11}, s_{10} \subseteq_t s_{11},$
 $\text{be.healthy}\{u_4, s_{11}, w_0\}]$

In sum, this section has provided a glimpse of how deictic and anaphoric adverbials are accounted for by the Adverbial Transparency Theory. In the next section, I discuss how this theory could be extended to the adverbs *today* and *on Sunday*, whose semantics is complicated by the fact they are also compatible with the past, present and future tenses. The semantics of *on Sunday* is especially complicated because on its anaphoric usage, this adverb is transparent to narrative progression (cf. Kamp and Reyle 1993). I show how the Adverbial Transparency Theory can account for this usage of *on Sunday* and discuss the difficulties of providing one, uniform meaning that also accounts for its deictic usage.

4.5 ‘Today’ and ‘on Sunday’

Intuitively, the adverb *today* means something like “the day of the speech event.” The difficulty of analyzing this adverb lies in the fact that the speech event is shorter than a day and therefore *today* is compatible with the past, present and future tenses:

- (376) a. John was ill today.
 b. John is ill today.
 c. John will be ill today.

In order to account for the sentences in (376), I propose the meaning below, in (377). Crucially note that the time input t that is supplied by the tense is contained within the time $\text{dref } t_n$ that is introduced by *today*. As will be demonstrated below, this is why *today* is compatible with all tenses. The other conditions introduced by

today are what one would expect: t_n is a 24-hour interval of time denoted by *day* and it contains the speech event.

$$(377) \quad [\text{AdvP today}^{t_n, s_n}] \rightsquigarrow \lambda R \lambda t. [t_n, s_n \mid t \subseteq t_n, \text{day}\{t_n\}, e_0 \subseteq t_n] ; R(s_n, t)$$

Note that like the other deictic frame adverbials, *today* introduces a new state dref that remains unspecified. This accounts for the intuition that *today* often ‘overrides’ the typical flow of a narrative because it is often incompatible with narrative progression, cf. (378) and (379).

- (378) a. Next Sunday John will wake up extremely ill.
b. He will start drinking like there is no tomorrow.

- (379) a. Next Sunday John will wake up extremely ill.
b. Today he will start drinking like there is no tomorrow.

Let us now derive the meanings for each of the sentences in (376), which have the syntactic representations in (380) respectively.

$$(380) \quad \begin{array}{l} \text{a.} \quad [\text{TP}[\text{T}' \text{PST}^{t_1} [\text{AspP}[\text{AdvP today}^{t_2, s_2}] [\text{Asp}' \text{STATE}^{s_3} \text{John}^{u_4} \text{be.ill}]]]] \\ \text{b.} \quad [\text{TP}[\text{T}' \text{PRS}^{t_1} [\text{AspP}[\text{AdvP today}^{t_2, s_2}] [\text{Asp}' \text{STATE}^{s_3} \text{John}^{u_4} \text{be.ill}]]]] \\ \text{c.} \quad [\text{TP}[\text{T}' \text{FUT}^{t_1} [\text{AspP}[\text{AdvP today}^{t_2, s_2}] [\text{Asp}' \text{STATE}^{s_3} \text{John}^{u_4} \text{be.ill}]]]] \end{array}$$

As before, I assume that the Asp' in (380a,b,c) has the meaning in (381):

$$(381) \quad [\text{Asp}' \text{STATE}^{s_3} \text{John}^{u_4} \text{be.ill}] \rightsquigarrow \lambda s \lambda t. [s_3, u_4 \mid t \subseteq s_3, s \subseteq_t s_3, u_4 = \text{john}^\circ, \text{be.ill}\{u_4, s_3, w_0\}]$$

Moreover, I assume that three tense operators have the meanings in (382)-(384):

(382) $[T \text{ PST}^{t_1}] \rightsquigarrow \lambda Q.[t_1 \mid t_1 < e_0] ; Q(t_1)$

(383) $[T \text{ PRS}^{t_1}] \rightsquigarrow \lambda Q.[t_1 \mid t_1 \approx e_0] ; Q(t_1)$

(384) $[T \text{ FUT}^{t_1}] \rightsquigarrow \lambda Q.[t_1 \mid e_0 < t_1] ; Q(t_1)$

When we combine (377) with (381) and (382), we get the meaning in (385), which corresponds to (376a). As illustrated below, in Fig. 18, (385) correctly predicts that the state of being ill s_3 both precedes the speech event e_0 and holds during the day of the speech event t_2 . This is achieved via the intermediate location time t_1 , which is contained within both s_3 and t_2 and precedes e_0 . The unspecified state s_2 is left out since it does not play a crucial role in the temporal ordering.

(385) $[t_1, t_2, s_2, s_3, u_4 \mid t_1 < e_0, t_1 \subseteq t_2, \text{day}\{t_2\}, e_0 \subseteq t_2, t_1 \subseteq s_3, s_2 \subseteq_t s_3, u_4 = \text{john}^\circ, \text{be.ill}\{u_4, s_3, w_0\}]$

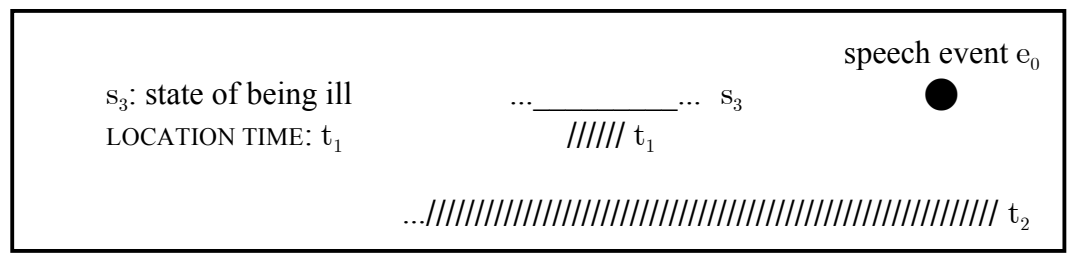


Figure 18: Temporal ordering given (385)

When we combine (377) with (381) and (383), we get the meaning in (386), which corresponds to (376b). As illustrated below, in Fig. 19, (386) correctly predicts that the state of being ill s_3 overlaps both the speech event e_0 and the day of the speech event t_2 . This is once again achieved via the intermediate

location time t_1 , which is contained within both s_3 and t_2 and is equated with the time of the speech event e_0 .

$$(386) \quad [t_1, t_2, s_2, s_3, u_4 \mid t_1 \approx e_0, t_1 \subseteq t_2, \text{day}\{t_2\}, e_0 \subseteq t_2, t_1 \subseteq s_3, s_2 \subseteq_t s_3, u_4 = \text{john}^\circ, \text{be.ill}\{u_4, s_3, w_0\}]$$

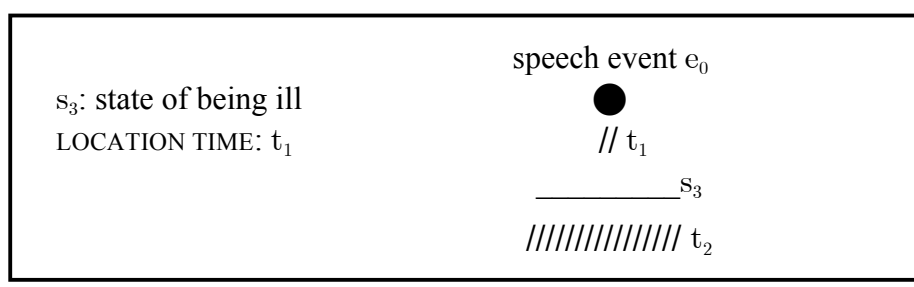


Figure 19: Temporal ordering given (386)

Finally, when we combine (377) with (381) and (384), we get the meaning in (387). As illustrated in Fig. 20, (387) correctly predicts that the state of being ill s_3 both follows the speech event e_0 and holds during the day of the speech event t_2 . This is once again achieved via the intermediate location time t_1 , which is contained within both s_3 and t_2 , and follows e_0 .

$$(387) \quad [t_1, t_2, s_2, s_3, u_4 \mid e_0 < t_1, t_1 \subseteq t_2, \text{day}\{t_2\}, e_0 \subseteq t_2, t_1 \subseteq s_3, s_2 \subseteq_t s_3, u_4 = \text{john}^\circ, \text{be.ill}\{u_4, s_3, w_0\}]$$

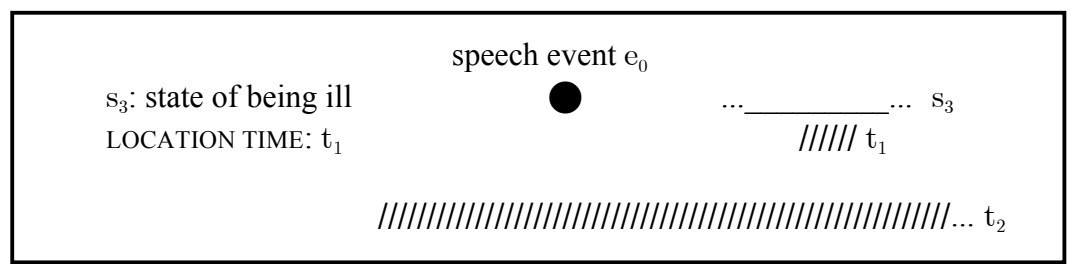


Figure 20: Temporal ordering given (387)

Let us move on to consider the adverbial *on Sunday*, discussed extensively by Kamp and Reyle (1993, pp. 614-621; see also Vegnaduzzo 2001). The semantics of this adverb is complicated for several reasons. To begin with, consider (388). The sentence in (388a) entails that Mary wrote a letter on the closest Sunday prior to the speech time, while (388b) entails that Mary will write a letter on the closest Sunday after the speech time. Moreover, (388a) and (388b) are infelicitous if uttered on a Sunday. Therefore, it is not surprising that (388c) is infelicitous on a present tense interpretation; only the so-called ‘planning’ or ‘futate’ interpretation is possible. Parallel observations can be made about expressions like *in April* and *at noon*, viz. (389) and (390) below.

- (388) a. Mary wrote a letter on Sunday (Kamp and Reyle 1993, pp. 614).
 b. Mary will write a letter on Sunday.
 c. #Mary is writing a letter on Sunday.
- (389) a. Mary wrote a letter in April.
 b. Mary will write a letter in April.
 c. #Mary is writing a letter in April.
- (390) a. Mary wrote a letter at noon.
 b. Mary will write a letter at noon.
 c. #Mary is writing a letter at noon.

From the data above it may seem reasonable to conclude that the meaning of *on Sunday* constitutes a generalized version of the meaning of *last Sunday* combined with the meaning of *next Sunday*.¹¹⁴ (391) illustrates a formal implementation of this idea, first proposed by Kamp and Reyle (1993, pp. 621) and adapted to the framework assumed here.

¹¹⁴ Similarly, the meaning of *in April* constitutes a generalized version of the meaning of *last April* and *next April*; the meaning of *at noon* constitutes a generalized version of the meaning of *yesterday at noon* and *tomorrow at noon*.

$$\begin{aligned}
 (391) \quad & [\text{AdvP on Sunday}^{t_n, s_n}] \text{ (deictic version)} \rightsquigarrow \\
 & \lambda R \lambda t. [t_n, s_n] t_n = t, \text{ sunday}\{t_n\}, t_n \odot e_0 \\
 & [t' | t_n \leq t' \leq e_0] \Rightarrow [| \neg [\text{sunday}\{t'\}]], \\
 & [t' | e_0 \leq t' \leq t_n] \Rightarrow [| \neg [\text{sunday}\{t'\}]] ; R(s_n, t)
 \end{aligned}$$

According to (391), *on Sunday* introduces a time t_n that does not overlap the speech event (viz. the non-overlap relation \odot) such that (i) if t_n precedes speech event, t_n is the closest Sunday prior to the speech event and (ii) if t_n follows speech event, t_n is the closest Sunday after the speech event. In cases where the past tense is used, (i) must hold because the time that is located prior to the speech event by the past tense is identified with t_n . This accounts for our intuitions about (388a). In cases where the future tense is used, (ii) must hold because the time that is located after the speech event by the future tense is identified with t_n . This accounts for our intuition about (388b). Finally, in cases where the present tense is used, we derive the contradictory claim that a time is both identical to the speech event time and it does not overlap it. This contradictory claim comes about because the present tense identifies the speech event time with the time t_n that it introduces. This accounts for (i) our intuition that (388c) is infelicitous on a present tense interpretation and (ii) why sentences with *on Sunday* cannot be uttered on a Sunday.

While accounting for (388), (391) does not account for the ambiguous discourse in (392). The unexpected reading is one in which Mary finished her article on the closest Sunday to the Friday described in (392a). The discourses in (393)-(394) show that *in April* and *at noon* lead to parallel unexpected readings.

- (392) a. Three weeks ago on a Friday Mary began an article.
 b. She finished it on Sunday (Kamp and Reyle 1993, pp. 617).
- (393) a. Three years ago in December Mary began an article.
 b. She finished it in April.
- (394) a. Three days ago at 8 o'clock in the morning Mary began an article.
 b. She finished it at noon.

The unexpected readings in the discourse above show that *on Sunday*, *in April* and *at noon* have an anaphoric function. In fact, these adverbs are analogous to *that same day* insofar as they are compatible with narrative progression. The discourses in (395)-(397) suggest a further parallel: in contexts where narrative progression is not forced upon by world knowledge (as is the case in (392)-(394)), *on Sunday*, *in April* and *at noon* are transparent to narrative progression—i.e. in (395)-(397) the hiring and check-giving is understood to follow the house cleaning whether these adverbs are present or not.

- (395) a. Three weeks ago on a Friday Stella cleaned our house. She made everything sparkle.
 b. On Sunday my wife hired her and gave her a check for one month in advance.
- (396) a. Three years ago in March Stella cleaned our house. She made everything sparkle.
 b. In April my wife hired her and gave her a check for one month in advance.
- (397) a. Three days ago at 8 in the morning Stella cleaned our house. She made everything sparkle.
 b. At noon my wife hired her and gave her a check for one month in advance.

One question that comes up is whether *on Sunday* (and the other adverbs) is, in fact, transparent to narrative progression or whether it simply has the

meaning of *the following Sunday* in, e.g. (395b). There are two reasons to think that *on Sunday* does not have the meaning of *the following Sunday* in (395b). The first reason is that (395b) also has a reading in which the described events take place at the closest Sunday *prior* to the speech event. This reading is not available with *the following Sunday*. The second reason is that we can use the past perfect in (395b) to describe a situation in which the hiring and check giving are understood to take place on a Sunday *prior* to the Friday described in (395a), viz. below in (398). Once again, this is not possible with *the following Sunday*.

- (398) a. Three weeks ago on a Friday Stella cleaned our house. She made everything sparkle.
 b. My wife had hired her on Sunday and gave her a check for one month in advance.

The discourses in (392)-(397) pose a serious challenge for any attempt to come up with a single meaning of *on Sunday*, *in April* and *at noon*. The reason for this is that on their deictic usage, viz. (388)-(390), these adverbs can describe times that precede or follow the time of evaluation (i.e. the speech event time). However, on their anaphoric usage, viz. (392)-(397), these adverbs are transparent to narrative progression and thus only describe times that *follow* the time of evaluation (i.e. a salient time previously mentioned in the discourse). For this reason, Kamp and Reyle's proposed meaning of *Sunday*, viz. the construction rule below, is extremely complicated, involving multiple disjunctions.

CR.Sunday

Triggering configuration: NP(t'): Sunday

Constraint: The clause from which this configuration derives has either the past or future tense

Choose: Origin of Computation t'' from (a)-(c) such that K entails the following condition $\neg[t'' \mid t'' \subseteq t''', \text{Sunday}(t''')]$

(a) speech time, (b) temporal perspective point, or (c) reference point

Introduce into U_K : A new dref t

Introduce into Con_K : Sunday(t) and

- (a) if K entails the conditions $e < t''$, where e is the dref for the described eventuality, add to Con_K : $t < t''$ and $[t'' \mid t'' \leq t''' \leq t'''] \Rightarrow [\mid \neg [\text{Sunday}(t''')]]$
- (b) if K entails the conditions $t'' < e$, where e is the dref for the described eventuality, add to Con_K : $t'' < t$ and $[t'' \mid t'' \leq t''' \leq t] \Rightarrow [\mid \neg [\text{Sunday}(t''')]]$

The two disjunctions in the meaning above involve (i) the choice of a so-called “Origin of Computation”, i.e. the origin from which one calculates the relevant Sunday, and (ii) the choice of whether to look for the closest Sunday *after* the Origin of Computation or *prior* to it. In what follows, I would like to explore the idea that in ambiguous discourses like (392)-(397), the choices in (i) and (ii) could be determined by rules of anaphora resolution and aspectual constraints on narrative progression, rather than the tense. This idea is in the spirit of Kamp and Reyle’s proposal and can be easily implemented within the Adverbial Transparency Theory, viz. the meaning in (399).

- (399) [_{AdvP} on Sunday^{t_n} e_m, s_k] (anaphoric version) \rightsquigarrow
 $\lambda R \lambda t. [t_n \mid t_n = t, \text{Sunday}\{t_n\}, \neg[t' \mid e_m \subseteq t', \text{Sunday}\{t'\}],$
 $[t' \mid t_n \leq t' \leq e_m] \Rightarrow \neg[\mid \text{Sunday}\{t'\}]],$
 $[t' \mid e_m \leq t' \leq t_n] \Rightarrow \neg[\mid \text{Sunday}\{t'\}]] ; R(s_k, t)$

To grasp the meaning above, let us use it to derive the two possible readings in (392), repeated below in (400). Recall that on the deictic reading, Mary finished her article on the closest Sunday prior to the speech event. On the anaphoric reading, Mary finished her article on the closest Sunday to the Friday described in (400a).

- (400) a. Three weeks ago on a Friday Mary began an article.
 b. She finished it on Sunday (Kamp and Reyle 1993, pp. 617).

Let us assume that this discourse has two possible syntactic representations in (401) and (402):¹¹⁵

(401) Syntactic representation of (400)

- a. [_{TP}[_{T'} PST^{t₁}[_{AspP}[_{AdvP} three weeks ago on a Friday<sup>t₂, s₂]] [_{Asp'} PFV^{e₃, s₃} Mary^{u₄} begin an article^{u₅}]]]]]
 b. [_{TP}[_{T'} PST^{t₆}[_{AspP}[_{AdvP} on Sunday^{t₇} e₀, s₃]] [_{Asp'} PFV^{e₈, s₈} she_{u₄} finish it_{u₅}]]]]]</sup>

(402) Syntactic representation of (400)

- a. [_{TP}[_{T'} PST^{t₁}[_{AspP}[_{AdvP} three weeks ago on a Friday<sup>t₂, s₂]] [_{Asp'} PFV^{e₃, s₃} Mary^{u₄} begin an article^{u₅}]]]]]
 b. [_{TP}[_{T'} PST^{t₆}[_{AspP}[_{AdvP} on Sunday^{t₇} e₃, s₃]] [_{Asp'} PFV^{e₈, s₈} she_{u₄} finish it_{u₅}]]]]]</sup>

¹¹⁵ Note that the expression *three weeks ago on a Friday* is treated as a syntactic unit. This is forced upon us by the proposed semantic type for adverbs, which does not allow stacking. A related problem dealing with quantified phrases like *every meeting on a Monday* and *every meeting until Christmas* is addressed by Pratt and Francez (2001); see also von Stechow (2002). The hope is that the insight found there could be adapted to the framework pursued here. I leave this task for another occasion.

The two representations above differ solely in the event antecedent associated with *on Sunday*. The representation in (401b) corresponds to the deictic reading; the subscripted e_0 means that the corresponding event antecedent for *on Sunday* is the speech event. The representation in (402b) corresponds to the anaphoric reading; the subscripted e_3 means that the corresponding event antecedent for *on Sunday* is the article-beginning event that is introduced into the discourse context by PFV. Finally, the subscripted s_3 in both (401b) and (402b) means that the corresponding state antecedent for *on Sunday* is the consequent state of the article-beginning event introduced by PFV.

Consider now the meanings of (401) and (402) below, in (403) and (404) respectively, where superfluous information has been eliminated:

(403) Meaning of (100a,b)

$[t_1, s_2, e_3, s_3, u_4, u_5, t_6, e_8, s_8 \mid$

- a. $t_1 < e_0, \text{friday}\{t_1\}, t_1 <_{3\text{-weeks}} e_0, e_3 \subseteq t_1, e_3 \subseteq_t s_2, u_4 = \text{mary}^\circ,$
 $\text{article}\{u_5\}, \text{begin}\{u_4, u_5, e_3, w_0\}, s_3 = \text{CONS}\{e_3\},$
- b. $t_6 < e_0, \text{sunday}\{t_6\}, \neg[t' \mid e_0 \subseteq t', \text{sunday}(t')],$
 $[t_{10} \mid t_6 \leq t_{10} \leq e_0] \Rightarrow \neg[\mid \text{sunday}\{t_{10}\}],$
 $[t_{10} \mid e_0 \leq t_{10} \leq t_6] \Rightarrow \neg[\mid \text{sunday}\{t_{10}\}],$
 $e_8 \subseteq t_6, e_8 \subseteq_t s_3, \text{finish}\{u_4, u_5, e_8, w_0\}, s_8 = \text{CONS}\{e_8\}]$

(404) Meaning of (101a,b)

$[t_1, s_2, e_3, s_3, u_4, u_5, t_6, e_8, s_8 \mid$

- a. $t_1 < e_0, \text{friday}\{t_1\}, t_1 <_{3\text{-weeks}} e_0, e_3 \subseteq t_1, e_3 \subseteq_t s_2, u_4 = \text{mary}^\circ,$
 $\text{article}\{u_5\}, \text{begin}\{u_4, u_5, e_3, w_0\}, s_3 = \text{CONS}\{e_3\},$
- b. $t_6 < e_0, \text{sunday}\{t_6\}, \neg[t' \mid e_3 \subseteq t', \text{sunday}(t')],$
 $[t_{10} \mid t_6 \leq t_{10} \leq e_3] \Rightarrow \neg[\mid \text{sunday}\{t_{10}\}],$
 $[t_{10} \mid e_3 \leq t_{10} \leq t_6] \Rightarrow \neg[\mid \text{sunday}\{t_{10}\}],$
 $e_8 \subseteq t_6, e_8 \subseteq_t s_3, \text{finish}\{u_4, u_5, e_8, w_0\}, s_8 = \text{CONS}\{e_8\}]$

Let us focus on the difference between (403b) and (404b). According to (403b), there is a time t_6 that has property of being a Sunday and its anchor is the speech event. In particular, t_6 is the closest Sunday *prior* to the speech event. We know this to be the case because the past tense—which forces t_6 to be prior to the speech event—renders the initial conditional in (403b) relevant. Since the article-finishing event took place within t_6 , while the article-beginning event took place three weeks prior to the speech event, it follows that the beginning happened prior to the finishing. The condition $e_8 \subseteq_t s_3$ in (403b)—which says that the article-finishing event is contained within the consequent state of the article-beginning event—is consistent with the predicted event ordering (though superfluous).

According to (404b), there is a time t_6 that has property of being a Sunday and its anchor is the article-beginning event e_3 . In particular, t_6 is the closest Sunday *after* e_3 . We know this to be the case because the condition $e_8 \subseteq_t s_3$ in (404b)—which says that the article-finishing event is contained within the consequent state of the article-beginning event—renders the second conditional in (404b) relevant. That is, if we assume that the topic state in (404b) is the consequent state of the article-beginning event, the aspectual constraints on narrative progression encoded by the aspect force us to dismiss the first conditional encoded by *on Sunday*. Given that the second conditional encoded by *on Sunday* is at play, we account for the correct event ordering without contradicting the contribution made by the tense.

In sum, I have shown how (399) allows us to account for the ambiguity in (400) and reiterates the fruits of the Adverbial Transparency Theory.¹¹⁶ Unfortunately, however, (399) also leads to an incorrect prediction about the original example in (388a), repeated below in (405).

(405) Mary wrote a letter on Sunday (Kamp and Reyle 1993, pp. 614).

In particular, (399) leads to the prediction that analogous to *that same day*, *on Sunday* cannot be used in discourse initial contexts because it requires a salient state antecedent. This negative result highlights the difficulty of analyzing this adverb (and its relatives): the fact that *on Sunday* is transparent to narrative progression leads us to appeal to rules of anaphora resolution and aspectual constraints on narrative progression. By doing so, however, we are lead astray with regard to discourse-initial, deictic usages of *on Sunday*. I leave it open for further research whether (405) points to a fundamental flaw in the proposed analysis of *on Sunday* or whether *on Sunday* is simply ambiguous between a deictic meaning, viz. (391) and an anaphoric meaning, viz. (399).

In the next section, I consider the adverb *now*, which also describes a time that can be anchored relative to the speech time or an event previously mentioned in the discourse. Unlike *on Sunday*, however, *now*'s distribution is more restricted: it is an event seeking anaphor that occurs in stative sentences.

¹¹⁶ I assume that this analysis can be straightforwardly extended to (393)-(397).

4.6 Anaphoricity of *now*

4.6.1 *Now*'s two key properties

There is a particular use of *now* where it co-occurs with the past tense.¹¹⁷ This usage is often found in *free indirect discourse* (FID), where it is possible to understand the described eventualities as happening from the point of view of a particular character.¹¹⁸ The discourses in (406) and (407) provide examples of *now* in FID. They come from a rather sad passage describing an episode of *As the World Turns*, a popular American television soap opera. The sentences in (406b) and (406d), which contain *now*, are told from the point of view of Emily, Dan's lover. On the other hand, the sentence in (407b) is told from the point of view of Dan, who is married to Susan (viz. the parenthetical *thought Dan*).

- (406) a. Emily pulled back from his embrace. Secretly she had been hoping that once he had the baby with his wife, Susan, Dan's feelings would soften and he would agree to apply for adoption.
- b. But she **could see now** that this was just a wild fantasy.
- c. Emily did not cry easily. There were countless times when she had felt as if her heart were splitting open yet she had remained dry eyed, holding her grief inside.
- d. **But now she was crying**, and there was nothing she could do about it.
- (407) a. Dan left the country with Emily. Susan became an alcoholic, constantly wallowing in her own grief. She spent most of her time with her beer-buddy Kevin Thompson, to whom she was attracted.
- b. Dan and Emily came back to town,
- c. but **now Susan was too drunk** to raise her own daughter, thought Dan.

¹¹⁷ Lee (2010) showed that of the 100 randomly selected narrative discourses from the British National Corpus that contained *now*, 63 had the past tense.

¹¹⁸ For discussion of point view and free indirect discourse, see e.g. Banfield 1982, Kamp and Rohrer 1983, Doron 1991, Schlenker 2004, Sharvit 2008 and Cumming, in prep.

Now exhibits two key properties in discourses above. The first is that *now* is an event anaphor. In both (406b) and (406d), *now* refers to the event of Emily pulling back away from Dan, described in (406a). As a result, the described eventualities modified by *now* in (406b) and (406d)—i.e. being able to see and the crying—are understood to hold throughout this event. Further evidence for the view that *now* is an event anaphor comes from (408), which is infelicitous with *now* because the series of stative sentences don't provide an antecedent of the right type.

- (408) Samsa's room, a regular human bedroom, only rather too small, lay quiet between the four familiar walls. Above the table on which a collection of cloth samples was unpacked and spread out hung a picture. It showed a lady, with a fur cap on and a fur stole, sitting upright and holding out to the spectator a huge fur muff. **Samsa {#was now/^{OK}was} intrigued by this lady** (modified from Kafka's *The Metamorphosis*).

In contrast to (408), (409) is felicitous because a series of eventive sentences (in italics) have been inserted, thereby providing an antecedent for *now*. In particular, we understand that the lady intrigued Samsa when he was rubbing his eyes.¹¹⁹

- (409) Samsa's room, a regular human bedroom, only rather too small, lay quiet between the four familiar walls. Above the table on which a collection of cloth samples was unpacked and spread out hung a picture. It showed a lady, with a fur cap on and a fur stole, sitting upright and holding out to the spectator a huge fur muff. *Suddenly, the lady dropped the muff and took off her cap. Samsa rubbed his eyes.* He could not believe what he just saw. **He {^{OK}was now/^{OK}was} intrigued by this lady.**

¹¹⁹ Note that it is possible to construct discourses like (i), where there is no event antecedent present, yet the discourse is felicitous. In such contexts, however, we seem to accommodate an event for which the state description serves as the background, e.g. in (i) we accommodate an event of Emily becoming an adult.

(i) In her youth, Emily hated the idea of a landlord. But **now, she took masochistic pleasure in dealing with a nasty landlord** (Roger Schwarzschild, p.c.)

The other key property of *now* is illustrated by the discourses in (410) and (411), which suggest that this adverb is incompatible with eventive sentences (cf. Kamp and Reyle 1993, pp. 595-596).

- (410) In messages on 3 December, the British and French Governments noted that an effective United Nations Force **{#now arrived/^{OK}was now ready to arrive/^{OK}was now arriving}**.¹²⁰
- (411) John came to me and told me he had been dressing in my clothes whenever I wasn't home for quite a few years, and **now he {#took/^{OK}was ready to take/^{OK}was taking}** the next step and with the help of his doctor (that I didn't even know about) he wanted to start the process of becoming female (from *Woman's Day* magazine).

An interesting contrast to (410)-(411) comes from the discourses below, in (412)-(413), where *now* co-occurs with the eventive verbs *shoots*, *gasps*, *gazes* and *turned*.

- (412) Now he shoots short up to the round air; Now he gasps, now he gazes everywhere... ("The Loss of Eurydice", G. Hopkins).
- (413) a. Someone touched his elbow so timidly that he thought it had been accidental, until the gesture was repeated with more insistence.
 b. Now he turned and saw Nebamun walking beside him (Lee and Choi 2009, pp. 101).

However, there is good reason to believe that (412) and (413) exemplify a *now* that is distinct from the *now* in (410) and (411). As will be discussed in §4.6.3, some languages morphologically distinguish the two *nows*. The *now* in (412) and (413) resembles (though is not the same as) the narrative marker *then* and will be discussed in §4.6.3; I will henceforth refer to this *now* as 'broadcaster *now*'

¹²⁰ Modified from:
<http://www.un.org/en/peacekeeping/missions/past/unef1backgr2.html>

because it is often found in ‘broadcaster talk’ (though it is also often found in stage directions and narrative discourse). The *now* in (410) and (411), on the other hand, is the focus of this sub-section as well as the next. I will continue to refer to this *now* as ‘*now*’, though where necessary, I will use the locution ‘stative *now*’ to refer to its affinity for stative sentences. This *now* resembles the adverb *currently*, which also has an affinity for stative sentences. As illustrated below, in (414) and (415), the combination of *currently* with eventive verbs like *arrived* and *built* renders the discourse odd.

- (414) In messages on 3 December, the British and French Governments noted that an effective United Nations Force {#**currently arrived**/ ^{OK}**was currently ready to arrive**/ ^{OK}**was currently arriving**}.¹²¹
- (415) He developed the Boston Road projects for CVS, Big Y and Red Robin, and {#**currently built**/ ^{OK}**was currently building**} a Hampton Inn and Suites at Founders Plaza.¹²²

The data above are important for several reasons. To begin with, it goes against Katz’s (2003) descriptive claim that some adverbs “select against stative verbs and for eventive verbs”, but “there do not seem to be adverbs that select for stative verbs and against eventive verbs.” Katz calls this generalization the “Stative Adverb Gap” (summarized below), which would be unexpected on most analyses of temporal location adverbs and certainly on the analysis of temporal location adverbs proposed in this chapter.

¹²¹ <http://www.un.org/en/peacekeeping/missions/past/uneflbackgr2.html>

¹²² <http://articles.courant.com/keyword/hampden/recent/2>

(416) *Stative Adverb Gap*

“if an adverb can felicitously modify a stative verb, then it can also felicitously modify an eventive verb, but not the other way around” (Katz 2003, pp. 2).

On the other hand, the fact that there are adverbs that “select for stative verbs and against eventive verbs”, viz. *now* and *currently*, raises non-trivial questions about the meaning of these adverbs. The idea pursued in the next section is that *now* has both an explicitly temporal component and perspective shifting discourse component.¹²³ These components conspire to impose the following two requirements: (i) search for a topical event that serves as the ‘current perspective’ and (ii) describe what took place throughout this topical event. The first requirement captures *now*’s anaphoric nature, while the second leads to a contradiction with eventive, but not stative verb phrases. More specifically, the idea is that aspectual constraints on narrative progression imposed by eventive (but not stative) VPs contradict the narrative progressive constraints imposed by *now*.

As we shall see, this proposal is easily implemented within the Adverbial Transparency Theory because, according to this theory, adverbs make reference to two distinct parameters, i.e. a time and state, which interact with aspectual meaning. In contrast, Kamp and Reyle (1993) propose that adverbial meaning involves a single temporal parameter, a so-called *temporal perspective point*, which interacts with tense, but not with their reference point parameter that is responsible for narrative progression (cf. discussion in Chapter 3). As a result,

¹²³ I assume that the proposed analysis of *now* extends to *currently* as well.

Kamp and Reyle are forced to posit three past tenses even though the morphology indicates otherwise: (i) a past tense that only combines with stative sentences, (ii) a past tense that only combines with eventive sentences and (iii) a past tense that is required only in the presence of *now* (Kamp and Reyle 1993, pp. 601). On the one hand, this seemingly spurious ambiguity highlights the difficulty of incorporating the meaning of *now* within a more general analysis of temporal interpretation in narrative discourse. On the other, it highlights the fruits of combining the birelational analysis of aspect pursued in Chapter 3 with the Adverbial Transparency Theory pursued here: even though the birelational analysis is fairly complicated, the proposed analysis of temporal interpretation as a whole is simpler than its predecessors, accounting for several puzzling phenomena in a straightforward way.

4.6.2 Predicting *now*'s two key properties

The goal of this section is to show how the meaning below, in (417), accounts for *now*'s two key properties: (i) it is an event anaphor, and (ii) it is only compatible with stative sentences.

$$(417) \quad [\text{AdvP } \text{now}^{\text{s}_n \text{e}_m}] \rightsquigarrow \\ \lambda R \lambda t. [s_n \mid t \approx e_m, \text{CONS}\{e_m\} = s_n]; R(s_n, t)$$

According to (417), *now* is like all other temporal location adverbs that we have looked at thus far in that it relates two times: a time that it supplies and a time that is supplied by the tense. However, unlike other adverbs that we have looked at, the time that *now* supplies is the time of an event e_m that requires a salient

antecedent (henceforth: PERSPECTIVAL EVENT). This reflects the first key property of *now*, namely that it is an event anaphor. Moreover, by linking the PERSPECTIVAL EVENT to a time supplied by the tense, viz. the condition $t \approx e_m$, we guarantee that an eventuality described by AspP takes places at the PERSPECTIVAL EVENT. Such is the case because an eventuality described by AspP is related to t . In this way, the condition $t \approx e_m$ serves as a link between an eventuality described by AspP and the discourse context.

The other function of *now* is to supply the state input required by an aspectual phrase. Recall that other temporal location adverbs either introduce an unspecified state into the discourse context or retrieve a state dref anaphorically from the discourse context. In the case of *now*, however, the state input s_n is specified as the consequent state of the PERSPECTIVAL EVENT, viz. the condition $\text{CONS}\{e_m\} = s_n$. Given the condition $t \approx e_m$, this entails that an eventuality described by AspP not only takes places at the PERSPECTIVAL EVENT, but that it also holds throughout this event. This leads to a contradiction with aspectual requirements imposed on eventive sentences, but not with stative sentences, thereby explaining *now*'s affinity for the latter, viz. (418).

(418) John came to me and told me he had been dressing in my clothes whenever I wasn't home for quite a few years, and **now he {#took/^{OK}was ready to take/^{OK}was taking}** the next step and with the help of his doctor (that I didn't even know about) he wanted to start the process of becoming female (from *Woman's Day* magazine).

Let us now derive the contrast in (418) using the meaning of *now* in (417) along with the meaning of the past tense in (419) and the meaning of the eventive,

aspectual phrase *John take the next step* in (420). These latter meanings were discussed earlier in this chapter and I will not say anything more here.

$$(419) \quad [{}_T \text{PST}^{t_n}] \rightsquigarrow \lambda Q.[t_n \mid t_n < \tau\{e_0\}] ; Q(t_n)$$

$$(420) \quad [{}_{\text{Asp}} \text{PFV}^{e_n, s_n} \text{John}^{u_m} \text{take the next step}] \rightsquigarrow \\ \lambda s \lambda t.[e_n, s_n, u_m \mid e_n \subseteq t, e_n \subseteq_t s, s_n = \text{CONS}\{e_n\}, u_m = \text{john}^\circ, \\ \text{take.the.next.step}\{u_m, e_n, w_0\}]$$

When we combine (417), (419) and (420), we get the meaning below, in (421). According to this meaning, the taking-the-next-step event e_k is contained within two non-overlapping eventualities—i.e. the PERSPECTIVAL EVENT e_m and its consequent state s_i —thereby explaining why *now* cannot co-occur with eventive sentences.

$$(421) \quad [{}_{\text{TP}} [{}_T \text{PST}^{t_n} [{}_{\text{AspP}} [{}_{\text{AdvP}} \text{now}^{s_i, e_m}] [{}_{\text{Asp}} \text{PFV}^{e_k, s_k} \text{John}^{u_j} \text{take the next step}]]]] \rightsquigarrow \\ [t_n, s_i, e_k, s_k, u_j \mid t_n < e_0, t_n \approx e_m, \text{CONS}\{e_m\} = s_i, e_k \subseteq t_n, e_k \subseteq_t s_i, \\ u_j = \text{john}^\circ, \text{take.the.next.step}\{u_j, e_k, w_0\}, s_k = \text{CONS}\{e_k\}]$$

On the other hand, when we combine (417), (419) and the meaning of the stative, aspectual phrase *be ready* below, in (422), we get the meaning in (423). According to this meaning, the state of being ready s_k holds throughout the PERSPECTIVAL EVENT e_m and its consequent state s_i .

$$(422) \quad [{}_{\text{AspP}} \text{STATE}^{s_n} \text{John}^{u_m} \text{be ready}] \rightsquigarrow \\ \lambda s \lambda t.[s_n, u_m \mid t \subseteq s_n, s \subseteq_t s_n, u_m = \text{john}^\circ, \text{be.ready}\{u_m, s_n, w_0\}]$$

$$(423) \quad [{}_{\text{TP}} [{}_T \text{PST}^{t_n} [{}_{\text{AspP}} [{}_{\text{AdvP}} \text{now}^{s_i, e_m}] [{}_{\text{Asp}} \text{STATE}^{s_k} \text{John}^{u_j} \text{be ready}]]]] \rightsquigarrow \\ [t_n, s_i, s_k, u_j \mid t_n < e_0, t_n \approx e_m, \text{CONS}\{e_m\} = s_i, t_n \subseteq s_k, s_i \subseteq_t s_k, \\ u_m = \text{john}^\circ, \text{be.ready}\{u_m, s_k, w_0\}]$$

As illustrated below, in Fig. 21, this information captures our intuitions about *now* in stative sentences such as (424). Here, the state of being ready is understood to hold throughout the perspectival event, which presumably is the event of John telling the speaker that he had been dressing in the speaker's clothes.

- (424) John came to me and told me he had been dressing in my clothes whenever I wasn't home for quite a few years, and **now he was ready**...

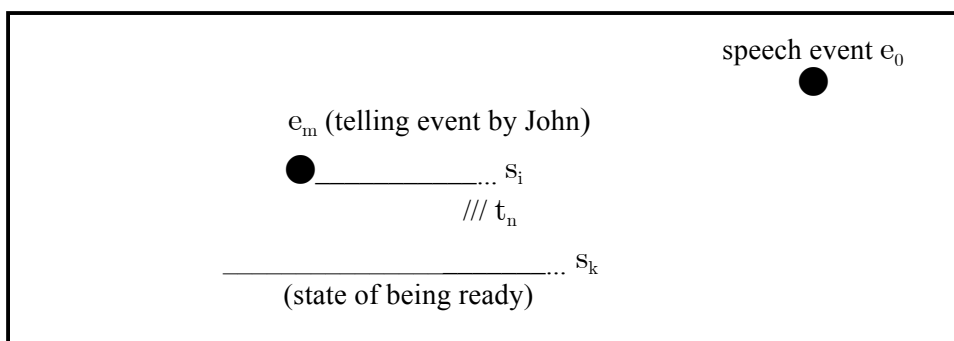


Figure 21: Temporal orderings of eventualities in (424)

When we combine (417), (419) and the meaning of the progressive, aspectual phrase below, in (425), we get the meaning in (426). It follows from this meaning that a taking-the-next-step event stage e'_k is contained within the PERSPECTIVAL EVENT e_m and the consequent states of e'_k and e_m are co-temporal (viz. the condition $s_i \approx_t \text{CONS}\{e'_k\}$).

- (425) $[\text{AspP PROG}^{e'_n, e_n, w_n} \text{John}^{u_j} \text{take the next step}] \rightsquigarrow$
 $\lambda s \lambda t. [e'_n, e_n, w_n, u_m \mid e'_n \subseteq t, s \approx_t \text{CONS}\{e'_n\}, \text{STAGE}\{e'_n, e_n, w_0, w_n\},$
 $u_m = \text{john}^\circ, \text{take.the.next step}\{u_m, e_n, w_n\}]$

- (426) $[\text{TP}[\text{TPST}^{t_n}[\text{AspP}[\text{AdvP} \text{now}^{s_i, e_m}][\text{AspP} \text{PROG}^{e'_k, e_k, w_k} \text{John}^{u_j} \text{take the next step}]]]] \rightsquigarrow$
 $[t_n, s_i, e'_k, e_k, w_k, u_j \mid t_n < e_0, t_n \approx e_m, \text{CONS}\{e_m\} = s_i, e'_k \subseteq t_n,$
 $s_i \approx_t \text{CONS}\{e'_k\}, \text{STAGE}\{e'_k, e_k, w_0, w_k\}, u_j = \text{john}^\circ,$
 $\text{take.the.next.step}\{u_j, e_k, w_k\}]$

As illustrated below, in Fig. 22, this information captures our intuitions about *now* in progressive sentences such as (427). Here, the consequent state of a taking-the-next-step event stage is understood to overlap the perspectival event, which once again I assume is the event of John telling the speaker that he had been dressing in the speaker's clothes.

- (427) John came to me and told me he had been dressing in my clothes whenever I wasn't home for quite a few years, and **now he was taking the next step**...

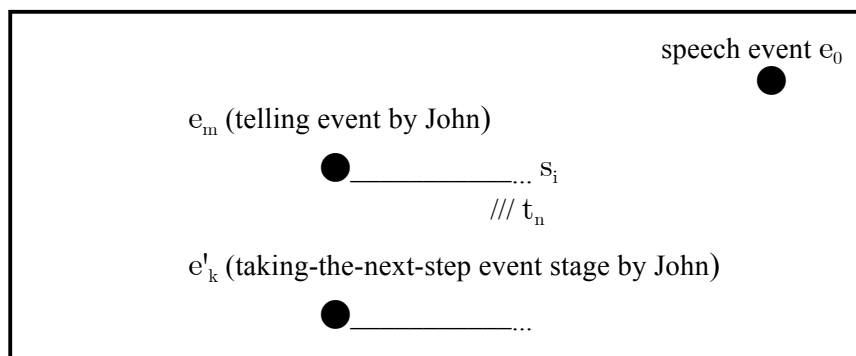


Figure 22: Temporal orderings of eventualities in (427)

Let us now consider some other predictions of (423) and (426). To begin with, (423) and (426) make the desirable prediction that the sentences below, in (428) and (429), are infelicitous in discourse initial contexts. Such is the case because (423) and (426) require a salient antecedent for the PERSPECTIVAL EVENT e_m that is prior to the speech event. No such antecedent is available in discourse initial contexts, however.

- (428) #John was now ready to take the next step to become female.
 (429) #John was now taking the next step to become female.

On the other hand, given the meaning of the present tense proposed earlier in this

chapter, we expect (430) and (431) to be felicitous:

(430) John is now ready to take the next step to become female.

(431) John is now taking the next step to become female.

Such is the case because the present tense requires that PERSPECTIVAL EVENT e_m be the speech event. For example, when we combine the meaning of the present tense in (432) with the meaning of *now* in (417) and the meaning of the stative aspectual phrase (422), we get the meaning in (433). According to this meaning, the state of being ready s_k holds throughout the PERSPECTIVAL EVENT e_m , which in turn is identified with the speech event e_0 . In other words, the state of being ready holds throughout the speech event. This is exactly what (430) means.

(432) $[_T \text{PRS}^{t_n}] \rightsquigarrow \lambda Q.[t_n \mid t_n \approx e_0] ; Q(t_n)$

(433) $[_{TP} [_T \text{PRS}^{t_n} [_{AspP} [_{AdvP} \text{now}^{s_i} e_m] [_{Asp'} \text{STATE}^{s_k} \text{John}^{u_j} \text{be ready}]]]] \rightsquigarrow$
 $[t_n, s_i, s_k, u_j \mid t_n \approx e_0, t_n \approx e_m, \text{CONS}\{e_m\} \approx_t s_i, t_n \subseteq s_k, s_i \subseteq_t s_k,$
 $u_j = \text{john}, \text{be.ready}\{u_j, s_k, w_0\}]$

Similarly, when we combine the meaning of the present tense in (432) with the meaning of *now* in (417) and the meaning of the progressive aspectual phrase in (425), we get (434). According to this meaning, an event stage of John taking the next step e'_k takes place at the PERSPECTIVAL EVENT e_m , which in turn is identified with the speech event e_0 . In other words, John is taking the next step at the speech event. This is exactly what (431) means.

(434) $[_{TP} [_T \text{PRS}^{t_n} [_{AspP} [_{AdvP} \text{now}^{s_i} e_m] [_{Asp'} \text{PROG}^{e'_k, e_k, w_k} \text{John}^{u_j} \text{be ready}]]]] \rightsquigarrow$
 $[t_n, s_i, e'_k, e_k, w_k, u_j \mid t_n \approx e_0, t_n \approx e_m, \text{CONS}\{e_m\} \approx_t s_i, e'_k \subseteq t_n,$
 $s_i \approx_t \text{CONS}\{e'_k\}, \text{STAGE}\{e'_k, e_k, w_0, w_k\}, u_j = \text{john}^\circ,$
 $\text{take.the.next.step}\{u_j, e_k, w_k\}]$

In sum, I have proposed that *now* is an anaphoric expression that retrieves a PERSPECTIVAL EVENT. The present tense requires the PERSPECTIVAL EVENT to be the speech event, while the past tense requires the PERSPECTIVAL EVENT to be a salient event previously mentioned in the discourse that is prior to the speech event. From this, one may be tempted to conclude that the seemingly deictic behavior of *now* comes from the present tense. Hans Kamp's influential example in (435) shows, however, that this is not the case. (435) entails that an earthquake is taking place at the speech event even though there is no present tense in the sentence. Moreover, the aforementioned entailment disappears without *now*.

(435) I learned last week that there would now be an earthquake (Kamp 1971, pp. 299).

This example was used by Kamp to argue that *now* always refers to the context of utterance, which would explain why (435) entails that an earthquake is taking place at the speech event. The analysis proposed here, however, offers a different explanation: the PERSPECTIVAL EVENT in (435) must be the speech event because it is compatible with the semantics of *would* and there is no other possible antecedent; the learning event described by the matrix clause is ruled out because *would* requires the earthquake to follow this event. In other words, the idea is that *now* is compatible with a present or a past PERSPECTIVAL EVENT and—if no grammatical elements (viz. the present tense) indicate otherwise—independent rules of anaphora resolution determine which one is chosen. In (435), these rules determine that the speech event is chosen.

I end this section, by considering and ultimately rejecting an alternative analysis of *now* that is arguably more attractive than the one proposed here. The crux of this analysis is to say that in cases where *now* co-occurs with the past tense, there is an operator that ‘shifts’ *now*’s coordinates—e.g. in (436c), an operator shifts the speech time coordinate to a past time, namely the time of Dan and Emily coming back into town.

- (436) a. Dan left the country with Emily. Susan became an alcoholic, constantly wallowing in her own grief. She spent most of her time with her beer-buddy Kevin Thompson, to whom she was attracted.
 b. Dan and Emily came back to town,
 c. but **now Susan was too drunk** to raise her own daughter, thought Dan.

This analysis is arguably more attractive than the one proposed here because (i) we can maintain the classic view that *now* is a deictic expression, i.e. it always refers to the (shifted) speech time and (ii) it has been argued on independent grounds that shifting operators are necessary to account for propositional attitude reports across languages (Schlenker 1999, Anand and Nevins 2004) and FID (Schlenker 2004, Sharvit 2008), i.e. cases in which the ‘perspective’ shifts from the narrator to the attitude holder (or character in a novel). Since (436) is a clear case of FID (viz. the parenthetical *thought Dan* in (436c)), it may seem especially appealing to adopt an analysis of *now* that involves a shifting operator.

Two questions that arise for such an analysis are: (i) does *now* co-occur with the past tense in non-perspective-shifting contexts? and (ii) how does shifting coordinates of *now* explain its reluctance to co-occur with eventive

sentences? Let us consider these questions in turn. With regard to the first question, consider the discourse in (437), which is just like (436), except that the parenthetical *thought Dan* has been taken out and *the miserable soul* has been inserted to embellish the description of the poor condition that Susan was in. As a result, (437c) must be understood as being told from the point of view of the narrator rather than Dan. That is, there is no shift in the point of view and yet *now* felicitously co-occurs with the past tense.¹²⁴

- (437) a. Dan left the country with Emily. Susan became an alcoholic, constantly wallowing in her own grief. She spent most of her time with her beer-buddy Kevin Thompson, to whom she was attracted.
 b. Dan and Emily came back to town,
 c. but **now the miserable soul was too drunk** to raise her own daughter.

Note that the data above is not evidence that a shifting operator is absent from (437c). After all, one could argue that *now*'s co-occurrence with the past tense warrants such an operator. However, without the point of view shift in (437c), there does not seem to be any independent reason to posit such an operator.

The biggest problem for the shifting analysis of *now* comes from considering the other question mentioned above: how does shifting coordinates of *now* explain its reluctance to co-occur with eventive sentences? The only possible way (that I know of) of answering this question is as follows. Assuming that *now* refers to the speech event (shifted or otherwise), we do not expect it to co-occur with eventive sentences if we further assume that the speech event is instantaneous and an eventive sentence cannot be true at an instant (Taylor 1977,

¹²⁴ Thanks to Sam Cumming for bringing such data to my attention.

Dowty 1979; see also Landman 2008). This answer, however, faces two challenges. The first challenge comes from a discourse like (438), where we would have to say that the shifted speech event is the event of pacing back and forth described in (438a). Such is the case because we understand Rebecca's delusional state described in (438b) to hold throughout this event. However, the sentence *Rebecca paced back and forth* does not describe an instantaneous event (nor does any other sentence in this discourse).

- (438) a. The chain around her ankle scraped against the concrete floor as Rebecca paced back and forth.
- b. Rebecca **was now delusional**, seeing herself in a giant mushroom forest surrounded by multicolored talking two legged frogs (*Darkness Light: Witness to the Unholy*; P. Puck).

The second challenge concerns the aforementioned assumption that an eventive sentence cannot be true at an instant. It is unclear to me why this assumption should be granted. In particular, why can't a sentence with an achievement VP be true at an instant? After all, events described by achievement VPs *are* instants. For example, it seems reasonable to conclude that the underlined sentence in (439) is true at an instant—i.e. the point at which the woman's illness began to be more manageable.

- (439) Then, in 1996, she became ill and unable to keep working. After over two years of very restricted activity, her illness began to be more manageable, allowing her to have some energy and reduced pain. **At that point, in 1999, she and her husband, Graham, decided to launch *Inquire Within*.**¹²⁵

¹²⁵ <http://www.inquirewithin.net/shannonbio.htm>

In contrast to (439), (440) shows that *now* is incompatible with sentences that have achievement VPs.

- (440) In messages on 3 December, the British and French Governments noted that an effective United Nations Force {#**now arrived**/^{OK}**was now ready to arrive**/^{OK}**was now arriving**}.

If (439)-(440) constitute evidence against an analysis that appeals to an instantaneous speech event as an explanation of *now*'s affinity for stative sentences, then there would be little (if any) motivation for a shifting-operator analysis of *now*. Especially since on the analysis advocated here, *now*'s affinity for stative sentences follows from independently motivated constraints on anaphora resolution encoded by *now* that clash with independently motivated constraints on narrative progression encoded by the aspect.

4.6.3 A note on the broadcaster *now*, *sejčas* and *teper'*

In the previous section I proposed a meaning of *now* that accounted for its two key properties: (i) it is an event anaphor, and (ii) it is only compatible with stative sentences. In this section, I would like to return to the sentences below, which exemplify the so-called broadcaster *now*.

- (441) Now he shoots short up to the round air; Now he gasps, now he gazes everywhere... (*The Loss of Eurydice*; G. Hopkins).
- (442) a. Someone touched his elbow so timidly that he thought it had been accidental, until the gesture was repeated with more insistence.
 b. Now he turned and saw Nebamun walking beside him (Lee and Choi 2009 pp. 101).

In these sentences, *now* does not seem to contribute anything to the assertion; it merely emphasizes the narrative progression. As shown below, in (443), taking out *now* from (441) affects the poem insofar as the transition from one event to the next seems less illuminated. Similarly, if we take out *now* from (442b), as in (444b), the described turning event seems less dramatic.

(443) He shoots short up to the round air; He gasps, he gazes everywhere...

- (444) a. Someone touched his elbow so timidly that he thought it had been accidental, until the gesture was repeated with more insistence.
 b. He turned and saw Nebamun walking beside him.

Given these observations, it is tempting to conclude the broadcaster *now* is the overt manifestation of NARR, proposed in §4.3. That is, it retrieves a state dref anaphorically from the discourse context, and aspectual operators ensure that the described event is contained within this state.

While I believe that the broadcaster *now* is, in fact, a state anaphor on a par with NARR, I also think that its meaning has a further component. This additional component comes into play when we consider stative sentences like (445b).

- (445) a. Irene missed me so much that she drove from Tarifa to see me.
 b. **Now all she wanted to do** was to take me back with her.

If the meaning of the broadcaster *now* were to be identical to NARR, then we would expect the desire described in (445b) to hold throughout the driving event described in (446a). That is, we would expect (445) to have the same meaning as (446):

- (446) a. Irene missed me so much that she drove from Tarifa to see me.
 b. **All she wanted to do was** to take me back with her.

However, (445) only asserts that Irene had a desire of a certain kind *after* she got to Tarifa; the assertion in (445) says nothing about whether this desire held while Irene was driving. In fact, (445) strongly implicates that Irene did *not* have this desire while she was driving.

The crucial property of the broadcaster *now* is, then, to move the story forward irrespective of whether an event or a state is at play. In this way, the broadcaster *now* is similar to the narrative discourse marker *then*, cf. (447) below.¹²⁶

- (447) a. Irene missed me so much that she drove from Tarifa to see me.
 b. **Then all she wanted to do was** to take me back with her.

In order to account for these observations about the broadcaster *now*, I propose the following analysis. In addition to retrieving a state antecedent anaphorically from the discourse context, the broadcaster *now* imposes the following requirement: the eventuality described by an aspectual phrase is contained within

¹²⁶ Note that there are many usages of *then* which do not resemble the broadcaster *now*, viz. (i)-(iv). See Shiffrin 1992, Glasbey 1993, Spejewski 1994 and Roßdeutscher 2005 for more discussion.

- (i) I'm going shopping and I'm going to the dry cleaners **then** (Spejewski 1994, pp. 124).
 (ii) My mother used to throw dinner parties every Thursday. She used her best silver **then** (Spejewski 1994, pp. 140).
 (iii) If my mother threw a dinner party and it was a Thursday, **then** she used her best silver.
 (iv) Speaker A: I am going shopping this afternoon. Speaker B: **Then** you had better go to the bank (Spejewski 1994, pp. 110).

the retrieved state.¹²⁷ Applying this idea first to (442), we would say that *now* requires the turning event described by the aspectual phrase in (442b) to be contained within a topical state. This requirement, however, is superfluous given that is also imposed by the aspectual phrase. This explains the intuition that *now* in (444b) does not contribute to the assertion. Fig. 23 below illustrates that if assume that if the topic state is the consequent state of the touching event described in (444a), it is correctly predicted that the turning followed the touching.

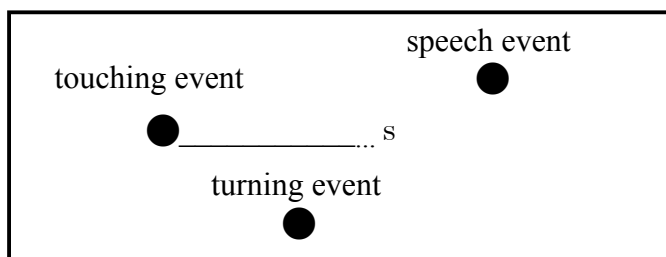


Figure 23: Temporal orderings of eventualities in (442)

Let us now apply the same analysis to (445): *now* requires the desire described by the aspectual phrase in (445b) to be contained within a topical state. This requirement differs from the requirement imposed by the aspectual phrase, namely that a topical state be contained within the desire. Given that the containment is non-proper, it follows from the two requirements that the desire is co-temporal with the topical state—i.e. if $s \subseteq_t s'$ and $s' \subseteq_t s$, then $s \approx_t s'$. Fig. 24 below illustrates that if assume that the topical state is the consequent state of the

¹²⁷ I leave it open for further research how this analysis should be implemented into the Adverbial Transparency Theory proposed in this chapter.

driving event in (445a), it is correctly predicted that the desire followed the driving event.

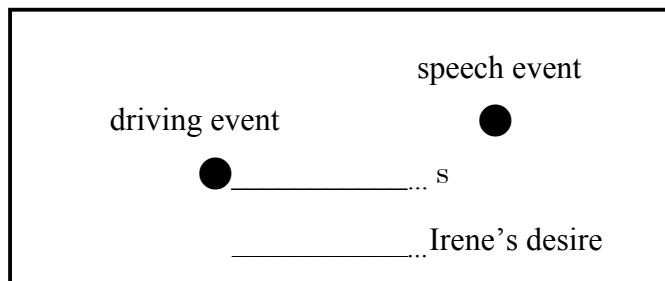


Figure 24: Temporal ordering of eventualities in (445)

Moreover, if assume that states are homogenous (as is typically assumed), then we do not rule out the possibility that the desire held prior to the driving event (cf. discussion of Dowty 1986 in Chapter 3). Finally, the implication in (445) could be derived via Gricean reasoning: since the speaker did not assert that Irene's desire took place prior to the driving event (in addition to the desire taking place after the driving event), which would have been more informative than what is asserted in (445), we infer the contrary, namely that the desire was absent during the driving event.

A major challenge for the proposed analysis is to say why the *now* in (445) is not interpreted as the stative *now* discussed in the previous subsection. That is, what prevents *now* in (445) from seeking an event (rather than a state) antecedent, which in this case would be the driving event, and require that Irene's desire hold throughout this event—cf. (448), where the state of being too drunk is understood to hold throughout the event of Dan and Emily coming back into town.

- (448) a. Dan and Emily came back to town,
 b. but now Susan was too drunk to raise her own daughter.

At this point it is not clear what prevents *now* in (445) from getting the interpretation found in (448). Conversely, it is not clear why the *now* in (448) could not be interpreted as the *now* in (445). One possibility is that world knowledge is at play here—e.g. on a broadcaster *now* interpretation, (448) would imply the unlikely scenario that the coming into town by Dan and Emily caused Susan to become too drunk to raise her own daughter.

In what follows, I would like to investigate cases in which it is much more clear why a particular *now* is used. To do so, I let us look at data from Russian, a language that morphologically distinguishes between the two *nows*.¹²⁸ To begin with, consider the discourse below, in (449), which uses *teper'* ('now') in (449b) to emphasize narrative progression. In particular, we infer that a man first put on his helmet and then jumped on the horse. *Sejčas*, which also translated as 'now', is not possible here because it is incompatible with eventive sentences, viz. the stative *now* in English.

- (449) a. *On vynu-l iz-pod plašča ploskij šlem*
 He ^{PFV}take.out-PST.3S from.under coat flat helmet
bez operenija, nade-l ego.
 without feathers ^{PFV}put.on-PST.3S it
 'He took out a featherless flat helmet from underneath his coat and put it on.'
- b. {^{OK}*Teper'* #*Sejčas*} *na lošad' vskoči-l čelovek*
 Now now on horse PFV-jump.on-PST.3S person
v voennoj xlamide i s korotkim mečom na bedre.
 with military uniform and with short sword on hip
 'Now the man in a military uniform with a short sword on his hip jumped onto the horse' (Bulgakov, M; *Master i Margarita*).

¹²⁸ As argued by Lee and Choi (2009), Korean is another language that morphologically distinguishes between the two *nows*; cf. *icey* ('now') and *cikum* ('now'), which correspond to the English broadcaster *now* and stative *now* respectively.

The discourse above suggests that *teper'* corresponds to the broadcaster *now* in English while *sejčas*, to the stative *now*. This idea is further supported by (450), where *sejčas* is used to indicate Kate's current physical location, namely her being at the university. This, in turn, explains why the speaker cannot call Kate. According to Mel'chuk (1985), the use of *teper'* is odd in this context because it would lead to a change-of-state inference—i.e. that Kate was not previously at the university—which is irrelevant to the speaker's ability to call Kate.

- (450) *Ja ne mogu pozvat' Katju: ona {^{OK}sejčas #teper'} v universitete.*
 I not able call.IPF Kate she now now in university
 'I'm not able to call Kate: she's at the university right now' (Mel'chuk 1985, pp. 273).

This inference associated with *teper'* is reminiscent the inference associated with the broadcast 'now' in (445), namely that Irene formed a desire of a certain kind *after* she arrived in Tarifa (i.e. she did not have this desire prior to her arrival).

The discourse below, in (451), exemplifies the same contrast as in (450), but for different reasons. In (451c), *sejčas* is used to assert that Carlo was old and sick when he entered Giuseppe's home. The visiting event in (451a) is chosen as an antecedent because (i) it is described by a perfective VP, which allows for temporal anaphora and (ii) the other events in (451b) are described by imperfective VPs, which do not allow for temporal anaphora. *Teper'* ('broadcaster now') is odd in (451c) because the consequent state of the visiting event would be chosen as an antecedent and we would infer that Carlo was old after he entered Giuseppe's home, but not before.

- (451) a. *V èto vremja k Dzhyzeppe za-še-l ego starinnyj*
 In this time to Giuseppe PFV-go-PST.3S his old
prijatel', šarmanšik, po imeni Karlo.
 friend organ.grinder with name Carlo
 “At this time, Giuseppe’s old friend, entered—an organ grinder
 named Carlo.”
- b. *Kogda-to Karlo v širokopoloj šljape xodi-l s*
 Once Carlo with wide.billed hat go.IPF-PST.3S with
prekrasnoj šarmankoj po gorodam i penniem i muzykoj
 splendid barrel.organ in cities and singing and music
dob-yva-l sebe na xleb.
 obtain-IPF-PST.3S self for bread
 “Once upon a time, Carlo—in a hat with a wide bill—would go
 from city to city and use his splendid barrel organ to make enough
 for bread.”
- c. {^{OK}*Sejčas #Teper'*} *Karlo by-l uže star i bolen,*
 Now now Carlo be-PST.3S already old and sick
i šarmanka ego davno sloma-l-a-s'.
 and barrel.organ his long.time break.down-PST.3S-FEM-RFL
 “Now Carlo was already old and sick, and his barrel organ had
 been broken for a long time.” (A. Tolstoj; *Zolotoj ključik, ili*
priključenija Buratino).

Finally, consider (452). *Sejčas* is used here to indicate that Michael is with a woman at the speech event. Mel'chuk (1985) observes that *teper'* is not possible here, which is expected given that *teper'* corresponds to the broadcaster *now*. That is, it retrieves a state dref anaphorically from the discourse context, but no such dref is available discourse initially.

- (452) *Miša {^{OK}sejčas #teper'} s damoj.*
 Michael now now with woman
 “Michael is with a woman right now” (after Mel'chuk 1985, pp. 262).

In sum, the data above provide some evidence that *sejčas* corresponds to the stative *now* in English, while *teper'* corresponds to the broadcaster *now*. *Sejčas*

is an event anaphor, whose semantic function is to locate a described eventuality throughout a salient event previously mentioned in the discourse. Given aspectual constraints on narrative progression, this means that it can only be used in stative sentences. *Teper'*, on the other hand, is a state anaphor that is compatible with both stative and eventive sentences. Its semantic function is to ensure that the described eventuality took place during a salient consequent state previously mentioned in the discourse. This means that *teper'* ‘overrides’ the aspectual constraints on narrative progression. That is, when a sentence has *teper'*, the story moves forward irrespective of whether an event or a state is at play.

I conclude this section by considering the following quote from Mel'čuk (1985):

- (453) a. S.1 obezatel'no otsylaet k momenty reči, T.E. javljaetsja šifterom (v smysle Jakobson 1957), ili deiktičeskim znakom; T.1 ukazyvaet na tot period, o ktorom idet reč', T.E. javljaetsja anaforičeskim znakom. S1 vxodit v odin rjad s *ja, ty, zdes', segodnja*, a T1 s *on, tut, tam i togda, v tot den'/mement* (Mel'čuk 1985, p. 273-274).
- b. *Sejčas* must refer to the speech time, i.e. it behaves as a shifter (in the sense of Jakobson 1957), or a deictic sign...*Teper'* refers to that period, about which the utterance is about, i.e. it behaves as an anaphoric sign...*Sejčas* goes into one row, with “I”, “you”, “here”, “today”, but *teper'*—with “he”, “here”, “there” and “then” (“on that day/moment”).

Given the proposed analysis, Mel'čuk's assessment of *teper'* is correct; it is an anaphoric expression whose antecedent is never linked to the context of utterance. Mel'čuk's assessment of *sejčas*, however, is incorrect. *Sejčas* ('stative now') is not a deictic expression on a par with the first person pronoun. It is an anaphoric expression like *teper'*. The crucial difference between *sejčas* and *teper'* is that the

former does not rule out the speech event as a possible antecedent. Like the stative *now* in English, *sejčas* can pick out the speech event, viz. (450) and (452), or a previously mentioned event located in the past, viz. (451).

4.7 Conclusion

This chapter proposed the Adverbial Transparency Theory. According to this theory, adverbs have both an explicitly temporal component and a discourse component that determines whether narrative progression is possible. *That same day* provides a clear case in which these two components are at play. Not only does this adverb ensure that a described eventuality is located at a previously mentioned 24-hour interval of time (temporal component), but it also ensures that the described eventuality is located at a previously mentioned consequent state (discourse component). Given independent rules of anaphora resolution and aspectual constraints on narrative progression, it follows from this latter component that when a sentence has *that same day*, the story moves forward with eventive sentences, viz. (454), but not with stative ones, viz. (455).

- (454) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. My wife hired her **that same day** and gave her a check for one month in advance.
- (455) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. **That same day** my wife was sick with the flu.

Another adverb that is compatible with narrative progression is *the next day*. Unlike *that same day*, however, it is not transparent to narrative progression, but is rather a narrative progression trigger. That is, when a sentence has *the next*

day, the story moves forward irrespective of whether that sentence is eventive or stative. For example, unlike (455), (456) exemplifies narrative progression.

- (456) a. On May 12, 1984, Stella called a doctor.
 b. She was sick with the flu.
 c. **The next day**, she was healthy.

This observation about *the next day* is accounted for by the proposed theory as follows. *The next day* ensures that a described eventuality is located after mentioned 24-hour interval of time (temporal component) and it prevents a described eventuality from being located at a salient consequent state (discourse component). In other words, unlike *that same day*, which ‘activates’ both the temporal and discourse component made available by the aspect, *the next day* ‘activates’ the former and ‘neutralizes’ the latter.

Unlike *that same day* and the *next day*, *now* (corresponding to *sejčas* in Russian) is incompatible with narrative progression. Its semantic function is to search for a topical event that serves as the ‘current perspective’ and describe what took place throughout this topical event. In this way, the stative *now* facilitates a description of the ‘background’ for some salient event. For example, in (457b) and (457d), *now* facilitates a description of the background for the event of Emily pulling back from Dan’s embrace.

- (457) a. Emily pulled back from his embrace. Secretly she had been hoping that once he had the baby with his wife, Susan, Dan’s feelings would soften and he would agree to apply for adoption.
 b. But she **could see now** that this was just a wild fantasy.
 c. Emily did not cry easily. There were countless times when she had felt as if her heart were splitting open yet she had remained dry eyed, holding her grief inside.

- d. **But now she was crying**, and there was nothing she could do about it.

One question that comes up for the proposed analysis is whether there is a temporal location adverb that is not transparent to narrative progression even though the time that it describes is compatible with it. Such an adverb is clearly conceivable—e.g. when placing this adverb in (458b), the events described in (458a) and (458b) would not be understood as having a particular order relative to one another.

- (458) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. **Temporal adverbial**, my wife hired her and gave her a check for one month in advance.

The theory advocated here does not rule out such a possibility. However, given that an indefinite adverbial expression like *at some point or other* does not override narrative progression rules, viz. (459), I suspect that such an adverb does not exist.

- (459) a. Stella cleaned our house on May 12, 1984. She made everything sparkle.
 b. **At some point or other**, my wife hired her and gave her a check for one month in advance.

This leads me to the hypothesis below, in (460):

- (460) *Hypothesis*
 If an adverb is compatible with narrative progression, then it is transparent to it.

If (460) is, in fact, true then the theory of narrative progression advocated here would need to be constrained so that (460) follows from it.

Chapter 5

Summary

A central puzzle in research on Slavic aspect concerns cases where the imperfective seems to function like its perfective counterpart. In particular, cases in which the imperfective leads to an inference that the described event was *completed*. Such cases are especially common in Eastern Slavic languages—Bulgarian, Russian and Ukrainian (Dickey 1995; 2000)—and are puzzling because they contradict the well-documented cases in which the imperfective leads to an inference that the described event was not *completed*.

In Chapter 2 I suggested that the Russian imperfective could be understood more adequately if—instead of using the general notion of *completion* to characterize events described by *telic* and *atelic* VPs (as is often done)—we focus on cases in which an imperfective sentence has a telic VP and it therefore makes sense to talk about an event's *culmination*. Moreover, I suggested that we should differentiate cases in which a sentence *entails* that the described event culminated from cases in which a sentence *implicates* this.

Appealing to the notions of *culmination* and *entailment* to describe the Russian data, I addressed the questions below, in (461) and proposed the generalization in (462):

- (461) a. When does the Russian imperfective lead to an inference that a described event culminated?
 b. What meaning predicts the answer to (461a)?

(462) *Culmination entailment generalization*

The combination of the Russian imperfective with a base VP gives rise to an entailment that a described event culminated only when the base VP is an achievement.

The generalization in (462) gives part of the answer to (461a) and leads to the view that the culmination properties of the perfective and the imperfective aspect in Russian are neutralized when the base VP is an achievement. The generalization in (462) does not fully answer (461a) because it says nothing about cases in which the Russian imperfective leads to an implicature that the described event culminated. Although such cases were discussed and some steps were taken towards analyzing them, the following question—to a large extent—remains a puzzle: why would an imperfective implicate an event's culmination when its perfective counterpart entails it?

To account for the generalization in (462) and thereby shed light on (461b), I built on Hana Filip's (Filip 1993; 1999; 2000) proposal that Russian has a partitive imperfective operator, IPF. Using Landman's (1992) *stage-of* relation to talk about the possible developments of an event, I proposed that IPF combines with a VP and returns a VP-event stage. Assuming that an event described by an achievement VP comprises a stage that develops into itself in the world of evaluation (and presumably every other possible world), it is correctly predicted that IPF of an achievement VP leads to the culmination entailment. On the other hand, assuming that events described by non-achievement VPs comprise multiple stages, it is correctly predicted that IPF of a non-achievement VP does not lead to

the culmination entailment because any one of the VP-event stages satisfies the truth-conditions of IPF.

Moreover, I proposed that the English progressive operator, PROG, encodes a more constrained *stage-of* relation: an event is a stage of another event only if the former is a proper part of the latter. This explains why a progressive sentence cannot make reference to the type of event that would be described by an achievement VP; PROG of an achievement denoting VP leads to coercion (Moen and Steedman 1988). In this way, the English progressive differs from the imperfective in Russian and other Eastern Slavic languages, which were discussed after an analysis of the Russian data was provided. I also showed how the proposed analysis could be extended to the imperfective aspect in Western Slavic languages (Czech, Slovak, Slovene) and languages that are transitioning between Eastern and Western Slavic (Serbo-Croatian, Polish). In these languages, the imperfective patterns more with the English progressive rather than its perfective counterpart when it comes to its culmination properties.

The goal of Chapter 3 was to extend the proposed analysis to account for the discourse properties of aspect. A central question in the literature on this topic concerns the nature of the so-called *reference point* that is arguably encoded by the aspect. Although most analyses agree that the reference point serves as a placeholder for where the narrative has progressed, there is disagreement about how it relates to a described eventuality. The main contribution of Chapter 3 was to show how the Russian imperfective discriminates between two influential approaches to aspect and narrative progression. In particular, I argued that the

Russian imperfective relates distinct event parts to the reference point. Which event part is at play depends on how the reference point is specified. If it is specified by a temporal location adverbial, then a VP-event part is located in time. If, on the other hand, it is specified by the discourse context, then a consequent state of a VP-event part is located in time. Based on these observations, I concluded that a version of an approach to aspect advocated by Hans Kamp and colleagues (Kamp and Reyle 1993; Kamp, van Genabith, and Reyle 2005) ought to be adopted. According to this approach, aspect is *birelational*: it relates a described event relative to two temporal parameters. This approach differs from a *prima facie* more elegant *unirelational* approach first proposed by Erhard Hinrichs (Hinrichs 1981; 1986) and later extended by Barbara Partee (Partee 1984), David Dowty (1986) and Bonnie Webber (Webber 1988), according to which aspect relates a described event relative to a single temporal parameter.

At the end of Chapter 3, I showed how the *birelational* approach leads to a straightforward analysis of the Russian imperfective. In particular I showed that if assume that (i) a VP-event stage is related to a time input that functions like Kamp *et al.*'s location time and (ii) the consequent state of that VP-event stage is related to a state input that functions like Webber's consequent-state-as-a-reference-point, then we can account for the discourse properties of IPF, while maintaining the modal analysis put forth in Chapter 2. Moreover, I showed how, given (i) and (ii), the meaning of the imperfective could be extended to account for the discourse properties of the English progressive and the imperfective in other Slavic languages.

The analysis proposed in Chapter 3 led to the following two questions: (i) where do aspectual phrases get their two inputs from and (ii) how do these two inputs manage to function like Kamp *et al.*'s location time and Webber's consequent-state-as-a-reference-point? I answered these questions in Chapter 4 by proposing that the time input is supplied by the tense, though its value is constrained (sometimes completely determined) by temporal location adverbs. This part of the analysis is quite standard. The novel contribution concerns the state input. I proposed that temporal location adverbs supply the state input and thereby determine—to a large extent—whether narrative progression is possible. In particular, I proposed that some temporal location adverbs retrieve a state dref anaphorically from the discourse context, while other temporal location adverbs introduce a new state dref into the discourse context (i.e. the universe of a DRS) and leave it unspecified. The idea is that when a state dref is retrieved anaphorically from the discourse context, narrative progression follows from independent rules of anaphora resolution. On the other hand, when a new state dref is introduced into the discourse context and left unspecified, the temporal location of a described eventuality is fixed solely by the time input, which may, but need not, be compatible with narrative progression.

The proposed theory—which I called the Adverbial Transparency Theory—was shown to be independently motivated and applicable to a wide range of adverbials. I first argued *that same day* introduces a new time dref and retrieves a state dref anaphorically from the discourse context. Given independent aspectual constraints on narrative progression, it follows that *that same day* locates

a described eventuality at (i) a previously mentioned 24-hour interval of time and (ii) at a previously mentioned consequent state. This explains why *that same day* is transparent to narrative progression, i.e. when a sentence has *that same day*, the story moves forward with eventive sentences, but not with stative ones.

Another adverb that is compatible with narrative progression is *the next day*. Unlike *that same day*, however, it is not transparent to narrative progression, but is rather a narrative progression trigger. That is, when a sentence has *the next day*, the story moves forward irrespective of whether that sentence is eventive or stative. This observation was accounted for by the proposed theory as follows. *The next day* retrieves a time dref anaphorically for the discourse context and introduces new state dref that remains unspecified. Given independent aspectual constrains on narrative progression, it follows that *that next day* (i) locates a described eventuality a day after a previously mentioned mentioned 24-hour interval of time and (ii) prevents the described eventuality from being located at a salient consequent state. In other words, unlike *that same day*, which ‘activates’ both the temporal and discourse component made available by the aspect, *the next day* ‘activates’ the former and ‘neutralizes’ the latter.

Unlike *that same day* and the *next day*, *now* (corresponding to *sejčas* in Russian) is incompatible with narrative progression. Its semantic function is to search for a topical event that serves as the ‘current perspective’ and describe what took place throughout this topical event. In this way, *now* facilitates a description of the ‘background’ for some salient event, which in turn explains why this adverb has an affinity for stative sentences. These observations were

accounted for by the proposed theory as follows. *Now* retrieves an event dref anaphorically for the discourse context and introduces new state dref that is the consequent state of the retrieved event. Given independent aspectual constrains on narrative progression, it follows that *now* locates a described eventuality at a previously mentioned event and its consequent state.

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Ciriculum Vitae

EDUCATION

- 2004-2010 Ph.D. in Linguistics, Certificate in Cognitive Science, Rutgers, the State University of NJ
- 1999-2003 B.A. in Philosophy, Minor in Linguistics, departmental and college honors, University of California, Los Angeles.
- 2001 Intercampus visitor, University of California, Berkeley.

EMPLOYMENT

- 2010-present Andrew W. Mellon Postdoctoral Fellowship in Language, Mind, and Culture School of Cognitive Science, Hampshire College

PUBLICATIONS

☐ *Refereed journal articles*

- to appear* “Aspect in English and Russian flashback discourses”. *Oslo Studies in Language*.
- 2009 “Quantity insensitive iambs in Osage”. *International Journal of American Linguistics* 75(3): 365-398.
- 2007 “WCO, ACD and what they reveal about complex demonstratives”. *Natural Language Semantics* 15(3): 265-277.
- 2004 “Relative head surgery”. *Snippets* 9: 5-6.
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☐ *Book chapters*

- 2007 “Parenthetical null topic constructions in Romance” (with Viviane Déprez), in *Romance Linguistics 2006*, Current Issues in Linguistic Theory, Vol. 287, José Camacho et al (eds.), pp. 1-15. Amsterdam: Johns Benjamins.