

Doktori (Ph.D.) értekezés

**Toward a Scalar Semantic Analysis of Telicity in
Hungarian**

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Én, Kardos Éva Aliz teljes felelősségem tudatában kijelentem, hogy a benyújtott értekezés a szerzői jog nemzetközi normáinak tiszteletben tartásával készült. Jelen értekezést korábban más intézményben nem nyújtottam be és azt nem utasították el.

ÖSSZEFOGLALÁS

A disszertáció a telikusság kifejezését vizsgálja a magyarban és fontos megállapításokat tesz az angolban megfigyelhető telikussági jelenségekről is. Az aspektuskutatásban sokak által elfogadott az az elképzelés, hogy az igei predikátumok telikussága a diskurzus különböző elemeiből (pl. az igei fej, az argumentum(ok)) úgy adódik, hogy az elemek mindegyike hozzájárul valamilyen jelentéselemmel a predikátum által jelölt behatárolt esemény leírásához. Fontos megállapítása a dolgozatnak, hogy a telikus értelmezéshez hozzájáruló elemek eltérőek aspektuális „súlyukat” illetően, hiszen különbséget tehetünk például az eseményt végponttal ellátó elemek és a predikátum által lexikalizált skálát végponttal ellátó elemek között. Az előzőek, melyekre a magyarban látunk példát, aspektuálisan „nehezebbek”, hiszen az esemény végpontjának a meghatározásában közvetlenül játszanak szerepet. Ennek fontos következménye, hogy az ilyen elemet tartalmazó predikátumok nem jellemezhetők aspektuális variabilitással. Ezzel szemben a predikátum skáláját behatároló elemek, mint például az angol igei partikulák, önmagukban nem eredményezik a esemény behatároltságát. Az elemzésem elméleti háttérét Beavers (2012a) skaláris-szemantikai, figura-útvonal relációkat feltételező elmélete adja, mely Krifka (1998) elméletének egy továbbfejlesztett változata. Ezenkívül fontos szerepet kap Filip és Rothstein (2006) és Filip (2008) esemény maximalizációs elképzelése is. A dolgozatban elsősorban eredményeket, teljesítményeket és folyamatos állapotváltozást kifejező predikátumokat vizsgálom és megállapítom, hogy a magyarban az esemény behatárolásáért kétféle elem tehető felelőssé: egyrészt partikulák, rezultatív/lokatívuszi kifejezések, vagy kvantált skaláris DP-k, másrészt pedig kvantált elfogyasztott/létrehozott témák. Továbbá arra is fény derül, hogy a partikulák, a rezultatív/lokatívuszi kifejezések és a kvantált skaláris DP-k esemény maximalizációt vezetnek be és így meghatározzák a predikátumban található figura és skála argumentumok interpretív tulajdonságait. Az esemény behatárolásáért felelős egyéb elemek, nevezetesen az elfogyasztást és létrehozást kifejező predikátumokban található kvantált DP-k pontosan meghatározzák az elfogyasztás/létrehozás skála strukturáját (és méretét), mely a predikátum kvantált (és telikus) interpretációját eredményezi. A disszertációban közölt elemzés megfelelő alapot teremthet ahhoz, hogy megmagyarázzuk a magyarban megfigyelhető összes (a)telikussági jelenséget és remélhetőleg arra is alkalmas, hogy új ötleteket adjon további nyelvek közötti vizsgálódásokhoz.

ABSTRACT

This dissertation examines the encoding of telicity in Hungarian and it also makes important observations regarding the telicity facts of English. It is commonly assumed in the literature that the telicity of verbal predicates results from the cumulative effects of various components of the discourse. The basic idea is that these elements (e.g. the verb and its argument(s)) each contribute some meaning component that is necessary to describe a situation that has an inherent endpoint. In this work I observe that the elements that one must consider in the calculation of the telicity of a predicate differ as far as their aspectual "weight" is concerned. I show that we can distinguish between event-bounding constituents (as in Hungarian) and scalar-bounding constituents (as in English). The former are aspectually "heavier" as they achieve the direct bounding of the event, with the crucial side effect that predicates containing such elements are characterizable in terms of aspectual invariability. This contrasts with scalar-bounding constituents like English particles and resultative XPs, which only achieve the bounding of the scale along which the event progresses, and this, by itself, is insufficient for a telic interpretation. I take a model-theoretic approach to characterizing Hungarian telic predicates. Specifically, I adopt Beavers's (2012a) FPR model, which is an extension of Krifka's (1998) aspectual theory, and I also incorporate the notion of event maximalization from Filip and Rothstein (2006) and Filip (2008). I examine data from various aspectual classes, focusing on degree achievements, achievements, and accomplishments. I identify two types of event-bounding constituents, namely particles, resultative/locative XPs, and quantized scalar DPs, on the one hand, and quantized DPs of creation/consumption predicates, on the other. I conclude that telicizing particles, resultative/locative XPs, and quantized scalar DPs achieve event bounding by introducing event maximalization into the predicate, thereby imposing specific constraints on the interpretive properties of the argument whose referent undergoes some kind of change and those of the scalar argument. By contrast, quantized DPs of consumption/creation predicates bound events by virtue of specifying the exact structure of the consumption/creation scale, and hence that of the event as well, given the unique, verb-mediated relationship between such DPs and creation/consumption scales. This work is a first step toward a theory that can potentially predict all (a)telicity facts of Hungarian and it can hopefully serve as impetus for further cross-linguistic explorations into aspectual composition.

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CHAPTER 1

INTRODUCTION

1.1 The primary objectives of the dissertation

It is well-known that there is a cross-linguistic tendency for the lexical aspectual properties of a verbal predicate, including telicity, to be calculated from what is contributed by various elements of the discourse including the verb heading the predicate, its argument(s), and even contextual clues. Consider how telicity arises in the case of the English examples in (1a) and (1b).

- (1) a. Peter ran to the university.
- b. Peter warmed the soup.

The event description in (1a) illustrates a running event, as lexically specified by the verb *run*, which terminates when Peter reaches the university, as determined by the prepositional phrase *to the university*. In other words, the predicate is telic, as it is associated with an inherent endpoint that is reached at the culmination of the event. In (1b) the predicate, which describes a warming event as lexically specified by the verb *warm*, can be interpreted telically due to sufficient contextual clues that allow the listener to identify an endpoint to the event such that the soup has reached some specific temperature at the termination of the event. If such clues are not available, atelicity arises.

However, as will be argued at length in this dissertation, languages differ regarding the aspectual role of these elements when it comes to the encoding of events that are associated with an inherent endpoint. I illustrate this cross-linguistic difference with the English example in (2) and the Hungarian examples in (3).¹

- (2) Peter painted three fences. (telic or atelic)

¹All Hungarian examples in Chapter 1 illustrate neutral sentences, i.e. sentences not including negation or a focused element.

- (3) a. Péter festett három kerítés-t.² (atelic)
Péter.NOM painted three fence-ACC
'Péter painted three fences.'
- b. Péter le-festett három kerítés-t. (telic)
Péter.NOM PRT-painted three fence-ACC
'Péter painted three fences.'
- c. Péter piros-ra festett három kerítés-t. (telic)
Péter.NOM red-into painted three fence-ACC
'Péter painted three fences red.'

In (2) the English predicate *painted three fences* can be interpreted telically if the listener has sufficient information from context regarding the endpoint of the event, which corresponds to a state of affairs where the three fences are all covered in paint. Otherwise, an atelic reading arises. In (3a), which is the Hungarian equivalent of (2), the former duality is not observable. In this case context does not have a role in the lexical aspectual value of the predicate. Rather, the example in (3a) is invariably atelic. This contrasts with (3b) and (3c), which are both invariably telic. Crucially, this corresponds to the fact that (3b) and (3c) have the particle *le* and the resultative phrase *pirosra* 'into red' respectively, both of which are lacking in (3a).

Related to this is a special effect of Hungarian telicizing elements like *pirosra* 'into red', which does not characterize their English counterparts. Consider (4) and (5).

- (4) a. *Péter piros-ra festett kerítések-et.
Péter.NOM red-into painted fences-ACC
- b. Péter piros-ra festett három kerítés-t (telic)
Péter.NOM red-into painted three fence-ACC
'Péter painted three fences red.'
- (5) a. Peter painted fences red. (atelic)
- b. Peter painted three fences red. (telic)

In Hungarian, once a telic marker like *pirosra* 'into red' in (4) appears in the predicate, the theme argument must receive specific reference, i.e. we must know how much of the

²The examples in (3) are possible answers to the question *Mit csinált Péter tegnap?* 'What did Péter do yesterday?'.

referent of the affected argument undergoes a change in the course of the event. This is apparent from the contrast between (4a) and (4b). The example in (4a) is ungrammatical as the affected argument is instantiated via the bare plural form *kerítéseket* 'fences', which can only be interpreted with non-specific reference. Conversely, (4b) is acceptable as the quantity of the referent of the affected argument is specified by the predicate. In English we cannot observe this type of contrast, as demonstrated in (5). In (5a) the predicate contains the resultative XP *red* and the affected argument *fences* whose referent is not associated with a specific quantity. The predicate is ultimately grammatical, albeit interpreted atelically. If the quantity of the referent of the affected argument is determined, as in (5b), the predicate instead receives a telic reading.

This phenomenon, whereby some part of the predicate places a semantic constraint on a nominal expression within the predicate, is not unique to Hungarian. As has been argued extensively in the literature (cf. Wierzbicka 1967, Forsyth 1970, Filip 1993, 1999, 2001, Slabakova 2004), Slavic languages also show signs of this behavior. The Russian examples, which I took from Slabakova (2004), demonstrate this:

- (6) a. ja yel gruši / tort (atelic)
 I eat-PAST/1sg pears-ACC / cake-ACC
 'I was eating (some) pears / cake.'
- b. ja s-yel gruši / tort (telic)
 I PERF-eat-PAST/1sg pears-ACC / cake-ACC
 'I ate all the pears / the whole cake.' (Slabakova 2004: 128, (4) and (5))

Although Russian does not have an overt article system, it is clear from the example in (6b) that the prefixed verb *syel* 'perfective ate' affects the internal arguments *gruši* 'pears' and *tort* 'cake' in a way that they can only be interpreted as referring to a specific set of pears and a specific cake, respectively.

So far then, English and Hungarian seem to differ in how lexical aspectual properties such as telicity are derived, where in English context and reference properties of the theme vary more independently with respect to other components that figure into telicity (cf. resultative XPs). However, interestingly, a subset of Hungarian predicates can be treated on a par with their English counterparts when it comes to aspectual composition. Specifically, Hungarian creation/consumption predicates can be interpreted telically without a particle or a resultative XP if the quantity of their theme is specifically

determined, which is exactly how the telicity of English creation/consumption predicates arises. The examples in (7) and (8) are illustrative of this aspectual similarity.

- | | | |
|-----|--------------------------------|---------|
| (7) | a. Peter ate two oranges. | (telic) |
| | b. Peter built two houses. | (telic) |
| (8) | a. Péter evett két narancs-ot. | (telic) |
| | Péter.NOM ate two orange-ACC | |
| | 'Péter ate two oranges.' | |
| | b. Péter épített két ház-at. | (telic) |
| | Péter.NOM built two house-ACC | |
| | 'Péter built two houses.' | |

The consumption and creation predicates above all describe events which advance as the referent of the theme disappears (as in (7a) and (8a)) or comes into existence (as in (7b) and (8b)) and they culminate when all of the theme disappears or comes into existence. This in turn gives rise to a telic interpretation in both English and Hungarian.

In this dissertation I intend to further explore the aspectual differences and similarities illustrated above, while focusing primarily on the characterization of the (a)telicity facts of Hungarian. I adopt Beavers's (2012a) model-theoretic approach, which assumes homomorphic, figure-path relations between the part structure of incremental themes and the part structure of events.³ I show that this model has the tools with which we can potentially describe all telicity facts of Hungarian, with the caveat that it needs to be supplemented with the additional notion of event bounding, which is a telic marking strategy that Hungarian employs. On the basis of my examination of predicates representing various aspectual classes, I identify two types of event bounders, namely particles, resultative/locative XPs, and quantized scalar DPs, on the one hand, and quantized DPs of predicates expressing creation or consumption, on the other. The former play an event-bounding role thanks to a maximalization operator that they introduce into the predicate (cf. Filip and Rothstein 2006, Filip 2008), while quantized created and consumed themes bound events due to the unique verb-mediated relationship that obtains between these arguments and the corresponding scalar arguments. Crucially, the ultimate

³Following Beavers (2009, 2011, 2012a), I assume that dynamic verbal predicates of change encode multiple incremental themes. This position contrasts with, for instance, Tenny (1994), who considers the internal arguments of only certain verbs, such as *eat* and *build*, to be incremental themes. For more on the motivation behind the former view, see Chapters 2 and 5.

aspectual effect of the two types of event bounding-constituents is the same since they all obligatorily telicize the predicate. An interesting cross-linguistic finding that falls out of the analysis is that event bounders all provide quantized reference for their predicates, which means that in Hungarian telic predicates are minimally quantized, unlike in English, where it is a sufficient but not necessary condition for telicity.

Before I set out to address the issues above, an important note on the terminology is in order since the territory that I would like to explore in this dissertation is fraught with terminological confusion. As Croft (2012: 33) points out, this confusion is rooted in various reasons. First, researchers tend to describe conceptual properties by using multiple (more or less synonymous) notions. For instance, events that are associated with a culmination point are referred to as telic, perfective, or bounded in the aspectual literature. At the same time, sometimes clearly distinct categories are described by the same term. Croft (*ibid.*) mentions the term 'event', which is used by some researchers in reference to the denotation of verbal predicates, while other (more formally-minded) scholars use it to name the basic entities in the reference domain of verbal predicates. Also, there is a third sense in which the term 'event' is used in the aspectual literature. Mourelatos (1978, 1981) and Bach (1981, 1986), for instance, refer to one of their aspectual class as the class of events, which is the combination of Vendler's accomplishments and achievements.⁴ Finally, the use of various terms, such as perfective and imperfective, to describe both conceptual and grammatical categories also causes substantial confusion. Therefore, to help the reader work their way through this study, I now briefly clarify some of the terminology that I will use in later chapters. I start with the distinction between the notions 'telic'/'atelic' and 'perfective'/'imperfective'.

As will be discussed at length in Chapter 3, (a)telicity stands in contrast to (im)perfectivity in fundamental ways in this work. On the one hand, the property 'telic' is taken to be a lexical aspectual property, which characterizes predicates associated with an inherent endpoint (e.g. *Mary ran to the gate*, *Mary reached the hilltop*), while atelicity is characteristic of predicates with no such inherent endpoint (e.g. *Mary ran*, *Mary danced*).⁵

⁴Bach (1981, 1986) uses the term 'eventuality' to refer to all aspectual classes (i.e. states, processes, and events in his theory).

⁵Demonte and McNally (2012: 4) note that it is necessary to distinguish between accounts of telicity that attribute a crucial role to incremental change (or scalarity) in the calculation of telicity and those that view telic predicates as having a complex subevent structure including an activity component and some kind of result state component. This dissertation is written with the former in mind, though it must also be noted that one can find a number of correspondences between the notions of the two approaches (*ibid.*).

The binary distinction between perfective and imperfective predicates, on the other hand, illustrates the different viewpoints or perspectives that the speaker can have of situations. For instance, the perfective form *John ran* demonstrates an atelic situation viewed as complete (or perfective), whereas *John was running* is illustrative of an atelic situation viewed as ongoing (or imperfective). Also, following Smith (1991/1997), I take (a)telicity and (im)perfectivity to be independent aspectual categories. Next, I use the term 'event' in two ways throughout the dissertation. On the one hand, the denotations of verbal predicates are sets of events. On the other hand, the FPR model that I assume in Chapters 4, 5, and 6 consists of a domain of events (which are basic entities just like objects and times) in which verbal predicates have their denotations. Finally, events are taken to be bounded when the predicate supplies a specific endpoint to them or requires them to have one.

1.2 The structure of the dissertation

Chapter 2 provides an overview of some previous approaches to telicity including the immediate theoretical framework of the dissertation, i.e. the FPR model of Beavers (2012a). I devote the first half of this chapter to comparing and contrasting Verkuyl's (1993) Plus-principle, Tenny's (1994) Aspectual Interface Hypothesis, and Krifka's (1989, 1992, 1998) homomorphism-based approach and argue for the latter by showing a variety of lexical aspectual facts that this theory can predict. I also provide insights into the more recent scalar approach proposed in Hay et al. (1999), Kennedy and McNally (2005), and Kennedy and Levin (2008), among others, since central notions from this line of research will be useful in later chapters of the dissertation. As for the FPR model, I describe in what respects it is an extension of Krifka's theory and discuss in detail the motivation behind the assumption of figure-path relations in language. As will be apparent, Chapter 2 serves not only as background information that is aimed at preparing the reader for subsequent chapters of the dissertation in general (by introducing notions that have been used in the literature to characterize telicity phenomena), but also provides a detailed picture of how telicity obtains in English.

In **Chapter 3** I outline some basic characteristics of the grammar of Hungarian, while focusing on aspectually relevant phenomena. In particular, on the basis of É. Kiss (2002), I first provide a brief description of the structure of Hungarian by giving some insights into the topic-predicate articulation of the Hungarian sentence, verbal particles, focusing, and

negation. Then I discuss Smith's (1991/1997) two-component theory of aspect so that I can continue with Csirmaz's (2008) aspectual theory, important facets of which I assume in later chapters of the dissertation. Finally, I limit the discussion to telicity in Hungarian by reviewing two telicity tests that are applicable in this language and by demonstrating various types of telic predicates.

Chapter 4 has five main objectives: (i) to summarize again the most important facets of the FPR model in order to facilitate understanding of the subsequent discussion, (ii) to make a distinction between the notions of scalar bounding, as is observable in English, and event bounding, as is observable in Hungarian, (iii) to establish the claim that figure-path relations obtain in the case of Hungarian verbal predicates, (iv) to provide the foundation for the Principle of Telic Marking (PTM), as is formulated in (9), and (v) to introduce event maximalization into the analysis.

- (9) **THE PRINCIPLE OF TELIC MARKING (PTM):** Telicity must be overtly marked by event bounders.

As for the specific details of this chapter, after a short overview of the FPR model, I present evidence to corroborate my claims above while discussing primarily the telicity facts of degree achievements. The reason I focus on these predicates is that they exhibit most clearly the kind of scalar semantic properties that are ultimately argued to characterize all dynamic verbal predicates of change. Moreover, the English equivalents have been focused on extensively in the literature, so that this case study is ripe for cross-linguistic comparison. I identify a crucial aspectual difference between English and Hungarian by showing that telicity in the former is the cumulative effect of certain, well-definable properties of the incremental themes of predicates, which involves the boundedness of the scalar incremental theme and the quantized nature of the argument whose referent undergoes some kind of change, whereas in Hungarian, it is the direct effect of an overt aspectual marker, to be referred to as an event bouncer, whose semantic role lies in contributing an endpoint to the denoted event. I also formulate the Principle of Telic Marking, which characterizes the encoding of telicity Hungarian and exemplifies a cross-linguistic difference between this language and English. As for the precise semantic role of the event bounders of this chapter, I argue that they introduce an event maximalization operator over predicates of events, an idea which was originally proposed in Filip and Rothstein (2006) and Filip (2008). This chapter also addresses particle variability in the

class of degree achievements while providing further evidence for event bounding and the PTM.

Chapter 5 addresses the aspectual composition of creation/consumption predicates, which display unique properties as to the nature of the quantization effects of the patient argument on the scale encoded by such predicates. The chapter provides a precise characterization of the relation between patients and scales within this class, which yields effects that are not observable within other predicate classes. The discussion begins with the exemplification of aspectual variability and invariability as observable in this class in the case of English predicates. Furthermore, it is also demonstrated how the internal complexity of consumed and created objects affect the aspectual structure of their predicates. Then, a novel analysis of the scalar structure of consumption and creation predicates is provided, which is capable of capturing the (preliminary) English facts of this chapter and crucial facts of Hungarian as well.

Chapter 6 extends the scalar semantic analysis advocated in this work to canonical achievements and accomplishments (exclusive of creation/consumption predicates) in an effort to lend further support to the main claims of Chapters 4 and 5. While achieving this, it also provides a motivated explanation for a few (somewhat puzzling) facts of Hungarian, including the obligatory nature of telicizing particles in the case of most achievements and the fact that quantized scalar DPs can also serve the event-bounding role in eventive predicates.

Chapter 7 summarizes the findings of the dissertation.

TELOCITY IN THE LITERATURE: STRUCTURAL VERSUS HOMOMORPHISM-BASED APPROACHES

As is well-known, felicity is a property of predicates denoting events that describe an inherent boundary or endpoint to those events. It has been pointed out in the literature (see Verkuyl 1972, 1993, Dowty 1986, Smith 1991/1997, Rothstein 2004, among others) that this property cannot be determined solely based on the aspectual content that the head verb contributes to the meaning of a given predicate, as was proposed in Vendler 1957/1967, but is instead to be calculated compositionally based on the aspectual contribution of both the head verb and its argument(s). By way of illustration, I consider (1).

- It is clear that the predicate in (1a) receives a telic interpretation, whereas (1b) is atelic. Given that (1a) and (1b) are headed by the same verb and contain the same agent argument, it is reasonable to assume that the aspectual dichotomy is due to the patient argument. This also accords with the intuition that *eat*-type predicates denote events that progress through the patient argument of the head verb. For instance, in (1a) the event denoted by *Mr. Rochester ate two pears* advances as the two pears undergo a change of state such that they are consumed. In this case the event terminates when the two pears are entirely consumed. In (1b), it is not made clear how much patient there is, and therefore it is not clear how much eating there is. Thus the aspectual constraint that the patient argument imposes on the predicate is as follows: If the spatial extent (i.e. the size) of the referent of the patient argument is known, the size of the denoted event can also be

determined and thus a telic interpretation arises (cf. (1a)), while in other cases the predicate can only be interpreted atelically (cf. (1b)).

The aspectual correlation that I sketched above has been the subject of numerous studies on lexical aspect and it will be carefully investigated in this work as well. In this chapter I first review some of these studies in an effort to prepare the reader for more recent approaches and ultimately my own semantic analysis of telicity in Hungarian. I start with a brief overview of Verkuyl's (1972, 1993) Plus-principle, one of the first structural approaches to telicity. I then turn to Tenny's (1994) Aspectual Interface Hypothesis, which has been widely discussed in the literature. The motivation for discussing Verkuyl's and Tenny's work is that they are direct predecessors to homomorphism-based models, of which one will be assumed in Chapters 4, 5, and 6.¹ I then present Krifka's (1989, 1992, 1998) semantic analysis of telicity, couched in a mereological framework adopted from previous works including Link (1983) and Bach (1986). This review is of special importance as it lays the groundwork for more recent semantic analyses of telicity such as Filip and Rothstein (2006), Filip (2008), and Beavers (2012a), which I also address in later sections. More specifically, I devote the final section of this chapter to Beavers's aspectual theory since this is the framework within which I couch the analysis of my Hungarian data in Chapters 4, 5, and 6. Also, in the final sections of Chapter 4, I offer some discussion of Filip and Rothstein (2006) and Filip (2008), where aspectual composition is examined mainly in English and Slavic languages. My objective with the latter is to place my analysis in a larger context by comparing and contrasting the encoding and calculation of telicity in Hungarian versus English and Slavic languages.

2.1 Structural approaches

2.1.1 Verkuyl's Plus-principle

Verkuyl (1972, 1993) develops an aspectual theory in which both lexical and structural properties of a predicate² contribute to the terminative or durative nature of an event

¹For a detailed review of some of the major linguistic studies of telicity, the reader is advised to consult Verkuyl (1993: 33-68).

²As will be apparent from the subsequent discussion, an important assumption that structural approaches tend to maintain is that the telicity of a predicate is affected by the nominal expressions

description.³ He claims that terminative aspect is compositionally calculated on the basis of temporal information stemming from the verb and atemporal information associated with the argument NPs of the verb. Informally speaking, the former property is understood as one of two semantic feature values, namely [+ADD TO] or [-ADD TO], which stand for 'movement' and 'no movement' respectively. Thus non-stative verbs such as *eat* and *give* contribute the former type of feature value to a given predication, while stative verbs such as *want* and *hate* carry the latter. By contrast, atemporal information originates from the structural nodes representing the argument NPs of the verb. Feature values representing atemporal information can be either [+SQA] or [-SQA], which are intended to capture the specified or unspecified quantity of the entities denoted by the argument NPs respectively. On this view, an event description is specified positively for terminative aspect (i.e. telicity) (and is therefore represented as having the feature value [+T]) on the condition that a certain combination of the features coming from the verb and its argument NPs obtains.

To put this discussion on more concrete footing, I provide Verkuyl's (1993) classification regarding all the possible aspectual patterns with which event descriptions can be associated:

- | | | |
|-----|---------------------------------|------------------------------------|
| (2) | a. Judith ate three sandwiches. | [+SQA] + [+ADD TO] + [+SQA] = [+T] |
| | b. Judith ate sandwiches. | [+SQA] + [+ADD TO] + [-SQA] = [-T] |
| | c. Judith ate no sandwich. | [+SQA] + [+ADD TO] + [-SQA] = [-T] |
| | d. Judith wanted nothing. | [+SQA] + [-ADD TO] + [-SQA] = [-T] |
| | e. Nobody ate a sandwich. | [-SQA] + [+ADD TO] + [+SQA] = [-T] |
| | f. Nobody ate sandwiches. | [-SQA] + [+ADD TO] + [-SQA] = [-T] |
| | g. Nobody ate a sandwich. | [-SQA] + [+ADD TO] + [+SQA] = [-T] |
| | h. Judith wanted a sandwich. | [+SQA] + [-ADD TO] + [+SQA] = [-T] |

within the predicate, given a certain structural configuration within the lexical specification of the verb heading the predicate (Filip 1999).

³In his dissertation, Verkuyl (1972) uses the terms 'non-durative' and 'durative' in reference to events with and without bounds, respectively. The motivation for this is the idea that durative aspect is considered by him to be the default aspect, whereas non-durative aspect is the marked option. Later, however, in Verkuyl (1993), he replaces the former terms with the ones I will be using in this short review, namely 'terminative' and 'durative', probably because his theory is not about durativity, as commonly understood, but terminative aspect.

- i. No one wanted a sandwich. [-SQA] + [-ADD TO] + [+SQA] = [-T]
 (Verkuyl 1993: 20)

As these examples clearly illustrate, Verkuyl (1993) views terminative aspect as a molecule built up from the atoms [+/- ADD TO] and [+/- SQA] which is specified positively just in case all the temporal and atemporal features receive a plus-value, as in (2a). This requirement, namely that all aspectual atoms involved in the aspectual make-up of a VP must be specified positively, is what is referred to as the Plus-principle. What complicates this picture somewhat is that Verkuyl actually advocates an asymmetric view of terminative aspect and distinguishes between terminative verb phrases and terminative sentences. He argues for the role of syntactic structure (hence the term "structural" in reference to this approach) in the expression of terminative aspect by proposing that the structure to be attributed to (2a), for instance, is [Judith [ate three sandwiches]] and not [[Judith ate] three sandwiches]. Verkuyl (*ibid.*: 21) argues that the latter is less plausible since it would require us to assume that *Judith ate* is terminative (and thus can give rise to the value [+T] for (2a) along with the terminative *ate three sandwiches*) contrary to fact.

Although one can easily see the appeal of this approach, the theory leaves a few questions unanswered. First, it is not entirely clear whether a semantic feature algebra can provide all the details of how exactly the components of a predicate determine aspectual composition in the case of different predicate types. For instance, the lexical aspectual value of creation/consumption predicates depends solely and strictly on the referential properties of the internal argument (cp. telic *Peter ate two apples* and atelic *Peter ate apples*). Predicates like *warm* and *straighten*, on the other hand, behave somewhat differently since it is not only the referential properties of the internal argument that figure into the aspectual properties of these predicates, but also the type of adjective that arguably underlies the head verb of these predicates (cp. atelic or telic *Kate warmed the plate* vs. telic *Kate straightened the rope*). In yet another class, e.g. the class of motion predicates, both the referential properties of the path and those of the participant that undergoes change of location play a role in aspectual composition (cp. atelic *children ran miles*, atelic *the children ran miles*, atelic *children ran 2 miles*, and telic *the children ran 2 miles*).⁴ As will be apparent, Tenny's (1994) theory addresses some of these issues, which will also be

⁴Some of these issues are given a model-theoretic analysis in Verkuyl (1993).

explored in much detail not only in English but also in Hungarian in Chapters 4, 5, and 6 of this dissertation.

Another question regarding this and similar theories (see, for instance, Tenny 1994, discussed below) is how they account for the telicity facts of languages such as Hungarian, Polish, and Czech, in which it is very often the case that verbal particles or prefixes impose structural constraints on the argument NPs of the base verbs and, along with this, they allow us to determine the aspectual value of event descriptions.⁵ The present chapter is ultimately aimed at laying the ground for an analysis that can perform both tasks, namely the integration of the semantics of nominal expressions and that of verbal particles in the calculation of telicity.

2.1.2 Tenny's Aspectual Interface Hypothesis

In her seminal work, Tenny (1994) develops a theory of linking between lexical semantics and syntax (i.e. a theory of argument realization), one that attributes a central role to a restricted set of aspectual properties in the linking mechanism. To outline the main facets of the theory, I first cite the four constraints that are argued to affect linking:

- (3) *Measuring-Out Constraint on Direct Internal Arguments*
 - (i) The direct internal argument of a simple verb is constrained so that it undergoes no necessary internal motion or change, unless it is motion or change which 'measures out the event' over time (where 'measuring out' entails that the direct argument plays a particular role in delimiting the event).
 - (ii) Direct internal arguments are the only overt arguments which can 'measure out the event'.
 - (iii) There can be no more than one measuring-out for an event as described by a verb.
(Tenny 1994: 11, (9))
- (4) *The Terminus Constraint on Indirect Arguments*
 - (i) An indirect internal argument can only participate in aspectual structure by providing a terminus for the event described by the verb. The terminus causes the event to be delimited.
 - (ii) If the event has a terminus, it also has a path, either implicit or overt.
 - (iii) An event as described by a verb can have only one terminus.
(Tenny 1994: 68, (128))

⁵Here and throughout, I follow Grimes (2003) and Piñón (2008), among others, in distinguishing between verbal particles and prefixes based on whether they can occur as separate elements in the sentence. Specifically, the former can occur as attached to their verb stem and also as separate elements, as in Hungarian, whereas the latter are phonologically attached to their host verb, which they usually precede, as in Russian.

- (5) *The Non-Measuring Constraint on External Arguments*
An external argument cannot participate in measuring out or delimiting the event described by a verb. An external argument cannot be a measure, a path, or a terminus.
(Tenny 1994: 83, (165))
- (6) *The Single Delimiting Constraint*
The event described by a verb may only have one measuring-out and be delimited only once.
(Tenny 1994: 79, (155))

The most important part of the theory, which makes reference to the above constraints, is the Aspectual Interface Hypothesis (AIH), which stresses the sole role of aspectual properties in the linking mechanism:⁶

- (7) *Aspectual Interface Hypothesis*
The universal principles of mapping between thematic structure and syntactic argument structure are governed by aspectual properties relating to measuring-out. Constraints on the aspectual properties associated with direct internal arguments, indirect internal arguments, and external arguments in syntactic structure constrain the kinds of event participants that can occupy these positions. Only the aspectual part of thematic structure is visible to the universal linking principles.
(Tenny 1994: 2)

Tenny (1994) distinguishes between three types of verbs assigning aspectual roles to event participants: incremental theme verbs (e.g. *eat*, *build*), change-of-state verbs (e.g. *break*, *ripen*), and route verbs with path objects (e.g. *climb* as in *climb a ladder* and *play* as in *play a sonata*). The aspectual roles that Tenny associates with these verbs are of three types: incremental theme verbs and change-of-state verbs are associated with the aspectual role MEASURE, whereas route verbs are claimed to have two aspectual roles, namely the PATH aspectual role and the TERMINUS aspectual role. Tenny's (*ibid.*) definitions of these roles are as follows:

- (8) The MEASURE aspectual role:
is assigned to an argument of the verb, which (in the event as described by the verb) either undergoes some internal change or motion, along a single parameter; or provides a scale or parameter without undergoing change or motion; [*sic*] that measures out and defines the temporal extent of the event.
(Tenny 1994: 95, (190))
- (9) The TERMINUS aspectual role:
is assigned to an argument of the verb, which (in the event as described by the verb) marks the endpoint of a course traversed in measuring out the event, and which defines the temporal endpoint of the event.
(Tenny 1994: 95, (191))
- (10) The PATH aspectual role:
is a defective MEASURE role, which is assigned to an argument of the verb that provides a scale or parameter along which the event is measured out, and along which the TERMINUS role marks the endpoint of the event. The PATH role accompanies the

⁶The highly influential AIH was first proposed in Tenny (1987: 247) in a simpler version.

TERMINUS role, explicitly or implicitly.

(Tenny 1994: 95, (192))

It follows from the above definitions that given that a verb is associated with the aspectual grid [MEASURE], its direct internal object both measures out and delimits the event described by the verb that selects for this internal argument. If, however, the verb has the aspectual grid [PATH, TERMINUS], the direct argument measures out the event and the indirect argument provides the terminus, thereby making the event delimited. Examples of all three measuring-out verbs, that is, an incremental theme verb in (11), a change-of-state verb in (12), and a route verb with an explicit path (i.e. *the Appalachian Trail*) and an explicit terminus (i.e. *Canada*) in (13), are provided below.

- | | | |
|------|-------------------------------|--|
| (11) | build: [MEASURE] | Mary built a house in a day. |
| (12) | ripen: [MEASURE] | The bananas ripened. ⁷ |
| (13) | walk: [PATH, TERMINUS] | Susan walked the Appalachian Trail to Canada
in sixty days. |
- (Tenny 1994: 107-108, (200), (201), and (202))

The examples in (11) and (12) illustrate the aspectual effect of the arguments *a house* and *the bananas*, respectively, which measure out the event by carrying a MEASURE aspectual role and by being (spatially) delimited. The delimitation of the event is achieved somewhat differently in (13), where it is not one but two arguments that are responsible for the telic interpretation of the predicate. Specifically, the nominal argument *the Appalachian Trail* measures the event by virtue of having a PATH role, whereas the nominal phrase *Canada* describes the endpoint at which arrival (by Susan) is asserted by the predicate.

The system also allows aspectual roles to be inserted into empty aspectual grids. The verb *run*, as in *John runs*, for instance, is analyzed as having an external argument indicated by a blank underline and an empty slot for an aspectual role, as illustrated in (14) below.

- | | | |
|------|--------------------|------------------------|
| (14) | [<u> </u> []] | (Tenny 1994: 137, (5)) |
|------|--------------------|------------------------|

⁷In line with Perlmutter's (1978) Unaccusative Hypothesis, Tenny posits that the surface subject of sentences such as *The bananas ripened* is an underlying object.

If a MEASURE role is inserted, we get a predicate such as *John ran a mile*, in which the direct internal argument measures and delimits the event. In case a PATH and a TERMINUS role are inserted, we get a predicate like (13) above with the verb being *ran* in this case.⁸

This rather brief summary allows us to pinpoint (at least) two important merits of this theory. First, as Levin and Rappaport Hovav (2005: 101) point out, Tenny captures more or less correctly the tendency that the direct object position is very often occupied by participants that measure out the event they are participants in, and also arguments that measure out events often end up in (direct) object position in the syntax. Levin and Rappaport Hovav (*ibid.*) argue that if we look at the direct objects of prototypical (syntactically) transitive verbs such as *destroy*, we find that, as far as their semantics is concerned, their non-agent arguments are most typically incremental themes in the sense of Dowty (1991), i.e. they determine the aspectual make-up of the event they are predicated of. Conversely, if we examine predicates that are not characterizable as denoting an event that has an agent and a patient participant, we find that they are syntactically intransitive since their non-agentive argument is linked to a syntactic position that is different from the position of the direct object. This is exemplified by some verbs of authority in English, such as *preside* and *reign*, both of which license their non-agent arguments as PPs instead of object DPs, as is apparent from sentences such as *Steve presided over the company* and *A dictator reigned over Egypt* (Levin and Rappaport Hovav 2005: 21).

Second, similarly to Verkuyl (1993), Tenny (1994) is able to capture – albeit informally – the correlation between the verbal domain and the nominal domain by tying the spatial delimitedness of the referents of nominals to the temporal delimitedness of events denoted by verbs due to their specific aspectual roles.

While it is undeniable that Tenny’s theory has contributed greatly to our understanding of various lexical aspectual and argument realization phenomena, it also suffers from some shortcomings, of which I will mention four. I begin with one that is orthogonal to the main questions of the dissertation (i.e. the encoding and calculation of telicity) but constitutes the core idea of the theory, namely that it is only certain aspectual properties (i.e. measuring-out and delimitedness) that are visible to the computational system when it comes to linking between lexical semantics and syntax. As Levin (1999) points out, this is

⁸Notice that the motion verbs *walk* and *run* have different aspectual grids. The former has a PATH-TERMINUS aspectual grid, whereas the latter has an aspectual grid with no aspectual roles. Further examples of the latter type of verb are *study* and *push* (Tenny 1994: 106-107).

a rather simplified and inaccurate characterization of linking, as there are several verb classes whose members exhibit identical argument realization properties but are aspectually heterogeneous. For instance, Levin (*ibid.*) provides as examples activities such as *play* and *dance* and semelfactives such as *tap* and *jump* and argues that it is left unaccounted for in Tenny (1994) why members of both aspectual classes are found in reflexive resultatives (cf. *Lizzy danced herself dizzy* and *Bertha jumped herself to death*) and with *out*-prefixation (cf. *Australia outplayed India in the first game* and *Bob outjumped his opponent*), in spite of the fact that they have distinct aspectual properties. Therefore, it follows that semantic notions other than delimitedness and measuring-out must also figure in the syntactic instantiation of arguments. As an alternative solution to such problems, Levin (1999) argues that, by invoking the notions of 'external' versus 'internal' causation in argument expression, one can, for instance, more accurately predict whether a verb can appear in the causative alternation. For an elaboration of this idea, see Levin and Rappaport Hovav (1995, Chapter 3).

Second, contra Tenny's conviction, it has long been noticed that the measuring-out participant in an event can end up in a position other than the internal direct object. Dowty (1991: 570), for instance, points out that there are a number of verbs, such as *reach*, *depart*, *leave*, *abandon*, *exit*, and *enter*, which occur in transitive verb constellations where the participant that measures out the event denoted by the verb is linked to subject position in the sentence. Consider, for instance, (15) and (16) below:

(15) John entered the icy water (very slowly).⁹

(16) The crowd exited the auditorium (in 21 minutes).

(Dowty 1991: 570, (25a) and (25b))

In (15) the measuring-out of the event is related to the NP in subject position (i.e. *John*) and not the direct object (i.e. *the icy water*) such that the entering event ends when John's whole body is under the icy water. Likewise, in (16), the exiting event comes to an end when all members of the crowd have left the auditorium. Related to this is Eszes's (2008: 60) observation, namely that Hungarian experiencer-subject verbs with particles, such as

⁹Beavers (2012a: 51) also discusses this example (though in a slightly different form) and assumes that the aspectual structure of the predicate in (15) is determined by both the event participant undergoing change of location (i.e. *John*) and the path traversed by this participant. This claim, namely that certain dynamic predicates are associated with double incremental themes, is further substantiated in this and subsequent chapters of this dissertation.

megszeret 'come to like' and *meggyűlöl* 'come to hate', also serve as counterexamples to Tenny's *Measuring Out Constraint on Direct Internal Arguments* since these verbs denote events in which the argument in subject position measures out the event. For instance, the sentence *János megszerette Marit* 'John came to like Mary' denotes an event which can be perceived of as one in which John has undergone a change of state, the outcome of which is John's ending up in an intensified emotional state.

Third, Tenny (1994) stresses that there can be no more than one measuring-out in a clause and an event can be delimited only once.¹⁰ She also claims that this constraint applies only to a restricted set of verbs (i.e. incremental theme verbs, change-of-state verbs, and route verbs with path objects). This is rebutted by, for instance, Beavers (2012a), who provides ample evidence for the assumption that possibly every predicate expressing change has multiple arguments that determine the aspectual structure of the predicate. Specifically, he claims that every dynamic predicate has two incremental themes, the part structures of which are related to each other and the part structure of the event argument through complex homomorphic mappings. In subsequent sections of this chapter, I provide a thorough overview of Beavers's homomorphism-based model, which I then adopt in my analysis of Hungarian predicates in Chapters 4, 5, and 6.

Fourth, regarding the verb classes to which this theory is meant to apply, it seems that important differences between certain members of these classes remain unaccounted for. By way of illustration, I now provide a brief characterization of the distinct grammatical behavior of the incremental theme verbs *eat* versus *devour*, whereby I start with the discussion of the example in (17) below.¹¹

(17) Kate ate a sandwich.

¹⁰The idea that an event can be delimited only once has been proposed by several researchers (see, for instance, Rothstein 1983, Goldberg 1995, and Filip 2004).

¹¹As this dissertation is aimed at exploring questions of aspectual composition, I only focus on aspectual properties of predicates headed by the verbs *eat* and *devour*. However, it is worth noting that, besides aspectual differences, these verbs also have rather distinct argument expression properties. The verb *devour* behaves more like canonical change-of-state verbs (e.g. *break*) in that it has restricted argument realization options, whereas *eat* behaves more like motion verbs (e.g. *run*) by showing more flexibility in argument expression. Specifically, *devour* is strongly syntactically transitive by virtue of the fact that it requires its patient argument to appear in object position, from which it follows that sentences such as **John devoured* are ungrammatical. Conversely, the verb *eat* can occur in the conative construction, as in *John ate at the apple*, and even without a direct object, as is illustrated by the sentence *John ate*. There is in fact a sizeable literature on the interpretation and the licensing of the latter pattern. Some examples of this are Fillmore (1986), Mittwoch (1982, 2005), Groefsema (1995), Iten et al. (2005), Kardos (2008, 2009, 2010), and Pethő and Kardos (2008, 2009).

When discussing incremental theme verbs, Tenny (1994) makes the observation that the event denoted by such a verb "is understood to progress through the internal argument" (*ibid.*: 15) and it ends when, in our example, the sandwich is entirely consumed. To confirm the validity of this measuring-out capacity of the internal argument, Tenny provides several syntactic tests, out of which one is of special relevance to us now. She, along with many others (see the references in Section 2.2.2), claims that in the case of incremental theme verbs, there is a direct correlation between the count/mass property of the direct internal arguments and the delimited/non-delimited nature of the events predicated of these arguments. Specifically, if the internal argument is a count noun phrase, the event will receive a delimited reading, and if it is a mass noun, it will receive a non-delimited reading, which is exactly what we see in the following examples.¹²

- (18) a. Kate ate an apple in an hour/?for an hour.
 b. Kate ate ice cream for an hour/*in an hour.

In (18a), *an apple* is a singular count noun phrase and the event is delimited, as is apparent from the compatibility of the predicate with the time-span adverbial *in an hour*, whereas in (18b) *ice cream* is a bare mass noun phrase and the event predicated of it receives a non-delimited reading, which is evidenced by the fact that *ate ice cream* is grammatical with the durative adverbial *for an hour*, but not with the time-span adverbial *in an hour*. Although, as noted above, the correlation between event delimitedness and the mass/count properties of nouns has been widely accepted in the lexical-semantic literature, the generalization is not as strong as it is argued to be. First, the question mark in (18a) illustrates that the non-delimited reading with a count noun is better than the delimited reading with a mass noun, which is usually left unaccounted for in models that advocate the idea that incremental themes determine the aspectual structure of predicates (cf. Krifka 1989, 1992, 1998, and Beavers 2009, 2011, 2012a).¹³

Additionally, if we replace the verb *eat* with the verb *devour*, we get different results. Consider (19).

¹²Tenny (1994) uses the terms 'count' and 'mass' instead of the more accurate terms 'quantized' versus 'non-quantized'. For a proper characterization of the latter notions, see Section 2.2.3.

¹³This is an issue that I also address in Chapter 5.

- (19) a. Kate devoured an apple in an hour/*for an hour.
 b. Kate devoured ice cream for an hour/*in an hour.

What these examples tell us is that *devour*, another measuring-out verb on Tenny's view, exhibits slightly different aspectual properties than *eat* does (notice that the calculation of the (a)telicity of the predicates in (19) is more straightforward than that of the predicates in (18)) in spite of the assumption that they are both associated with a MEASURE role in their aspectual grid. A similar problem is pointed out in Levin (2000), where the aspectual ambiguity revolving around degree achievement verbs is discussed, among other things. Levin claims that the MEASURE aspectual role of these verbs does not always delimit the event. She provides the following examples to support her claim:

- (20) a. The soup cooled in an hour.
 b. The soup cooled for an hour.
 c. The cook cooled the soup in an hour.
 d. The cook cooled the soup for an hour.

(Levin 2000: 419, (11a), (11b), (12a), and (12b))

What these sentences illustrate is that the verb *cool* is not necessarily associated with an entailment according to which the denoted event is interpreted as bounded, neither as a causative verb (see (20d)), nor as an inchoative verb (see (20b)). As Levin rightly points out, "just because a component of an event can be used to judge its progress, doesn't mean that this component – or the event itself – has to be bounded" (*ibid.*: 420).

The above discussion shows that, despite their undeniable initial appeal, structural approaches to telicity suffer from weaknesses which call for further examination. On the one hand, a more general problem with such analyses is that they tend to make generalizations that are too broad, and thus empirically inadequate, as was illustrated above in the critical review of some aspects of Tenny (1994). On the other hand, an even greater concern from the perspective of the present investigation is the fact that such approaches exclusively focus on the relation between verbs and their nominal arguments and thus they fail to account for the quantificational influence of verbal morphology (e.g. verbal particles and perfective verbs) on nominals and on the denoted event descriptions (a point also stressed by Filip 1999), which is a common aspectual phenomenon in languages such as Hungarian, Russian, and Polish. As will be apparent from subsequent chapters, more recent

semantic analyses such as Filip and Rothstein (2006) and Filip (2008) as well as Beavers (2012a) can provide more adequate solutions to the issues raised above.

Before discussing these models, however, I provide an overview of a purely semantic analysis of verbal predicates that formalizes the relation between the part structure of incremental theme arguments and the part structure of events and is thus considered to be one of the most precise analyses of telicity in the aspectual literature.

2.2 Telicity as a semantic property

2.2.1 The notions of cumulative versus quantized reference

It is a well-known fact in semantic studies that there are interesting similarities between verbal predicates such as *walk* and *run* and nouns such as *water* and *books*, on the one hand, and predicates such as *recover* and *break the vase* and nominal expressions such as *a book* and *5 books*, on the other. Krifka (1989) describes this relation between "nominal reference and temporal constitution" (*ibid.*: 76) by making reference to two properties of nominal and verbal expressions: cumulativity and the quantization property in the nominal domain and atelicity and telicity in the verbal domain. In this section I briefly characterize these properties and the relation between them based on Krifka's discussion.

A nominal expression has cumulative reference if the sum of the denotation of the entities within the denotation of the nominal expression is also in the denotation of this expression.¹⁴ For instance, Krifka (1989) discusses the example *beer* as follows: *beer* has cumulative reference since "if there are two entities to which *beer* applies, this predicate applies to their collection as well" (*ibid.*: 75). In other words, any two sums of entities are still in the denotation of *beer*. The bare plural noun *books* can be analyzed along the same lines. Any sum of parts in the denotation of *books* is books. Conversely, the nominal expressions *a book* and *five books* do not refer cumulatively, which follows given the fact that the sum of two entities within the denotation of *a book* or *five books* is two books and ten books, respectively. Krifka claims that these nominal expressions have quantized reference.¹⁵

¹⁴The term 'cumulative reference' was first introduced in Quine (1960).

¹⁵Bach (1981), a predecessor to Krifka, uses the terms 'additive' and 'antisubdivisible' in reference to the properties 'cumulative' and 'quantized', respectively.

Verbal predicates, on the other hand, are generally classified as telic or atelic. On the traditional view, telic predicates such as *break a vase* and *find the key* encode that the denoted event reaches a culmination point, whereas atelic predicates such as *walk in the garden* and *run* do not specify any such final point (or set terminal point in Vendler's (1957/1967) terminology). For instance, an event is not in the denotation of *break a vase* unless it is an event in the course of which the vase ends up being broken, i.e. the event reaches the culmination point of the vase being broken. At the same time, predicates such as *walk in the garden* do not entail that the agent participant reaches any specific final destination in the course of the walking event, or that there is otherwise any specific endpoint to the event.

As Krifka (1989: 76) argues, the similarity between nominal reference and temporal constitution is reflected in the following dichotomy. On the one hand, he claims that the referent of quantized nominal expressions such as *a book* has precise limits in the same way as, for instance, the event denoted by the telic predicate *solve a puzzle*. On the other hand, the referent of the cumulative nominal *water* is not associated with any such limits, which is also true of verbal predicates like *run*. To put it somewhat differently, the sum of two events of *solve a puzzle* is not in the denotation of *solve a puzzle* (cp. the denotation of *a book* above), whereas the sum of two running events of *run* is still in the denotation of *run* (cf. the denotation of *beer* and *books* above). In the following sections, I further elaborate on the connection between nominal reference and temporal constitution and provide Krifka's formal representation of quantized (\approx telic) versus cumulative (atelic) predicates.¹⁶

2.2.2 A closer look at the relation between nominal reference and temporal constitution

There is a voluminous literature on how the quantization properties of nominal arguments affect those of events denoted by the predicates containing these arguments. Some oft-cited examples are Verkuyl (1972, 1993), Taylor (1977), Mourelatos (1978, 1981), Bach (1981,

¹⁶Krifka (1998: 207) points out that telic predicates are not necessarily quantized. The predicate *ran to the capitol* exemplifies this case, as, although it denotes an event that culminates, it can also refer cumulatively. Specifically, there is a scenario where the sum of two running events, wherein the goal point is the capitol, is also in the denotation of *ran to the capitol*. For an illustration of this, see Beavers (2012a: 34). For the moment I will continue to assume that telic predicates have quantized reference.

1986), Hinrichs (1985), and Krifka (1989, 1992, 1998). Among these, it is Krifka that provides one of the most precise, formal characterizations of the relation between nominal and verbal expressions. To illustrate this relation, consider the examples in (21).

- (21) a. John built a house (in a year/?for a year).
 b. John built houses (for a year/??in a year).

There are two properties that deserve special attention here. On the one hand, the two sentences differ with respect to the quantization property of the direct object in them. In (21a) the verb occurs with a quantized, singular count noun phrase, whereas in (21b) the same verb appears with a non-quantized, bare plural count noun phrase. On the other hand, the examples differ in terms of their aspectual properties. Specifically, (21a) contains a telic predicate, while (21b) contains an atelic predicate, as evidenced by the fact that they are more acceptable with the time adverbials *in a year* and *for a year*, respectively. As was stated in the former section, the telic predicate in (21a) can be analyzed as having quantized reference, whereas the atelic predicate in (21b) can be said to have non-quantized reference. Crucially, these aspectual effects obtain due to the fact that the reference properties of the object (*a house* and *houses*, respectively) are transferred to the denoted events. However, as will be shown in Section 2.3.4, this conception of telicity, where quantized reference gives rise to a bounded reading, is in fact too strong.

Another property of predicates such as *build a house*, one that a theory of telicity has to account for, is that they denote events whose progress can be measured by the coming into being of the referent of their direct object (i.e. *a house* in (21a)). In the literature, this is captured through, for instance, the assumption of the semantic feature value [+/- ADD TO] in Verkuyl (1993), the measuring-out relation in Tenny (1994), the structure-preserving binding relation in Jackendoff (1996), and homomorphism à la Krifka (1989, 1992, 1998). Section 2.2 is ultimately intended to present the latter, which, as will be demonstrated here, can adequately handle the majority of the facts raised above. Before that, however, I provide a brief overview of the mereological approach, which serves as the theoretical background to Krifka's theory.

2.2.3 A basic overview of lattice structures within extensional mereology

Bach (1981, 1986) is the first to account for all eventuality types (i.e. states, processes, and events on this view) under one rubric while couching his analysis within the theoretical framework of event-based semantics. Thus Bach's work serves as a predecessor to Krifka (1989, 1992, 1998), Filip (1993, 1999, 2005, 2008), and Beavers (2009, 2011, 2012a), among others. The reason why this framework is advocated by the authors listed above is that it conveniently allows us to draw parallels between the denotation of nominal expressions and that of verbs, since in this theoretical model events denoted by verbal expressions are treated on a par with thematic arguments instantiated by nominals expressions.¹⁷

In order to model the structure of the denotation of nominal expressions and that of verbal expressions, in general, and to capture the interdependence between the cumulative and quantized properties of verbal and nominal expressions, in particular, researchers such as Krifka use part structures, which take the form of complete join lattice structures without a bottom element.¹⁸ In what follows, I elaborate on the semantic representation language and the lattice structures assumed in Krifka (1989, 1992, 1998, among others).

As a semantic representation language, Krifka uses an extensional type-theoretic logic. He treats events, objects, and times as basic entities in the domain of discourse, the part structures of which are first illustrated by the Hasse Diagram and then more formally described based on Krifka (1998).

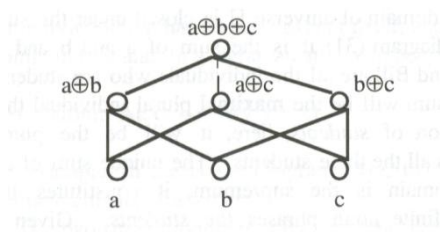


Figure 2.1 A complete lattice structure without a bottom element

(taken from Filip 1999: 47)

¹⁷It is in fact Davidson (1967) who is credited with the idea that, regarding their ontological categories, events, individuals, and times are all basic entities within the domain of discourse. Verbs are considered to have an argument position for an event variable, which means that every n -place predicate has $n+1$ argument positions in their lexical specification. However, the "extra" argument, i.e. the event argument, never surfaces linguistically.

¹⁸Link (1983, 1987) also uses part structures (semi-lattices), but only within the domain of nominal expressions, to model the structure of mass nouns and plurals.

The above diagram contains three individuals (a, b, and c) and the sum entities of these individuals, namely $a \oplus b$, $a \oplus c$, $b \oplus c$, and $a \oplus b \oplus c$. This structure (more precisely, the sum operation, which will be defined in (22) below) is complete in the sense that any number of individuals can be joined (*ibid.*: 48). Also, the sum entities are to be understood as plural individuals, rather than as sets of singular individuals, as proposed in Link (1983). Thus the individuals a, b, and c and the sum entities are of the same ontological type. In addition, the individuals a, b, and c are parts of the sums $a \oplus b$, $a \oplus c$, $b \oplus c$, and $a \oplus b \oplus c$, and the sums $a \oplus b$, $a \oplus c$, $b \oplus c$ are parts of the sum $a \oplus b \oplus c$.

Next, let us review the properties of the part structures which objects, times, events, and paths are associated with:¹⁹

- (22) $P = \langle U_P, \oplus_P, \leq_P, <_P, \otimes_P \rangle$ is a *part structure* iff
- a. U_P is a set of entities;
 - b. \oplus_P , the *sum operation*, is a function from $U_P \times U_P$ to U_P . The sum operation has the following properties:
 - (i) commutativity: $\forall x, y \in U_P [x \oplus_P y = y \oplus_P x]$
 - (ii) idempotency: $\forall x, y \in U_P [x \oplus_P x = x]$
 - (iii) associativity: $\forall x, y, z \in U_P [x \oplus_P [y \oplus_P z] = [x \oplus_P y] \oplus_P z]$
 - c. the following two-place relations apply:
 - (i) the part relation, defined as: $\forall x, y \in U_P [x \leq_P y \leftrightarrow x \oplus_P y = y]$
 - (ii) the proper part relation, defined as: $\forall x, y \in U_P [x <_P y \leftrightarrow x \leq_P y \wedge x \neq y]$
 - (iii) the overlap relation, defined as: $\forall x, y \in U_P [x \otimes_P y \leftrightarrow \exists z \in U_P [z \leq_P x \wedge z \leq_P y]]$
 - d. Remainder principle: $\forall x, y \in U_P [x <_P y \Rightarrow \exists! z [\neg [z \otimes_P x] \wedge x \oplus_P z = y]]$
- (Krifka 1998: 199, (1))

Regarding part structures, some more discussion is in order. As Krifka (1998) argues, what makes a lattice structure a join semi-lattice is the three properties of the sum operation, namely that it is commutative, idempotent, and associative (cf. (22b)). As for the three relations, the following properties characterize them. The part relation is a partial order relation as it is reflexive, transitive and antisymmetric; the proper part relation is irreflexive, asymmetric and transitive; and the overlap relation is reflexive, symmetric, and

¹⁹For purposes of clarity and convenience, I will mainly use the notations applied in Krifka (1998) here and throughout this chapter.

it is not transitive (cf. (22c)). Finally, the remainder principle says that "whenever an element x is a proper part of another one, y , then there is exactly one third element z that does not overlap with x , such that x and z taken together make up y " (*ibid.*: 199). This principle is necessary as it excludes structures that have a bottom part, i.e. a subpart shared by everything. In other words, it ensures that every non-maximal element has at least one non-overlapping element (Gawron 2007), which is necessary so that we can properly characterize predicates describing a change (cf. (22d)).²⁰

Further, Krifka (1998) defines predicates with cumulative and quantized reference with respect to a part structure P as follows:

$$(23) \quad \forall X \subseteq U_P [\text{CUM}_P(X) \Leftrightarrow \exists x, y [X(x) \wedge X(y) \wedge \neg x = y] \\ \wedge \forall x, y [X(x) \wedge X(y) \rightarrow X(x \oplus_P y)]]$$

$$(24) \quad \forall X \subseteq U_P [\text{QUA}_P(X) \Leftrightarrow \forall x, y [X(x) \wedge X(y) \rightarrow \neg y <_P x]]$$

(Krifka 1998: 200, (3) and (4))

That is, a predicate X is cumulative if and only if given x and y are both in X , the sum of x and y is also in X . In addition, it follows from the cumulative property that the predicate applies to at least two distinct elements. Conversely, a predicate X is quantized if and only if given x and y are in X , there is no y in X that is a proper part of x .

Krifka (1998) also introduces the notion of an atom relative to a property X and an atomic property X into his model in the following way:

$$(25) \quad \text{a. } \forall X \subseteq U_P \forall x \in U_P [\text{ATOM}_P(x, X) \Leftrightarrow X(x) \wedge \neg \exists y \in U_P [y <_P x \wedge X(y)]] \\ \text{b. } \forall X \subseteq U_P [\text{ATOM}(X) \Leftrightarrow \forall x \in U_P [X(x) \rightarrow \exists y \in U_P [y \leq_P x \wedge \text{ATOM}_P(y, X)]]]$$

(Krifka 1998: 200, (5) and (6))

What (25a) says is that x is an X -atom if and only if it is characterized by the property X and none of its proper parts have this property. The definition in (25b), on the other hand, says that a property X is atomic if and only if every element having this property has an X -atom as a part (*ibid.*: 200). With the introduction of these notions, it becomes possible to

²⁰The bottom element has to be disposed of since it is a subpart of all other subparts. If we assumed that part structures have a bottom, a transition from one subpart (i.e. subevent) to another subpart (i.e. subevent) would always involve some partly stationary aspect. This in turn would preclude us from being able to characterize dynamic situations (i.e. change).

characterize the aspectual structure of predicates denoting punctual change, as, for instance, in the case of canonical change-of-state predicates such as *break* and *explode*. Additionally, as will be apparent from Section 2.3.4.1, some kind of atomic property will also be necessary to describe the internal complexity of incremental themes (i.e. paths and figure arguments in the terminology of Beavers 2012a), which arguably plays a role in the durativity/punctuality of verbal predicates (*ibid.*).²¹

Second, I provide the formal details of event structures, which are essentially part structures for events, with additional properties:

(26) $E = \langle U_E, \oplus_E, \leq_E, <_E, \otimes_E, T_E, \tau_E, \infty_E, \ll_E, C_E \rangle$ is an *event structure* iff

a. $\langle U_E, \oplus_E, \leq_E, <_E, \otimes_E \rangle$ is a part structure,

b. T_E is a time structure $\langle U_T, \oplus_T, \leq_T, <_T, \otimes_T, \infty_T, P_T, D_T, \ll_T \rangle$,

c. τ_E , the *temporal trace function*, is a function from U_E to U_T ,

∞_E , *temporal adjacency*, is a two-place relation in U_E ,

\ll_E , *temporal precedence*, is a two-place relation in U_E ,

C_E , the set of *temporally contiguous events*, is a subset of U_E , with the following properties:

(27) $\forall e, e' \in U_E [\tau_E(e \oplus_E e') = [\tau_E(e) \oplus_T \tau_E(e')]]$

(28) $\forall e, e' \in U_E [e \infty_E e' \leftrightarrow \tau_E(e) \infty_T \tau_E(e')]$

(29) $\forall e, e' \in U_E [e \ll_E e' \leftrightarrow \tau_E(e) \ll_T \tau_E(e')]$

(30) $\forall e \in C_E [\tau_E(e) \in P_T]$

(31) U_E is the smallest set such that $C_E \subseteq U_E$, and for every $e, e' \in U_E$, $e \oplus_E e' \in U_E$.

(Krifka 1998: 206, (26)-(31))

Events are mapped to the time at which they occur through the temporal trace function τ_E . That it, as (27) indicates, there is a homomorphism between the part structure of events and the part structure of times.²² Also, events are characterized by temporal adjacency (cf. (28)) and temporal precedence (cf. (29)) when mapped to their run times. Finally, according to (30), temporally contiguous events have a contiguous run time and (31) says that the set of

²¹See also Maleczki (1994: 174) for an account of how we can capture the denotational difference between singular nouns with an indefinite article (cf. *egy kutya* 'a dog'), plural count nouns (cf. *kutyák* 'dogs'), and bare common nouns (cf. *kutya* 'dog') in Hungarian through the incorporation of atomicity.

²²Krifka (1998: 205, (25)) also defines time structure T , which is a one-dimensional directed path structure.

events is the closure of the contiguous events as ensured by the sum operation (Krifka 1998: 206).

Below I assume all events are elements of some U_E that forms an event structure and all individuals are elements of some U_P that forms a part structure. With this introduction to part structures and event structures as background, we are now ready to proceed with the discussion of Krifka's aspectual calculus with respect to different types of predicates.

2.2.4 Krifka's aspectual calculus

2.2.4.1 (Strictly) incremental relations

I begin this section by illustrating the type of semantics that Krifka assumes in his analysis.²³ Below I provide the compositional steps that yield *Mary ate apples* in (32), which I took from Krifka (1998: 210, (42)). The verb *ate* expresses a three-place relation between an agent $x \in U_P$, a theme $y \in U_P$, and an event $e \in U_E$, the bare plural nominal expression *apples* has cumulative reference, M is a constant and it denotes the individual Mary, R and S are variables and they represent two- and three-place relations respectively. Tense is disregarded in the analysis.

- (32) a. *ate*:
 $\lambda x, y, e [\text{EAT}(x, y, e)]$
 b. *apples*:
 $\lambda S \lambda x, e \exists y [\text{APPLES}(y) \wedge S(x, y, e)]$
 c. *ate apples*:
 $\lambda S \lambda x, e \exists y [\text{APPLES}(y) \wedge S(x, y, e)] (\lambda x, y, e [\text{EAT}(x, y, e)])$
 $= \lambda x, e \exists y [\text{APPLES}(y) \wedge \text{EAT}(x, y, e)]$
 d. *Mary*:
 $\lambda R \lambda e [R(M, e)]$
 e. *Mary ate apples*:
 $\lambda R \lambda e [R(M, e)] (\lambda x, e \exists y [\text{APPLES}(y) \wedge \text{EAT}(x, y, e)])$
 $= \lambda e \exists y [\text{APPLES}(y) \wedge \text{EAT}(M, y, e)]$
 f. Existential closure:
 $\exists e \exists y [\text{APPLES}(y) \wedge \text{EAT}(M, y, e)]$

²³This type of semantics is adopted by Beavers (2012a) and, since I adopt Beavers's (*ibid.*) model, it is also what I assume in Chapters 4, 5, and 6 (cf. Section 4.2).

As was demonstrated in Section 2.2.3, it is also assumed that the part structures of y and e are related to each other by homomorphic relations. An important innovation of Krifka's analysis is the formalization of these homomorphic relations, taken to be encoded by the head verbs of certain verbal predicates, which I present below. First, however, I provide an informal illustration of the idea that (in the case of certain event predicates) the structure of the denotation of an event participant has a direct relation to the structure of the denoted event. Consider the diagram below:

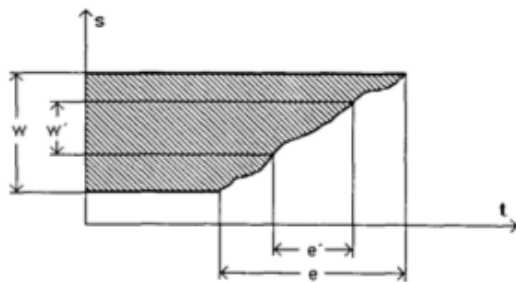


Figure 2.2 The relationship between incremental themes and events

(taken from Krifka 1992: 38)

The diagram illustrates the incremental relation that obtains between the part structure of the incremental theme and the part structure of the event argument in the case of creation/consumption predicates. The horizontal axis represents time, while the vertical axis represents space. Objects are represented on the latter, whereas events are mapped to the time axis. In this graphical representation, Krifka intends to illustrate that the gradual progression of the event denoted by a given predicate can be measured through the gradual coming into being or disappearance of the object affected in the course of the event. For instance, the event that the predicate *Mary ate the apple* denotes can be measured through the disappearance of the apple by virtue of the fact that it progresses incrementally (i.e. gradually) as the apple disappears bite by bite. This relation between the part structure of the event argument and the part structure of the incremental theme is what Krifka refers to as a homomorphism, i.e. a structure and property preserving function. In the case of examples such as *eat the apple* and *drink a glass of wine*, it is a special type of homomorphism, i.e. an isomorphism, that obtains between the part structure of themes and the part structure of events wherein each unique part of the theme (i.e. *the apple* and *a glass wine*) corresponds to a unique part of the event and vice versa. A more formal

characterization of the properties of the relevant homomorphic relation θ is provided in (33).²⁴

(33) a. Cumulative²⁵

$$\forall x, y \in U_P \forall e, e' \in U_E [\theta(x, e) \wedge \theta(y, e') \rightarrow \theta(x \oplus_P y, e \oplus_E e')]$$

b. Uniqueness of Objects, UO(θ)

$$\forall x \in U_P \forall e, e' \in U_E [\theta(x, e) \wedge e' \leq_E e \rightarrow \exists! y [y \leq_P x \wedge \theta(y, e')]]$$

c. Uniqueness of Events, UE(θ)

$$\forall x, y \in U_P \forall e \in U_E [\theta(x, e) \wedge y \leq_P x \rightarrow \exists! e' [e' \leq_E e \wedge \theta(y, e')]]$$

d. Mapping to Objects, MO(θ)

$$\forall x \in U_P \forall e, e' \in U_E [\theta(x, e) \wedge e' \leq_E e \rightarrow \exists y [y \leq_P x \wedge \theta(y, e')]]$$

e. Mapping to Events, ME(θ)

$$\forall x, y \in U_P \forall e \in U_E [\theta(x, e) \wedge y \leq_P x \rightarrow \exists e' [e' \leq_E e \wedge \theta(y, e')]]$$

(Krifka 1998: 211-212)

UO ensures that one subevent can be mapped to one unique subpart of the object, whereas UE says a subpart of the object can be mapped to one unique subevent. Krifka uses the latter property to account for token-oriented predicates, such as *eat an apple*, *destroy a house*, *drink a glass of wine*, and so on. These predicates are special in the sense that they denote non-resettable events, unlike type-oriented predicates like *read a poem* and *play a sonata* (Filip 1999: 93). MO ensures that every part of the event corresponds to some part of the referent of the object argument, whereas ME says that every part of the object corresponds to some part of the event. This latter property is what enables us to distinguish incremental relations (as represented by *eat an apple*) from non-incremental relations (as represented by *push the cart*), a distinction that cannot be captured through the assumption of cumulativity only (Krifka 1998: 211). However, Krifka argues that the ME and MO properties are not restrictive enough as the former allows that a proper part of the incremental theme be mapped to event e , whereas the latter allows that a proper part of event e be mapped to theme x . Therefore, he tightens these notions and proposes that incremental relations have the properties *mapping to subevents* (MSE) and *mapping to subobjects* (MSO), the formal characterizations of which are as follows:

²⁴In his formal representations, Krifka (1998) uses θ to refer to the homomorphism.

²⁵This property is called summativity in Krifka (1992).

- (34) θ shows mapping to subevents, $\text{MSE}(\theta)$, iff

$$\forall x, y \in U_P \forall e \in U_E [\theta(x, e) \wedge y <_P x \rightarrow \exists e' [e' <_E e \wedge \theta(y, e')]]$$
(Krifka 1998: 211, (46))
- (35) θ shows mapping to subobjects, $\text{MSO}(\theta)$, iff

$$\forall x \in U_P \forall e, e' \in U_E [\theta(x, e) \wedge e' <_E e \rightarrow \exists y [y <_P x \wedge \theta(y, e')]]$$
(Krifka 1998: 212, (49))

Given the above properties, two types of homomorphisms are distinguished, namely the strict incremental relation (SINC) and the incremental relation (INC). The definitions of the SINC and the INC are provided below:

- (36) θ is a *strict incremental relation*, $\text{SINC}(\theta)$, iff
(i) $\text{MSO}(\theta) \wedge \text{UO}(\theta) \wedge \text{MSE}(\theta) \wedge \text{UE}(\theta)$
(ii) $\exists x, y \in U_P \exists e, e' \in U_E [y < x \wedge e' < e \wedge \theta(x, e) \wedge \theta(y, e')]$
(adopted from Krifka (1998: 213, (51)))
- (37) θ is an *incremental relation*, $\text{INC}(\theta)$, iff
a. there is a strictly incremental relation θ' such that $\text{SINC}(\theta')$, and
b. θ is the smallest relation that contains θ' and is closed under sum formation:

$$\theta' \subseteq \theta \text{ and } \forall x, y \forall e, e' \in U_E [\theta(x, e) \wedge \theta(y, e') \rightarrow \theta(x \oplus_P y, e \oplus_E e')]$$
(Krifka 1998: 219, (59))

It follows from (36) and (37) that the strict incremental relation contrasts with the incremental relation in that the former is a (strict) one-to-one mapping that relates the lattice structure of the incremental theme argument to the lattice structure associated with the event, whereas the latter is a looser homomorphism (i.e. it is not an isomorphism) by virtue of the fact that in this case a subpart of the theme can be mapped to more than one subevent and thus this relation allows backups. A typical example of a verb that encodes a strict incremental relation is *eat*, which denotes an event that progresses through the subparts of the theme incrementally, and once a subpart has been involved in the eating event and has thus ceased to exist, it cannot be mapped to a subpart of the event again. By contrast, the looser incremental relation, i.e. the INC, is encoded by the verb *read*, which denotes an event that also progresses through subparts of the theme incrementally, but a

subpart of the theme can be mapped to more than one subevent by virtue of the fact that one can read a given text (e.g. a chapter or a section of a dissertation) more than once.

Based on the above discussion, three types of verbs can be distinguished: (1) verbs such as *eat* and *write*, (2) verbs such as *read*, and (3) verbs like *touch* and *see*, as in *touch a cat* and *see a horse* (Krifka 1992: 42). Whereas all three types are characterized by cumulativity, they differ with respect to UO, UE, MO, and ME. Verbs like *eat* and *write* in *eat an apple* and *write a letter*, respectively, are associated with all of these properties and are characterizable in terms of encoding a SINC; verbs like *read* in *read a letter* do not possess the UE property and can be described as encoding an INC; and verbs such as *touch* and *see* do not encode a homomorphic relation at all.

While progressing through Krifka's model to ultimately present his definition of telicity, it is clear that what we have so far been able to achieve is provide a characterization of homomorphisms that relate the structure of canonical incremental themes to the structure of the event arguments associated with them, which ensures the transfer of reference properties from themes to events.²⁶ Thus it follows that a quantized incremental theme yields a predicate that has quantized reference (\approx is telic) (e.g. *ate two pears*), whereas a cumulative incremental theme yields a cumulative (i.e. atelic) predicate (e.g. *ate chocolate*). Given that this structural analogy between nominal and verbal expressions can be observed in other domains as well (consider, for instance, the motion domain and predicates such as atelic *Peter walked* versus telic *Peter walked a kilometer*), one can rightly expect that the homomorphism-based analysis of telicity that I outline here is also applicable to predicates in those domains. To fulfill this expectation, Krifka (1998) extends his analysis, which I present in Section 2.2.4.2.

2.2.4.2 (Strict) movement relations

In order to account for the (a)telicity facts of motion predicates like *walk from the university to the capitol* and subsequently predicates denoting change in some quality of an event participant, as in the case of *heat the water from 10°C to 80°C*, Krifka (1998) expands his theory by introducing novel notions characterizing the incremental themes of motion predicates, which are referred to as paths, and two types of homomorphic relations that can obtain between the lattice structure of paths and the lattice structure associated

²⁶Recall that, for instance, Tenny (1987, 1994) characterizes only the internal arguments of creation/consumption verbs as incremental themes.

with their corresponding events. More concretely, the (novel) properties characterizing paths are the adjacency relation and the tangential property, whereas the homomorphic relations associated with the motion domain are the strict movement relation (SMR) and the movement relation (MR). Below I describe each in turn.

First, let us start with the definition of the adjacency relation, which ensures that two entities (e.g. paths) can be externally connected. Consider (38).

- (38) $A = \langle U_A, \oplus_A, \leq_A, <_A, \otimes_A, \infty_A, C_A \rangle$ is an *adjacency structure* iff
- a. $\langle U_A, \oplus_A, \leq_A, <_A, \otimes_A \rangle$ is a part structure,
 - b. ∞_A , *adjacency*, is a two-place relation in U_A such that
 - (i) $\forall x, y \in U_A [x \infty_A y \rightarrow \neg x \otimes_A y]$
 - (ii) $\forall x, y, z \in U_A [x \infty_A y \wedge y \leq_A z \rightarrow x \infty_A z \vee x \otimes_A z]$
 - c. $C_A \subseteq U_A$, the set of *convex elements*, is the maximal set such that

$$\forall x, y, z \in C_A [y, z \leq_A x \wedge \neg y \otimes_A z \wedge \neg y \infty_A z \rightarrow \exists u \in C_A [u \leq_A x \wedge u \infty_A y \wedge u \infty_A z]]$$
- (Krifka 1998: 203, (14))

That is, if x and y are adjacent, they cannot overlap and if x is adjacent to y , which is part of z , then it is either the case that x is adjacent to z or x and z overlap. In addition, if x , y , and z are parts of the set of convex elements and y and z are parts of x and y and z do not overlap, nor are they adjacent, then there is a u such that u is part of x and it is adjacent both to y and z , that is, it connects y and z .

Given (38), paths can be defined as follows:

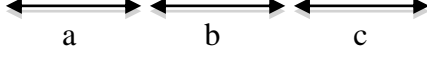
- (39) Path structures: $H = \langle U_H, \oplus_H, \leq_H, <_H, \otimes_H, \infty_H, C_H, P_H \rangle$, such that
- a. $\langle U_H, \oplus_H, \leq_H, <_H, \otimes_H, \infty_H, C_H \rangle$ is an adjacency structure,
 - b. $P_H \subseteq C_H$ is the maximal set such that

$$\forall x, y, z \in P_H [y, z \leq_H x \wedge \neg y \otimes_H z \wedge \neg y \infty_H z \rightarrow \exists u \in P_H [u \leq_H x \wedge y \infty_H u \infty_H z]]$$
 - c. $\forall x, y \in U_H [\neg x \otimes_H y \wedge \neg x \infty_H y \rightarrow \exists z \in P_H [x \infty_H z \infty_H y]]$
- (Krifka 1998: 203, (15))

The property in (39b) ensures that there are no circular and branching paths since, according to the definition, given that x , y , and z are paths, where y and z are subparts of x and they are both non-overlapping and non-adjacent, there exists one path u that is adjacent

to subpaths y and z (i.e. u connects y and z).²⁷ Also, (39c) says that there is always a path (cf. z) that connects two non-adjacent elements (cf. x and y).

Another property that paths have is the tangential property. The diagram below illustrates internally and externally tangential paths:



The externally tangential property obtains between, for instance, the paths $a \oplus b$ and c , whereas $a \oplus b$ and b are internally tangential. In accordance with the former property one can progress through a path x , stop for a while (or even take a detour and come back where s/he stopped) and start a new event (on path y), which commences at where the former event stopped in space (on path x). Thus the externally tangential property allows two motion events that are temporally non-adjacent to be summed (i.e. and hence yield a motion event) thanks to their respective paths. The internal tangential property, on the other hand, allows one to progress through a path and at some point back up along the same path. Krifka (1998) provides the following formal characterizations of these properties:

$$(40) \quad a. \forall x, y \in P_H [\text{ETANG}_H(x, y) \leftrightarrow x \oplus_H y \in P_H \wedge x \infty_H y]$$

That is, x and y are externally tangential iff their join is a path and they are adjacent.

$$b. \forall x, y \in P_H [\text{ITANG}_H(x, y) \leftrightarrow \exists z \in P_H [\neg x \otimes_H z \wedge y = x \oplus_H z]]$$

That is, x and y are internally tangential iff there is a z such that x and z do not overlap and y is the join of x and z .

$$c. \text{TANG}_H = \text{ETANG}_H \cup \text{ITANG}_H \quad (\text{adopted from Krifka (1998: 204, (17))})$$

Within general paths, Krifka also defines directed paths, a subset D of P , which are characterized by the precedence relation (\ll_D), which has the properties of irreflexivity, asymmetry, and transitivity. This relation applies to non-overlapping elements only. Also, whenever two subpaths of a directed path do not overlap, the precedence relation obtains

²⁷To exclude circularity, (39b) must in fact be even stricter and specify that there be exactly one u that connects y and z . Therefore, the revised version of this condition is as follows: $P_H \subseteq C_H$ is the maximal set such that $\forall x, y, z \in P_H [y, z \leq_H x \wedge \neg y \otimes_H z \wedge \neg y \infty_H z \rightarrow \exists! u \in P_H [u \leq_H x \wedge y \infty_H u \infty_H z]]$.

between them and it holds between subpaths of directed paths only. Krifka (1998: 204) illustrates this relation with the text of a book which can be thought of as a path whose subparts are, for instance, its chapters. The precedence relation holds between these subparts in a way that chapter 1 precedes chapter 2, chapter 2 precedes chapter 3, and so on. For the formal characterization of directed paths, see Krifka (*ibid.*: 205, (19) – (23)).

Krifka (1998) also introduces new homomorphisms into his model so that he can properly describe the relation between the part structure of path arguments and the part structure of the corresponding motion events. Specifically, he distinguishes between strict movement relations (SMRs) and movement relations (MRs) in order to capture the difference between motion events in which "whenever two subevents of a movement event are temporally adjacent, then their paths are spatially adjacent, and vice versa" (*ibid.*: 224) and more generalized movements, which may include stops, backtracking, and circles (i.e. detours). That is, SMRs are similar to SINCs in that they also ensure the isomorphism of the subparts of the event and those of the path but they are also different from SINCs as they can be characterized also by a correspondence of temporal and spatial adjacency. This property is what Krifka defines as follows:

$$(41) \quad \theta \text{ has the ADJACENCY PROPERTY, } \text{ADJ}(\theta), \text{ iff} \\ \forall x, y, z \in P_H \quad \forall e, e', e'' \in U_E [\theta(x, e) \wedge e', e'' \leq_E e \wedge y, z \leq_H x \wedge \theta(y, e') \wedge \theta(z, e'') \rightarrow [e' \varphi_E e'' \leftrightarrow y \varphi_H z]] \quad (\text{Krifka 1998: 224, (68)})$$

That is, given that two subevents of a motion event are (temporally) adjacent, their respective paths will also be (spatially) adjacent, and vice versa, if two paths are (spatially) adjacent, their respective events will also be (temporally) adjacent.

To properly formalize SMRs and MRs, Krifka also defines the initial and final parts of events as follows:

$$(42) \quad \text{a. } \forall e, e' \in U_E [\text{INI}_E(e', e) \leftrightarrow e' \leq_E e \wedge \neg \exists e'' \in U_E [e'' \leq_E e \wedge e'' \ll_E e']]$$

That is, e' is an initial subevent iff e' is a part of e and there is no subevent e'' such that e'' is a part of e and e'' precedes e' .

$$b. \forall e, e' \in U_E [\text{FIN}_E(e', e) \leftrightarrow e' \leq_E e \wedge \neg \exists e'' \in U_E [e'' \leq_E e \wedge e' \ll_E e'']]$$

That is, e' is a final subevent iff e' is a part of e and there is no subevent e'' such that e'' is a part of e and e' precedes e'' . (Krifka 1998: 207, (36))

Given the above, we can now make sense of the formal characterization of the SMR and that of the MR in (43) and (44) below.

(43) θ is a *strict movement relation*, SMR (θ), iff

$$\text{ADJ}(\theta) \wedge \text{MO}(\theta) \wedge \forall x \in U_H \forall e \in U_E [\theta(x, e) \rightarrow x \in P_H] \quad (\text{Krifka 1998: 224, (69)})$$

(44) θ is a *movement relation*, MR (θ), iff it is the smallest relation that satisfies the following conditions:

a. There is a strict movement relation θ' , and $\theta' \subseteq \theta$;

$$b. \forall x, y \in U_H \forall e, e' \in U_E [\theta(x, e) \wedge \theta(y, e') \wedge e \ll_E e' \wedge \forall e'', e''' \in U_E \forall x', y' \in U_H [\text{FIN}_E(e'', e) \wedge \text{INI}_E(e''', e') \wedge \theta(e'', x') \wedge \theta(e''', y') \rightarrow \text{TANG}_H(x', y')] \rightarrow \theta(x \oplus_H y, e \oplus_E e')] \quad (\text{Krifka 1998: 225, (71)})$$

That is, whereas a strict movement relation is an isomorphism of subparts, where adjacency holds between subparts of the event and those of the path traversed in the course of the event, a movement relation is less restrictive as it does not require strict adjacency all through the event. Rather, an MR is defined as the join of several SMRs that involve contiguous movement along a path but not necessarily at contiguous times, allowing stops, detours, and backward movement.²⁸

Having provided the formalization of the SMR, the MR, and the initial as well as the final parts of events, we are now two steps away from the calculation of the telicity of actual motion predicates. In the first step, the definition of telicity must be given:

$$(45) \quad \forall X \subseteq U_E [\text{TEL}_E(X) \leftrightarrow \forall e, e' \in U_E [X(e) \wedge X(e') \wedge e' \leq_E e \rightarrow \text{INI}_E(e', e) \wedge \text{FIN}_E(e', e)]] \quad (\text{Krifka 1998: 207, (37)})$$

By (45) a telic predicate is such that it does not describe any subevent e' that does not contain the initial and final parts of e .

²⁸By way of exemplifying general movements, Krifka (1998: 225-226) mentions stop-n-go movements, Alcatraz movements, and Echternach movements.

Finally, we must formally describe the source and goal of movement relations, which will be necessary to describe motion predicates (both in space and other dimensions such as temperature) that specify these components of the motion events denoted by the predicates. The definitions are given below:

- (46) If θ is a movement relation and it holds for x, e that $\theta(x, e)$, then
- a. $\forall y \in U_H[\text{SOURCE}(x, y, e) \rightarrow \forall e' \in U_E \forall x' \in U_H[[\text{INI}(e', e) \wedge x' \leq_H x \rightarrow x' \infty_H y] \wedge [\neg \text{INI}(e', e) \wedge x' \leq_H x \rightarrow \neg x' \infty_H y]]]$
 - b. $\forall y \in U_H[\text{GOAL}(x, y, e) \rightarrow \forall e' \in U_E \forall x' \in U_H[[\text{FIN}(e', e) \wedge x' \leq_H x \rightarrow x' \infty_H y] \wedge [\neg \text{FIN}(e', e) \wedge x' \leq_H x \rightarrow \neg x' \infty_H y]]]$ (Krifka 1998: 227-228, (73a) and (73b))

That is, for Krifka, the source of a movement (spatial or other) is adjacent to all initial parts of the movement, which means the source is not part of the path. Likewise, the goal of a movement (spatial or other) is adjacent to all final parts of the movement, from which it follows again that the goal is not on the path.²⁹

Given all of the above, we can now calculate that, for instance, the predicate *Peter walked from city hall to the bank*, the semantic representation of which is $\lambda e \exists x [\text{WALK}(P, x, e) \wedge \text{SOURCE}(x, C, e) \wedge \text{GOAL}(x, B, e)]$,³⁰ is telic as there is no non-initial or non-final proper part of this walking event that is described by *Peter walked from city hall to the bank* and does not violate the SOURCE and GOAL conditions specified in the semantic representation of the predicate. Or to put it another way, any non-initial or non-final subevent of e described by the predicate is a walking event along a path non-adjacent to either the named source point (i.e. city hall) or the named goal point (i.e. the bank). This, however, does not satisfy the SOURCE or GOAL conditions imposed by the predicate, and thus such subevents are not described by this predicate, which predicts telicity.

Predicates expressing change in dimensions other than space can be analyzed along the same lines. For instance, *Peter cooled the soup from 50 °C to 20 °C* denotes an event which can be argued to be associated with the same type of movement relation as any canonical movement event (cf. *John walked from city hall to the bank*). In this case, a strict

²⁹As we will see in Section 2.3.4, Beavers (2012a) modifies these definitions in his FPR model, which is an extension of Krifka (1998).

³⁰This logical term, wherein P denotes the individual Peter, C represents the source (i.e. city hall) on path x , and B is the goal (i.e. the bank) on path x , represents the predicate prior to existential closure of the event variable.

homomorphic relation obtains between the part structure of a cooling event e and the part structure of a path p , which is an abstract path that stands for quality change in temperature. The fixed degrees (50°C and 20°C) can be thought of as the SOURCE and the GOAL in the same way as city hall and the bank in the example above, whereas the path between 50°C and 20°C has the length of 30 degrees in the directed path structure of temperatures. Thus, having calculated that the predicate *Peter walked from city hall to the bank* is telic, we can conclude that the predicate *Peter cooled the soup from 50 °C to 20 °C* should be telic as well, which is true to fact.

2.2.4.3 Some reasons behind the popularity of Krifka's theory

Having provided a brief outline of Krifka's theory of telicity, we can see that it has provided answers to a number of puzzles within lexical semantic research, which in turn explains why it has gained such a wide popularity among semanticists in the past two decades. Before we proceed, let us recapitulate two merits of this theory.

First, the most apparent advantage of Krifka's analysis is that it provides a precise, formal characterization of the structural analogy between mass nouns and process predicates as well as count nouns and event predicates (in the terminology of Bach 1986). In addition, as Filip (2011) discusses, in this model, besides capturing the fact that a quantized nominal expression can make a verbal predicate quantized (i.e. telic), we can also account for the fact that for certain predicates the quantization property of the theme argument does not have an effect on the quantization property of the event denoted by the predicate. This is illustrated by predicates like *pushed the cart* and *carried three apples*, which, on this account, do not encode a homomorphic relation between the part structure of the theme argument and the part structure of the event argument. Thus telicity does not follow from the occurrence of the quantized nominal expressions *the cart* and *three apples* in the respective predicates.

Second, with the assumption of identical part structures for the denotation of nominal and verbal expressions and homomorphism, this theory provides us with the tools to calculate telicity both in Germanic languages as well as Slavic languages, which are characterizable as having rather distinct aspectual properties. Specifically, Filip (1999, 2011), for instance, argues that a model like the one advocated by Krifka enables us to hypothesize that in these languages the encoding of telicity is a function of the overt

expression of the universal quantization and cumulative properties either by a nominal predicate operator, such as a determiner quantifier, or measure expression, on the incremental theme argument (as in the case of English, for instance) or by a verbal predicate operator, such as a prefix, applied to the incremental verb (Filip 2011).

In subsequent parts of the dissertation, I also discuss more recent applications of Krifka's model such as Filip and Rothstein (2006), Filip (2008), and Beavers (2012a). The latter is of particular interest to us as, on the one hand, it sheds light on some shortcomings of this model and offers novel solutions to them, and, on the other hand, it serves as the immediate theoretical background to my analysis of Hungarian predicates.³¹ Before proceeding along these lines, however, let us explore more recent, scalar approaches to telicity, crucial facets of which will also be useful in Chapters 4, 5, and 6.

2.3 In the footsteps of Manfred Krifka: scalar approaches to word meaning

As is apparent from the previous sections, the idea that certain verbs encode a homomorphism between the part structure associated with an event participant and the part structure of the corresponding event has long been observed in the aspectual literature. Since Hay et al. (1999) a more recent trend, one which can be considered to be a kind of restatement and extension of the former analyses, has been to assume that certain verbs are lexically associated with some type of scale and are thus referred to as scalar verbs (e.g. *warm* and *cool*), while others, the so-called non-scalar verbs (e.g. *play* and *roll*), are not.³² The intuition behind the assumption of a scalar meaning component in the lexical semantic representation of verbs like *warm* is that they express some kind of change in a property of an event participant, which can be measured along some scale. For instance, on this view, the predicate *the soup warmed* is analyzed as expressing that the referent of the affected argument (i.e. the soup) changes in the scalar dimension of warmth and this change can be measured along a temperature scale lexically specified by the verb *warm*. By contrast, non-scalar verbs like *roll* are not characterizable in terms of lexicalizing a scale by virtue of not

³¹For other critical comments on the Krifka-type homomorphism, see Rothstein (2012: 67).

³²Although there are apparent parallelisms between homomorphism-based analyses and the scalar approach in this section, it is important to emphasize that the latter does not posit that there is a homomorphic relation between the part structure of the event argument and the part structure of the scale of a given predicate (cf. Hay et al. 1999 and Kennedy and Levin 2008, among others).

expressing an ordered change.³³ As has been shown in the scalar semantic literature, the presence or absence of this scalar meaning has important ramifications with regard to the aspectual make-up of verbal predicates and, concomitantly, the argument realization patterns in which a verb can appear. This section is aimed at exploring the notion of scales and, to some extent, that of scalar change versus non-scalar change. In Section 2.3.1, I begin with a precise definition of scales based on Hay et al. (1999). Next, in the first three subsections of Section 2.3.2, I review the scalar verb classification proposed in Levin (2010), Rappaport Hovav and Levin (2010), and Rappaport Hovav (2012), among others. First, in Section 2.3.2.1, I discuss change-of-state verbs like *warm* and *cool*, which lexicalize property scales. Second, in Section 2.3.2.2, I move on to describing directed motion verbs like *ascend* and *descend*, which encode path scales. Third, in Section 2.3.2.3, I characterize predicates like *eat* and *drink*, which involve volume/extent scales. Fourth, in Section 2.3.2.4, I briefly address verbs expressing non-scalar change. In Section 2.3.3, I round off this discussion by briefly summarizing why a scalar approach to verb meaning is favorable over previous analyses so that I can continue with a detailed discussion of the closely-related mereological approach of Beavers (2012a).

2.3.1 The novel notion of scales in verb meaning

A fundamental idea of the scalar approach is that certain types of dynamic verbs can be characterized as verbs lexicalizing a measure function that measures the amount of change an event participant undergoes relative to some scalar dimension (e.g. temperature, length, width, or height) over the course of the event (cf. Hay et al. 1999, Kennedy and Levin 2008). For instance, in the case of the degree achievement verb *lengthen*, it is clear that the verb denotes an event in which there is a certain amount of change with regard to the length of the object being lengthened.³⁴ Hay et al. (1999) illustrate this with causative *lengthen* in the following way:

³³Croft (2012) also assumes a basic distinction between scalar and non-scalar change. He uses the terms 'directed change' and 'undirected change', respectively, to refer to these classes.

³⁴Dowty (1979: 88-90) introduces the term 'degree achievement' in reference to predicates like *cool* and *sink*, which do not fit into the Vendlerian classification by virtue of displaying properties associated with more than one (Vendlerian) aspectual class. More specifically, as Dowty puts it, these verbs "express a change of state like other achievements" (*ibid.*: 88) and yet they are compatible with adverbs of duration like *for X time unit*.

- (47) a. Kim lengthened the rope.
 b. Kim caused the length of the rope to increase by some amount.

(Hay et al. 1999: 130, (8a) and (9a))

The paraphrase of (47a), which is (47b), shows the transitive verb *lengthen* expresses that the rope undergoes a change in the course of which its length (necessarily) increases by some amount, which can be either unspecified (as in the example above) or overtly realized by some linguistic material as in *Kim lengthened the rope by 10 cm*.

What is special about degree achievements is that the property with respect to which the referent of a given argument changes is introduced by the adjectival base of the verb. Therefore, in the case of these verbs, it seems motivated to characterize the semantics of the verb based on the semantics of the adjectival base, as proposed in, for instance, Kennedy (1999).³⁵ In what follows, I first introduce the technical machinery necessary to capture the meaning components briefly mentioned above, and then I provide the scalar formalization of verbs expressing scalar change. This discussion will primarily focus on degree achievement predicates.³⁶

As was mentioned above, on the scalar approach, degree achievement predicates are argued to be based on the adjectives underlying the verbs heading these predicates. The adjectives are treated as functions that map objects to degrees (i.e. abstract representations of measurement) (cf. Hay et al. 1999, Kennedy and Levin 2008). For instance, the representation of the adjective *short* is as follows:

- (48) $[short(x)(t)]$ = the degree to which x is short at time t

In (48) the variable t enables us to indicate that the given property (i.e. shortness in the above example) is characteristic of object x at time t and it can potentially be different at different times. The degrees that serve as an abstract representation of measurement of a specific property of a given object can be positive or negative along a scale, and they are taken to be a set of points totally ordered in some dimension, such as temperature, length,

³⁵Kennedy and Levin (2008) claim that the scalar properties of verbs different from degree achievement verbs are also based on a more general kind of measure function lexicalized by the verb. However, in these cases, this semantic component is not illustrated as transparently as in the case degree achievements, where the adjectival base embodies this measure function.

³⁶In the literature on scales, degree achievement predicates often serve as a verb class through which the scalar view of verbal predicates can be best exemplified (cf. Hay et al. 1999, Kennedy and Levin 2008). I follow this practice in this dissertation as well (cf. Chapter 4).

or weight. Adjectives such as *warm* and *high* are considered to denote functions from objects to positive degrees, whereas adjectives such as *cool* and *low* denote functions from objects to negative degrees. Hay et al. (1999) define the set of positive and negative degrees along a scale S as follows:

$$(49) \quad \begin{aligned} \text{a. } POS(S) &= \{d \subseteq S \mid \exists p_1 \in d \forall p_2 \in S [p_2 \leq p_1 \Rightarrow p_2 \in d]\} \\ \text{b. } NEG(S) &= \{d \subseteq S \mid \exists p_1 \in d \forall p_2 \in S [p_1 \leq p_2 \Rightarrow p_2 \in d]\} \end{aligned}$$

(Hay et al. 1999: 131, (12))

In (49a) and (49b) $POS(S)$ is the set of positive degrees and $NEG(S)$ is the set of negative degrees, respectively, d stands for degrees (intervals) and p_1 and p_2 represent single points or degree values on a scale.

In order to integrate the notion of scalar change into the formal semantic representation of verbs, further notions need to be introduced as part of the technical apparatus. For instance, degree addition, which is meant to reflect the fact that verbs of scalar change entail that the degree to which an event participant possesses a property increases over the course of the event denoted by the verb, is defined in (50a) and (50b), where $d_{(0,i)}$ stands for the positive degree ranging from the lower bound of a given scale to point i , whereas $d_{(i,\infty)}$ is the negative degree ranging from i to ∞ , which represents the upper bound of the scale and the fact that it is not associated with a maximal value.

$$(50) \quad \begin{aligned} \text{a. } d_{(0,i)} + d_{(0,j)} &= d_{(0,i+j)} \\ \text{b. } d_{(i,\infty)} + d_{(0,j)} &= d_{(i-j,\infty)} \end{aligned}$$

(Hay et al. 1999: 131, (15a) and (15b))

The description in (50a) exemplifies the addition of two positive degrees, whereas (50b) formalizes the addition of a negative degree and a positive degree. The addition of two negative degrees is left undefined here. For more on why this is the case, see von Stechow (1984).

Next, in order to capture the observation that verbs encoding scales denote events that measure out a change with respect to a given property of an object that undergoes this change, Hay et al. (1999) introduce an INCREASE function, which is as follows:

$$(51) \quad [[\text{INCREASE } (\phi) (x) (d) (e)]] = 1 \text{ iff } \phi(x) (\text{SPO}(e)) + d = \phi(x) (\text{EPO}(e))$$

where SPO and EPO are functions from events to times. The output of SPO is the initial point of the event, while the output of EPO is the endpoint of the event.

(Hay et al. 1999: 132, (16))

The definition in (51) says that $\text{INCREASE } (\phi) (x) (d) (e)$ is true if and only if object x has property ϕ to some degree at the beginning of event e and, at the end of e , the degree to which x has ϕ equals the degree of x at the beginning of the event increased by degree d . The variable d is also referred to as the difference value, whose role in the aspectual make-up of verbal predicates is as follows: it can specify a bounded amount of change, which the referent of the affected argument undergoes, by virtue of being associated with a specific value. In this case, the identification of the culmination point of the event denoted by the predicate becomes possible, which in turn yields the telicity of the predicate. If, however, d is not specific and hence does not denote a bounded amount of change, which then makes it impossible for the listener to determine the endpoint of the event, atelicity arises (*ibid.*: 133).

With this background in mind, we can now provide the formal representation of the scalar component of the lexical specification of the predicates in (52a) and (53a):

(52) a. Jackie shortened her skirt (for 30 minutes).

b. $\exists e, d [\text{INCREASE } (\text{short}(\text{skirt})) (d) (e)]$

(53) a. Jackie shortened her skirt by 10 cm (in 30 minutes).

b. $\exists e [\text{INCREASE } (\text{short}(\text{skirt})) (10 \text{ cm}) (e)]$

Regarding the aspectual structure of the predicates in (52) and (53), the following aspectual values fall out of the analysis. Given that the difference value is not specific in (52), it follows that the predicate can most naturally be interpreted with an atelic reading. Conversely, in (53a), the difference value is specified (notice that it is 10 cm), which thus enables the reader to identify the amount of change the referent of the affected argument (i.e. the skirt) underwent and also the endpoint of the event, which as a result gives rise to a telic interpretation.

Having familiarized ourselves with the basic machinery of the scalar approach, let us now move on to a more detailed discussion of verbs of non-scalar and scalar change and the different types of scales that the members of the former class encode.

2.3.2 Verbs expressing scalar and non-scalar change

An innovative move of the scalar approach is the idea that, for instance, contra Tenny (1994), it is no longer the incremental theme argument *per se* that measures out the event associated with a predicate but an abstract property of this argument. Based on this property, we can differentiate between three types of scales encoded by a verb or a verb phrase (Hay et al. 1999, Beavers 2008, Levin 2010, Rappaport Hovav 2012) in the class of scalar verbs. Specifically, canonical change-of-state verbs such as *break* and degree achievement verbs such as *warm* and *widen* are considered to encode property scales, verbs expressing inherently directed motion (cf. *ascend* and *approach*) have path scales, and verb phrases denoting the creation/consumption of the referent of an event participant (cf. *eat an apple* and *build a house*) encode volume/extent scales. It has been shown (see Levin 2010 and Rappaport Hovav 2012) that the presence or absence of a scale in the lexical specification of a verb and, in the former case, the type of scale a given verb is associated with, allows us to predict important aspectual and argument realization properties associated with this verb. This in turn motivates the brief description of the aspectual and argument realization properties of scalar verbs and those of non-scalar verbs in the following four subsections of Section 2.3.2.

2.3.2.1 Change-of-state verbs and property scales

What verbs such as *break*, *smash*, *cool*, and *warm* share is that they all express a change in a given property of the event participant that undergoes this change. Related to this is another inherent property of these verbs, namely that they denote an ordered set of changes. For instance, the verb *cool* denotes an event in the course of which the temperature of the referent of the affected argument decreases degree by degree in an orderly fashion. Advocates of the scalar approach capture these properties by assuming that these verbs encode a property scale, which is characterizable as having all the components scales are generally associated with (Rappaport Hovav 2012). These components are as follows: the dimension along which change occurs, the ordered set of

degrees of change, the relation of degrees to a standard value, and the ordering of these degrees. By way of illustration, I discuss the characteristics of the property scales of *widen* and *shorten* below:³⁷

(54) a. *widen*

Dimension: width

Degrees: conventionalized degrees of width such as centimeter, inch, etc.

Ordering: increasing

Relation to standard: above

b. *shorten*

Dimension: length

Degrees: conventionalized degrees of length such as centimeter, inch, etc.

Ordering: decreasing

Relation to standard: below

The above characterization is straightforward given that the adjectival basis of verbs such as *shorten*, *widen*, *cool*, and *warm*, which in each case encodes the scalar attribute expressing the property with respect to which the referent of the argument of the derived verb changes, is fairly explicit. For instance, based on the adjectival basis of *cool*, we can conclude that the change that the verb expresses occurs in the attribute of coolness. In addition, the properties of this attribute also allow us to identify the direction of change associated with the derived verb, which is characterizable as "decreasing" in the case of *cool*.

Next, it has also been shown that various syntactic as well as semantic properties follow from whether the property scale of a verb has multiple or exactly two (degree) values. The former case applies to verbs such as *shorten*, *widen*, *cool*, and *warm*. The multi-valued nature of the scale associated with these verbs stems from their being based on gradable adjectives, such as *short*, *wide*, *cool*, and *warm*. As Rappaport Hovav (2012) discusses, the gradable nature of these adjectives is evidenced by the fact that they can occur in the comparative (cf. *shorter*, *wider*, *cooler*, and *warmer*) and in the superlative (cf. *the shortest*, *the widest*, *the coolest*, *the warmest*). In addition to this, they are also compatible with degree modifiers such as *quite* and *very* as in *quite short* and *very wide*. Conversely,

³⁷For more examples, see Levin (2010) and Rappaport Hovav (2012).

some verbs, such as *break* and *die* have property scales that are not based on gradable adjectives and their adjectival basis is thus incompatible with comparative morphology. The examples below are illustrative of this:

(55) *more broken, *more dead

Beavers (2002, 2008) argues that such verbs express a transition on the part of the theme from one state to another state, which can then be thought of as two degree values on the property scale of the verb. For instance, *Bill died* expresses that Bill underwent a change from not being dead (which corresponds to the initial degree value on the property scale) to being dead (which corresponds to the final degree value on the property scale).³⁸ Given the internal structure of the events these verbs denote, it follows that the predicates they are contained in are inherently telic, a property that I will constantly refer back to in Chapters 4, 5, and 6 of this dissertation.

Finally, another distinction that is often made within the class of verbs encoding property scales is between closed-range verbs and open-range verbs. Specifically, change-of-state verbs based on closed-range adjectives such as *empty*, *dry*, *ripen*, *darken*, and *straighten* are often argued to select for a scale that is associated with a maximal value stemming from their adjectival base. This value is maximal in the sense that there exist no higher degrees on the scale entailed by the verb (Kearns 2007). For instance, if something becomes dry at the termination of a drying event, it cannot be made any drier after that. This has important ramifications for the aspectual make-up of predicates containing such verbs as a bound on the encoded scale can easily be identified with the help of the maximal value, which in turn explains why *empty*, *dry*, *ripen*, and *straighten* are most commonly associated with a telic interpretation without any further sentential material like *completely* or a measure phrase like *to X degrees* (cp. telic *the fridge emptied* and telic *the soup cooled to 10 degrees*).³⁹ For an illustration, consider the examples below:

³⁸Croft (2012: 59-60) also claims that achievements describe a transition from one state (rest state in his terminology) to another state (the result state) in what he calls the qualitative state dimension (*q*). Interestingly, however, on this view, this transition corresponds to a single point in the dimension of time (*t*), which seems problematic given how such events unfold in time (cp. the state of alive and the state of dead, where the former must precede the latter temporally). For another instance of the idea that the denotation of achievements consists of exactly two events, which correspond to the rest state and the result state of the referent of the argument undergoing a change in Croft (*ibid.*), see Maleczki (1994: 177).

³⁹As will be discussed later, the verb *cool* contrasts with the verb *empty* by virtue of being an open-range verb.

- (56) a. They are straightening the rope. \Rightarrow They have straightened the rope.
 b. The clothes are drying. \Rightarrow The clothes have dried.
 (Hay et al. 1999: 136, (26a) and (26b))
- (57) a. The sky darkened (?but it didn't become dark).
 b. The shirt dried (??but it didn't become dry).
 (Kennedy and Levin 2008: 159, (5a) and (5b))

That degree achievement verbs stemming from closed-range adjectives denote telic event descriptions is evidenced by the fact that they are not entailed by their progressive forms, as is apparent from (56a) and (56b) (cf. Dowty 1979) and that they are not natural with continuations negating that the referent of the affected argument has attained a final state described by the adjectival base (cf. (57a) and (57b)).

Although researchers tend to agree that *empty*-type predicates are typically telic, the idea that telicity stems from the maximality of the final value on the scale encoded by the verb has been called into question. Kearns (2007), for instance, argues that the culmination point of a telic event description denoted by such degree achievement verbs can be identified due to a standard value coming from the adjectival basis. This value, however, does not necessarily correspond to a maximal value. She provides the following examples to substantiate her claim:

- (58) a. The sky darkened in an hour but it wasn't completely dark.
 b. The fruit ripened in five days but it wasn't completely ripe.
 (Kearns 2007: 46, (37a) and (38a))

Kennedy and Levin (2008) take issue with the above idea and argue that what the second clause in both (58a) and (58b) denies is that all parts of the referent of the affected argument have undergone a change, which is due to the definiteness of the expressions *the sky* and *the fruit*, respectively. They provide the following evidence for their claim:

- (59) a. #All of the sky darkened in an hour, but it wasn't completely dark.
 b. #The entire fruit ripened in five days, but it wasn't completely ripe.
 (Kennedy and Levin 2008: 164, (14a) and (14b))

In order to further demonstrate that sentences containing change-of-state verbs based on closed-range adjectives do entail that the referent of the affected argument of the head verb has attained a final state that corresponds to a maximal value on the property scale of the verb, Kennedy and Levin (*ibid.*) also discuss the examples below:

- (60) a. #The sky darkened in an hour, but no part of it was completely dark.
 b. #The fruit ripened in five days, but no part of it was completely ripe.
 (Kennedy and Levin 2008: 165, (15a) and (15b))

As is apparent from (60a) and (60b), the negation of the fact that the affected argument maximally possesses a given property at the termination of the entailed event yields a contradiction, contra Kearns's (2007) prediction. Therefore, it seems reasonable to adhere to the position that closed-range verbs encode scales with maximal final values on them.

Verbs based on closed-range adjectives contrast with verbs derived from open-range adjectives, such as *warm* and *cool*, since in the case of the latter there is no maximal value (i.e. upper bound) associated with the scale entailed by the verbal predicate. Thus the referents of the affected arguments in these predicates can in principle always change in the scalar dimension associated with the head verb. The lack of an endpoint on the scale then explains why such verbs are more likely to be associated with atelic event descriptions unless context or some sentential element makes the identification of a bound possible. This is illustrated by predicates like *the soup warmed* and *the soup cooled*, which are interpreted atelically without contextual clues or sentential material like a measure phrase of the type *to X degrees*, which induce a telic reading.

In sum, the members of this verb class can be considered to be canonical scalar verbs (at least in English) as they lexicalize full scales, albeit with minor differences depending on the adjectival basis of these verbs. Another class of verbs which can be characterized as having properties very similar to the ones discussed above is the class of directed motion verbs. In the following section I elaborate on this class while emphasizing the parallelisms between change-of-state verbs and directed motion verbs.

2.3.2.2 Directed motion verbs and path scales

As mentioned above, change-of-state verbs and directed motion verbs such as *rise*, *fall*, *arrive*, *leave*, *come*, *go*, *ascend*, and *descend* share striking similarities. Most importantly,

both types of verbs encode an ordered set of changes in a single attribute of their theme, which is often lexicalized as an adjective in the case of change-of-state verbs and as a preposition in the case of directed motion verbs. Similarly to adjectives, prepositions entailing a scalar attribute (e.g. *above*, *below*, *in front of*) describe a relation between a property of a theme (i.e. its location in the case of directed motion verbs) and a reference object, which corresponds to the standard associated with change-of-state verbs. Evidence with respect to the scalar nature of such prepositions comes from the fact that they can appear with degree modifiers, just like their adjectival counterparts.⁴⁰ Consider the examples below:

(61) two meters above, far/further above, far/further below

(Rappaport Hovav 2012: 9, (18b))

Rappaport Hovav (2012: 10) stresses, however, that there is an important difference between change-of-state verbs and directed motion verbs as far as their scales are concerned. As we saw in the previous section, the former lexicalize property scales with all the components scales can potentially be associated with. Conversely, directed motion verbs like *approach* do not generally encode full scales (notice that the direction of movement is not specified by verbs like *approach*), although there are a few exceptions like *fall*. The scalar properties that these two verbs are associated with are as follows:

(62) a. *approach*

Dimension: distance

Degrees: points of distance on a path

Reference object: provided by an expression which is external to the verb

Relation to reference object: towards

Ordering: decreasing

b. *fall*⁴¹

Dimension: location

Degrees: points of location on a path

Reference object: source of gravity

⁴⁰The idea that both adjectives and prepositions can be associated with a scalar property is also proposed in Beavers (2008).

⁴¹This characterization of *fall* is based on Rappaport Hovav's (2012) discussion of *rise*.

Relation to reference object: closer to
Ordering: decreasing

Next, there is one more aspectual property that is worth mentioning. Similarly to the domain of change-of-state verbs, it is possible to make a distinction between verbs entailing two-point scales and verbs entailing multi-point scales in the directed motion domain as well. For example, the verb *enter* is associated with a two-point scale since it describes an event in the course of which the argument undergoing change-of-location goes from one side of the reference object to the other side, which is also true of the verb *exit*, whereas the scales that verbs such as *ascend* and *descend* entail are multi-valued in nature. As seen in the previous section, this distinction has important aspectual consequences in a way that predicates entailing two-point scales are inherently telic, whereas predicates having multi-point scales can be either telic or atelic.

Further evidence for a fundamental similarity between change-of-state and directed motion verbs is that the argument expression patterns that they are compatible with are quite restricted. For instance, they do not allow implicit objects, as illustrated in (63). Second, (64) shows that they cannot co-occur with any type of scalar XP. Third, they cannot appear with *out*-prefixation, which is why examples like (65) are ungrammatical.

(63) a. *Mary entered last night.

b. *Mary broke last night.

(64) a. *Casey arrived breathless. (on the result interpretation)

b. *The child broke the dishes off the table.

(Rappaport Hovav 2012: 17, (42a) and (42b))

(65) *Andy outbroke Mandy.

(Levin 2010: 15, (58b))

It has been argued that verbs encoding a scalar change must have an overt "normal" direct object (Rappaport Hovav 2008: 23) and that the resultative XPs that such verbs co-occur with must be compatible with the type of change described by the verb. The former fact predicts the ungrammaticality of (63) and (65), whereas the latter predicts the ungrammaticality of (64).

In sum, what falls out of the discussion of this and the former section is that the aspectual and argument realization parallelisms between change-of-state verbs and directed motion have to do with the fact that the members of both classes have very similar scalar

structures. Conversely, as is often argued in the literature, verbs of creation/consumption are associated with a scalar structure in significantly different ways. This is what I discuss in the next section.

2.3.2.3 Verb phrases encoding volume/extent scales

Volume/extent scales are typically associated with verb phrases expressing a creation or consumption event. The major difference between the former two verb classes, namely change-of-state verbs and directed motion verbs, and verbs of creation/consumption is that the latter are generally assumed not to lexicalize a scalar structure. Instead, it is often argued that the scalar meaning that verb phrases headed by such verbs are associated with stems from the theme argument of the verb. For instance, on such a view, the extent scale encoded by the predicate *ate an apple* comes from the theme argument *an apple*, an idea which is rooted in analyses such as Verkuyl (1972, 1993) and Tenny (1994), among others. Crucially, this property of creation/consumption verbs is what researchers (see Rappaport Hovav 2008, Rappaport Hovav and Levin 2010, and Rappaport Hovav 2012) often refer to in order to explain why, for instance *eat* and *drink* show argument realization properties similar to those of non-scalar verbs like *roll* and *play*. Specifically, similarly to non-scalar verbs (cf. Section 2.3.2.4), verbs occurring with volume/extent scales are quite flexible when it comes to the expression of their patients. For instance, (66) shows that these verbs can occur only with an agent argument. Also, they can occur in resultative expressions where the object is not the incremental theme (i.e. the extent scale), as in (67). Another possibility for the scale/incremental theme to remain implicit involves *out*-prefixation, which is illustrated in (68).

(66) Mary read.

(67) Mary read her son to sleep.

(68) Mary outread Ann.

Although I share the view that the scalar structure associated with predicates of creation/consumption is different from the scales encoded by change-of-state predicates and directed motion predicates, I take issue with the idea that creation/consumption verbs do not lexicalize scales at all. Following Beavers (2012a), I assume that creation/consumption predicates, just like change-of-state and directed motion predicates,

encode a complex homomorphism between the part structure of the incremental theme arguments and the part structure of the event argument. Furthermore, I argue that the reason why predicates such as *eat* and *drink* exhibit interpretive properties that are significantly different from the interpretive properties of, for instance, *break*-type change-of-state predicates (as shown in Levin 2010 and Rappaport Hovav 2012) is that they lexicalize a special verb-mediated relation between their incremental theme arguments.⁴² In Section 2.3.4 I discuss Beavers's (2012a) model in much detail, whereas in Chapter 5, my objective is to provide a precise characterization of the unique correlation between the incremental themes of creation/consumption predicates. Before that, however, I briefly describe non-scalar verbs and finish my review of the scalar approach with a short summary of why it has recently been appealed to in lexical semantic research.

2.3.2.4 Verbs expressing non-scalar change

As Rappaport Hovav and Levin (2010) note, verbs expressing non-scalar change (e.g. *clean*, *exercise*, *play*, *roll*, *scrub*, *steam*) are characterizable in terms of expressing an unordered change. Moreover, many of these verbs describe a combination of various changes at once (Levin 2010: 10) and hence cannot be associated with a single scale. As for their aspectual behavior, it is notable that they can enter into telic predications (just like scalar verbs) on the condition that some sentential element like a scale-denoting XP (or heavy contextual support) ensures that the event denoted by the predicate headed by such a verb can be interpreted as bounded (Levin 2010: 10-11). For instance, in (69), the example containing the non-scalar verb *steam* is interpreted telically because the scale-denoting phrase *open* shows up in the predication. Without such a verb-external element, a telic reading is generally unavailable, as demonstrated in (70).

(69) John steamed the envelope open.

(70) #The ball rolled in two minutes. (Levin 2010: 10, (35a))

⁴²As will be apparent from Section 2.3.4, on Beavers's (2012a) view, dynamic verbal predicates encode multiple incremental themes (i.e. a path/scale and a figure argument). In the case of creation/consumption predicates, these are the creation/consumption scale and the patient argument that comes into being or disappears.

Regarding argument realization, non-scalar verbs contrast with scalar verbs (i.e. change-of-state verbs and directed motion verbs) and pattern with verbs occurring with volume/extent scales. Consider (71) – (73).

- (71) a. I cleaned all day.
 b. I exercised all day.
- (72) a. We steamed the envelope open.
 b. We steamed the tablecloth flat.
 c. We steamed the clothes clean.
 d. We steamed the clothes stiff. (Levin 2010: 11, (37a) - (37d))
- (73) Real Madrid outplayed Barcelona in the first leg of the Spanish Super Cup.

What the examples above illustrate is that non-scalar verbs are quite flexible when it comes to the realization of their direct object and the specification of the scales that the predicates in which they can occur are associated with. The former is apparent from (71), where the verbs *clean* and *exercise* occur with a single agent argument and from (73), where the predicate involves *out*-prefixation. On the other hand, these verbs can co-occur with a variety of scale-denoting XPs, as is clear from (72).

2.3.3 Some characteristics of the scalar approach in a nutshell

Having reviewed the scalar/non-scalar classification of verbs and its consequences for interpretation and argument realization, I now conclude this discussion by highlighting some aspects of scalar analyses, which I will sporadically refer back to in subsequent chapters. I first begin with what is most relevant in this dissertation, namely the perception of the (a)telicity of verbal predicates.

(i) *The calculation of telicity with scales*

As was pointed out at the beginning of this chapter, what much research on lexical aspect has been concerned with in the past few decades is how much of telicity is lexicalized in the verb heading a given predicate and how much of it comes from the syntactic environment, namely the arguments that this verb selects for and the non-subcategorized adjuncts. Within a scalar framework, this issue can be rephrased as how much of the scale entailed by a given predicate comes from the head verb and what makes this scale

bounded. As is shown in Hay et al. (1999), in English it is possible for a scale to be fully lexicalized in a verb along with a bound (e.g. change-of-state verbs and directed motion verbs encoding two-point scales), which in turn results in a telic aspectual value with respect to the corresponding predicates. In other cases, a sentential element external to the head verb (or in some cases context) allow the listener to identify a bound on the scale and interpret the predicate telically.

Now, interestingly, in languages such as Hungarian telicity is very often due to a particle or a resultative expression, i.e. sentential elements that are external to the verb and its arguments. A possible conclusion that one might draw from this is that English verbs lexicalize more aspectually relevant facets of situations than Hungarian verbs do. In Chapters 4, 5, and 6 I show that it is in fact not the lexical semantic content of individual verbs to which the above difference should be attributed, but a language-specific principle, one which determines telic marking in Hungarian but not in English.

(ii) *Aspectual duality*

Related to the above discussion is the oft-cited fact that the scalar approach allows us to account for the aspectual ambiguity found within the class of degree achievements, such as *cool*, *warm*, *lengthen*, and directed motion verbs such as *ascend* and *descend*. As was discussed in Section 2.3.1, the aspectual duality of these predicates follows quite straightforwardly on this view as it is simply linked to the specific or non-specific nature of the difference value encoded by a given predicate. In Chapter 5, I take the notion of aspectual duality further and show that it is also observable within the class of creation/consumption predicates in cases where the predicate contains a certain type of quantized theme. This in turn serves as additional evidence for the claim that creation/consumption predicates encode both a scalar argument and a patient, an idea proposed by Beavers (2012a).

(iii) *Argument realization facts*

Aspectual approaches are often criticized for treating verbs with distinct argument realization properties under one rubric due to the similar aspectual properties they are associated with. Levin and Rappaport Hovav (2005: 109-110), for instance, point out that such approaches tend to (incorrectly) characterize verbs of consumption such as *eat* and *drink* as well as change-of-state verbs such as *freeze* and *melt* as belonging to a single aspectual class due to the fact that they all select for incremental theme arguments.

However, when we look at the syntactic environments these verbs appear in, we find significant differences. The scalar approach to word meaning offers a verb classification that is different from the four-way classification (i.e. states, activities, achievements, and accomplishments) proposed by Vendler (1957/1967) and also from the three-way characterization of verbs (i.e. verbs denoting states, processes and events) as advocated in Mourelatos (1978, 1981) and Bach (1981, 1986) by virtue of the fact that, on this view, verbs are distinguished based on whether they denote scalar or non-scalar change. Although this conception of verb classes does seem to be more appealing and is thus worth considering,⁴³ as this dissertation is not aimed at exploring argument realization phenomena, I will not discuss this issue any further.

One final point that is worth noting, however, is an important characteristic of the scalar approach in which it differs from other aspectual analyses such as Krifka (1989, 1992, 1998). Specifically, notice that the scalar framework that I have outlined above does not make reference to the special relation (cf. Krifka's homomorphism) that arguably obtains between the denotation of a given verbal predicate and that of the (incremental) theme within the predicate. The single aspect of an event description that such an approach attempts to capture, in an effort to describe the aspectual structure of a given predicate, is whether or not the event description denoted by the predicate is associated with a quantized difference value. This is certainly sufficient to determine the aspectual value of the predicate, but, at the same time, it also has a rather unfortunate consequence. The scalar approach à la Hay et al. (1999), Kennedy and McNally (2005), as well as Kennedy and Levin (2008), among others cannot provide a precise truth conditional characterization of predicates, which can be rightly expected from any lexical aspectual analysis. More concretely, if it is the degree to which incremental progress to a specific bound on a scale that gives rise to telicity, then the scalar approach under discussion does not adequately capture the meanings of predicates of change. This issue is addressed in Beavers (2012a) as follows:

⁴³For an argument for this view, see, for instance, Rappaport Hovav and Levin (2010).

"... the goal of a theory of lexical meaning is not simply that it predict things like which predicates are telic, but that it more broadly capture their overall truth conditional content, ideally in a way that ultimately derives facts like telicity."

(Beavers 2012a: 44)

A theory that supersedes the scalar approach by virtue of having the potential to provide very precise truth conditions for predicates is Beavers's FPR model, the specific details of which I provide next.

2.3.4 The FPR model

A rather novel semantic analysis of telicity that utilizes important facets of Krifka's (1989, 1992, 1998) work is Beavers's (2009, 2011, 2012a) FPR model.⁴⁴ As will be apparent below, Beavers (2012a) first proposes revisions regarding some theory-internal assumptions made in Krifka (1998), and then he extends Krifka's theory so that his model can accommodate double incremental theme effects, a fact of language that is generally left unaccounted for in the literature. Before I specifically address the latter issue, I summarize what facets of Krifka's (1998) analysis are modified in Beavers (2012a).

First the notions of SOURCE and GOAL are revised as follows:

- (74) a. $\forall x[GOAL(x,p,e) \leftrightarrow \exists e' \forall e''[FIN_E(e'',e) \rightarrow e' \leq e''] \wedge \theta(e',x)]$ ⁴⁵
 "x is the goal on p in e iff x is θ -related to the smallest final $e' \leq e$."
 b. $\forall x[SOURCE(x,p,e) \leftrightarrow \exists e' \forall e''[INI_E(e'',e) \rightarrow e' \leq e''] \wedge \theta(e',x)]$
 "x is the source on p in e iff x is θ -related to the smallest initial $e' \leq e$."

(Beavers 2012a: 30, (2.13a) and (2.13b))

As is apparent from (74) above, on this view, SOURCES and GOALS constitute parts of the path traversed by the event participant undergoing a change of location as "they are the smallest initial and final subparts of the path" (*ibid.*: fn. 9), respectively.⁴⁶ The reason why

⁴⁴The discussion in Section 2.3.4 is primarily based on Beavers (2012a) as this has been the most developed version of the FPR model to date.

⁴⁵Subscripts are omitted in the original text.

⁴⁶When presenting the FPR model, Beavers (2012a) first illustrates the specific details of the model within the domain of motion predicates. Later, however, he extends the analysis to other predicate classes as well.

Beavers departs from Krifka in defining these notions is that without this step it would not be possible to characterize events containing only an initial and a final subevent (i.e. events that express a transition from one location or state to another one), as in the case of the change-of-state verbs such as *break* and *smash*, which enter into telic predications with specific themes (cf. the scalar analysis of *break* and other verbs lexicalizing two-point scales in Section 2.3.2.1).

Next, he also introduces a new movement relation. This is a minimal movement relation (MR), which applies between a path p and an event e just in case the GOAL on p is mapped to only one subevent e' . In the case of such an MR the following additional constraint holds for p and e in addition to the usual constraints on MRs:

- (75) Minimal MR: An MR θ between event e and path p is minimal iff the goal x on p in e is mapped to only one subevent of e , i.e. $\forall x[GOAL(x, p, e) \Rightarrow \exists! e'[e' < e \wedge \theta(e', x)]]$ (Beavers 2012a: 33, (2.19))

With the introduction of minimal MRs, it is now possible to account more accurately for predicates that specify the endpoint of the event they denote, as illustrated by *Mary ran to the bank*. As is pointed out by Beavers (2012a: 33), the general movement relations as proposed in Krifka (1998: 225, (71)) are not sufficiently restrictive to yield the movement relations encoded by these predicates as they allow for an event to end "early" and so the participant undergoing change in a spatial dimension can leave again after reaching the goal or reach the goal early and "sit out" the rest of the event there. Such events are arguably not in the denotation of these predicates. Conversely, minimal MRs specify that the GOAL can be mapped to only one subevent of e . Thus "early" arrival at the final subpart of p is ruled out.⁴⁷

Finally, Beavers (2012a) provides a definition of telicity which is slightly different from the one found in Krifka (1998: 207, (37)):

- (76) $\forall X \subseteq U_E [TEL_E(X) \leftrightarrow \forall e \forall e' \in U_E [X(e) \wedge X(e') \wedge e' \leq_E e \rightarrow FIN_E(e', e)]]$
 “A predicate X over events is telic iff for any event it describes it does not describe any non-final subevent of that event.” (Beavers 2012a: 35, (2.23))

⁴⁷This is, of course, unnecessary in a model where goals do not constitute a part of the path, which, however, yields the complication that I outlined below (74).

An important aspect in which (76) differs from Krifka's definition (cf. Section 2.2.4.2) is that it is missing the notion of initial subevent. The motivation behind this is that Krifka's definition proves to be too restrictive when it comes to predicates with an implicit initial p' and an explicit final p'' . For instance, Beavers (*ibid.*: 34) points out that the predicate *John walked to the capitol*, wherein the SOURCE remains covert and the GOAL is specific (i.e. the capitol), is predicted to be atelic on Krifka's view (since both event e and a non-initial subevent e' are described by the predicate), contra the fact that it is compatible with the time-span adverbial *in 10 minutes*. This problem does not arise for (76), which can be thought of as a loosening of Krifka's definition.⁴⁸

Next, in the second part of this section, I discuss figure-path relations (which I will mainly refer to as FPRs in what follows), which will be essential in my analysis of Hungarian dynamic verbal predicates in Chapters 4, 5, and 6. The basic idea behind FPRs is that, contra the traditional view, namely that it is the quantization properties of a single incremental theme that determine the quantization properties of a given predicate, it is in fact two incremental themes that play a role in aspectual composition.⁴⁹ To illustrate the phenomenon in question, I first cite (77), which is discussed in Filip (1999: 100, (33)) and Beavers (2012a: 25, (2.5)).

- (77) a. The earthquake shook a book off the shelf in/?for a few seconds.
 b. The earthquake shook books off the shelf for/?in a few seconds.
 c. The earthquake shook a book for/?in a few seconds.
 d. The earthquake shook books for/?in a few seconds.

The examples above exemplify event descriptions with either a quantized figure argument (as in (77a) and (77c)) or a non-quantized figure argument (as in (77b) and (77d)) and either an explicit bounded path expression (as in (77a) and (77b)) or an implicit, unbounded path expression (as in (77c) and (77d)).⁵⁰ Telicity obtains only in one case, namely when the figure has quantized reference and the path is bounded, as in (77a). This leads Beavers (see also Filip 1999, Rothstein 2004, and references cited in Beavers 2012a)

⁴⁸The same point is also made by Rothstein (2004: 8).

⁴⁹Following Dowty (1991), Beavers (2012a) calls all event participants that figure into aspectual composition incremental themes.

⁵⁰The figure argument corresponds to the affected argument in Beavers (2012a).

to make the claim that the aspectual structure of the predicates above is determined by not one but two event participants. In other words, the predicate has two incremental themes.

Beavers's novel notion of homomorphism, i.e. the FPR, can accommodate the above facts by virtue of the fact that it is a mutually-constraining ternary homomorphic relation between an event argument e , a path argument p , and a figure argument x .⁵¹ The definition of this relation is as follows:

- (78) Figure/Path Relation (FPR): θ is the smallest relation where if $\theta(e, x, p)$ then for each $x_i \leq x$ ($1 \leq i \leq n$) there is a unique pair $e_i \leq e$ and $p_i \leq p$ where:
- a. e_i stands in a non-minimal MR to p_i ;
 - b. the GOAL of p_i in e_i is the GOAL of p in e ;
 - c. for all such e_i and p_i , $e = \sum_{i=1}^n e_i$ and $p = \sum_{i=1}^n p_i$. (Beavers 2012a: 38, (2.26))

That is, e , x , and p are related via the FPR in such a way that each subpart of the figure $x_i \leq x$ corresponds to a unique subevent $e_i \leq e$ wherein x_i crosses a subpath of the path $p_i \leq p$. The constraint in (78a) says that e_i and p_i are related to each other via a movement relation, whereas according to (78b) p_i ends at the goal, i.e. the final subpart, of p in e . Finally, (78c) ensures that there is no subevent that does not characterize motion along some subpath and that there is no subpath that is not traversed in some corresponding subevent of a motion event. In other words, the event as perceived in the FPR model progresses as each part of the theme moves along some part of the path all towards a common goal, and it ends when all of the theme reaches the goal. This in turn ensures that the event can be measured by either looking at parts of the theme traversing parts of the path, or by looking at parts of the path traversed by parts of the theme.

To illustrate the FPR, I show a possible decomposition of e denoted by the predicate in (79) in Figure 2.3, which was inspired by Beavers (2012a: 42, (2.35)).

⁵¹Following Krifka (1998), Beavers considers motion verbs to be three-place predicates. For instance, the predicate *John walked the Appalachian Trail* expresses a relation between a walking event e , a path p , the referent of which is the Appalachian Trail, and a figure x , which is instantiated by John. As is apparent from this example, the figure is the event participant that undergoes change of location in the case of motion predicates.

(79) Five mice ran three meters from the market to the river.

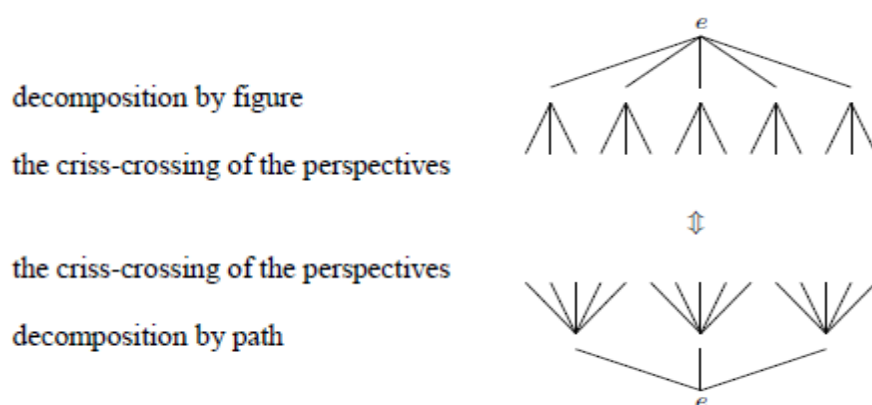


Figure 2.3 Figure-path relations⁵²

Figure 2.3 illustrates two possible ways in which an event in the denotation of *Five mice ran three meters from the market to the river* can be carved up.⁵³ The upper half of the diagram shows that the event is first divided into five subevents relative to parts of the figure.⁵⁴ These subevents are then divided into 15 subsubevents (i.e. three subsubevents per each subevent) relative to each meter of the path traversed by the figure. These subsubevents each represent one part of the figure crossing one part of the path. In a similar vein, the lower half of the diagram shows the same "quantity" of event, but this time it is carved up differently. First e is divided into three subevents based on the parts of the path traversed by the figure, and then each subevent is divided into subsubevents based on the various parts of the figure that actually traverse the part of the path corresponding to the given subevent. These subsubevents each represent one part of the path being crossed by one part of the figure. Overall, then, the different perspectives of the running event denoted by the predicate in (79) are as follows: The event can be decomposed by subparts of the figure, in which case there are five subevents, or by subparts of the path, in which case there are three subevents. Furthermore, the two perspectives can be criss-crossed (in the terminology of Beavers), which yields fifteen subsubevents on both sides of the decomposition.

⁵²I thank Csernyi Gábor for helping me create Figure 2.3.

⁵³The diagram in Figure 2.3 is meant to illustrate a situation in which each mouse runs three meters.

⁵⁴I chose one mouse to represent an atomic subpart of the figure for ease of conceptualization. There are, of course, an infinite number of ways in which the figure can be divided into subparts. Likewise, the 15 subsubevents (5 multiplied by 3) obtain if we consider atomic parts of the path to be one meter in length. This is, again, one of an infinite number of possibilities.

The reason why the FPR is assumed to be a mutually constraining relation between e , p , and x , contra the possible assumption that e is related to p and independently to x , as well, is provided below, in the discussion of (80).

(80) Wine flowed onto the floor for/??in five minutes. (Beavers 2012a: 37, (2.25))

Beavers notes that in (80) one could possibly assume a SINC (in the sense of Krifka) between the figure argument and the event argument and a separate MR between the path and the event in order to account for the double incremental effects that arguably characterize the predicate. This, however, yields contradictions. For instance, it is possible that (80) describes an event in the course of which different parts of the wine are moving at the same time, i.e. at the same point in the event. In other words, it is possible to imagine a scenario in which different parts of the referent of the figure argument correspond to the same subevent, which violates the SINC as one subevent corresponds to multiple parts of the figure (not a unique part of it). On the other hand, one could respond to the problem by arguing that the different parts of the figure can be viewed as a single part, which can then be mapped to the event without violating the SINC. However, this solution is not appealing either, as it does not reflect the real-world fact that the different parts of the figure undergo change of location quite independently of each other. As is shown in Beavers (2012a: 36), a similar problem arises if we assume an independent MR between e and p . Given these facts, Beavers refutes the assumption of independent double incremental relations and maintains the view that a mutually-constraining homomorphic relation obtains between p and e relative to x , and x and e relative to p .

With this background in mind, let us see how we can calculate the (a)telicity of a predicate assuming an FPR. Consider (81) below.

(81) Five mice ran (for 10 minutes).

$$\lambda e \exists p \exists x \exists y [run'(y, p, e) \wedge 5mice'(y) \wedge GOAL(x, p, e)]$$

On this view, (81) is predicted to be atelic as for any e in the denotation of (81) for path p , there is a non-final $e^j < e$ corresponding to $y^j = y$ crossing $p^j < p$ not sharing the goal of p in e . Since the predicate does not specify the goal of p , any p^j will satisfy (81), from which it follows that both e and e^j will be in the denotation of (81). Therefore, given that there is both an event and its non-final subevent in the denotation of (81), atelicity follows.

At this point it is also worth noting that the specification of the path alone does not make the predicate telic. This is illustrated in (82).⁵⁵

(82) Water ran from the tap to the floor (for 30 minutes).

$$\lambda e \exists p \exists w [run'(w, p, e) \wedge water'(w) \wedge SOURCE(\mathbf{tap}, p, e) \wedge GOAL(\mathbf{floor}, p, e)]$$

The atelicity of the predicate in (82) is predicted in an FPR analysis as for any e in the denotation of the predicate for some water w , there is a non-final $e' < e$ corresponding to some $w_i < w$ crossing $p' \leq p$ sharing the goal with p in e . Since any w_i will satisfy the constraints of the predicate (note that the predicate does not specify constraints regarding the quantity of the figure), e' will also be in the denotation of the predicate, which in turn gives rise to atelicity.

By contrast, (83), which is given below, receives a telic interpretation.

(83) Five mice ran to the river (in 10 minutes).

$$\lambda e \exists p \exists x [run'(x, p, e) \wedge 5mice'(x) \wedge GOAL(\mathbf{river}, p, e)]$$

The predicate in (83) is telic as there is no subevent e' in the denotation of (83) that would describe what e does, namely that all of the figure reaches the end of the path (i.e. the river) in the course of the running event. The more specific argument (along the lines of Beavers 2012a) is as follows: Any event in the denotation of (83) is in an FPR with the figure (i.e. 5 mice) and the path (the path between a contextually determined source and the river) at the same time. This relation entails that any non-final $e' < e$ is mapped to some $x' < x$ and/or to some non-final $p' < p$, where p is the full path. Since there is no such proper subevent e' that (83) describes, whereby all of the theme ends up at the goal point of the path, the predicate is predicted to be telic. As Beavers (*ibid.*: 38) points out the FPR does not require that the predicate specify that each part of the figure participant (e.g. each mouse in (83)) start at the same source, which in turn allows this analysis to predict the telicity of predicates that specify no source location, something which Krifka's (1998) analysis fails to achieve.

Therefore, we can conclude that this model predicts correctly that telicity obtains in only one case: when we know where the path ends and how much of the figure has reached

⁵⁵Bold print indicates constants in the logical representations.

the end of the path. In other words, a telic interpretation arises only if the path is bounded and the figure is quantized.

Before applying this analysis to domains beyond motion, Beavers (2012a) invokes the notion of figure-path relations in the characterization of a lexical aspectual property other than telicity, namely durativity. Specifically, he argues for the correlation between the durativity/punctuality of a predicate and the internal complexity of the theme and that of the path. First, in Beavers (2008), the generalization is that if we assume an MR between the path and the event argument of a predicate, we can predict the following relation between paths and events: an event predicated of a theme moving along a simplex path, which consists of exactly two subparts, will be punctual, whereas an event predicated of a theme moving along a complex path, which consists of at least three subparts, will be durative.⁵⁶ This is attested in the examples below:

- (84) a. The settler will cross the border in an hour.
simplex path \leftrightarrow punctual event
b. The settler will cross the desert in an hour.
complex path \leftrightarrow durative event (Beavers 2012a: 49, (2.49a) and (2.49b))

However, Beavers (2012a) argues that the above generalization needs to be modified so that it can accommodate the fact that the internal complexity of the theme also figures into the durativity/punctuality of a predicate. Contrast (84a) with (85).

- (85) The settlers will cross the border in an hour.
simplex path \leftrightarrow durative event (Beavers 2012a: 49, (2.49c))

The example in (85) illustrates that in addition to the internal complexity of the path, the atomic (i.e. non-decomposable)/complex nature of the figure also has to be taken into account so that we can determine the durativity/punctuality of a predicate.⁵⁷ Given these facts, the revised generalization with respect to the calculation of the durativity/punctuality of a predicate is as follows: A predicate denotes a punctual event if the figure is atomic and

⁵⁶For a precise, formal characterization of simplex and complex paths, the reader is advised to consult Beavers (2012a: 48, (2.44)).

⁵⁷The figure arguments in (84a) and (84b) are taken to be atomic by virtue of the fact that they can be viewed as non-decomposable, whereas the figure argument in (85) is decomposable into subparts, which thus explains its non-atomic status.

the path is simplex. In all other cases, that is, if the figure is non-atomic or the path is complex, or if both conditions obtain, the denoted event is durative.

Beavers's (2012a) next step is to extend the notion of FPR to other non-stative predicates, for instance, predicates that denote change in an abstract property of an event participant and predicates that express creation/consumption. I discuss only the former type here.⁵⁸ As we saw in Section 2.2.4.2, Krifka (1998) was already able to analyze predicates like *cool the soup from 60 °C to 20 °C* by assuming the same kind of movement relation that obtains in the case of motion predicates like *walked from the university to the capitol*. Beavers (2012a) takes Krifka's analysis further and argues that it is an FPR that holds between the property scale, the theme, and the event arguments of these and similar predicates, which I illustrate with (86) and (87), which both contain resultative XPs:

- (86) a. Peter dyed the water red in/??for an hour.
 b. $\lambda e \exists s [dye'(\mathbf{peter}, \mathbf{water}, s, e) \wedge GOAL(\mathbf{red}, s, e)]$
- (87) a. Peter dyed water red for/??in an hour.
 b. $\lambda e \exists s \exists y \exists x [dye'(\mathbf{peter}, y, s, e) \wedge GOAL(x, s, e) \wedge water'(y)]$

The examples in (86) and (87) are similar in that they both have an agent argument, a redness scale, and a figure argument. They also differ with respect to the quantization properties of the figure argument, which in turn yields distinct aspectual values for each predicate. Beavers argues that the discrepancy between examples such as (86) and (87) can be explained only if an FPR is assumed between the three arguments associated with the respective predicates. For instance, in (86), no $w_i < w$ (where $w = \mathbf{water}$) or $s^j < s$ (where s is the full redness scale, the endpoint of which corresponds to the state of redness) not sharing a result/goal state with s in e associated with any subevent e' of e that is in the denotation of (86) will match the constraints imposed by (86), as w_i does not equal \mathbf{water} and s^j does not correspond to the full redness scale. The atelicity of (87) can be calculated along similar lines as well.

Having illustrated the applicability of the FPR to a variety of English data, the question arises whether this model is tenable in languages other than English, e.g. languages that use significantly different mechanisms to encode lexical aspectual properties of predicates, as, for instance, Slavic languages and Hungarian. As will be apparent from later chapters,

⁵⁸I provide an FPR-based analysis of creation/consumption predicates in Chapter 5.

the answer is in the positive, albeit with some modifications. Before I provide evidence for this claim, however, I discuss some (mainly aspectual) facts of Hungarian in the next chapter in order to prepare the reader for my analysis in Chapters 4, 5, and 6.

CHAPTER 3

SOME FACTS OF HUNGARIAN

In this chapter my objective is to introduce the reader to crucial facts of the grammar of Hungarian before I make an attempt toward a scalar semantic analysis of telicity. My most important goal is to motivate a two-component theory of the Hungarian aspectual system and the idea that telicity is to be treated independently of the aspectual property of perfectivity by reviewing relevant works in the literature. Concomitantly, I present the types of data that I will focus on and the ones that I will disregard in subsequent chapters of the dissertation.

The structure of this chapter is as follows: In Section 3.1, I begin with a brief description of the structure of the Hungarian sentence on the basis of É. Kiss (2002) in order to facilitate understanding of my data in subsequent sections. Next, in Section 3.2, I introduce Smith's (1991/1997) highly influential two-component theory of aspect so that I can narrow down the discussion and provide evidence in favor of a very similar (two-component) theory of aspect in Hungarian, partly based on Csirmaz (2008). Finally, in Section 3.3, I restrict the discussion to Hungarian telic predicates by first offering a brief characterization of telicity tests which are applicable to these data and by presenting the types of telic predicates that are observable in the language.

3.1 The Hungarian sentence in a nutshell

This section, which is based entirely on É. Kiss (2002), provides a brief description of the structure of the Hungarian sentence in order to help the reader interpret my Hungarian data and the discussion related to them. I also aim to show the kinds of linguistic patterns that constitute the subject of my analysis in Chapters 4, 5, and 6, and those that must remain outside the scope of this work. In Section 3.1.1, I begin with a general characterization of the topic-predicate structure of the Hungarian sentence. Next, in Section 3.1.2, I discuss verbal particles. Then, in Section 3.1.3, I go on to address some consequences of focusing, while in Section 3.1.4, I provide a short description of negation. As will be apparent, verbal

3.1.1 The topic-predicate divide

(1) a. [TopicJános] [Predicate fel ásta a kertet]
 John.NOM up dug the garden-ACC
 'John dug up the garden.'
 (É. Kiss 2002: 3, (3))

b. [TopicJánost] [Predicate elütötte egy autót]
 John-ACC hit a car
 'A car hit John. [John was hit by a car.]'

c. [TopicJánosból] [Predicate hiányzik a becsület]
 from.John is.missing the honesty
 'Honesty is missing from John. [John lacks honesty.]'
 (É. Kiss 2002: 9, ((3a) and (3b)))

(2) *[TopicKevés várat] [Predicate meg védtek a zsoldosok a törökök ellen]?
 few fort-ACC VM¹ defended the mercenaries-ACC the Turks against
 'Few forts were defended against the Turks by the mercenaries.'
 (É. Kiss 2002: 10, (4a))

¹VM stands for 'verb modifier' in É. Kiss (2002).

move to a higher functional projection called TopP to check the [+referential], [+specific] features of the Top head.²

The predicate, on the other hand, is characterizable in terms of containing a VP and various functional projections such as an aspectual phrase or a focus phrase (among others). The VP is verb initial and the arguments in it can occur quite freely after the verb. Crucially, any of the arguments can function as the topic of the sentence, in which case they move out of the VP, leave a trace there, and end up in the specifier position of TopP. In the case of focusless sentences, since the postverbal positions in the VP can host only referential expressions, non-referential phrases must also leave the VP. Consider (3) and (4) from É. Kiss (2002).

- (3) a. [_{VP} Küldött Péter egy levelet Máriának.]
 sent Peter a letter-ACC Mary-DAT
 'Peter sent a letter to Mary.'
- b. [_{VP} Küldött Máriának Péter egy levelet]
 c. [_{VP} Küldött egy levelet Péter Máriának]
 d. [_{VP} Küldött Péter Máriának egy levelet] (É. Kiss 2002: 27, (1))
- (4) a. *János [_{VP} táncolt keringőt]
 John danced waltz-ACC
 b. [János [_{AspP} keringőt_i táncolt *t_i*]]
 John.NOM waltz-ACC danced
 'John was waltzing.' (É. Kiss 2002: 29, (8))

The examples in (3) demonstrate the free word order of postverbal arguments, whereas (4) illustrates that non-referential expressions like bare nominals cannot occur after the verb, if the sentence does not contain a focused element.³

In addition to the arguments, the verb also deserves some attention here. First, it can carry a number of inflectional suffixes expressing modality, tense, or mood (among others), which correspond to heads of various functional projections in the syntax of the sentence. Second, the Hungarian verb can be associated with one of two conjugations: the objective conjugation and the subjective conjugation. The former applies if the verb occurs

²This assumption is not entirely unproblematic. For details, see É. Kiss (2002: 13-14).

³If the constituent *János* is focused in (4a), the sentence becomes grammatical. In that case the sentence is interpreted in a way that it was John (and not someone else) that waltzed.

with a definite object, and the latter applies elsewhere. The examples in (5) illustrate the two conjugation patterns.

- (5) a. Ismer-em a vers-et.
 know-1.SG.DEF the poem-ACC
 'I know the poem.'
- b. Ismer-ek egy vers-et.
 know-2.SG.INDEF⁴ a poem-ACC
 'I know a poem.'

Regarding the divide between the topic and the predicate in the sentence, at first sight, it may not be obvious which constituents belong to which part of the sentence. An important clue that helps us distinguish between these two units has to do with stress in the sentence. There are two things to consider here: (1) The first obligatory stress, which is the heaviest grammatical stress in the sentence, falls on the first major component of the predicate and (2) the stress on the topic is usually not the primary stress (É. Kiss 2002: 11-12). Given these two conditions, the identification of the topic and the predicate is quite straightforward. Another indicator of the topic-predicate divide is the position of the verb and that of the verb modifier in the sentence. Specifically, the unmarked order of these elements is such that the verb modifier precedes the verb, as in (6b). If, however, a different pattern, whereby the verb modifier follows the verb, is observable in the sentence, as in (6a), it is possible to conclude that the sentence contains a focus (on the left edge of the predicate), which, unlike the topic, triggers verb movement (*ibid.* 12).⁵

- (6) a. [_{Predicate} Egy autó állt meg a házunk előtt]
 A car stopped VM the our.house in.front.of
 'A car has stopped in front of our house.'
- b. [_{Topic} Egy autó] [_{Predicate} meg állt a házunk előtt]
 a car VM stopped the our.house in.front.of
 'One of the cars has stopped in front of our house.'

(É. Kiss 2002: 10, (5b) and (5c))

⁴DEF indicates objective conjugation and INDEF indicates subjective conjugation.

⁵In (6a) the constituent *egy autó* is focused, which has important phonological and semantic consequences. Specifically, the focused element *egy autó* bears the primary stress in the sentence, which expresses exhaustive identification. For more on these effects of focusing, see Section 3.1.3.

Having provided a general idea of the topic-predicate structure of the Hungarian sentence, we are now ready to turn our attention to more specific and aspectually relevant areas of the Hungarian grammar, namely verbal particles, focusing, and negation.

3.1.2 The verbal particle

The immediate preverbal position in the predicate is very often occupied by a verbal particle, which has apparent aspectual consequences. Consider (7) and (8).

- (7) a. Anna ette az almá-t.
Anna.NOM ate the apple-ACC
'Anna was eating the apple.'
- b. Anna meg-ette az almá-t.
Anna.NOM PRT-ate the apple-ACC
'Anna ate the apple.'
- (8) a. Péter sétált.
Péter.NOM walked
'Péter walked/was walking.'
- b. Péter be-sétált.
Péter.NOM PRT-walked
'Péter walked in.'

The difference between *ette az almát* (7a) and *megette az almát* (7b) and *sétált* (8a) and *besétált* (8b) is clearly aspectual. In (7) the examples differ in that (7a) is progressive and (7b) is perfective, whereas in (8) the event description in the first case is atelic, while in the second case it is telic.⁶ Another property that examples like (8) illustrate is that the meaning of Hungarian particle verbs is often computed compositionally, based on the meaning of the verb and that of the particle. Below I provide (9) and (10) to further exemplify this, where the English translations are meant to indicate the additional meaning that the particles *át* 'through' and *ki* 'out' contribute to the respective predicates.

⁶For more on the (a)telic/(im)perfective distinction, see Section 3.2.

- (9) a. Kati olvasott.
 Kati.NOM read
 'Kati read/was reading.'
- b. Kati át-olvasott egy jelentés-t.
 Kati.NOM PRT-read a report-ACC
 'Kati read through/skimmed a report.'
- (10) a. János futott.
 János-NOM ran.
 'János ran/was running.'
- b. János ki-futott.
 János.NOM PRT-ran
 'János ran out.'

In addition to the above pattern, there are also instances of particle verbs whose meaning is clearly non-compositional, as in the case of (11) and (12).

- (11) a. Feri lépett egy-et.
 Feri.NOM stepped one-ACC
 'Feri stepped once.'
- b. Feri tegnap fel-lépett a Csokonai Színház-ban.
 Feri.NOM yesterday PRT-stepped the Csokonai theatre-in.
 'Feri performed yesterday in Csokonai Theatre.'
- (12) a. Mari rúgott egy-et.
 Mari.NOM kicked one-ACC
 'Mari kicked once.'
- b. Mari be-rúgott.
 Mari.NOM PRT-kicked
 'Mari got drunk.'

In this dissertation, I disregard the particle verb constructions illustrated in (11) and (12). Instead, I will examine examples like (8) and (10). More specifically, I will focus on the specific lexical aspectual role of particles like *be* in (8b) and *ki* in (10b) in subsequent chapters.

Next, it is an interesting property of Hungarian verbal particles that, unlike prefixes in Slavic languages, they are quite flexible as far as their sentential position is concerned. They can precede (cf. (13a)) or follow (cf. (13b) and (13c)) the verb that they modify, and they can even end up in positions which are not adjacent to the verb (cf. (13d)).

- (13) a. Kati fel-mászott a fá-ra.
 Kati.NOM PRT-climbed the tree-to
 'Kati climbed up the tree.'
- b. Kati mászott fel a fá-ra, amikor csengett a telefon.
 Kati.NOM climbed PRT the tree-to when rang the telephone
 'Kati was climbing up the tree when the telephone rang.'
- c. Kati tegnap mászott fel a fá-ra.
 Kati.NOM yesterday climbed PRT the tree-to
 'It was yesterday that Kati climbed up the tree.'
- d. Fel csak Kati mászott a fá-ra.
 PRT only Kati.NOM climbed the tree-to
 'Up, only Kati climbed the tree.'

This flexibility provides quite strong evidence that particles do not form compounds with their head verbs, which is what, for instance, native speakers' intuition would suggest, but rather they are independent units in the sentence. Categorically, they are assumed to be adverbial phrases (consisting of an Adv head only) base-generated in a postverbal argument position in the VP. (É. Kiss 2002, Section 3.6.1). Given that such positions can only be occupied by referring expressions (cf. Section 3.1.1), particles have to leave the VP and then move (as phrases) to the specifier position of a functional projection (e.g. AspP or PredP) above the VP unless some element (e.g. a focused constituent or the negative particle *nem*) blocks particle movement.⁷

⁷As for the trigger of particle movement, various proposals have been put forward in the literature. On the one hand, it has been claimed that particles are aspectualizers, which perfectivize event descriptions and hence move to the specifier of an aspectual functional projection AspP (cf. Piñón 1995, Alberti 2004). On the other hand, particles have also been treated as predicative elements which end up in the specifier of a predicative functional projection PredP (cf. É. Kiss 2008a). Another alternative, proposed in Csirmaz (2008), is a hybrid account, which basically combines the former two approaches. Since my primary objective at this stage of this research is to provide a semantic account of telicity, I do not intend to explore the syntax of particles (or other telicizing elements) any further in what follows.

Finally, an important comment is in order regarding the stress patterns of particle verb constructions. Consider (14).

- (14) a. 'Fel-sétáltam a kilátótorony-ba.
PRT-walked.1.SG the observation.tower-to
'I walked up to the observation tower.'
- b. 'Sétáltam 'fel a 'kilátótorony-ba, amikor valaki megütött.
walked.1.SG PRT the observation.tower-to when somebody hit.me
'I was walking up to the observation tower, when somebody hit me.'
- c. 'Sétáltam (már) fel a kilátótorony-ba.
walked.1.SG (already) PRT the observation.tower-to
'I have (already) walked up to the observation tower.'
- d. A 'KILÁTÓTORONY-BA sétáltam fel (és nem a vár-ba).⁸
the observation.tower-to walked.1.SG PRT (and not the castle-to)
'It is the observation tower that I walked up to (and not the castle).'

The example in (14a) illustrates a particle verb construction in a perfective, neutral sentence. Here the particle forms a phonological unit with the verb, which bears the first primary stress illustrated by the symbol ' throughout the dissertation. In (14b), the particle follows the verb and all three major components of the clause are stressed. In (14c), the particle follows the verb again, but in this case only the verb bears the primary stress. This difference between (14b) and (14c) yields a difference in their interpretation. Whereas (14b) receives a progressive reading, (14c) illustrates an experiential sentence (É. Kiss 2002: 63). Finally, (14d) contrasts with the former three in that it contains a focused element, which bears the primary stress in the sentence and obligatorily deletes the stress of the verb that comes after it (cf. Section 3.1.3). This last example is similar to (14b) regarding the position of the particle (i.e. it is postverbal) but it also contrasts with it as (14d) is interpreted perfectly, whereas (14b) is progressive.

Overall, then, it is clear that the different stress patterns also correspond to different aspectual properties. In this dissertation I examine aspectual composition mainly in sentences like (14a) along with their counterparts that do not contain a particle and I discuss only a few examples that resemble (14b). Sentences like (14c) and (14d) are

⁸The symbol '' indicates the phonological prominence of the focused element, which is spelled with capital letters.

beyond the scope of this dissertation. Therefore, in what follows, I indicate stress only in the case of such examples that may misguide or confuse the reader by virtue of deviating from the pattern in (14a) or their counterparts lacking a particle.

3.1.3 Focusing

The left edge of the predicate can be the locus of various operators expressing, for instance, exhaustive identification or quantification. The former is the function of focus, which is the most prominent element in the sentence in terms of its semantic and phonological properties. Focusing can best be illustrated via sentences that contain a verb modifier and a verb given the apparent difference regarding the word order of focused and focusless variants of such examples (cf. (14) above). By way of illustration, I provide (15).

- (15) [Topic PÉTERt] [Predicate [Focus JÁNOS] mutatta be Marinak]]
 Peter-ACC John introduced VM Mary-to
 'As for Peter it was John who introduced him to Mary.' (É. Kiss 2002: 77, (1a))

The focused element, indicated by capital letters throughout this dissertation, "expresses exhaustive identification from among a set of alternatives" (É. Kiss 2002: 77). For instance, (15) expresses that the only member of the set of people who could have introduced Péter to Mari is János and no other member of this set can be characterized this way. To put it more formally, an operator seems to apply to a set of individuals that can be potentially characterized by the VP and it yields a subset which is in fact characterized by the VP while excluding all other members of the set (*ibid.* 78). As far as the phonological effects of focusing are concerned, it becomes the locus of primary stress in the sentence and deletes the stress on the verb following it, thereby forming a phonological unit with it.

Another property of the focus, which must be mentioned in the context of this dissertation, is that it has conspicuous aspectual effects in the sentence. Consider (16) below.

- (16) a. JÁNOS ment fel a toronyba (éppen), amikor a zivatar ki tört.
 John went up the tower-to (just) when the thunderstorm out broke
 'It was John who was going up the tower when the thunderstorm broke out.'

b. JÁNOS ment fel a toronyba nyolc órára.

'It was John who had gone up the tower by eight.' (É. Kiss 2002: 64, (88))

As will be demonstrated in Section 3.2.2.1, in many cases, the immediate preverbal (i.e. unmarked) position of the verbal particle yields the perfective interpretation of a given predicate, whereas the postverbal position of the verbal particle gives rise to a progressive reading. If, however, the sentence contains a focused element, this aspectual divide is neutralized. Therefore, for example, the string *János ment fel a toronyba*, as illustrated in (16), becomes ambiguous since it can be interpreted either perfectly or progressively.⁹

Another effect of focusing, which will be relevant for us in subsequent chapters, is illustrated below.

(17) a. *Anna fel-melegített tányérok-at.

Anna.NOM PRT-warmed plates-ACC

'Anna warmed up plates.'

b. Anna fel-melegítette a tányér-t.

Anna.NOM PRT-warmed the plate-ACC

'Anna warmed up the plate.'

It is an intriguing property of Hungarian particle verb constructions that describe telic situations that their theme must be specific (see Chapter 4). In (17), for instance, it is the argument whose referent undergoes a change of state that must occur in the form of a nominal expression that refers specifically (see (17b)). If this requirement is not satisfied, the sentence is ungrammatical (see (17a)). Interestingly, however, this restriction can be dissolved if one of the constituents is focused, as in (18a) and (18b).

(18) a. ANNA melegített fel tányérok-at.

Anna.NOM warmed up plates-ACC

'It was Anna who warmed up plates.'

b. Anna TÁNYÉROK-AT melegített fel.

Anna.NOM plates-ACC warmed up

'It was plates that Anna warmed up.'

⁹For more on the neutralizing effect of focusing, see Szabolcsi (1992).

The example in (18a) is possible in Hungarian with *Anna* in focus and is interpreted in a way that it was Anna, and crucially no other member of a set of potential candidates who could have warmed up plates, for which the VP holds. Likewise, the sentence in (18b) is grammatical and has the meaning that it was plates, and no other subset of the things that could have been warmed up, that took part in the event described by the VP.

In light of these data, it is apparent that the role of focus must be accommodated in any aspectual theory of Hungarian. However, since I cannot provide a definitive description of the aspectual role of focus, I will not control for the above effects in this dissertation.

3.1.4 Negation

Negation in Hungarian is carried out by the negative particle *nem*, which can function in various ways in the sentence.¹⁰ In (19a), for instance, *nem* negates what the VP expresses, whereas in (19b) it negates the exhaustive identification that is due to the focused element (i.e. *Péter*) in the sentence.

- (19) a. Kati nem ismerte Péter-t.
 Kati.NOM not knew Péter-ACC
 'Kati did not know Péter.'
 b. Kati nem PÉTER-T ismerte.
 Kati.NOM not Péter-ACC knew
 'It was not Péter that Kati knew.'

If the sentence contains a particle verb and negation, particle movement is blocked and thus the particle remains in its postverbal position. This is illustrated in (20).

- (20) Kati nem ismerte fel Péter-t.
 Kati.NOM not knew PRT Péter-ACC
 'Kati did not recognize Péter.'

Further, as was mentioned earlier, negation has aspectual effects in the sentence, similarly to focus. The examples in (21) demonstrate this.

¹⁰For a detailed description of negation in Hungarian, see Chapter 6 in É. Kiss (2002).

- (21) a. A vonat (már) át ment a hídon, amikor a baleset történt.
the train (already) across went the bridge-on when the accident happened
'The train had (already) gone across the bridge when the accident happened.'
- b. A vonat (épp) ment át a hídon, amikor a baleset történt.
the train (just) went across the bridge-on when the accident happened.
'The train was (just) going across the bridge when the accident happened.'
- c. A vonat (még) nem ment át a hídon, amikor a baleset történt.
the train (yet) not went across the bridge-on when the accident happened
'The train did not go across the bridge (yet) when the accident happened.'
- (É. Kiss 2002: 132, (6a), (6b), and (6c))

The sentence in (21a) expresses that the denoted event has been completed. By contrast, (21b) receives a progressive interpretation, as is shown by the English translation.¹¹ Unlike (21a) and (21b), the example that contains negation, i.e. (21c), is ambiguous aspectually since it can describe a situation in which the train did not start crossing the bridge or one in which it did not finish crossing the bridge (but it started crossing it).

As I mentioned at the outset of this section, the examples that I examine in subsequent parts of this dissertation are such that negation is not contained in them. Given that this work is an initial step toward a scalar semantic account of telicity in Hungarian, I can only hope that it is still a worthwhile endeavor to first propose an analysis only for neutral sentences, i.e. sentences that do not involve focusing or negation.

3.2 A two-component theory of aspect: situation versus viewpoint aspect

This section is aimed at providing a brief overview of the aspectual approach that I assume throughout the analysis of my Hungarian data in Chapters 4, 5, and 6. Specifically, I discuss in some detail the two-component analysis of Smith (1991/1997), which arguably has a high degree of cross-linguistic plausibility. To set the stage for the presentation of my Hungarian data, in Section 3.2.1, I begin with a rough overview of the theory with respect to English. Then, in Section 3.2.2, I limit the discussion to Hungarian and, following Csirmaz (2008), I argue that Smith's theory can be applied to this language as well.

¹¹For more on the progressive in Hungarian, see Section 3.2.2.1.

3.2.1 Smith (1991/1997)

That sentences convey two types of aspectual information has become a widely-accepted claim in the literature (cf. Comrie 1976, Smith 1991/1997, Borik and Reinhart 2004, Croft 2012, among many others). On the one hand, the verbal predicate of a given sentence is associated with some kind of inherent aspectual information, which is contributed (lexically) by the verb and its argument(s) (cf. Chapter 2). On the other hand, it also expresses the perspective or viewpoint that the speaker has of the denoted situation. The former allows us to classify situations as states and various types of events, such as activities, accomplishments, and achievements, whereas the latter can stand for perfective and imperfective viewpoints of situations (among others). Smith (1991/1997), who uses the terms 'situation aspect' and 'viewpoint aspect', respectively, to refer to these two categories, claims that predicates are invariably characterizable in terms of having both types of aspectual values and that the two aspectual domains exist independently of each other. To illustrate Smith's point, I discuss the following set of data:

- (22) a. Mary walked to school.
b. Mary was walking to school.
c. Mary walked in the park. (Smith 1997: 2, (1a)-(1c))
d. Mary was walking in the park.

The sentences in (22a) and (22b) are similar as far as the situation aspect associated with them is concerned since they both contain telic predicates which describe events that have an inherent endpoint named by the nominal expression *school*. As for their viewpoint aspect, however, they differ. In (22a), the walking event is viewed as one that has been completed, whereas in (22b) the same type of event is viewed as an ongoing process (i.e. an event without its initial and final bounds). The examples also demonstrate that in English viewpoint aspect, unlike situation aspect, is encoded morphologically on the verb, which is a common, albeit far from universal, strategy that languages employ to encode viewpoint contrasts.¹² The predicates in (22a) and (22c), on the other hand, differ in their situation aspectual properties as the former is bounded and hence telic, while the latter is unbounded and hence atelic. As far as the perspective of the speaker is concerned, (22a)

¹²Finnish and Eskimo, for instance, do not have explicit morphemes that encode viewpoint aspect (Smith 1997: 81). As we shall see in later sections, Hungarian is also such a language.

and (22c) are identical as they both convey information about events that are viewed as complete. Finally, the example in (22d) is different from all three above as it contains an atelic predicate viewed progressively.

Smith (1991/1997) differentiates between five classes of situation types, namely states, activities, accomplishments, semelfactives, and achievements and three viewpoint types, namely perfective, imperfective, and neutral viewpoints. In what follows I provide a brief description of these classes focusing on their temporal and linguistic properties. I begin with the five situation types.

3.2.1.1 Situation aspect

In line with many others, Smith (1991/1997) bases her classification of situation types on three aspectual properties: stativity, durativity, and telicity. Situations are marked positively for stativity if they are not associated with any kind of change (i.e. they lack dynamism); durativity characterizes events that take time;¹³ and telicity refers to the goal-oriented nature of situations. The confluence of the three properties, marked either positively or negatively, yields the following classification:¹⁴

(23) Temporal features of the situation types

Situations	Static	Durative	Telic	
States	+	+	-	
Activity	-	+	-	
Accomplishment	-	+	+	
Semelfactive	-	-	-	
Achievement	-	-	+	(Smith 1997: 20, (2))

The first class of situations above is that of states (e.g. *be happy*, *know the answer*), which are stative (i.e. non-dynamic) and durative. These aspectual properties have conspicuous consequences as far as the linguistic realization of states is concerned. For instance, (24a)

¹³As Smith (1997: 19) notes, the contrast between durative and non-durative (i.e. instantaneous) situations is just an idealization, as even instantaneous situations like the breaking of a vase take some time, however little.

¹⁴Not all combinations of the three properties are represented in this typology of situations since, according to Smith, the property 'telic' is irrelevant for states (Smith 1997: 20). Although I follow Smith in disregarding statives when probing for telicity, I acknowledge that such predicates can also be classified as atelic given the right definition (cf. Maleczki 1994: 175).

and (24b) demonstrate that stative predicates cannot be complements of the verb *persuade* and they cannot occur in the pseudo-cleft construction. This is a common syntactic property associated with dynamic situations, as will be apparent in the case of other (dynamic) situation types that follow. On the other hand, the example in (24c) is indicative of the durative nature of stative predicates.¹⁵

- (24) a. *Ann persuaded Peter to know the answer.
 b. *What Ann did was know the answer.
 c. Ann was happy for three days.

Activities (e.g. *walk*, *run*) contrast with states in that they are dynamic and thus they can be complements of the verb *persuade* (cf. (25a)) and they can occur in the pseudo-cleft construction (cf. (25b)). They are also durative and hence compatible with the adverb *slowly* (cf. (25c)), which modifies situations that have internal stages, and also with the durative time adverbial *for an hour*. Finally, what (25e) illustrates is that such predicates are atelic. In other words, they only have a process part and no set terminal point, which explains why (25e) has a single interpretation (whereby the adverbial *almost* has scope over the entire event), namely that Ann did not walk.

- (25) a. Ann persuaded Peter to walk.
 b. What Ann did was walk.
 c. Ann slowly walked.
 d. Ann walked for an hour.
 e. Ann almost walked.

Similarly to activities, accomplishments (e.g. *build a house*, *walk to the gate*) are dynamic as they describe some kind of change. Therefore, they also exhibit the linguistic behavior that we have seen in the case of activities, i.e. they can be the complements of the verb *persuade* (cf. (26a)) and they can occur in the pseudo-cleft construction (cf. (26b)). In addition, they are characterizable in terms of having both a process part and a set terminal

¹⁵Dowty (1979: 173-180) further distinguishes between momentary and interval states. The difference between these two types of states is that the members of the former subclass (e.g. *be asleep* and *be in the garden*) depend on a moment, whereas the members of the latter (e.g. *sit* and *stand*) depend on an interval (similarly to activities like *roll*), i.e. such predicates can be true just in case the entity that is described in the predication is stationary for at least more than one moment.

point, i.e. they are durative and telic. The former property allows accomplishments to be modified by the adverbial *slowly*, as in (26c). The telicity of such situations, on the other hand, gives rise to their compatibility with the time-span adverbial *in a year* (cf. (26d)) and also to the multiple interpretations of sentences such as (26e), where the adverbial *almost* either has scope over the entire event or the culmination only. In the former case (26e) is interpreted as describing a situation where Peter did not begin building a house, whereas in the latter case, it is interpreted as describing a situation where he did not finish building a house.

- (26) a. Ann persuaded Peter to build a house.
 b. What Peter did was build a house.
 c. Peter slowly built a house.
 d. Peter built a house in a year.
 e. Peter almost built a house.

Finally, the two instantaneous situation types of Smith's typology are semelfactives and achievements.¹⁶ The members of the former class (e.g. *knock on the door*) are dynamic and atelic, whereas those of the latter (e.g. *break the vase*, *spot an error*) are dynamic and telic. Seeing the very similar temporal properties of these two situation types, it is not too surprising that their distributional properties are also very similar. Specifically, the grammaticality of the (a) and (b) examples in (27) and (28) follow from the dynamicity of these situation types, whereas the (c) examples indicate their punctual nature as they can both be modified by the time point adverbial *at noon*. An interesting discrepancy between *knock*-type and *break*-type predicates is that the former can be reinterpreted as referring to a series of events, which is why (27d) can be assigned an interpretation. This is not an option in the case of achievements and thus examples like (28d) are semantically ill-formed.

- (27) a. Ann persuaded Peter to knock on the door.
 b. What Peter did was knock on the door.
 c. Peter knocked on the door at noon.
 d. Peter finished knocking on the door.

¹⁶Semelfactives have been referred to by various names in the literature. For instance, Jackendoff (1991) uses the term 'point events', while Croft (2012) refers to them as cyclic achievements.

- (28) a. Ann persuaded Peter to break the vase.
b. What Peter did was break the vase.
c. Peter broke the vase at noon.
d. #Peter finished breaking the vase.

Having outlined some crucial properties of the five situation types, we are now ready to proceed with the discussion of the aspectual typology in the domain of viewpoint aspect. My objective in the following sections is not so much to provide a detailed characterization of the three viewpoints proposed by Smith, but to motivate the idea that viewpoint aspect is to be treated independently of situation aspect.¹⁷

3.2.1.2 Viewpoint aspect

To give an initial idea of the function of viewpoints, I cite Smith's (1997) metaphorical characterization below:

"Aspectual viewpoints function like the lens of a camera, making objects visible to the receiver. Situations are the objects on which viewpoint lenses are trained. And just as the camera lens is necessary to make the object available for a picture, so viewpoints are necessary to make visible the situation talked about in a sentence."
(Smith 1997: 61)

The above description suggests that viewpoint aspect is distinct from situation aspect and that it is an obligatory category, i.e. sentences always convey information about the viewpoint or perspective of the speaker.¹⁸ According to Smith, sentences can be associated with one of three viewpoints: the perfective, the imperfective, and the neutral viewpoint. In

¹⁷In addition to the three basic categories, Smith (1997) also discusses marked viewpoints, such as the *-guo* perfective viewpoint in Mandarin Chinese. I will not mention such cases here as they would take us far afield from the main purpose of this chapter.

¹⁸It is commonly pointed out in the literature that it is not entirely unproblematic to separate the two types of aspectual information with respect to a sentence. One reason for this is that, for instance, contextual effects often hinder the identification of inherent aspectual properties associated with a predicate (Dahl 1985: 27). And yet, given the various types of evidence across languages, the need to distinguish between situation (or lexical) and viewpoint (or grammatical) aspect seems to be motivated and is thus widely accepted among aspectologists.

this section I briefly discuss each so that I can continue to present Smith's arguments for the independence of the viewpoint domain from the situation domain in Section 3.2.1.3.¹⁹

I begin with the perfective viewpoint, which presents situations as complete units, i.e. units including their initial and final bounds. In other words, this viewpoint is "closed informationally" (Smith 1997: 66) and is thus incompatible with clauses expressing that the event that was viewed perfectly continued. This is illustrated in (29).

- (29) a. #Kate swam in the pond and she may still be swimming.
b. #Mrs Ramsey wrote a letter and she may still be writing it.

(Smith 1997: 67, (11))

Smith argues that the contradiction that is observable in both (29a) and (29b) is indicative of the fact that the closed reading of the first clause in each case is not just a pragmatic inference but it is due to the semantics, i.e. it does seem to be the case that the viewpoint aspect of the sentence contributes semantic information. If it were to the contrary, open readings would also be possible, which is however not supported by the data.

Next, the examples in (30) provide evidence in favor of the claim that perfective sentences convey completion.

- (30) a. #Mrs Ramsay wrote a letter, but she didn't finish writing it.
b. #James opened the door, but she didn't get it open. (Smith 1997: 68, (12))

The semantic ill-formedness of (30a) and (30b) follows from the fact that the completion meaning component in the first clause cannot be cancelled by applying the type of conjunction illustrated above.

The perfective viewpoint contrasts with the imperfective viewpoint in that the latter focuses only part of the denoted situation. Smith distinguishes between two types of the imperfective: the general imperfective and the progressive. The former is compatible with all situation types that have internal stages and is exemplified by the *Imparfait* viewpoint in

¹⁹Although there is convergence on the idea that grammatical and lexical aspect are existing categories in languages, the relationship between them is an unresolved issue. Some, including Smith (1991/1997), argue for their independence, while others (e.g. Németh 2011) claim that their semantics is the same and they are to be treated on a par with each other. I adopt the former view in this dissertation.

French (cf. (31)), whereas the latter is possible only with non-statives and it is illustrated with the English examples in (32).

- (31) a. La mer était calme.
 'The sea was^{Impf} calm.'
 b. L'enfant pleurait.
 'The child was crying^{Impf},
 c. Ils bâtittaient une cabine.
 'They were building^{Impf} a cabin.' (Smith 1997: 73, (24))
- (32) a. Kelly was singing.
 b. Ross was climbing a tree.
 c. *Bill was knowing the answer. (Smith 1997: 74, (26))

In (31) the general imperfective is exemplified with a stative, an activity, and an accomplishment predicate from French. The English translations, which are only approximate, show that the situations described in these examples receive an ongoing (i.e. open) interpretation. The examples in (32), on the other hand, are marked positively for the progressive viewpoint. These sentences differ in terms of grammaticality since the progressive is compatible only with situations that have internal stages (i.e. activities and accomplishments, as in (32a) and (32b)). States like (32c) do not have internal stages and hence they cannot be viewed progressively.²⁰

To demonstrate the difference regarding the semantic consequences of the perfective and the imperfective viewpoints, we can use various diagnostics. First, consider (33).

- (33) a. Kate drank a glass of wine when Bill arrived.
 b. Kate was drinking a glass of wine when Bill arrived.

The example in (33) illustrates what I will call the *when*-clause test. The claim frequently made in the literature is that when followed by a *when*-clause, predicates associated with perfective aspect tend to be interpreted as describing an event that happened before the event described in the subordinate clause (cf. Steedman 1981). By contrast, this sequential

²⁰Landman (1992) claims that progressive sentences express that a stage of the situation described in the sentence is happening. States do not have stages since they are homogeneous (i.e. they look the same no matter which part of the situation we look at), which in turn explains why they cannot be used in the progressive.

reading (Smith 1997: 65) does not arise in the case of sentences in which the main clause events are viewed imperfectively. The examples in (33) solidify this claim as in (33a) the drinking event is likely to be interpreted as having occurred prior to Bill's arrival.²¹ In (33b), however, the drinking event was in progress when Bill arrived.

Another diagnostic which is often used to distinguish between the imperfective and the perfective is illustrated in (34). As Smith (1997: 65) claims, in sentences that contain *before*-clauses, a sequential or overlapping relation must obtain between the situation described in the main clause and the situation expressed in the subordinate clause, or else the sentence proves to be odd or ungrammatical. This is what (34b) demonstrates as, in this case, a sequential interpretation is not readily available because of the imperfective aspect of the predicate.²²

- (34) a. Kate drank a glass of wine before Bill arrived.
 b. ??Kate was drinking a glass of wine before Bill arrived.

Finally, I briefly discuss the neutral viewpoint aspect, which is different from the former two types in that it is never marked morphologically and it allows both closed and open readings. By way of illustration, Smith provides, among others, the following sentence from French:

- (35) Jean chantera quand Marie entrera dans le bureau.
 Jean will sing^{Fut} when Marie will enter^{Fut} the office. (Smith 1997: 78, (35))

The example in (35), which includes future tense and conveys no viewpoint information, has two interpretations. On the one hand, it can mean that Jean will start singing when Marie enters the office (closed reading) and, on the other hand, it can also mean that Jean will already be singing when Marie enters (open reading). Such an ambiguity does not arise in the case of the perfective or the imperfective viewpoints, which serves as evidence for the assumption of a third viewpoint. Since, following Csirmaz (2008), I will not assume

²¹It is worth noting that although the sequential reading is generally available for native speakers, there is disagreement regarding the ordering of the events described in sentences like (33a). Specifically, there are native speakers who interpret such examples in a way that the event described in the subordinate clause preceded the event of the main clause, contra the discussion below (33).

²²With some contextual support, (34b) can actually receive a consecutive interpretation such that Kate had just stopped drinking before Bill arrived.

this third category in the discussion of my Hungarian data, I now finish the presentation of Smith's typology of viewpoint aspects and proceed with some arguments for the claim that situation and viewpoint aspect are to be treated as independent categories.

3.2.1.3 The independence of situation aspect and viewpoint aspect

In this section I present Smith's (1997) arguments for the claim that situation aspect and viewpoint aspect are distinct, independent categories in language.²³ The main purpose of this discussion is to provide a foundation for the idea that the same type of distinction can be assumed in the case of Hungarian as well.

The first argument that Smith elaborates has to do with the fact that it is quite common for the span of the viewpoint aspect of a sentence to be different from that of the situation aspect associated with that sentence. The data below illustrate this difference:

- (36) a. Algernon is reaching the top.
b. "Bright Star" is winning the race. (Smith 1997: 82, (44))

The examples in (36a) and (36b) can be interpreted in a way that the speaker has a progressive viewpoint of the interval preceding the achievements expressed by the respective predicates. This interval, however, does not constitute part of the situation lexicalized in the meaning of the component parts of *reach the top* and *win the race* since these predicates describe instantaneous situations. Smith argues that this dilemma can be nicely resolved if our theory of aspect distinguishes the viewpoint domain, which contributes information about the perspective of the speaker, from the situation domain, where aspectual meaning comes from the component parts of predicates. In (36) the interval is introduced by the viewpoint aspect. For another set of examples illustrating the same problem, see Smith's discussion of the *-guo* viewpoint in Mandarin Chinese (Smith 1997: 82-83).

Related to this is another issue, which has been referred to as the imperfective paradox in the literature (cf. Dowty 1979). This is what I illustrate in (37) – (39).

²³A similar proposal is put forward in Borik and Reinhart (2004), where it is argued that semantic aspect, which reflects a distinction between telicity and atelicity, must be treated independently of morpho-syntactic tense and viewpoint aspect, where imperfective and perfective viewpoints are distinguished.

- (37) a. Peter was running.
- b. Peter ran.
- (38) a. Peter was building a house.
- b. Peter built a house.
- (39) a. Peter was winning the race.
- b. Peter won the race.

The above data are notable since although all the (a) examples are marked for progressive aspect and all the (b) examples are marked for perfective aspect, the pairs (37), (38), and (39) do not share the same entailment relations between their (a) and (b) sentences. Specifically, while (37a) entails (37b), (38a) and (39a) do not entail (38b) and (39b), respectively. This difference between predicates like *run* and predicates like *build a house* and *win a race* is also indicative of the fact that sentences are associated with two types of aspectual information, i.e. some predicate-internal or lexical aspect and some grammatical aspect orthogonal to the predicate.²⁴

Next, Smith also mentions that the listener can always identify the situation type of a given sentence regardless of the viewpoint of the speaker. For instance, in (40) one can clearly determine that the denoted situation is an accomplishment containing the goal phrase *to school*, which is marked progressively and thus actual completion of the event is not expressed by the sentence.

- (40) We were walking to school. (Smith 1997: 83, (47a))

The final argument that I present here regarding the claim that viewpoint aspect and situation aspect are independent categories revolves around the question whether the progressive and the stative are distinct or identical categories. The examples below support the former as statives and progressives appear to have different semantic properties. Specifically, while the former can have either a closed or an open reading, progressives can never receive a closed reading. For instance, (41a) can refer to one of three states of affairs: (1) one in which Mary was angry before and at the time of the breaking of the glass, (2) one in which she became angry at the time of the breaking of the glass, and (3) one in

²⁴Dowty (1979, Chapter 3) provides a solution for the imperfective paradox by proposing that all progressive sentences contain a sentence operator PROG (meaning 'progressive') in their logical representation, but the way this operator interacts with accomplishments like *build a house* and achievements like *win a race* is different from the way it interacts with activities like *run*.

which Mary became angry after John broke the glass. The same ambiguity cannot be observed in the case of the progressive (cf. (41b)) as it has only an open reading.

- (41) a. Mary was angry when John broke the glass.
b. Mary was singing when John broke the glass.

Smith argues that the different semantics illustrated above serves as further evidence for the claim that situations and viewpoints belong to distinct components of the grammar.

With this in mind, we can now shift our attention to the Hungarian facts and see how the two components can be separated there.

3.2.2 A two-component theory of aspect in Hungarian

In this section I address three issues. First I locate situation aspect in the grammar of Hungarian while highlighting an important difference between Hungarian and English regarding (lexical) aspectual composition. Specifically, I show that whereas in the latter the quantization properties of the incremental theme determine aspectual composition, in the former the lexical aspectual value of a predicate is often unaffected by the quantization of this argument. Second, I illustrate the encoding of perfective and imperfective aspect in Hungarian. I demonstrate that, for instance, variance in particle placement can yield different viewpoints of the same event. Third, I provide some arguments for the independence of the situation domain and the viewpoint domain.

3.2.2.1 Situation aspect and viewpoint aspect in Hungarian

Similarly to English, the (lexical) aspectual structure of Hungarian verbal predicates is determined compositionally based on the components of the predicates. However, the two languages differ with respect to the type of constituents that contribute aspectually relevant meaning within a given predicate. As we have seen in Chapter 2, in English it is the head verb, its incremental themes, and (in certain cases) context that determine the (a)telicity of a predicate. Conversely, the (lexical) aspectual value of most Hungarian predicates very often follows from the meaning of the head verb and the presence or absence of a particle

or a resultative phrase (É. Kiss 1987, Kiefer 1992, 1994, Csirmaz 2008).²⁵ Thus the quantization properties of the theme argument selected for by the head verb do not typically affect aspectual composition in this language. The examples in (42) and (43) illustrate this aspectual contrast between the two types of languages.

- (42) a. Peter painted fences red for a week/*in a week.
 b. Peter painted a fence for a year/in a year.
- (43) a. Péter egy hét-ig/*egy hét alatt festett egy kerítés-t.
 Péter.NOM a week-for/*a week under painted a fence-ACC
 'Péter painted a fence for a week.'
 b. Péter egy hét-ig/*egy hét alatt kerítések-et festett.
 Péter.NOM a week-for/*a week under fences-ACC painted
 'Péter painted fences for a week.'
 c. Péter egy hét alatt/*egy hét-ig le-festett egy kerítés-t
 Péter.NOM a week under/*a week-for PRT-painted a fence-ACC
 'Péter painted a fence in a week.'
 d. Péter egy hét alatt/*egy hét-ig piros-ra festett egy kerítés-t.
 Péter.NOM a week under/*a week-for red-into painted a fence-ACC
 'Péter painted a fence red in a week.'

The examples in (42) illustrate that in English the quantization properties of incremental themes have a crucial role in determining the (a)telicity of verbal predicates. In (42b) the quantized nature of the incremental theme *a fence* (along with context) gives rise to telicity, whereas a non-quantized affected argument (cf. *fences* in (42a)) or that the context is such that the specific endpoint of the scale is not recoverable from it (which is why (42b) is ambiguous aspectually) yield atelicity. In contrast, telicity in Hungarian obtains on the condition that a specific element, which contributes a specific type of aspectual content to the verbal predicate, occurs in the sentence.²⁶ This element is very often (but not always) a verbal particle like *le* in (43c) or a resultative phrase like *pirosra* 'into red' in (43d). In

²⁵Interestingly, however, for instance, creation/consumption predicates deviate from this pattern as they exhibit very similar aspectual properties to their English counterparts. Specifically, they can be telic without a particle or resultative phrase given that their incremental theme can provide the event denoted by the predicate with a culmination point. In Chapter 5 I attempt to provide a motivated explanation of this peculiar behavior.

²⁶I refer to this aspectual meaning as event bounding in Chapters 4, 5, and 6.

other cases, only an atelic reading is available (cf. (43a) and (43b)) regardless of the quantization of the theme.

At this point it may be worth mentioning that not all particles have a telicizing effect in Hungarian (Csirmaz 2008, Kiefer 1992, 2006). The example in (44) is illustrative of this.

- (44) István egy nap-ig/*egy nap alatt el-sörözgetett a kert-ben.
 István.NOM a day-for/*a day under PRT-had.beer the backyard-in
 'István spent a day drinking beer at a leisurely pace in the backyard.'

The particle *el* in (44) has aspectual effects other than telicity. Specifically, predicates containing particle verbs with (this type of) *el* denote events that are characterizable as having a more extended duration in comparison to the events denoted by the corresponding predicates not containing this particle.²⁷ For instance, *el-sörözget* 'PRT-have.beer' differs from *sörözget* 'have.beer' in that the former denotes a set of beer-drinking events carried out at a more leisurely pace than the set of events denoted by *sörözget* 'have.beer'.

As for the encoding of the perspective or viewpoint of the speaker with respect to a given situation, various patterns are observable in Hungarian. First, consider (45).

- (45) a. Éva fel-vágta a csirké-t.
 Éva.NOM PRT-cut the chicken-ACC
 'Éva cut up the chicken.'
 b. Éva 'vágta 'fel a 'csirké-t, amikor meg-érkeztek a vendégek.
 Éva.NOM cut PRT the chicken-ACC when PRT-arrived the guests.NOM
 'Éva was cutting up the chicken when the guests arrived.'

The examples in (45a) and (45b) differ in that the former contains a perfective verbal predicate, while the latter is associated with imperfective viewpoint. As is apparent, in (45) the locus of the encoding of the perfective-imperfective contrast is syntax since it is the position of the verbal particle *fel* (and stress/intonation) that determines the aspectual interpretation of the sentence. When the particle occupies the immediate preverbal

²⁷In Hungarian, *el* can have three functions (É. Kiss 2002, Dékány 2008). First, it can be a resultative marker, as in *el-olvasott egy könyvet* 'PRT-read a book'. Second, it can function as a directional particle, as in *el-ment (a boltba)* 'PRT-went (to the store)'. Third, it also has a durative use as in *el-iddogált* 'lingered over a drink or two'. For a more detailed discussion of these and other similar examples and for a possible syntactic treatment of *el*, see Dékány (2008).

position, the predicate is interpreted perfectly, whereas its postverbal position yields imperfective aspect.²⁸

Although the above pattern is quite common in Hungarian, there are deviations from it. Consider (46) and (47).

- (46) Kati fel-olvasott Péter-nek, amikor Júlia belépett a szobá-ba.
 Kati.NOM PRT-read Péter-for when Júlia.NOM entered the room-into
 'Kati was reading for Péter when Júlia entered the room.'
- (47) Mari fel-szolgált a vendégek-nek, amikor János belépett.²⁹
 Mari.NOM PRT-served the guests-for when János.NOM entered
 az ebédlő-be.
 the dining room-into
 'Mari was serving the guests when János entered the dining room.'

What (46) and (47) show is that it is in fact possible for imperfective aspect to be expressed by predicates containing particle verbs with the particle in preverbal position.

Finally, some predicates are ambiguous as regards their viewpoint specification, as illustrated in (48) below.

- (48) a. Amikor csengettek, János (éppen) telefonált.
 when rang.3.PL János.NOM (just then) phoned
 'When the bell rang, János was talking on the phone.' (ongoing process reading; imperfective)
- b. Amikor csengettek, János (rögtön) telefonált.
 when rang.3.PL János.NOM (immediately) phoned
 'When the bell rang, János called immediately.' (sequential reading; perfective)
- (Csirmaz 2008: 117, (21a) and (21b))

²⁸It is important to note that this aspectual divide is observable in the case of examples that do not contain a focused element or a negative particle. If, for instance, the phrase *Éva* is focused in the string *Éva vágta fel a csirkét*, it is possible to interpret the predicate perfectly (cf. Section 3.1.3).

²⁹As Kiefer (2006: 43, fn. 49) notes, *felolvas* 'recite' and *felszolgál* 'serve' can also occur in perfective predicates. The former is exemplified by *felolvasott egy verset* 'recited a poem', and the latter by *felszolgált a vacsorát* 'served the dinner'.

The string *János telefonált* 'János phoned', which lacks a particle, can be interpreted both imperfectively (cf. (48a)) and perfectly (cf. (48b)), as evidenced by its compatibility with the temporal modifiers *éppen* 'just then' and *rögtön* 'immediately', respectively. According to Csirmaz (2008: 117), this variability in the grammatical aspectual value of a given predicate can best be accounted for if we assume that every event description in Hungarian, regardless of their containing an aspectually relevant particle or not, has either a perfective or imperfective viewpoint specification. This is a central idea of the aspectual theory that I assume in this dissertation along with the claim that the imperfective-perfective contrast is to be treated independently of the atelic-telic contrast. The latter is what I address next.

3.2.2.2 The independence of situation aspect and viewpoint aspect in Hungarian

Smith's two-component theory has gained a wide appeal among researchers of aspect regardless of the language of investigation. To my knowledge, in the case of Hungarian, Csirmaz (2008) was the first to provide evidence in favor of the idea that situation aspect and viewpoint aspect are "independent components" (*ibid.* 112) of the aspectual system.³⁰ In what follows I present some arguments for this claim.

The first piece of evidence has to do with a peculiar property of imperfective forms, which Csirmaz refers to as the framing effect after Jespersen (1931). The phenomenon is illustrated in (49).

- (49) a. János 'megy 'fel a 'lépcsőn.
 János.NOM goes up the stair-on
 'János is going up the stairs.'
- b. János 'ment 'fel a 'lépcsőn *(amikor csengettek).
 János.NOM went up the stair-on when rang-3pl
 'János was going up the stairs *(when the bell rang).'
- (Csirmaz 2008: 113, (15))

The examples in (49a) and (49b) demonstrate the framing effect, namely that situations viewed imperfectively can be characterized only relative to some specific time, which can

³⁰Peredy (2008) also represents this view.

be the utterance time in the present tense (cf. (49a)) or the time associated with another situation, which has to be described explicitly in the sentence, in the case of past tense (cf. (49b)). Crucially, no such effect is observable in perfective sentences, i.e. they do not require that they be interpreted relative to some specific time, as is illustrated in (50).

- (50) János fel-ment a lépcső-n.
 János.NOM PRT-went the stair-on
 'János went up the stairs.'

The sentence above is indicative of the presence of two types of aspectual information in the sentence since in spite of the identical lexically specified content of the predicates (notice that both contain the same verb and the particle *fel*), (49b) and (50) have different interpretive properties such that the former is sensitive to the framing effect whereas (50) is not.

Another argument for the two-component theory is that, just like in English (cf. Section 3.2.1.2), Hungarian imperfective and perfective sentences are interpreted differently in the environment of *when*-clauses. In the case of the former, the situation in the main clause is taken to be in progress at the time of the situation characterized in the *when*-clause (cf. (51b)), whereas perfective forms give rise to a consecutive reading where the situation described in the main clause follows the situation described in the *when*-clause (cf. (51a)).

- (51) a. Amikor csengettek, János le ment a lépcsőn.
 when rang-3pl János.NOM down went the stair-on
 'When the bell rang, János went down the stair.'
 b. Amikor csengettek, János 'ment 'le a 'lépcsőn.
 When rang-3pl János.NOM went down the stair-on
 'When the bell rang, János was going down the stairs.'

(Csirmaz 2008: 113, (16))

Finally, Csirmaz also observes that perfective and imperfective forms are different in that the former receive a future or habitual reading (cf. (52a)), whereas the latter have an ongoing interpretation when expressed in the present tense (cf. 52b)), as indicated by the English translations of the respective examples.

- (52) a. János le megy a lépcsőn.
 János.NOM down goes the stair-on
 'János goes down the stairs.'
- b. János megy le a lépcsőn.
 János.NOM goes down the stair-on
 'János is going down the stairs.' (Csirmaz 2008: 113, (17))

The examples so far have illustrated that grammatical aspectual properties (i.e. viewpoint aspect), which are often coded by particle placement in Hungarian, are independent of the lexically specified aspectual properties (i.e. situation aspect). The final argument that I mention here illustrates that situation aspect is independent of viewpoint aspect. Consider (53).

- (53) a. *Péter 'festett 'be 'kerítések-et, amikor megérkeztem.
 Péter.NOM painted PRT fences-ACC, when arrived.1.SG
 'Péter was painting fences when I arrived.'
- b. *Péter be-festett kerítések-et.
 Péter.NOM PRT-painted fences-ACC
 'Péter painted fences.'
- c. Péter 'festett 'be egy 'kerítés-t, amikor megérkeztem.
 Péter.NOM painted PRT a fence-ACC when I.arrived
 'Péter was painting a fence when I arrived.'

The examples above show that regardless of the sentential position of the verb *festett* 'painted' and its particle *be*, which determines the grammatical aspect of this predicate, the affected argument must receive quantized reference or else the (focusless) sentence is ungrammatical, as in (53a) and (53b). Therefore, the conclusion to be drawn from this is that this restriction must come from the lexically specified components of the predicate.

Having listed some arguments for the claim that the Hungarian aspectual system has two independent components, namely situation aspect and viewpoint aspect, it now seems reasonable to examine the encoding of the aspectual properties (e.g. perfectivity, imperfectivity versus telicity, atelicity, durativity, punctuality, etc.) and the various constraints associated with them independently in the two domains. In subsequent chapters I will focus exclusively on telicity. More specifically, I will examine the conditions under

which it obtains and its encoding in various aspectual classes including degree achievements, canonical achievements, and accomplishments. Before that, however, I conclude this chapter with a general overview of the data that constitute my primary interest in this work.

3.3 Some telicity facts of Hungarian

The final part of this chapter is devoted to the presentation of some of the telicity facts of Hungarian. My main goal in this section is twofold: (1) to introduce two telicity tests that can be applied in Hungarian and (2) to exemplify Hungarian telic predicates, an analysis of which will be developed more fully in later chapters.

3.3.1 Telicity tests

To determine whether a predicate is telic or atelic, we can use various tests such as the subinterval property test or the *in/for X time unit* test. In this section I describe each and make the case for using the latter as the primary test throughout the analysis of my Hungarian data.

3.3.1.1 The subinterval property test

It has become fairly common in the literature to characterize aspectual classes within interval semantics (Bennett and Partee 1972, Taylor 1977, Dowty 1986, Borik and Reinhart 2004), where the telicity of a predicate is determined based on whether or not it possesses the subinterval property. Dowty (1986), for instance, describes telic predicates as follows:

- (54) A sentence φ is an accomplishment/achievement (or *kinesis*) iff it follows from the truth of φ at an interval I that φ is false at all subintervals of I .

(Dowty 1986: 42, (13c))

According to (54), telic predicates (i.e. accomplishments and achievements) do not have the subinterval property as they do not hold for any (proper) subinterval of the whole time

interval that is associated with the predicate. For instance, the predicate *walked to the gate from 10:00 to 11:00* does not hold for any (proper) subinterval (e.g. the interval between 10:00 and 10:30) of the whole time interval between 10:00 and 11:00. In contrast, activities and states (i.e. predicates specified negatively for telicity) possess the subinterval property as they hold for the whole time interval of their predicate and for the subintervals as well. Dowty (*ibid.*) describes this property in the case of states and activities as follows:

- (55) a. A sentence φ is stative iff it follows from the truth of φ at an interval I that φ is true at all subintervals of I .
 b. A sentence φ is an activity (or *energeia*) iff it follows from the truth of φ at an interval I that φ is true of all subintervals of I down to a certain limit in size.
 (Dowty 1986: 42, (13a) and (13b))

The definition in (55a) can be illustrated with the stative predicate *lived in Germany*. If it holds for the interval between January and July of some year, it holds for any subinterval of this interval (cf. the interval between February and March). The same reasoning applies to activity predicates such as *run* and *walk*.

3.3.1.2 The *in/for X time unit* test

Another very common test for determining the (a)telicity of a predicate is the *in/for X time unit* test, which will be my primary test throughout the discussion of telicity in Hungarian in Chapters 4, 5, and 6. Therefore, I illustrate this test with Hungarian examples. First consider (56).

- (56) a. Péter egy óra alatt/*egy órá-ig piros-ra festett egy kerítés-t. (telic)
 Péter.NOM an hour under/an hour-for red-into painted a fence-ACC
 'Péter painted a fence red in an hour/*for an hour.'
 b. Péter egy órá-ig/*egy óra alatt festett egy kerítést. (atelic)
 Péter.NOM an hour-for/an hour under painted a fence-ACC
 'Péter painted a fence for an hour/*in an hour.'

The predicate in (56a) illustrates a telic event description, in which the referent of the affected argument (i.e. the fence) undergoes a change of state and at the termination of the (painting) event the fence is red. In contrast, (56b) presents an atelic event description since, although some kind of change is predicated of the fence, the event does not culminate. The examples also illustrate that the telic predicate is compatible with the time-span adverbial *egy óra alatt* 'in an hour' and it is incompatible with the durative adverbial *egy óráig* 'for an hour', whereas the atelic predicate is possible only with the durative adverbial *egy óráig* 'for an hour'. Given that both time adverbials assume a durative situation by virtue of their meaning, we would expect that they cannot occur in predicates describing instantaneous events. The example in (57), however, does not bear this out.

- (57) János két óra alatt el-érte a hegycsúcs-ot.
 János.NOM two hour under PRT-reached the hilltop-ACC
 'János reached the hilltop in two hours.'

It is clear from (57), that similarly to their English counterparts (cf. Smith 1991), Hungarian achievements can also occur with time-span adverbials, but the adverbial in such cases refers to a time period (i.e. interval) at the end of which the event takes place. In other words, (57) is compatible with an *after* reading and incompatible with a *during* reading, the latter characterizing accomplishments like (56a).

Another type of temporal adverbial that is compatible with achievements is the time point adverbial, which names the endpoint of these situations. This is illustrated in (58), where *5 órakor* 'at 5 o'clock' refers to the point in time when the girls reached the hilltop.

- (58) A lányok 5 óra-kor el-érték a hegycsúcs-ot.
 the girls.NOM 5 o'clock-at PRT-reached the hilltop-ACC
 'The girls reached the hilltop at 5 o'clock.'

Interestingly, accomplishments like *megnéz egy filmet* 'watch a film' can also appear with time point adverbials, but in this case they receive an inceptive reading, as illustrated in (59), which I took from Kiefer (2009).

- (59) a. Nyolc óra-kor meg-nézte a film-et.
 eight o'clock-at PRT-saw the film-ACC
 'He saw the film at eight o'clock.'
- b. Meg-nézte a nyolc óra-kor kezdődő film-et.
 PRT-saw the eight o'clock-at starting film-ACC
 'He saw the film that started at eight o'clock.' (Kiefer 2009: 251, (8))

The only interpretation that we can assign to (59a) is what (59b) illustrates, namely that the adverbial *at 8 o'clock* refers to the starting point of the event. The same behavior can be observed in English, as in the case of *?Peter watched a film at 8 o'clock*.

Finally, an important caveat is in order before we proceed. Although the test that I have reviewed above is clearly applicable in the case of Hungarian, its use is not unrestricted. As has been observed elsewhere (cf. Csirmaz 2008), the time-span adverbial *in X time unit* requires that the viewpoint aspect of the predicate be perfective. Consider (60).

- (60) *János öt perc alatt 'vágta 'ki a 'fá-t, amikor Sára
 János.NOM five minute under cut PRT the tree-ACC, when Sára.NOM
 meg-érkezett.
 PRT-arrived
 'János was cutting down the tree in five minutes when Sára arrived.'

The event description in the main clause of (60) is associated with an inherent endpoint and hence it is telic.³¹ Nonetheless, the sentence is ungrammatical with the time-span adverbial *öt perc alatt* 'in five minutes' as the situation expressed by this clause is viewed imperfectively. Although I acknowledge this deficiency of the test, I will use it as my main telicity test, in line with tradition in the literature.

³¹There is disagreement in the literature as to the (a)telicity of predicates illustrated in the main clause of (60). For instance, Wacha (1989, 2001), Csirmaz (2008), and Peredy (2008) consider them to be telic, while Németh (2011: 78) argues for the atelicity of such examples. I follow the former in considering such predicates to be telic. An explanation for this is that one can see such situations as being in different stages relative to the different subparts of their internal temporal structure (Wacha 1989: 236). As a result, as far as the internal aspectual structure of these predicates is concerned, no subevent of the whole event matches what is described by such predicates, which is a defining property of telic event descriptions.

3.3.2 Telic predicates in Hungarian

Hungarian telic predicates can be grouped into three classes (cf. É. Kiss 2008a) depending on the lack and presence of a telicizing marker in them and, in the latter case, the type of marker that is responsible for their telic interpretation. First, there are predicates whose telicity is primarily due to a resultative particle or resultative phrase contained in them. These predicates express a change in some property of the theme argument, which then attains a certain kind of result state at the termination of the event denoted by the predicate. For instance, in (61a) the grapes attain the result state of dryness and in (61b) the fence ends up in the state of redness at the conclusion of the event.

- (61) a. István egy óra alatt/*egy órá-ig meg-szárította a szőlőszemek-et.
István.NOM an hour under/*an hour-for PRT-dried the grapes-ACC
'István dried the grapes in an hour.'
- b. Kati egy óra alatt/*egy órá-ig piros-ra festett egy kerítés-t.
Kati.NOM an hour under/*an hour-for red-into painted a fence-ACC
'Kati painted a fence red in an hour.'

The telicity of another type of telic predicates is due to a terminative particle attached to the verb heading the predicate. These predicates describe a change-of-location event at the termination of which the argument undergoing this change reaches some kind of end location.³²

- (62) a. János 10 perc alatt/*10 perc-ig be-sétált.
János.NOM 10 minute under/*10 minute-for PRT-walked
'János walked in in 10 minutes.'
- b. Anna 10 perc alatt/*10 perc-ig el-futott.
Anna.NOM 10 minute under/*10 minute-for PRT-ran
'Anna ran away in 10 minutes.'

³²Telic motion predicates often contain a particle and a locative phrase that specifically identifies the end location of the referent of the argument undergoing a change of location. For more on these constructions, see Surányi (2009) and Chapter 6.

Finally, there is a predicate class, the class of creation/consumption predicates, that does not require a telicizing particle or a resultative phrase in order for telicity to obtain. Intuitively, the events denoted by these predicates culminate when the referent of the affected argument undergoing a change comes into being or disappears, as has been pointed out in the literature by several authors (cf. Verkuyl 1993, Tenny 1994, Levin and Rappaport Hovav 2005). In Chapter 5, I discuss these predicates in detail and provide a novel analysis of how their (a)telicity is dependent on specific properties of the affected argument. Here I only provide a few examples for illustrative purposes:

- (63) a. Tamás egy óra alatt/egy órá-ig evett egy hamburger-t.
 Tamás.NOM an hour under/an hour-for ate a hamburger-ACC
 'Tamás ate a hamburger in an hour/for an hour.'
- b. Dávid egy óra alatt/egy órá-ig ivott egy sör-t.
 Dávid.NOM an hour under/an hour-for drank a beer-ACC
 'Dávid drank a beer in an hour/for an hour.'
- c. László egy év alatt/egy év-ig épített egy ház-at.
 László.NOM a year under/a year-for built a house-ACC
 'László built a house in a year/for a year.'
- d. Éva egy óra alatt/egy órá-ig sütött egy meggyes pité-t.
 Éva.nom an hour under/an hour-for baked a cherry pie-ACC
 'Éva baked a cherry pie in an hour/for an hour.'

As will be argued in subsequent chapters, although in the case of most event descriptions in Hungarian, the source of a bound on the event (and concomitantly on the scale) is a telicizing particle or a resultative expression, creation/consumption predicates can be considered to constitute a unique class as, in their case, it is the affected argument that serves as a delimiter for the scale and the event as well.

Overall, then, it is clear that any analysis of telicity must account for all three types of predicates outlined above.³³ In what follows, I take the first steps in achieving this within the domain of degree achievement predicates in Chapter 4 and that of creation/consumption predicates in Chapter 5. Then, in Chapter 6, I provide further

³³ This classification is based on É. Kiss (2008a). In Chapter 6, I will also discuss predicates whose telicity is attributable to quantized scalar DPs, as in *futott három kört* 'ran three laps'.

evidence for my claims by investigating some telicity facts of achievements and accomplishments (exclusive of creation/consumption predicates). A crucial objective of these chapters is to eventually propose a unified analysis of telicizing particles, resultative/locative XPs, and telicizing DPs in Hungarian.

CHAPTER 4

THE ASPECTUAL COMPOSITION OF DEGREE ACHIEVEMENTS IN HUNGARIAN

4.1 A general overview of the main claims

In this and later chapters I demonstrate how the telicity facts of Hungarian can be captured in a homomorphism-based model of lexical aspect. The theoretical framework that I assume in the course of this analysis is primarily an FPR model of telicity, as proposed in Beavers (2012a), but one that also incorporates important facets of Filip and Rothstein's (2006) and Filip's (2008) account of event maximalization. For purposes of clarity, I first build my argument around a single predicate class,¹ namely degree achievement predicates.² Then in Chapter 5 I turn to the characterization of creation/consumption predicates, which contrast with degree achievements in Hungarian, as the members of the former class can receive a telic reading without a particle or a resultative phrase (which are crucial for the telicity of the majority of Hungarian predicates) similarly to their English equivalents.³ I argue that this aspectual behavior provides further evidence for the claim that homomorphic theta-relations can be observed between the part structure of incremental themes and the part structure of events, and by assuming the type of homomorphism-based semantic model that I advocate here, we can predict a variety of telicity phenomena not only in English (and other English-type languages), but also in Hungarian.⁴ More evidence is provided for these claims in Chapter 6, where important insights emerge from the examination of the aspectual structure of achievements and

¹In line with Beavers (2012a), I also discuss lexical semantic properties encoded by predicates and not verbs, although the relevant homomorphic relations are assumed to be part of the head verb's meaning.

²Degree achievements constitute the core data set upon which the investigation in Chapter 4 is carried out as they often serve as the basis of scalar semantic analyses in the literature (cf. Chapter 2).

³What eventually falls out of the case studies of Chapters 4, 5, and 6 is that the telicity of all Hungarian predicates is due to an event-bounding constituent, which can be a particle, or a resultative/locative XP, or certain quantized DPs.

⁴There have been other instances of homomorphism-based analyses of various phenomena in Hungarian. Maleczki (1994), for instance, argues for the close connection between the part structure of objects and that of events in her analysis of constructions containing bare common nouns. Also, the definiteness effect is analyzed in a lattice-theoretic model in Maleczki (1996).

accomplishments (save creation/consumption predicates). This chapter also rounds off the analysis by summarizing how telicity can arise in Hungarian based on the case studies of Chapters 4, 5, and 6.

There are two main questions that are under constant scrutiny in this and later chapters. First, I attempt to find evidence in favor of the claim that a special type of homomorphic theta-relations, namely figure-path relations, obtain between the part structure of incremental themes and the part structure of events in Hungarian (see above), with the caveat that in this language telicity does not arise without an overt event-bounding constituent. That is, it is necessary that Hungarian predicates have a single constituent whose semantic content is such that, along with the verb, it provides a bound on the event. The ultimate effect of such an event-bounding element is that for any event e described by the predicate, no non-final e' is also described by the predicate, and thus telicity, as defined in the FPR, arises.⁵ This is in contrast with English, where the nominal arguments of the head verb of a predicate, a resultative XP, and contextual information, none of which are event bounders *per se*, as we shall see below, jointly play a role in determining whether or not the event denoted by the predicate culminates at a specific point.

Another question that I address is how exactly telicity is attained in English versus Hungarian. I show that in the case of the former, the bounding of events follows from the bounding of scales (given that the figure is quantized), whereas in the latter the bounding of events determines the bounding of scales. In short, it is argued that English and Hungarian contrast in that in the former it is scalar bounding and in the latter it is event bounding that ultimately gives rise to telicity. Crucially, however, once the event is bounded, the incremental themes possess similar quantization/boundedness properties (i.e. the figure has quantized reference and the scale is (minimally) bounded) in the case of both English and Hungarian predicates, as is predicted on an FPR approach. The illustration of the above cross-linguistic variation will naturally involve constant comparing and contrasting of data from English and Hungarian throughout the analysis.

I further claim that the relation between events and scales which is characteristic of Hungarian predicates is due to a "form-to-meaning" principle that ensures that telicity be encoded in specific constituents, which I refer to as event bounders. I state this principle as follows:

⁵As we shall see in later sections, event-bounding constituents have an even stronger aspectual effect. Specifically, they determine quantized reference for the predicates that they appear in, which is more than what the definition of telicity requires in the FPR.

- (1) **THE PRINCIPLE OF TELIC MARKING (PTM):** Telicity must be overtly marked by event bounders.

An important cross-linguistic consequence of the above principle is as follows: Hungarian predicates, whose aspectual structure is driven by the PTM, are predicted to obligatorily express telicity just in case constituents that can serve the role of event bounding occur in the predicate (e.g. telicizing particles), whereas in English, which is lacking in the PTM, one may rely solely on the lexical semantics of various (e.g. verbal, nominal, and adjectival) constituents of predicates, which are not event bounders, and contextual/pragmatic factors in order to get telic readings.

Furthermore, much attention is devoted to cases where event bounding is taken up by a DP argument. Specifically, in Chapter 5, I look into creation/consumption predicates, which are different from the degree achievements of Chapter 4 with respect to aspectual composition since in the former predicate class telicity can arise in the presence of a quantized figure (and crucially, without any particle or resultative phrase), exactly like in English. I argue that this property of creation/consumption predicates is due to the unique verb-mediated relationship that obtains between the part structure of the figure argument (i.e. the created/consumed theme) and the part structure of the creation/consumption scale of such predicates. In Chapter 6, further instances of aspectual composition whereby a DP argument is the event bouncer arise in other predicate classes as well. An important conclusion of this discussion will be that, regardless of the predicate type, such DP (event-bounding) constituents have the effect that the predicate has quantized reference and thus telicity arises.

I will conclude that the telicity of Hungarian predicates can be attributed to particles, resultative/locative XPs, and certain quantized DPs, at least one of which is obligatorily expressed in any telic predicate and which bound the event. This contrasts with English where, assuming that the affected argument is independently quantized, telicity is due to the direct bounding of the scale (and not that of the event) as supplied by some element in the discourse. Finally, it will be argued that a subset of event-bounding constituents like telicizing particles, resultative/locative XPs, and quantized scalar DPs lexicalize a maximalization operator (MAX_E), which applies on predicates over events and determines quantized reference for predicates, which ultimately gives rise to telicity. In other cases, namely where the predicate describes a creation or consumption event, the quantized created or consumed theme serves the event-bounding role by virtue of the unique

relationship (as encoded by the head verb) that obtains between such themes and the corresponding scales. Telicity in these cases again amounts not only to boundedness but also to quantized reference.

4.2 The model

Before I begin the examination of degree achievements, I recapitulate on the FPR model (Beavers 2012a) within which I couch my analysis to help the reader follow the reasoning and the notations of this and later chapters. This section provides only the technical details of the FPR model, which are also provided in Section 2.3.4. For a detailed description of the intuitions behind the definitions of this section, see Section 2.3.4.

Following Beavers (2012a: 27), I take all entities to belong to one of three domains, the domain of objects U_P , the domain of events U_E , or the domain of connected, directed paths P_H . The set of objects U_P , the set of events U_E , and the set of connected direct paths P_H are structured as complete join semilattices without a bottom element.⁶ The lattice structures are characterized by the sum operation ($\oplus_P, \oplus_E, \oplus_H$), which is commutative, idempotent, and associative (cf. Section 2.2.3). The entities in U_E , U_H , and P_H may be related to each other via the subpart relation ($x' \leq_X x$), the proper part relation ($x' <_X x$), or the overlap relation ($x' \otimes_X x$) (*ibid.*). Non-overlapping events in U_E are ordered by a temporal precedence relation ($e' \ll_E e''$) and non-overlapping paths are partially ordered by a spatial precedence relation ($x' \ll_H x''$). Partial ordering in the case of the latter is required due to multiple incrementality (*ibid.*). Also, any entity x' and x'' in U_E and P_H may be adjacent ($x' \propto_X x''$) (cf. Section 2.2.4.2). The system has the following further definitions:

- (2) Strict Movement Relation (SMR): Event e is θ -related to path p such that every unique part of e is θ -related to a unique part of p and vice versa and temporal adjacency in e corresponds to spatial adjacency in p and vice versa, i.e. θ has the ADJ, MO, and CP properties:

⁶ U_E is also part of an event structure (cf. (26) in Section 2.2.3) and the set of connected, directed paths P_H is a subset of the set of paths U_H . For the Krifkian definition of path structures, see (39) in Section 2.2.4.2.

a. Adjacency (ADJ): $\forall x,y,z \in P_H \forall e,e',e'' \in U_E [\theta(x,e) \wedge e',e'' \leq_E e \wedge y, z \leq_H x \wedge \theta(y,e') \wedge \theta(z,e'') \rightarrow [e' \infty_E e'' \leftrightarrow y \infty_H z]]$

“For θ -related e and x , for any $y,z \leq_H x$ θ -related to $e',e'' \leq_H e$ respectively, y is spatially adjacent to x iff e' is temporally adjacent to e'' . ”

b. Mapping-to-objects (MO): $\forall x \in U_P \forall e,e' \in U_E [\theta(x,e) \wedge e' \leq_E e \rightarrow \exists y [y \leq_P x \wedge \theta(y,e')]]$

“For all x θ -related to e , for all $e' < e$ there is a θ -related $x' < x$. ”

c. Movement happens along connected paths (CP): $\forall x \in U_H \forall e \in U_E [\theta(x,e) \rightarrow x \in P_H]$

“For all x θ -related to e , x is part of a connected path structure.”

(Beavers 2012a: 30, (2.12))

The definition in (2) describes the Strict Movement Relation (SMR), which serves as the basis for the looser Movement Relation (cf. (4)) and thus the minimal Movement Relation (cf. (7)) and the Figure-Path Relation (cf. (9)). The SMR represents a strict one-to-one mapping between the part structure of the path argument and the part structure of the event argument and is characterized by temporal and spatial adjacency.

(3) a. $\forall x,y \in P_H [ETANG_H(x,y) \leftrightarrow [x \oplus_H y \in P_H \wedge x \infty_H y]]$

“ x and y are externally tangential iff they are adjacent.”

b. $\forall x,y \in P_H [ITANG_H(x,y) \leftrightarrow [\exists z \in P_H [\neg x \oplus_H z \wedge y = x \oplus_H z]]]$

“ x and y are internally tangential iff $x < y$ and they share an endpoint.”

c. $TANG_H = ETANG_H \cup ITANG_H$

(Krifka 1998: 204, (17) and Beavers 2012a: 31, (2.16))

(4) Movement Relation (MR): θ is the smallest relation that embeds an SMR and for any two events $e \ll_E e'$ MR-related to tangential paths x, y respectively, $e \oplus e'$ is MR-related to $x \oplus y$, i.e.,

a. There is a strict movement relation θ' , and $\theta' \subseteq \theta$;

b. $\forall x,y \in U_H \forall e,e' \in U_E [\theta(x,e) \wedge \theta(y,e') \wedge e \ll_E e' \wedge \forall e'',e''' \in U_E \forall x',y' \in U_H [FIN_E(e'',e) \wedge INI_E(e''',e') \wedge \theta(e'',x') \wedge \theta(e''',y') \rightarrow TANG_H(x',y')] \rightarrow \theta(x \oplus_H y, e \oplus_E e')]$

(Beavers 2012a: 32, (2.17))

The tangential properties defined in (3) ensure that paths are connected at an endpoint, whereas the definition in (4) describes the Movement Relation, which characterizes general movement. Two movements constitute a general movement if the second commences where the first ended (i.e. their paths are connected at an endpoint) (Krifka 1998: 225).

Goals and sources are defined as follows:

- (5) If θ is a (strict) movement relation for path p and event e , then
- a. $\forall x[GOAL(x,p,e) \leftrightarrow \exists e' \forall e''[FIN_E(e'',e) \rightarrow e' \leq e''] \wedge \theta(e',x)]$
 “ x is the goal on p in e iff x is θ -related to the smallest final $e' \leq e$.”
- b. $\forall x[SOURCE(x,p,e) \leftrightarrow \exists e' \forall e''[INI_E(e'',e) \rightarrow e' \leq e''] \wedge \theta(e',x)]$
 “ x is the source on p in e iff x is θ -related to the smallest initial $e' \leq e$.”
- (Beavers 2012a: 30, (2.13))
- (6) a. $\forall x[GOAL(x,p,e) \rightarrow \forall e'[[FIN_E(e',e) \wedge \theta(e',x)] \rightarrow \neg \exists e''[e' \infty_E e'' \wedge \theta(e'',x)]]]$
 “If x is the goal on p in e then for any final subevent it is θ -related to, it is not θ -related to any subevent adjacent to it.”
- b. $\forall x[SOURCE(x,p,e) \rightarrow \forall e'[[INI_E(e',e) \wedge \theta(e',x)] \rightarrow \neg \exists e''[e' \infty_E e'' \wedge \theta(e'',x)]]]$
 “If x is the source on p in e for any initial subevent it is θ -related to, it is not θ -related to any subevent adjacent to it.”
- (Beavers 2012a: 33, (2.18))

The boundedness of a path at its beginning and at its end depends on whether its source and goal points are determined (cf. (5)). In addition, it is also important that the source and goal points are not mapped to any two adjacent subevents at the beginning and end of the event respectively, as encoded in (6), to ensure that the event begins when the figure first leaves the source and ends when it finally reaches the goal.

For cases where the goal point on the path is specified overtly in the predicate, a minimality condition is added to the MR, as defined in (7).

- (7) Minimal MR: An MR θ between event e and path p is minimal iff the goal x on p in e is mapped to only one subevent of e , i.e. $\forall x[GOAL(x,p,e) \rightarrow \exists! e'[e' < e \wedge \theta(e',x)]$
- (Beavers 2012a: 33, (2.19))

The FPR definition of telicity, as in (8), is void of the notion of initial subevent (cp. the definition of telicity in Krifka (1998: 207, (37))) and is thus more in line with the intuition

that telicity is about reaching a specific culmination point and not about both departing from a specific source point and also reaching a specific culmination point (Beavers 2012a: 34).

- (8) $\forall X \subseteq U_E[TEL_E(X) \leftrightarrow \forall e \forall e' \in U_E[X(e) \wedge X(e') \wedge e' \leq_E e \rightarrow FIN_E(e', e)]]$
 “A predicate X over events is telic iff for any event it describes it does not describe any non-final subevent of that event.” (Beavers 2012a: 35, (2.23))

The figure-path relation of (9), which is a ternary homomorphic relation between event e , path p , and figure x , and the definition of telicity in (8) capture the fact that in order to determine the boundedness of the event, we must know how much of the figure ends up where on the path. The minimality condition in (10) applies when the goal point on the path is specified (cp. (7) above).

- (9) Figure/Path Relation (FPR): θ is the smallest relation where if $\theta(e, x, p)$ then for each $x_i \leq x$ ($1 \leq i \leq n$) there is a unique pair $e_i \leq e$ and $p_i \leq p$ where:
- a. e_i stands in a non-minimal MR to p_i ;
 - b. the GOAL of p_i in e_i is the GOAL of p in e ;
 - c. for all such e_i and p_i , $e = \sum_{i=1}^n e_i$ and $p = \sum_{i=1}^n p_i$. (Beavers 2012a: 38, (2.26))
- (10) Minimal FPR: An FPR θ between event e , theme x , and path p is minimal iff the goal g on p in e for x is mapped to a unique subevent $e' < e$, i.e.
- $$\forall g[GOAL(g, p, e) \rightarrow \exists! e'[e' < e \wedge \theta(e', x, g)]$$
- (Beavers 2012a: 39, (2.29))

A scale other than a path scale of a motion predicate (e.g. a property scale or a consumption scale) is defined as a directed, connected path $s \in P_H$ and it has the following properties:⁷

- (11) a. Each $s \in P_H$ represents a specific property
 b. Degrees on s are atomic subparts of s
 c. Precedence relation $<<_H$ orders subparts of s (Beavers 2012a: 53, (2.54))

⁷As Beavers (2012a: 52-53) points out, the description in (11) can be corresponded to the notion of scale proposed in the scalar literature à la Hay et al. (1999), Kennedy and Levin (2008), among others. He also emphasizes that property scales are often different from paths of motion predicates by virtue of being totally ordered (*ibid.*: fn. 17).

An important consequence of the above is that the telicity of motion predicates and predicates expressing some kind of change in a property of the referent of the affected argument can be characterized in the same manner. That is, in the case of both motion predicates like *run* and *flow* and predicates like *cool* and *wipe*, the denoted event is such that some argument x moves along a scale s towards some goal state g on s , where the goal state g is in fact a degree on s (i.e. it is an atomic subpart of s). The identical treatment of two of the above predicates is illustrated below in (12) and (13), where, at the culmination of the event, in the first case (all of) the wine reaches the specific goal state (on path p) that is named thanks to the prepositional phrase *onto the floor*, whereas in the second case the table is characterizable in terms of having attained the specific (goal) state (on scale s) that is referred to by the adjectival expression *clean*. In other words, in (12), the value of the variable for the goal state is fixed (i.e. it is specific and hence indicated by the constant **floor**) since the predicate supplies a sufficient amount of information as to how much wine ends up where on the path. Likewise, in (13), the goal state is associated with a specific value thanks to the component parts *the table* and *clean*.

(12) The liter of wine flowed onto the floor in/?for one minute.

$$\lambda e \exists p [\textit{flow}'(\mathbf{wine}, p, e) \wedge \textit{GOAL}(\mathbf{floor}, p, e)] \quad (\text{Beavers 2012a: 43, (2.38)})$$

(13) Caesar wiped the table clean.

$$\lambda e \exists s [\textit{wipe}'(\mathbf{caesar}, \mathbf{table}, s, e) \wedge \textit{GOAL}(\mathbf{clean}, s, e)] \quad (\text{Beavers 2012a: 53, (2.55)})$$

Finally, before we proceed, an important note has to be made about scales in the FPR model. Specifically, on this view every dynamic predicate of change is associated with a scale unique to that predicate. Every such scale is a member of the set of connected, directed paths P_H , where P_H is associated with a mereological part structure. For example, the predicate *the soup warmed from 20 °C to 90 °C* has a (temperature) scale unique to that predicate such that it has (atomic) subparts that correspond to degrees in Celsius (see (11b) above). Moreover, this predicate specifies the initial subpart (i.e. the source point) of this scale as one corresponding to 20°C and also the final subpart (i.e. the goal point) of the scale as one corresponding to 90°C. This predicate contrasts with the predicate *the soup warmed from 30 °C to 70 °C* in that it is associated with a scale whose initial subpart corresponds to the degree 30°C and whose final subpart corresponds to 70°C. In other words, the scale of the latter predicate is smaller by virtue of having a shorter span

(between 30°C and 70°C with 30°C and 70°C being parts of the scale) than the scale of the predicate *the soup warmed from 20 °C to 90 °C* is. At the same time, it is also important to note that given that scales form a part structure, the two scales of the above predicates are subparts of the scale of the predicate *the soup warmed from 10 °C to 100 °C* and of an infinite number of other temperature scales of varying size. Furthermore, scales are taken to be arguments that are selected by the head verbs of the predicates.

4.3 Aspectual composition in the class of degree achievements

In this chapter I address aspectual composition among predicates whose telicity is generally attributable to the presence of a verbal particle or a resultative phrase. I structure the discussion as follows: In Section 4.3.1, I present the intuition behind how Hungarian is different from English (and other English-type languages) as regards the encoding of telicity. Second, in Section 4.3.2, I provide evidence in favor of the claim that figure-path relations obtain between the part structure of incremental themes and the part structure of events in Hungarian. Third, in Section 4.3.3, I critically address an existing analysis of particle variability, which is a common characteristic of the open-range predicates (cf. Section 2.3.2.1) of this chapter, so that I can briefly outline an alternative account, which I believe fares better than the prior analysis. This section will also discuss closed-range degree achievements, where particle variability is typically not possible and particles are generally obligatory. The latter type of data will be shown to be further evidence for one of the main claims of this and later chapters, namely that telicity must be marked by event-bounding constituents in Hungarian. Finally, in Section 4.3.4, I motivate the need for event maximalization on top of the FPR. I achieve this in two steps: First, I flesh out the details of event maximalization à la Filip and Rothstein (2006) and Filip (2008) and show how it works in English and Slavic languages. Second, I discuss the event maximalization operation in Hungarian and point out an important aspectual difference between English and Slavic languages versus Hungarian.

4.3.1 Different ways of achieving telicity: event bounding versus scalar bounding

Similarly to their English counterparts, Hungarian degree achievement predicates (regardless of the presence of a particle or resultative phrase) can be characterized as

denoting an event in the course of which an event participant undergoes a change along a scalar dimension such as temperature, length, and width. For illustration, consider the following examples in (14) and (15).

- (14) Kati melegített egy tányér-t, (#de a tányér nem lett melegebb). (atelic)
 Kati.NOM warmed a plate-ACC but the plate not became warmer
 'Kati warmed a plate, (#but the plate did not become warmer).'
- (15) A munkások ki-szélesítettek egy út-at, (#de az út nem lett szélesebb). (telic)
 the workers.NOM PRT-widened a road-ACC but the road not became wider
 'The workers widened a road, (#but the road did not become wider).'

The examples in (14) and (15) demonstrate that verbs like *melegít* 'warm' and *ki-szélesít* 'PRT-widen' express an increase in a property that is associated with the affected argument (i.e. *egy tányér* 'a plate' and *egy út* 'a road'). This property stems from the gradable adjectival base of the predicate (i.e. *meleg* 'warm' and *széles* 'wide'), just like in English and many other languages (Kennedy and Levin 2008: 156). The cancellation of this meaning component (i.e. an increase in warmth and width, respectively) results in semantic anomaly. What is significantly different from English, however, is the aspectual structure of these predicates. Specifically, Hungarian degree achievements by themselves can never have variable telicity, not even when the context of utterance or world knowledge can help the listener associate the goal point on the property scale encoded by the predicate with a specific value, as in the case of the English predicate *the soup cooled* (cf. Section 2.3.2.1). Consider the examples in (16) and (17), where the English translation shows that both the telic and the atelic reading are available, which is not the case in Hungarian.

- (16) A borsóleves 5 perc-ig/*5 perc alatt melegedett.
 the pea soup.NOM 5 minute-for/5 minute under warmed
 'The pea soup warmed for 5 minutes/in 5 minutes.'
- (17) Az eperleves 5 perc-ig/*5 perc alatt hűlt.
 the strawberry soup.NOM 5 minute-for/5 minute under cooled
 'The strawberry soup cooled for 5 minutes/in 5 minutes.'

Although context or world knowledge could in theory provide the predicate with a culmination point, which corresponds to a specific goal on the warmth scale in (16) and the

coolness scale in (17), as is possible in English, a telic interpretation does not arise in either case in Hungarian. Telicity obtains only in cases when either a verbal particle, as in (18)-(19), or a resultative XP, as in (20)-(21), occurs in the predicate.

- (18) A borsóleves 5 perc alatt/*5 perc-ig meg-melegedett.
the pea soup.NOM 5 minute under/5 minute-for PRT-warmed
'The pea soup warmed in 5 minutes/for 5 minutes.'
(telicity is due to a particle)
- (19) Az eperleves 5 perc alatt/*5 perc-ig le-hűlt.
the strawberry soup.NOM 5 minute under/5 minute-for PRT-cooled
'The strawberry soup cooled in 5 minutes/for 5 minutes.'
(telicity is due to a particle)
- (20) A patak 5 nap alatt/*5 nap-ig folyó-vá szélesedett.
the stream.NOM 5 day under/5 day-for river-into widened
'The stream became as wide as a river in 5 days/for 5 days.'
(telicity is due to a resultative XP)
- (21) A tavasz nyár-rá forrósodott egy hét alatt/*egy hét-ig.
the spring.NOM summer-into became.hot a week under/a week-for
'Spring became as hot as summer in a week/for a week.'
(telicity is due to a resultative XP)

Given the above characterization of degree achievement predicates, in general, and the fact that context alone is not sufficient for the listener to interpret such a predicate telically, it is easy to see that particles and resultative XPs are responsible for providing the event with a culmination point in these cases. A crucial question that remains, however, is whether these constituents bound events indirectly by placing a bound on the property scale of the predicate, a strategy English applies, as was briefly discussed in Section 2.3.3, or whether they directly bound the event denoted by the predicate. Without going into further details now, let us assume that the latter is true of Hungarian telic predicates. As will be apparent in subsequent sections, this aspectual difference has important ramifications for the semantic and syntactic properties of predicates in the two languages. Before discussing these properties and how they are treated in a lattice-theoretic model assuming figure-path relations, I first schematize the intuition behind my analysis of how telic interpretations arise in English and in Hungarian. More specifically, I examine the degree achievement

predicates *the soup cooled* and *a leves le-hũlt* 'the soup PRT-cooled' and provide an informal description of the different "steps" that can lead to a telic interpretation in each case. Then I illustrate this process in Figures 4.1 and 4.2. Crucially, this step-by-step characterization of the attainment of telicity in the two types of languages is not intended to suggest that there is a rule ordering of any kind as to the placing of bounds on scales as well as events. Instead, it is aimed at capturing the intuition of how the bounding of events can constrain the bounding of scales and vice versa.

the soup cooled

Step 1: The lexical semantic specification of the verb *cool* encodes a temperature scale along which change denoted by the predicate occurs.

Step 2: Context helps the listener to identify a final bound on the property scale given that the figure argument has quantized reference.⁸ That is, in the spirit of the FPR model advocated here, the goal state on the property scale (i.e. the final atomic subpart of the property scale) is associated with a specific value (i.e. the soup ends up in the state of coolness).

Step 3: The identification of the final bound on the property scale (plus quantized reference of the figure) allows the listener to determine where the event denoted by the predicate culminates, and thus the predicate is interpreted telically.

⁸In the case of other degree achievement predicates, the information necessary to identify the goal on the property scale comes from the lexical specification of the head verb of the predicate as in *John straightened the rope (in 10 minutes)*. For more on this type of degree achievements, see, for instance, Wechsler (2005: 263) and Section 4.3.3.2.

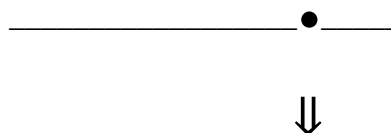
Step 1: Property scale

(as determined lexically by the head verb)

Step 2: Identification of specific goal on scale

(as determined by context or the lexical specification

of a constituent within the predicate) on the condition that the figure is quantized



Step 3: Identification of bound on event



Figure 4.1 The encoding of telicity as per scalar bounding in English

a leves le-hűlt 'the soup PRT-cooled'

Step 1: The lexical semantic specification of the verb *hűl* 'cool' encodes a temperature scale along which change denoted by the predicate occurs.

Step 2: The particle *le* places a bound on the event denoted by the predicate.⁹

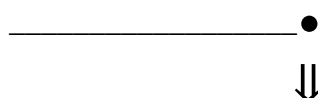
Step 3: Once the listener has been able to identify the culmination point associated with the event, context allows him or her to assign a specific value to the goal on the property scale encoded by the predicate and quantized reference for the figure.

Step 1: Property scale

(as determined lexically by the head verb)

Step 2: Identification of bound on event

(as determined by a particle or resultative XP)



Step 3: Identification of specific goal on scale



Figure 4.2 The encoding of telicity as per event bounding in Hungarian

The aspectual difference between English and Hungarian, as illustrated in Figure 4.1 and Figure 4.2, is as follows: In English telicity arises due to the bounding of the encoded scale

⁹This is an informal characterization of the aspectual effect of the particle in the predicate. For a more precise description, see Section 4.3.4.3.

by some element in the predicate and/or context in the environment of a quantized figure argument. By contrast, in Hungarian telic predicates always contain a constituent that bounds the event, which follows from a language-specific principle codified in the PTM. Thus, regarding the aspectual composition of predicates, we can characterize English as a language in which telicity obtains after the semantic properties of various building blocks of the utterance and the discourse are considered, while in Hungarian once a telic marker (i.e. an event boulder) occurs in the sentence, the telicity of the predicate is guaranteed and various interpretive facts about predicate-internal elements obligatorily follow. Conversely, without such a marker, a telic interpretation cannot arise (cf. examples (16) – (21)).

Once telicity obtains in either English or Hungarian, however, I argue that it is to be perceived as the outcome of the specific type of interaction of incremental themes, which are characterizable in terms of specific referential properties, and events, as proposed in Beavers (2012a). In the remainder of this chapter, I demonstrate that, just like in English, this perception of telicity, albeit modified slightly to accommodate the aspectual differences pointed out above, allows us to characterize crucial semantic properties of verbal predicates in Hungarian as well.

4.3.2 An FPR-based take on Hungarian degree achievements

Beavers (2012a) argues that telicity is due to the cumulative effect of ternary θ -relations obtaining between the part structure of events and the part structure of two incremental themes and the specific interpretive properties of these incremental themes, which means the necessity of quantized reference in the case of figure arguments and boundedness in the case of scales. In what follows I provide three arguments for the claim that this conception of telic predicates can be corroborated in light of Hungarian data, with the caveat that in this language telicity arises as a result of event bounding.

The first argument has to do with the fact that predicates containing telicizing particles or resultative phrases must contain a quantized figure argument. In Hungarian, just like in English, quantized interpretation arises in the case of DPs containing definite or indefinite determiners or certain quantifiers (e.g. numeral quantifiers).¹⁰ Bare nominals, on the other

¹⁰In English, certain quantified expressions such as *at least 3 apples* and *fewer than 3 books* have been argued to cause problems for theories of telicity along the lines of Krifka (1989, 1992, 1998) and Beavers (2012a) since in spite of the non-quantized nature of these expressions (e.g. a subpart of the denotation of *at least 3 apples* is also in the denotation of *at least 3 apples*) the event descriptions containing them are interpreted telically as in *John ate at least 3 apples (in half an*

hand, have non-quantized reference. Therefore, if we assume an FPR view of telicity that can handle event bounding, we expect degree achievement predicates containing telicizing particles or resultative XPs (i.e. constituents that place a bound on the denoted event) to be compatible with incremental themes that are spelled out as, for instance, definite nominal expressions, but incompatible with incremental themes that are instantiated via bare noun phrases. As we can see in the examples in (22)-(25), this prediction is borne out in Hungarian. In (22b), (24b), and (25b), it is the definite article instantiated as *a* or *az*, whereas in (23b) it is the numeral quantifier *three* that yields quantized reference.

- (22) a. *János 10 perc alatt fel-melegített tányérok-at.
 János.NOM 10 minute under PRT-warmed plates-ACC
 'János warmed plates (??in 10 minutes).'¹¹
 b. János 10 perc alatt fel-melegítette a tányérok-at.¹²
 János.NOM 10 minute under PRT-warmed the plates-ACC
 'János warmed the plates in 10 minutes.'
- (23) a. *Péter egy hónap alatt le-rövidített fejezetek-et.
 Péter.NOM a month under PRT-shortened chapters-ACC
 'Péter shortened chapters (??in a month).'
 b. Péter egy hónap alatt le-rövidített három fejezet-et.
 Péter.NOM a month under PRT-shortened three chapter-ACC
 'Péter shortened three chapters in a month.'
- (24) a. *A munkások egy év alatt autópályá-vá szélesítettek utak-at.
 the workers.NOM a year under freeway-into widened roads-ACC
 'The workers widened roads into a freeway (??in a year).'

hour) and *Mary read fewer than 3 books (in a year)* (cf. Zucchi and White 2001). As Beavers (2012a) suggests and as I discuss in Section 4.3.4, this problem can be resolved if we introduce the notion of event maximalization into our model of telicity, as proposed by, for instance, Filip and Rothstein (2006) and Filip (2008).

¹¹The English translation in (22a) (as well as in (23a), (24a), and (25a)) shows that while in English it is possible for a predicate associated with a bounded scale to contain a non-quantized theme, in Hungarian, predicates containing telicizing particles or resultative XPs are obligatorily telic and hence quantization of their figures follow. For more on this, see also the discussion below (22)–(25).

¹²As was mentioned in Section 3.1.1, Hungarian verbs have an objective (or definite) conjugation in the presence of a definite direct object and a subjective (or indefinite) conjugation elsewhere. This explains why *fel-melegít* 'PRT-warm' is conjugated differently in (22a) and in (22b). In the former, it is conjugated subjectively, while in the latter objectively.

- b. A munkások egy év alatt autópályá-vá szélesítették az utak-at.
 the workers.NOM a year under freeway-into widened the roads-ACC
 'The workers widened the roads into a freeway in a year.'
- (25) a. *Folyó-vá szélesedtek patakok egy hónap alatt.
 river-into widened streams.NOM a month under
 'Streams widened into a river (??in a month).'
- b. Folyó-vá szélesedtek a patakok egy hónap alatt.
 river-into widened the streams.NOM a month under
 'The streams widened into a river in a month.'

In addition to serving as evidence for the existence of figure-path relations, the predicates in (22)–(25) also exemplify that in Hungarian telicity is a matter of event bounding from which the bounding of the denoted scale naturally follows, but not vice versa. The evidence for this is as follows: Let us suppose that particles and resultative XPs bound scales and not events when present in a predicate. If this is correct, predicates containing a telicizing particle or a resultative XP should be compatible with both quantized and non-quantized figures, the former giving rise to telicity because of the boundedness of the scale and the quantized nature of the affected argument and the latter giving rise to atelicity because of the non-quantized nature of the figure argument. This is, however, falsified in (22a), (23a), (24a), and (25a) demonstrating that telic markers impose a restriction on the predicate, from which it follows that the figure argument must be quantized. This in turn leads to a crucial difference between Hungarian and English, as in the latter particles and resultative XPs do not have such semantic effects, as illustrated in (26), where examples from different predicate classes are listed.

- (26) a. Kate warmed up plates (for 10 minutes).
 b. Kate painted fences red (for 2 days).
 c. Kate ate up apples (for an hour).

In light of the data above, namely that *up* in (26a) and (26c) and *red* in (26b) do not have any semantic effects on the affected argument, it seems reasonable to assume that English resultative XPs and particles contrast with their Hungarian counterparts by virtue of bounding the encoded scale (along which the event progresses) and not the denoted event. Hungarian particles and resultative XPs, on the other hand, directly bound the event, which

yields the effect that the affected argument DPs in these predicates must have specific interpretive properties (i.e. they must be quantized). Put somewhat differently, it seems that Hungarian particles and resultative XPs impose a constraint on the predicate such that for any *e* described by the predicate, there is no non-final *e'* that is also described by the predicate, which in turn gives rise to the effects above.¹³ In English, in the presence of particles and resultative phrases and in the absence of a quantized figure (which is indeed possible), atelicity arises, as in (26), whereas in Hungarian, this is not an option, as illustrated in the (a) examples in (22) – (25).

Another sign of the quantization effect illustrated in (22)-(25) is observable in sentences of the type in (27), in which the figure argument is focused.¹⁴ At first sight, this example causes a problem for the FPR as the predicate is interpreted telically in spite of its containing a figure instantiated by a bare nominal expression and bare nominal expressions and quantized reference are generally incompatible in Hungarian. However, if we examine (27) more closely, the problem proves to be less acute.¹⁵

- (27) a. [TopP Sára[Predicate [Focus NARANCSOK-AT] hűtött le 1 óra alatt]]
 Sára.NOM oranges-ACC cooled PRT 1 hour under
 'It was oranges that Sára cooled in 1 hour.'

In (27a) the argument *narancsokat* 'oranges' is focused and thus the sentence is assigned the interpretation that it was not some other entities, but oranges that were cooled in one hour by Sára. Interestingly, there is a scenario in which this contrastive interpretation, pertains only to the qualitative content of the affected argument, as is illustrated in (27b) below.¹⁶

¹³In Section 4.3.4.3 I provide a more precise characterization of this effect by introducing the notion of event maximalization (Filip and Rothstein 2006 and Filip 2008) into the analysis.

¹⁴The example in (27) is unique among those analyzed in the dissertation as it contains a focused element. Since, however, this example also shows signs of the quantization restriction demonstrated in this section, I believe it is worth mentioning it here.

¹⁵My thanks are due to Pethő Gergely for bringing this example to my attention.

¹⁶To be fair, it must be noted that the example in (27) can also be interpreted with the bare nominal referring cumulatively and for some native speakers this is the only interpretation available. This is an issue that I leave unresolved at this point.

- (27) b. Speaker 1: *Sára 10 kg citrom-ot hűtött le egy óra alatt.*
 Sára.NOM 10 kg lemon-ACC cooled PRT one hour under
 '*Sára cooled 10 kg of lemons in one hour.*'
- Speaker 2: *Nem, Sára NARANCSOK-AT hűtött le egy óra alatt.*
 No, Sára.NOM oranges-AC cooled PRT one hour under
 '*No, it was oranges that Sára cooled in one hour.*'

The discourse context provided in (27b) illustrates that (27a) can be preceded by an utterance conveying that a specific quantity (i.e. 10 kg) of lemons was cooled by Sára. As this, however, does not reflect reality (in which oranges were cooled, and not lemons), Speaker 2 negates what Speaker 1 said and utters (27a), which contains an affected argument characterizable in terms of having a qualitative content such that the event in the denotation of the predicate now matches the state of affairs that obtains. The example in (27b) illustrates that the quantity of the referent of the affected argument remains specific in (27a) (i.e. the affected argument has quantized reference by virtue of the fact that it is interpreted along with the measure phrase *10 kg*, which is recoverable from the discourse context), and this is something that the FPR can capture. Crucially, (27) also exemplifies that the particle *le* is an event bounder, as proposed for all telic markers in Hungarian, since, apparently, once it appears in the predicate, the figure is interpreted with quantized reference, even if one has to resort to context to achieve this.

A second argument for the event-bounding nature of particles and resultative XPs is that once they occur in the predicate, the boundedness of the scale is ensured. The entailment test below illustrates this:

- (28) a. *A munkások ki-szélesítettek egy uta-t, #de az út nem lett széles.*
 the workers.NOM PRT-widened a road-ACC, #but the road not became wide
 '*The workers widened a road, #but the road did not become wide.*'
- b. *A munkások ki-mélyítettek egy tav-at, #de a tó nem lett mély.*
 the workers.NOM PRT-deepened a pond-ACC, #but the pond not became deep.
 '*The workers deepened a pond, #but the pond did not become deep.*'

The examples in (28a) and (28b) show that the cancellation of the attainment of a final state (i.e. some degree of width and some degree of depth, respectively), which correspond to the goal point on the property scales of the predicates, results in semantic ill-formedness.

This serves as evidence for the idea that predicates like *kiszélesítettek egy utat* 'widened a road' and *kimélyítettek egy tavat* 'deepened a pond', which contain an event-bounding element (i.e. the particle *ki*), are associated with bounded scales.

A final argument for the proposal that particles and resultative XPs bound events is that predicates containing such elements can never have aspectual duality (i.e. they are strictly telic), which is also characteristic of predicates not containing such telicizing constituents (i.e. they are strictly atelic), as was shown in (16) and (17).

The above discussion leaves one question unanswered: Is it possible to provide a precise characterization of how event bounding can be captured in the FPR model? Although Beavers (2012a) does not discuss such cases, I argue that it is in fact possible to achieve this. In section 4.3.4, I substantiate this claim by proposing that telicity arises as a result of maximalization over predicates of events that are related to multiple incremental themes by an FPR-type homomorphism. Before proceeding along these lines, however, I first discuss an interesting property of some degree achievement predicates, namely particle variability (and the lack thereof), and provide further evidence for obligatory telic marking in Hungarian.

4.3.3 Particle variability in the class of degree achievements

4.3.3.1 Csirmaz (2012) and Pethő and Kardos (2011)

It has been noted that it is possible for the head verb of (certain) degree achievement predicates to occur with different types of particles yielding varied interpretations regarding the property scale encoded by the predicate (Csirmaz 2012: 15). Consider (29a) and (29b) below.

- (29) a. {Meg / ki}-száradt a szivacs a nap-on.
 meg/ki-dried the sponge the sun-on¹⁷
 'The sponge dried in the sun.' (adapted from Csirmaz 2012: 16, (20))
- b. {Meg / ki}-száradt a bőröm a tengerpart-on.
 meg/ki-dried the my.skin the beach-on
 'My skin dried on the beach.'

¹⁷In the remainder of this section, I will provide the Hungarian names of particles in the English glosses, as well, for purposes of clarity.

Csirmaz (2012) argues that *szárad* 'dry' is associated with a homomorphic element which can potentially be linked to two scales due to the fact that it has multiple scalar entailments. A crucial function of the verbal particles in this case is to eliminate this ambiguity by picking out one of the multiple readings that can be assigned to the predicate. For instance, in (29a), the affected argument *a szivacs* 'the sponge' is (potentially) associated with both a scale of wetness and a scale indicating the amount of water contained within the sponge.¹⁸ According to Csirmaz (*ibid.*: 16-17), the particles *meg* and *ki* eliminate the scalar ambiguity encoded by the head verb *szárad* 'dry' in the following way: *meg* places a bound on the wetness scale, whereas *ki* makes the scale representing water content bounded. In order to lend support to this assumption, she discusses the following examples, among others:

- (30) a. {Meg / *ki} száradt {a ruha / a keze}.
 meg / ki dried the dress / his/her.hand
 'The dress / his or her hand dried.'
- b. {Ki / *meg} száradt {a tó / a forrás}.
 ki / meg dried the pond / the spring
 'The pond / the spring dried out.' (Csirmaz 2012: 16, (21a), (21b))

Csirmaz (*ibid.*: 16) claims that the reason why *meg-szárad* 'meg-dry' is ungrammatical with the affected arguments *a tó* 'the pond' and *a forrás* 'the spring' is that *meg* can only occur within a predicate entailing a scale associated with the final bound of dryness, which is not what the drying of a pond or spring is about. What the predicate in (30b) denotes is that the referent of the affected argument ends up in the state of non-existence on a scale indicating water content, which is compatible with the particle *ki*.

Although Csirmaz's notion of "ambiguous homomorphism" may look tenable at first sight, I show that it is problematic on several fronts. First, on this view of degree achievements, if a predicate can occur with two particles (cf. (29a) and (29b)), it is predicted to be compatible with two possible interpretations when licensed without a

¹⁸In order to clarify the difference between the two scales, I cite Csirmaz (2012: 15): "On the one hand, the event can be homomorphic with the scale of wetness as it applies to the affected argument. Given the initial state of wetness of the sponge, it becomes increasingly dryer. In addition to this, expected reading, there is another interpretation. Under this interpretation, the event is seen in terms of the amount of liquid or moisture contained in the sponge, and the amount of liquid becomes less as the event progresses."

particle. For instance, if we take the degree achievement predicate *a szivacs száradt* 'the sponge dried', we expect that it can be assigned multiple interpretations (i.e. one associated with a wetness scale and one encoding a scale representing water content) and that the cancellation of one of these interpretations still yields a felicitous sentence. The example in (31) is meant to test if this is the case.

- (31) A szivacs száradt, #de a benne lévő vízmennyiség nem csökkent.
 the sponge dried #but the in.it being water content not decreased
 'The sponge dried, #but the water content in it did not decrease.'

That (31) is unacceptable serves as evidence for the inaccuracy of Csirmaz's characterization of the predicate *a szivacs száradt* 'the sponge dried'. That is, the drying of the referent of this particular affected argument does entail that the water content in it decreased. I argue that the problem that (31) illustrates arises because the two scales assumed by Csirmaz are one and the same thing (i.e. wetness scales necessarily indicate a decrease in water content in some specific form or another) and thus the negation of change along this scale, which is inherently encoded by the verb *szárad* 'dry', results in semantic anomaly.

Another problem with Csirmaz's analysis is that the data that she uses to lend support to her argument are not always adequate. A case in point is the predicate *ki-száradt a keze* 'his hand ki-dried'. Csirmaz argues that the particle verb *ki-szárad* 'ki-dry' is not grammatical with the affected argument *kéz* 'hand' (Csirmaz 2012: 16, (21a)) as for *ki* to occur in a predicate entailing a scale of water content "it is necessary for the amount of liquid or moisture to be determined, e.g. by containment within the argument" (*ibid.*: 17). The example in (32) shows, however, that, contrary to Csirmaz's claim, *ki-szárad* 'ki-dry' is perfectly acceptable with *kéz* 'hand', which again indicates that the generalization regarding the grammatical status of *meg* and *ki* in examples such as (29) and (30) needs to be revised.

- (32) Speaker 1: Meg-száradt már a kezed?
 meg-dried already the your.hand
 'Has your hand dried yet?'

Speaker 2: Már annyit ült-em a nap-on, hogy ki is száradt.

already much sat-I the sun-on that ki also dried

'I've been sitting in the sun for so long that it has become extremely dry/cracked.'

Another degree achievement predicate that can occur with multiple particles, namely *meg* and *fel*, is *melegszik* 'warm'. Csirmaz (2012) argues that while *meg-melegszik* 'meg-warm' denotes an event in which the affected argument must reach a maximal degree value along a scale in the dimension of temperature at the end of the event, *fel-melegszik* 'fel-warm' describes only an unspecified amount of increase with respect to the temperature of the referent of the affected argument. Therefore, *melegszik* 'warm' is not compatible with the particle *meg* when its affected argument is *a laptop* 'the laptop' as there is no specific temperature a laptop is expected to attain at the termination of the warming event associated with it. Consider (33) below.

(33) A laptop {fel / ??meg} melegedett.

the laptop fel / meg warmed

'The laptop warmed.' (telic)

(adapted from Csirmaz 2012: 18, (24a))

Csirmaz's idea is that whereas in certain warming events the affected argument is expected to reach some, for instance, contextually salient temperature (cf. the warming of some soup), the warming of a laptop does not involve such an expectation. Although the intuition regarding the difference between the warming of some soup and the warming of a laptop seems to be correct, the characterization of the particle *meg* is falsified by the naturally occurring examples in (34) and (35), in which *meg* is grammatical in spite of the fact that the predicates contain the affected arguments *az akksi* 'the battery' and *a motor* 'the engine,' respectively, which can be treated on a par with *a laptop* 'the laptop' in (33) from the perspective of the present discussion.

(34) Valószínűleg meg-melegedett egyszer az akksi.

perhaps meg-warmed once the battery

'Perhaps the battery has warmed up before.'

(http://www.technet.hu/forum/szakertok/technet_szakertok/kerdezz_-felelek/?page=6&order=ASC, accessed on February 18, 2011)

(35) Annyira meg-melegedett a motor, hogy egy pillanat-ra meg-szorult.

much meg-warmed the engine, that a moment-to meg-stuck

'The engine warmed up so much that it got stuck for a moment.'

(adapted from www.zsiguli.hu, accessed on February 18, 2011)

Finally, as for the claim that the particle *fel* "does not establish a definite endpoint, but merely requires increase in temperature" (Csirmaz 2012: 19) when occurring with *melegszik* 'warm', as in (33), one comment is in order. Specifically, Csirmaz supports her claim by arguing that given the uniqueness restriction on the number of culmination points an event can be associated with¹⁹ and the possible assumption that the particle *fel* is responsible for the telicity of the predicate, as is argued in the present dissertation, *fel* should be incompatible within predicates that already contain a constituent that can be made responsible for providing the denoted event description with an endpoint. This, however, cannot be correct, argues Csirmaz, as in Hungarian, it is possible for *fel-melegszik* 'fel-warm' to occur with constituents that can be argued to make the event description telic, as, for instance, in *a sütő fel-melegedett 200 fokra* 'the oven warmed up to 200 degrees' (*ibid.*: 19, (24c)), where the resultative phrase *200 fokra* 'to 200 degrees' corresponds to the result state the oven attains and can thus be considered to be a telicizing element.²⁰ Therefore, Csirmaz concludes that *fel* in *fel-melegszik* 'fel-warm' does not establish a definite endpoint with respect to the denoted event. This, however, cannot be correct in light of (36) below.

(36) Kati fel-melegítette a leves-t, #de a leves nem lett meleg.

Kati.NOM fel-warmed the soup-ACC, #but the soup not became warm

'Kati warmed the soup, #but the soup did not become warm.'

If Csirmaz's claim regarding the semantics of *fel* were correct (i.e. *fel* is not responsible for establishing a definite endpoint which corresponds to some degree of warmth), we would expect that the cancellation of the entailment "the soup became warm" should yield a felicitous sentence. The example in (36), however, shows this to be false. Therefore, we

¹⁹For an instance of this restriction, see Tenny's (1994) Single Delimiting Constraint in Section 2.1.2.

²⁰For a possible analysis of such constructions, see Section 6.2.

can conclude that the particle *fel* does provide the event denoted by the predicate with a definite endpoint corresponding to some state of warmth.

Having described Csirmaz's treatment of some instances of particle variability within degree achievement predicates, I now briefly discuss an alternative characterization proposed by Pethő and Kardos (2011), which seems to be intuitively and empirically more adequate.²¹ The claims of this analysis are twofold: It is argued that (1) degree achievements have one scalar argument and that (2) the different particles yield different perspectives of the event denoted by the predicate. For instance, the predicates *meg-szárad* 'meg-dry' and *ki-szárad* 'ki-dry' differ in that the former denotes an event that progresses along a wetness/dryness scale and it culminates in an endpoint that corresponds to the "normal" state of the referent of the affected argument. By contrast, *ki-szárad* 'ki-dry' describes a situation in which the water content of the referent of the affected argument decreases in the course of the event. In addition, these predicates generally characterize situations at the beginning of which the water content is an inherent property of this event participant (in its normal state).²² To put it differently, in the case of *meg-szárad* 'meg-dry' the speaker's perspective is such that the event advances towards a goal (which is eventually reached), i.e. it is movement towards a goal point that is described by the predicate, whereas in the case of *ki-szárad* 'ki-dry' movement from an initial point and towards some state of dryness is described. An important advantage of this analysis is that it can predict cases in which the predicate *szárad* 'dry' is possible with both *ki* and *meg* and also cases where only one of the particles can occur in the predicate. Thus three different patterns arise: The first one is when only the particle *meg* is acceptable, the second one is when only *ki* is possible, and the third one is when both *meg* and *ki* can attach to the base verb *szárad* 'dry'. In (37)-(39) I illustrate each and provide some discussion of the examples.

(37) *Meg/*ki-száradt a ruha.*

meg/ki-dried the dress

'The dress dried.'

(Pethő and Kardos 2011: 343, (25))

²¹This discussion only provides a sketch of Pethő and Kardos (2011) and therefore it is far from being exhaustive.

²²Pethő and Kardos (2011) use a single predicate, namely *szárad* 'dry' to provide support for their claims. The present discussion also addresses particle variability with respect to this predicate only.

In (37) the referent of the affected argument (i.e. the dress) is characterizable in its normal state as an entity that is not associated with any amount of (inherent) wetness. Therefore, such event participants are not compatible with verbal predicates that describe movement from an initial state such that it corresponds to some amount of (inherent) wetness (notice the ungrammaticality of *ki-száradt* 'ki-dried'). Next, (38) illustrates predicates that are incompatible with the particle *meg*. The reason for this, as proposed on this view, is that the referents of the affected arguments in these cases are not characterizable in terms of having a dryness state and thus they cannot participate in events that advance towards a goal point which corresponds to some kind of dryness. In contrast, they can occur with verbs that describe the decrease of the (inherent) water content of the referent of the affected argument.

- (38) *Ki/*meg-száradt a tó/a forrás.*
 ki/meg-dried the pond/the spring
 'The pond/the spring dried out.' (Pethő and Kardos 2011: 343, (26))

The third pattern, whereby both *ki* and *meg* can attach to the verb *szárad* 'dry', is demonstrated in (39) below.

- (39) *Meg/ki-száradt a keze/az ajka/a haja.*
 meg/ki-dried his/her.hand/lip/hair
 'His/her hand/lips/hair became dry.' (Pethő and Kardos 2011: 344, (28))

The grammaticality of the particle *ki* follows since the affected participants (one's hand, one's lip, and one's hair) are associated with some water content and the type of situation that *ki-száradt* 'ki-dried' describes is that this water content decreases, yielding that the hand, the lips, or the hair become drier than they are in their normal state (i.e. the referent of the affected argument becomes dehydrated). The particle verb *meg-száradt* 'meg-dried', on the other hand, denotes an event at the termination of which the hand, the lips, or the hair end up in a normal state of dryness, which means (in the case of these event participants) that there is no water on their surface. In short, *ki-szárad* 'ki-dry' describes a situation which is associated with movement along a scale from a (normal) wetness state, whereas *meg-szárad* 'meg-dry' describes a situation which is associated with movement along a scale to a (normal) dryness state.

Overall, then, based on these examples and others in Pethő and Kardos (2011) and the critical review at the beginning of this section, we can say that the alternative analysis seems to supercede Csirmaz (2012) by virtue of having more predictive power. There is something, however, that neither analysis looks into, namely the lack of particle variability within a subset of degree achievements. This is what I briefly discuss in what follows.

4.3.3.2 The lack of variability and obligatory telic marking

In this section I attempt to provide an explanation for why certain degree achievements (i.e. those based on closed-scale maximum value gradable adjectives) are typically compatible with only one particle, which is also generally obligatory. In order to give some background to my claims, I first place the discussion in a broader perspective by reviewing what has been said of the English counterparts of these predicates in the scalar semantic literature.

When analyzing closed-scale gradable adjectives (a notion that was introduced in Chapter 2), which can serve as a basis for degree achievement predicates in English and several other languages, Wechsler (2005: 262), among others, makes a distinction between adjectives denoting minimal endpoints (cf. *wet_A*) and those denoting maximal endpoints (cf. *straight_A*) along the property scale of the corresponding verbal predicate. As for the former, the notion "minimal" is motivated by the fact that, due to the lexical specification of the adjectival base underlying the verbal predicate, a minimal change on the part of the affected argument is sufficient to satisfy the truth conditions of the predicate. For instance, *Mary wetted the towel* may be used to describe an event in the course of which only a drop of water (or any other liquid) is applied to the towel. Conversely, in the case of the latter, it is only events associated with a maximal change (i.e. the maximal attainment of a given property) that are in the denotation of the predicate. For instance, the truth conditions of *John straightened the rope* are satisfied only if the affected argument *the rope* ends up in the state of straightness, which necessarily entails complete straightness due to the lexical specification of the underlying adjective *straight* (*ibid.*). As Wechsler argues, this distinction has important ramifications for the aspectual structure of predicates in the following way: predicates based on minimal endpoint adjectives such as *wet_A* pattern with predicates based on open-scale adjectives, such as *cool_A* (cf. Chapter 2) as "the endpoint is infinitesimally low for minimal endpoint adjectives" (*ibid.*: 263). Following Wechsler (*ibid.*), in (40) I use the imperfective entailment test to illustrate this (aspectual)

correspondence and the contrast between predicates based on open-scale adjectives and predicates based on closed-scale minimal endpoint adjectives, on the one hand, and predicates based on closed-scale maximal endpoint adjectives, on the other.

- (40) a. They are straightening the rope. \nRightarrow They have straightened the rope.
 b. They are cooling the soup. \Rightarrow They have cooled the soup.
 c. John is wetting the towel. \Rightarrow John has wetted the towel.

(Wechsler 2005: 263, (17a), (17b) and (17c))

The examples above illustrate the imperfective paradox, which was first noticed to characterize accomplishment-type predicates (cf. Section 3.2.1.3). Specifically, an interesting property of accomplishments is that although they inherently encode the attainment of a result state, when used in the progressive, they do not give rise to the entailment that a result state comes about. For instance, *John was writing a book* does not entail that *John wrote a book* in spite of the fact that *write a book* encodes the coming into existence of a book. Conversely, activity-type predicates do not exhibit this behavior as is apparent from the fact that *Ed was playing rugby* does entail that *Ed played rugby*. The same type of "paradox" can be observed in the case of (40a), which is indicative of the fact that the aspectual structure of the predicate in this example is identical to that of accomplishments, i.e. the attainment of a result state, and thus telicity, is lexically encoded. The entailment relations in (40b) and (40c), on the other hand, demonstrate that *cool*-type and *wet*-type predicates pattern more like activities regarding their aspectual properties as the event descriptions denoted by them are not inherently telic.

Interestingly, the above correspondence between accomplishments and predicates based on closed-scale maximal endpoint adjectives is also observable in Hungarian with the following caveat. Although the type of scale associated with the predicate comes from the adjectival base, as in English, the attainment of the maximal endpoint on the scale is due to a separate element, which is typically a particle (or a resultative XP) in the class of degree achievements. I illustrate this in (41) and (42), where the (b) examples are the Hungarian equivalents of the (a) examples.

- (41) a. I flattened a box. (only telic)
 b. Ki-lapítottam egy doboz-t.
 ki-flattened.1.SG a box.ACC

- (42) a. I straightened a piece of wire. (only telic)
 b. Ki-egyenesítettem egy darab drót-ot
 ki-straightened.1.SG a piece wire-ACC

Regarding the above type of data (i.e. closed-range maximal endpoint value predicates), there are two expectations in light of what we have seen in this chapter so far. On the one hand, given the meaning of the head verbs, it is expected that these predicates always denote bounded events when containing quantized figure arguments, which in turn leads to another expectation, namely that they must contain an event boulder (e.g. a particle or a resultative XP) in accordance with the PTM. The examples below bear this out as they are quite strange without a particle.

- (43) a. ??Lapítottam egy adag tésztá-t.
 flattened.1.SG a portion dough-ACC
 b. Ki-lapítottam egy adag tésztá-t.
 ki-flattened.1.SG a portion dough-ACC
 'I flattened a portion of dough.'
 c. ??Lapult egy kalap.
 flattened a hat.NOM
 d. Ki-lapult egy kalap.
 ki-flattened a hat.NOM
 'A hat became flat.'

Another property of verbal predicates like *lapít* 'flatten' and *ürít* 'empty' is that they are not amenable to particle variability as much as open-range degree achievements. The reason for this can be that the type of endpoints these predicates are associated with correspond to quite stable result states such as flatness and emptiness, in contrast to the more flexible notions of warmth, coolness, and in Hungarian, dryness, which characterize result states in warming, cooling, and drying events, respectively. That is, the intuition is that predicates like *lapít* 'flatten' and *ürít* 'empty' describe events that progress towards a specifically identifiable goal point and thus the kind of flexibility that was observable in the case of *szárad* 'dry_v' and *melegszik* 'warm_v' is not expected from them. This is demonstrated in (44) below.

- (44) a. Kati *ki/*meg-ürített* egy szemetes-t.
 Kati.NOM *ki/meg-emptied* a garbage can-ACC
 'Kati emptied a garbage can'
- b. Kati *ki/*meg-lapított* egy adag tésztá-t.
 Kati.NOM *ki/meg-flattened* a portion dough-ACC
 'Kati flattened a portion of dough'

As for the exact type of endpoint with which these events (and the property scales) are associated, it is expected that it corresponds to an absolute maximum value on the property scale. Let us test if this is the case with the entailment test in (45) below.

- (45) a. Kati *ki-ürített* egy szemetes-t, #de a szemetes nem lett.
 Kati.NOM *ki-emptied* a garbage.can-ACC, #but the garbage.can not became teljesen üres.
 completely empty
 'Kati emptied a garbage can, #but the garbage can did not become completely empty.'
- b. Kati *ki-lapított* egy adag tésztá-t, #de a tészta nem lett.
 Kati.NOM *ki-flattened* a portion dough-ACC, #but the dough not became teljesen lapos
 completely flat.
 'Kati flattened a portion of dough, #but the dough did not become completely flat.'

The examples above illustrate that *ki-ürít* 'ki-empty' and *ki-lapít* 'ki-flatten' both denote events at the termination of which the referent of the affected argument ends up in a state corresponding to an absolute maximal value since the cancellation of the attainment of such a state (i.e. the state of complete emptiness in (45a) and that of complete flatness in (45b)) yields a contradiction.

An important question that remains in light of the discussion above and the previous sections of this chapter is what the exact semantic role of particles like *ki* and *meg* is in the examples discussed so far (i.e. how exactly do they give rise to a telic interpretation) and how does this fit in with an FPR-based analysis. In Section 4.3.4 I provide a possible answer to this question.

4.3.4 Event maximalization on top of the FPR

An adequate analysis of telicity is expected to satisfy (at least) two major requirements: (1) On the one hand, it has to characterize the conditions that are necessary for telicity to arise in a given language and (2) on the other hand, it has to describe how these conditions obtain by providing precise, truth conditionally accurate descriptions of both telic and atelic predicates. The highly influential work of Krifka (1989, 1992, 1998), for instance, can be claimed to fulfill the latter to a greater extent than the former, whereas the more recent scalar analysis of Hay et al. (1999), Kennedy and McNally (2005), and Kennedy and Levin (2008) suffers from inadequacy in both respects. Specifically, while Krifka provides a truth-conditionally very precise characterization of verbal predicates, he fails to account for multiple incremental theme effects (though his model serves as the basis for the FPR, which does handle such effects). The scalar model of Kennedy et al. is neither precise enough regarding its formal representations (cf. Chapter 2), nor does it address the question of double incrementality.

The FPR view of telicity proposed in Beavers (2012a) arguably supersedes both Krifka's analysis and the scalar approach of Kennedy et al. as it fulfills both requirements mentioned above, at least within the domain of English-type languages, in which the telicity of predicates arises given that the incremental themes possess specific quantization/boundedness properties. Thus, if we take the example *the children ran to the capitol*, for instance, it is clear that telicity is due to a bounded path thanks to the PP *to the capitol* and the quantized figure *the children*. If either the path is unbounded or the figure is non-quantized (due to the lexical specification of the constituents within the sentence or lack of contextual information/world knowledge), the predicate will be atelic, as in the case of *children ran to the capitol (for/*in 10 minutes)*, *the children ran (for/*in 10 minutes)*, and *children ran (for/*in 10 minutes)*. Conversely, the aspectual composition of predicates is significantly different in Hungarian. As was demonstrated in Section 4.3, in this language even if the conditions necessary for telicity (i.e. the quantized nature of the figure and the boundedness of the scale) are given in the discourse, but an event boulder does not appear in the predicate, telicity does not arise. This can be illustrated by the predicate *a munkások 10 napig/??10 nap alatt szélesítettek egy utat* 'The workers widened a road for 10 days/in 10 days' where an atelic interpretation is available in spite of the quantized nature of the figure and the fact that a final bound on the scale could potentially be identified based on contextual information or world knowledge, as is known to be possible

in English. By contrast, a telic reading arises in the presence of an event-bounding particle, as in the case of *a munkások 10 nap alatt/*10 napig ki-szélesítettek egy utat* 'The workers PRT-widened a road in 10 days/for 10 days'.

In light of the above aspectual properties of Hungarian predicates, we can conclude that although we have evidence for the claim that FPRs are observable in this language as well (see Section 4.3.2), it is yet to be determined how exactly the meaning of a telic predicate can be built compositionally in this type of language on such an approach. This is what I attempt to resolve by proposing that telicity is due to event maximalization, as proposed by Filip and Rothstein (2006) and Filip (2008). More specifically, a maximalization operator is assumed to apply on predicates over events, which determines quantized reference for the predicate and ultimately the interpretive restrictions that characterize the figure and the scale. An important claim in this section is that a crucial difference between Hungarian and English (as well as Slavic languages) is that whereas in the former this maximalization operator is overt by virtue of being lexicalized in event bounders (i.e. particles, resultative (and locative) XPs, and, as we will see in Chapter 6, quantized scalar DPs), in English and Slavic languages it is phonologically unexpressed, as substantiated by Filip and Rothstein (2006) and Filip (2008). Before I solidify my claim, I first review the notion of event maximalization in Filip and Rothstein's (2006) and Filip's (2008). An important objective of the rather detailed review in Sections 4.3.4.1 and 4.3.4.2 is to show that Filip's and Rothstein's (2006) and Filip's (2008) event maximalization account is potentially compatible with Beavers's FPR analysis (cf. Beavers 2012a: 47).

4.3.4.1 Event maximalization in English

Filip (2008: 219, (1)) views telicity as a semantic operation within the domain of events. She provides the following definition, which was originally proposed in Filip and Rothstein (2006: 139, (2)):

Telicity corresponds to the *maximalization operator* MAX_E . It is a monadic operator, such that $MAX_E(\Sigma) \subset \Sigma$, which maps sets of partially ordered events Σ onto sets of maximal events $MAX_E(\Sigma)$.

As her theoretical background, Filip (2008) assumes Krifka's (1989, 1992, 1998) semantics of measurement (cf. Section 2.2.4) and the scalar semantics of Gazdar (1979) and Horn (1972). However, there is also an important aspect in which Filip's approach

differs from Krifka's. Specifically, on the former view, the events denoted by predicates are (partially) ordered with respect to scales, which are, in English, typically provided by a verb-external element. A scale in this case is used as a "measuring device" against which the size of events in the denotation of a predicate can be determined. This is a crucial property of scales as, in order that MAX_E can apply, the largest event that the predicate describes needs to be identified. For Filip, the largest event is the most developed version of the set of (partially) ordered events associated with the predicate (cf. Landman 1992).

In order to present the details of how telicity arises in English, I first list what ingredients are needed for telicity and then illustrate how this model works with the help of a predicate, the telicity of which can be independently verified through the *in/for X time unit* test. The basic idea, which goes back to Krifka, is that telicity can obtain only if the verb heading a given predicate encodes a homomorphic relation, which, according to Filip (2008), can be either a strictly incremental relation (a SINC), as in the case of *eat* or an incremental relation (an INC), as in the case of *read* (see Section 2.2.4.1). Another ingredient that is necessary for event maximalization (i.e. telicity to obtain) is a measuring scale which can be identified in the discourse context in the presence of an incremental theme argument or a verb (cf. verbs based on closed-range adjectives like *empty_V*) that can provide an ordering criterion for the events in the denotation of a given predicate. A scale can function as a measuring device only if it is associated with a lexically or contextually specified endpoint. Given that a homomorphic relation (a SINC or an INC) obtains between the part structure of the incremental theme and the part structure of the event argument and that the largest event in the denotation of the predicate can be identified thanks to the measuring scale deduced by the speaker, MAX_E , a covert operator in English, applies. The speaker can deduce a measuring scale from the discourse context if, for instance, the incremental theme argument has quantized reference as in the case of *read three books* and *ate a slice of pizza*. The maximalization operator MAX_E takes the events ordered by the measuring scale and returns the largest event (at a given situation), and thus the predicate is interpreted with quantized reference, from which telicity (a weaker notion) naturally follows. If the predicate or context does not provide sufficient information so that a measuring scale can be deduced, MAX_E cannot apply and atelicity arises.

By way of illustration, let us see how the telicity of *ate three apples* obtains on this view. First, the verb *eat* encodes a strictly incremental relation (a Krifka-type SINC) that obtains between the part structure of the incremental theme argument *three apples* and the part structure of the event argument. The speaker deduces a measuring scale based on the

quantized incremental theme. Importantly, on this view, scales are not arguments of verbs, as in the FPR, but they are simply measuring devices that the speaker infers thanks to some element in the predicate (e.g. the incremental theme or the verb) and/or context to get an ordering of events, which will in turn allow the identification of the largest event in the denotation of a predicate like *ate three apples*. Now that the set of eating events (e.g. the eating of half an apple, the eating of one apple, the eating of two apples, etc.) can be maximal relative to a measure of three apples, the largest eating event can be identified and thus MAX_E can apply. This in turn gives rise to the telic reading of *ate three apples*.

Naturally, if a verb does not encode either a SINC or an INC, as, for instance, *carry*, according to Filip (2008: 234), or it does but no measuring scale is induced by the incremental theme argument of the verb, the predicate will be atelic since MAX_E cannot apply. The former is illustrated in (46), while the latter in (47).

(46) Peter carried 3 books for an hour/*in an hour.

(47) Peter ate apples for 10 minutes/*in 10 minutes.

The predicates in (46) and (47) cannot be interpreted telically as in the former the verb is assumed not to encode a homomorphic incremental relation, whereas in the latter the incremental theme does not give rise to a measuring scale.

Filip (2008: 227) claims that underived verbs in English and other Germanic languages share the property of being unmarked with respect to telicity, even if they are equipped with a measuring scale (cf. the verb *empty*), which is essential for the determination of the largest events in the denotation of predicates. What Germanic underived verb stems differ in is the extent to which they facilitate the application of MAX_E . Events denoted by verbs that encode no incremental relation are incompatible with this operator, and are thus associated with atelicity (cf. *carry*).²³ Verbs that encode an incremental relation, but specify no measuring scale lexically, which is necessary for the ordering of events, denote telic event descriptions just in case their incremental theme allows the speaker to deduce a measuring scale (cf. *eat* and *read*). Finally, verbs that encode both an incremental relation

²³Beavers (2012a: 47, fn. 13) points out that the verb *carry* can in fact enter into a telic predication if a prepositional phrase bounding the path along which the denoted event progresses is added to the predicate (cf. *The mother carried two boxes to the kitchen in 5 minutes.*). This is possible because it is not only the direct object *two boxes* that is mapped to the event but also the path that has a specific goal, which then serves as a counterargument regarding the idea that *carry* does not encode a homomorphism.

and a measuring scale are most amenable to event maximalization. These aspectual properties characterize open-scale and closed-scale degree achievements such as *cool*, *empty*, and *melt*. Crucially, however, according to Filip, even these verbs are not inherently telic (see above). The reason for this is that verbs like *empty* and *melt* "are not enforced by the English grammar to have just maximal events in their denotation" (*ibid.*: 228) and thus these verbs occur in predicates that are amenable to variable telicity, as observable in the case of the predicate *the snow melted in six days / for six days* (*ibid.*). Another illustration of the same point is given in (48) below.

(48) I emptied the tub, but not completely. (Rappaport Hovav 2008: 28, (29))

That the addition of the second clause, which contradicts the attainment of absolute emptiness on the part of the referent of the affected argument *the tub*, does not yield an infelicitous sentence in (48) leads Filip (2008) to the conclusion that although *empty* encodes a measuring scale that is associated with the maximal value of absolute emptiness and which can be mapped to the event, it does not encode the attainment of the state of absolute emptiness. Therefore, even these verbs prove to be unmarked for telicity in English.

Before we continue to discuss how telicity is encoded in Slavic languages, let us highlight some important consequences of this account with respect to English. First, Filip (2008) argues that her analysis provides a solution to what has been referred to as the quantization puzzle in the literature. Specifically, it has been observed (see, for instance, White 1994, Krifka 1998, Zucchi & White 2001, and Rothstein 2004) that there are predicates that receive a telic reading in spite of their containing a non-quantized incremental theme. Two examples of this predicate type are *drank a quantity of milk* and *ate at least two apples*, which are both telic in spite of the fact that their incremental themes, *a quantity of milk* and *at least three apples*, respectively, are non-quantized, as subparts of a quantity of milk are also in the denotation of *a quantity of milk* and there are subparts of at least three apples that are also in the denotation of *at least three apples*. Filip (2008) solves this puzzle by claiming that it is MAX_E , which is assumed to be a covert operator in these predicates, that "adds the requirement to pick (at a given situation) the largest unique even e_i , which leads to the most informative proposition among the alternatives in a given context" (*ibid.*: 224). In other words, although the incremental themes *at least three apples* and *a quantity of milk* by themselves are not characterizable in

terms of having a specific quantity, the predicates *ate at least three apples* and *drank a quantity of milk* force the listener to assign a quantized interpretation to them, which is possible in light of the discourse context.²⁴ This is due to the fact that MAX_E determines quantized reference for the predicate and ultimately a telic reading becomes available.²⁵

Second, as is pointed out by Filip (2008) herself, this model deems (more precisely, it is forced to deem) momentaneous events (cf. Bach 1981) denoted by verbs such as *reach*, *break*, and *die* (i.e. Vendler's achievement verbs) to fall outside of the domain of events to which MAX_E can apply. Filip explains this step by claiming that these verbs are characterizable as denoting sets of unordered events which cannot be measured due to their momentary character (Filip 2008: 227). Another formulation of this idea is that MAX_E fails to apply on sets of events denoted by achievement verbs as it requires, as its input, events that are associated with a non-trivial part-whole structure, which does not characterize momentaneous events (Filip and Rothstein 2006: 141). This analysis of predicates such as *die* and *break a vase*, however, cannot be correct for the following reason: these predicates can be argued to inherently encode changes in the course of which an event participant transitions from one state to another state (see Section 2.3.2.1) and can thus be associated with a structure containing two atomic subevents. Now, since events of predicates like *John broke a vase* necessarily culminate, which is a defining characteristic of telic event descriptions on a number of aspectual analyses (cf. Parsons 1990, Kratzer 2004), including Filip's (Filip 2008: 220), verbs like *break* actually serve as examples of underived telic verbs on Filip's (*ibid.*) analysis.

Related to this group of verbs are scalar verbs based on closed-range adjectives, such as *empty* and *straighten*, which, according to Filip (2008), may encode a measuring scale that is associated with an absolute maximal value, but they fail to encode that the event participant undergoing a change ends up in a state corresponding to this maximal value (see above). Therefore, given that neither *break*-type verbs nor *empty*-type verbs (the latter group being the most amenable to the maximalization operation on this view) can be

²⁴Filip argues that " MAX_E operates on asserted and implicated meaning components" (Filip 2008: 231).

²⁵Notice that even without the assumption of MAX_E , the (a)telicity facts of English and other English-type languages (exclusive of the facts of the quantization puzzle) can be predicted on an FPR view of telicity. At the same time, applying MAX_E on predicates like *John ate two apples* and *John ran two miles*, whose telicity already follows from the definition of telicity in the FPR model (cf. (8) in Section 4.2), is not a problem – however redundant it is – since it still gives the telicity facts that we want, i.e. once MAX_E is applied on predicates over maximal events, it returns predicates over maximal events.

considered to encode telicity inherently, Filip establishes the claim that in English verb stems never denote events that necessarily culminate. Therefore, MAX_E cannot apply at the level of Vs, but only at the level of VPs or IPs.

Finally, Filip has to assume that telic interpretation comes not only from the lexical specification of the building blocks of a VP (or IP) but also that of constructions (see also Filip 1993, 1999). Consider (49), for instance, which exemplifies the directed motion construction.

(49) Mary waltzed into the room. (Filip 2008: 237, (26a))

Filip (*ibid.*) argues that the telic interpretation associated with (49) does not stem from the lexical specification of the constituents of the predicate as the head verb *waltz* is inherently atelic, while the goal PP *into the room* does not necessarily yield a telic reading as illustrated by the predicate *smiled into the room*. Instead, it is the directed motion construction that provides the conditions (i.e. an ordering criterion on events) that are necessary for MAX_E to apply. Given the view of maximal (i.e. telic) event descriptions Filip cultivates and examples such as (49), the assumption that meaning is contributed by words as well as constructions follows. I argue, however, that this step is unnecessary if one provides an FPR-based maximalization account of telicity, where, since figure-path relations are assumed to obtain in the case of all dynamic predicates of change, given the quantized nature of the affected argument and the boundedness of the scale, the maximality of events is guaranteed, and thus a telic interpretation arises.

Having outlined how event maximalization pans out in English, let us now shift our attention to the same operation in Slavic languages.

4.3.4.2 Event maximalization in Slavic languages

Filip (2008) argues that the primary difference between Slavic and Germanic languages is that in the former it is verb stems, while in the latter it is VPs or IPs at the level of which MAX_E operates. More specifically, in Slavic languages it is perfective underived or derived verbs that denote the type of maximal event that can facilitate the application of MAX_E . The example in (50) illustrates the telicity of the predicate containing the past tense form of the underived perfective verb *obléci (se)* 'dress', whereas (51) is telic due to the derived perfective form *dopsal* 'wrote (telic)'.

MAX_E is spelled out as a prefix in perfective verbs is that derived imperfective verbs (i.e. secondary imperfective verbs), which denote non-maximal events, can also contain perfective prefixes. Consider (52) below.

- (52) Mozart do.pisoval^I poslední takty Don Giovanniho na Bertramce týden / *za týden.
Mozart TERM.write.IPF.PAST.3SG last notes D.G.SG.GEN on B. for a week / *in a week
'Mozart spent a week finishing the last notes of D.G. in the villa Bertramka.'
(Filip 2008: 246, (35b))

If the perfective prefix *do-* were the overt instantiation of MAX_E , the verbal predicate in (52) would automatically denote the largest writing event, and hence it would be telic. This is, however, not the case, which is evidenced by the fact that the derived verb form *dopisoval*¹ is compatible with the durative adverbial *týden* 'for a week' and unacceptable with the time-span adverbial *za týden* 'in a week'. Finally, as demonstrated in (50) above, the fact that underived (i.e. prefixless) verbs can also denote sets of maximal events also underpins the idea that prefixes are not the phonological spell-outs of MAX_E in Slavic languages.

Filip (2008) argues that the empirical adequacy of her aspectual analysis is reflected, for instance, in its ability to predict such facts as the quantization effects of perfective prefixes on the internal direct argument, as illustrated in (53).

- (53) On zjadł^P kaszę / oliwki. Polish
he.NOM PREF.atē porridge.SG.ACC / olives.PL.ACC
'He ate (up) (all) the porridge / olives.'
(Filip 2008: 250, (38a))

The internal objects *kaszę* 'porridge' or *oliwki* 'olives' must be interpreted as entities that are associated with maximal quantities, which follows if one assumes that there is a homomorphism between the part structure of the incremental theme and the part structure of the event argument and that the set of events in the denotation of the head verb must be maximal.

The imperfective form *jadt*^I 'eat', on the other hand, is different from the perfective *zjadt*^P 'eat' in that it does not determine what quantity the incremental theme must be interpreted with. Consider (54) below.

(54) On jadł^I kaszę / oliwki.

Polish

He.NOM ate porridge.SG.ACC / olives.PL.ACC

i. He was eating (sm/Ø/the) porridge / olives.

He was eating some of the porridge / olives.

ii. He ate (sm/Ø/the) porridge / olives.²⁷

(Filip 2008: 250, (38b))

That the imperfective verb form in (54) does not impose any constraints on the incremental theme argument regarding its quantization properties is reflected in the varied interpretation that can be assigned to it. As illustrated above, the theme can have a weak indefinite, a kind, or a definite (quantized) interpretation, depending on contextual factors (Filip 2008: 251). Crucially, as emphasized by Filip (*ibid.*), the incremental theme can be interpreted with quantized reference (and hence the set of events denoted by the imperfective form are taken to be maximal) just in case context and/or world knowledge provides the necessary conditions for the application of the maximalization operator.

Overall, then, we can conclude that Filip and Rothstein (2006) and Filip (2008) make a relatively successful attempt at proposing a unified analysis of the distinct telicity facts of Germanic and Slavic languages by assuming a SINC or INC-type homomorphism between the part structure of incremental themes and the part structure of events, as defined by Krifka (1989, 1992, 1998), measuring scales, which are responsible for the (partial) ordering of events in the denotation of predicates, and a maximalization operator that takes sets of these (partially) ordered events and returns sets of maximal events. In the table below I summarize how these meaning components figure into the aspectual composition of verbal predicates in the two types of languages:

²⁷ For more on the examples in (53) and (54), see Wierzbicka (1967: 2238-2239).

Ingredients of telicity	a SINC or an INC	a measuring scale	MAX_E
Germanic languages	encoded by certain verb stems	inferable thanks to the verb stem and/or an element outside of the verb within or outside of the VP	covert/applies on predicates over events
Slavic languages	encoded by certain verb stems	inferable thanks to the perfective verb and the theme	covert/applies on predicates over events

Table 4.1 Telicity as viewed by Filip and Rothstein (2006) and Filip (2008)

Despite the apparent predictive power of this model, I claim that it is problematic on at least two fronts. First, as was already argued in the previous section, it does not provide an adequate treatment of all predicate classes (e.g. achievements and degree achievements), which Filip (2008: 244) also hints at when she discusses telicity in Slavic languages. Second, it does not account for double incremental effects, which obtain in the case of dynamic verbal predicates of change, as has become evident by now. In the next section, I propose that telicity be viewed as maximalization on predicates over events that are related to both the affected argument and the scale argument via the type of homomorphism assumed on an FPR analysis. This approach can provide us with the benefit of being able to propose a unified semantic account of telicity within a variety of predicate classes in typologically distinct languages such as English, Slavic languages, and Hungarian.

4.3.4.3 Event maximalization revisited

This section is aimed at making the claim that the proper treatment of telic predicates must involve the notion of event maximalization somewhere along the lines of Filip and Rothstein (2006) and Filip (2008). That is, I suggest that telicity arises as a result of a maximalization operation on sets of partially ordered events. However, as a departure from Filip and Rothstein (2006) and Filip (2008), who propose that the ordering of events is guaranteed by a measuring scale, which is deduced by the speaker thanks to some element in the discourse, I argue that the events in the denotation of a given predicate are ordered relative to the part structure of the figure and the part structure of the scale, which, unlike

the measuring scales of Filip and Rothstein (2006) and Filip (2008), are both arguments of the verb heading the predicate, as maintained on Beavers's (2012a) FPR approach.

As was implicated in Section 4.3.4.1, a crucial piece of evidence for the claim that telicity should be viewed as maximalization on events comes from predicates that are telic in spite of the fact that they contain an incremental theme that receives a non-quantized interpretation when interpreted independently of the head verb, as in the case of *ate at least three apples*. As for the latter part of the claim, the examples below, which I took from Beavers (2012a), serve to illustrate that multiple incremental effects can be observed in the case of telic predicates where the non-quantized nature of the affected argument and the lack of boundedness of the path are due to the effects of quantified expressions of the type that was observable in the case of the predicate *ate at least three apples* above. Thus it seems to be reasonable to propose that event maximalization applies on sets of events which are related to the incremental theme arguments of the verb heading the predicate by a figure-path relation.

- (55) a. At least one liter of wine flowed at least as far as the table in/?for five minutes.
 b. At least one liter of wine flowed for/??in five minutes.
 c. Wine flowed at least as far as the table for/?? in five minutes
 d. Wine flowed for/??in five minutes. (Beavers 2012a: 46, (2.42))

The examples in (55) clearly show that the telicity of the predicate denoting a set of wine-flowing events is guaranteed only if certain quantificational properties of both the affected argument and the path argument obtain. Otherwise, only an atelic reading is available.

Given then the twofold assumption that telicity arises due to maximalization on events and that events can be maximal relative to the multiple incremental themes of the verb heading a given predicate in a way that events and incremental themes are related by the FPR, the difference between English and Slavic languages, on the one hand, and Hungarian, on the other hand, is that while in the former MAX_E is a covert operator, as maintained by Filip and Rothstein (2006) and Filip (2008), in the latter it is encoded in event-bounding constituents (particles, resultative/locative XPs, and certain DPs as we will see in Chapter 6). In other words, as regards the semantic function of these telicizing constituents, it seems that they add a maximalization requirement on the set of events that is in the denotation of a verbal predicate. This claim can be motivated by the fact that, in Hungarian, telic event descriptions are obligatorily expressed by predicates containing

event bounders and also, the presence of these constituents guarantee the telicity of the denoted event description. This is in contrast with telic marking in Slavic languages, for instance, where although all predicates denoting maximal events are formally perfective, not all perfective forms denote maximal events (Filip and Rothstein 2006: 152).

It is important to note that on this view, where event maximalization is assumed, telicity amounts to quantized reference with respect to the predicate (recall that MAX_E picks out the largest events in the denotation of a given predicate), which is in fact a stronger notion than what is required by the definition of telicity in Beavers (2012a) (see Section 2.2.2 for a brief discussion of this). If the predicate returned by MAX_E is quantized, then for any event e described by the predicate, there is no subevent e' which is also described by the predicate and thus there is no non-final subevent e' that is described by the predicate. Thus a telic interpretation arises. That is, this maximalization operation imposes constraints on the predicate such that it is interpreted with quantized reference. In line with the FPR, this in turn determines quantized reference for the figure and boundedness for the scale. I believe this is clearly exemplified by the Hungarian data of this chapter as in this language this operator seems to be lexicalized in certain event-bounding constituents like particles and resultative XPs, which directly determine a bound on the event and this in turn determines quantized reference for the figure and boundedness for the scale, as stated above.

Therefore, bearing in mind that MAX_E , which takes an eventive predicate, is contributed by certain event bounders (cf. *ki* in (57)) to the meaning of their predicates, I propose the following logical representations of sentences like (56) and (57).

- (56) Az út szélesedett.
the road.NOM widened
'The road widened.' (atelic)
 $\exists s \exists g \exists e [widen'(\mathbf{road}, e, s) \wedge GOAL(g, s, e)]$
'There exists an event such that the road widens to some value g on some scale s .'
- (57) Az út ki-szélesedett.
the road.NOM PRT-widened
'The road widened.' (telic)
 $\exists s \exists g \exists e [(MAX_E(\lambda e [widen'(\mathbf{road}, e, s) \wedge GOAL(g, s, e)]))(e)]$
'There exists an event that is a maximal event of the road being widened to some value g on some scale s .'

Given the discussion in Section 4.3.4, event maximalization on top of the FPR looks as follows in Hungarian, English, and Slavic languages.

Ingredients of telicity	figure-path relations	quantized figure and bounded scale	MAX_E
Hungarian	encoded by all dynamic verbs expressing some kind of change in a property of an event participant	quantization and boundedness restrictions apply on the figure and the scale due to an event bounder	overtly encoded in event bounding particles, resultative XPs and certain quantized scalar DPs
English	encoded by all dynamic verbs expressing some kind of change in a property of an event participant	quantized figure: specified at the level of DPs or IPs bounded scale: specified at the level of Vs or VPs or IPs	covertly applies to VP or IP
Polish, Czech, Russian	encoded by all dynamic verbs expressing some kind of change in a property of an event participant	quantization and boundedness restrictions apply on the figure and the scale due to the perfective verb	covertly applies to V

Table 4.2 Telicity in light of event maximalization and the FPR

In summary, in this chapter I have attempted to provide evidence for three main claims of the dissertation. First, I proposed that telicity in Hungarian be analyzed on Beavers's (2012a) lattice-theoretic approach, which assumes that (i) the telicity of a predicate is determined by double incremental themes and (ii) that the part structures of these incremental themes are related to the part structure of the event via a special type of homomorphic theta-relations, i.e. figure-path relations. Second, I showed that English contrasts with Hungarian regarding the encoding of telicity in two basic ways. On the one hand, while in the case of the former, scalar bounding gives rise to telicity (assuming the

figure has quantized reference), in the latter it is event bounding that ultimately has the same effect. On the other hand, telic marking (by an event-bounding constituent) is obligatory in Hungarian, unlike in English. Third, I also suggested event-bounding particles and resultative XPs contribute event maximalization to their predicates with the crucial effect that the predicate has quantized reference and hence telicity arises. In the next chapter I discuss aspectual composition in the class of creation/consumption predicates where event bounding is taken up by the internal argument in the predicate provided that it has quantized reference, whereas in Chapter 6 I provide further examples of particles, resultative (and locative XPs), and quantized scalar DPs, which serve the event-bounding role in the predicate by virtue of lexicalizing MAX_E .

CHAPTER 5

THE ASPECTUAL STRUCTURE OF CONSUMPTION AND CREATION PREDICATES

This chapter is aimed at providing a motivated explanation for why creation/consumption predicates in Hungarian exhibit somewhat different aspectual properties than, for instance, degree achievements. Specifically, it is an interesting fact that the telicity of Hungarian consumption and creation predicates is not necessarily due to a particle or a resultative phrase, which, as we demonstrated in the previous chapter, are commonly responsible for the obligatory bounding of events. Instead, similarly to their English counterparts, it is often solely the referential properties of the affected argument that determine the aspectual value of such predicates by virtue of the fact that telicity can arise if the affected argument receives quantized reference. In subsequent sections I show that this behavior is due to the lexical semantic properties that characterize such predicates. In particular, I claim that given the unique relationship between the scale and the theme arguments with which these predicates are associated, whereby crucial properties of the scale are determined by the theme, the (a)telicity of the event descriptions follows. An important conclusion of the analysis is that, as far as their aspectual role is concerned, such themes can be treated on a par with telicizing particles and resultative XPs since they also serve as event bounders, though the event-bounding mechanism observable within the class of creation/consumption predicates through the theme is different from what we saw in the case of particles and resultative XPs in Chapter 4. Specifically, quantized themes of creation/consumption predicates serve an event-bounding role in the predicate by virtue of specifically determining the structure of the scale of such predicates and thus the final bound of the event as well. By contrast, the particles and resultative XPs that I examined within the class of degree achievements introduce event maximalization into the predicate, which has the crucial effect that the predicate is telic by virtue of having quantized reference. In other words, the ultimate aspectual effect of quantized consumed themes, on the one hand, and that of particles and resultative XPs is the same (i.e. the predicate is quantized and is thus interpreted telically), but they achieve this in a different manner.

In what follows I first investigate aspectual composition within the class of English creation/consumption predicates and I then ultimately conclude that by assuming the

aspectual analysis that I propose for English data, we can predict the (a)telicity of Hungarian creation/consumption predicates as well. The motivation for beginning with some aspectual facts of English is twofold: On the one hand, as was mentioned above, creation/consumption predicates display very similar properties in the two languages. On the other hand, I aim to address a contentious issue regarding the aspectual structure of these predicates, which was raised in the literature primarily in connection with English data. Specifically, I show that, contrary to common belief in the literature, creation/consumption predicates are characterizable in terms of having variable telicity, similarly to degree achievements. The analysis that I offer after the presentation of the English facts is I believe capable of accommodating this variability, though a precise account of how exactly this can be done will be left for future work.

The chapter is organized as follows: In Section 5.1 I address three main issues: I begin with something that has remained on the periphery of aspectual studies. Specifically, I show that, in English, aspectual composition is not as straightforward within this class as it has been argued, i.e. it is not always the case that, for instance, definite expressions of the type *the soup* yield a telic reading in predicates like *ate the soup*. In other words, aspectual duality (which I also refer to as variable telicity) is observable in this class. In order to address the problem, in Section 5.1.2, I review two explanations of this variability as proposed by Smollett (2005) and Hay et al. (1999) and I then follow up this discussion with some critical observations. Second, in Section 5.1.3, I present data where aspectual duality is not possible. Third, in Section 5.1.4, I show how the internal complexity of the direct object argument affects the structure of consumption events. Next, in Section 5.2, I offer a preliminary account of the aspectual properties discussed in Section 5.1 by providing a novel analysis of the scalar structure of creation/consumption predicates. The most important finding of this section is that quantized themes of creation/consumption predicates bound the creation/consumption scale, which means that the necessary conditions for telicity (and even more than that), obtain and a telic interpretation arises, which in turn explains why they are sufficient in Hungarian as well to mark telicity.¹ I illustrate this in Section 5.3.

¹It will be shown that telic creation/consumption predicates are actually always associated with scales having both a specific source point and a specific goal point. This is more than what is required by the definition of telicity in the FPR (see (8) in Section 4.2), which needs that only the goal point on the scale be specific in addition to how much of the figure reaches this goal point.

5.1 Some aspectual facts of English consumption/creation predicates

5.1.1 Signs of variable telicity

Regarding the aspectual structure of creation/consumption predicates, it is a largely neglected fact in the literature (though see Hay et al. 1999 and Smollett 2005) that, similarly to degree achievements such as *the soup cooled* (cf. Chapter 2), these predicates also display signs of variable telicity.² The predicates in (1)-(4), where the (a) examples are mine, are illustrative of this:

- (1) a. Kathleen ate an apple in a couple of minutes.
b. Kathleen ate an apple for a couple of minutes while talking on the phone.
(Smollett 2005: 50, (16b))
- (2) a. I ate the soup in a week.
b. I ate the soup for a week and then my urinary tract infection was over.
(taken from <http://www.hemorrhoids2.com/gardening-etcetera-a-little-medicine-in-the-soup.html>, accessed on July 15, 2011)
- (3) a. Steven built a Lego tower in three hours.
b. Steven built a Lego tower for three hours. (Smollett 2005: 50, (18))
- (4) a. He built the fortress in two years.
b. Then Hung He went to the other side of the earth near the humans and built a fortress. After He built the fortress for 8 years, he went back to tell the other dragons ...
(taken from http://members.tripod.com/richard_670/FieldofFires.html, accessed on August 30, 2011)

It has become clear by now that homomorphic accounts of various lexical aspectual phenomena can provide a straightforward characterization of the telicity of

²Jackendoff (1996, fn. 2) also notes that verbs of creation and consumption can be interpreted atelically when occurring with quantized direct objects. However, he argues that this reading is due to the durative adverbial as in *John ate an apple for 5 minutes*.

As noted by Smollett (2005: fn. 7), a possible explanation for the fact that the property of variable telicity is not typically attributed to creation/consumption predicates is that authors often choose this predicate class to illustrate aspectual composition (i.e. the tendency that, when occurring with such verbs, quantized themes yield telicity, while non-quantized themes give rise to atelicity).

creation/consumption predicates when they occur with quantized incremental themes (cf. the (a) examples in (1) – (4)). Nonetheless it is also undeniable that these predicates can sometimes be interpreted atelically, which is what the (b) examples in (1) – (4) illustrate.³ Before I address two possible explanations for this duality, an important comment is in order. Specifically, it is worth noting that aspectual variability characterizes creation/consumption predicates in a somewhat different manner than what we saw in the case of degree achievements in Chapter 2. To illustrate this, I provide (5) and (6) below.

- (5) a. Kate cooled two plates of soup in/for 30 minutes.
 b. Kate cooled the soup in/for 30 minutes.
 c. Kate cooled a pot of soup in/for half a day.
- (6) a. Kate ate two plates of soup in/*for 30 minutes.
 b. Kate ate the soup in/for 30 minutes.
 c. Kate ate a pot of soup in/for half a day.

The examples in (5) show that in the case of degree achievements variable telicity characterizes predicates in the following way: Given a quantized figure argument, if context can provide a sufficient amount of information for the listener to identify a bound on the property scale, a telic interpretation arises. Otherwise, atelicity obtains. The situation is slightly different in (6) as in this case it is solely the referential properties of a single argument, i.e. the affected argument, that determines the aspectual value of the predicate.⁴ Apparently, themes of the type *two plates of soup*, whereby quantized reference is due to the numeral quantifier, do not give rise to aspectual duality. By contrast, predicates containing definite and indefinite themes of the type *the soup* and *a pot of soup*, respectively, are amenable to variable telicity. In this chapter I ultimately intend to provide

³Tenny (1994: 35) also remarks that there are native speakers who accept ambiguous (i.e. both atelic and telic) interpretations with predicates such as *ate an apple*. Without providing any details, she claims that the lexical semantics of the verbs heading these predicates in the grammars of individual speakers must reflect whether or not this kind of aspectual variation is possible for a given speaker.

⁴Kennedy (2012: 112) makes note of this difference between degree achievements (DA) and canonical incremental theme predicates including creation/consumption predicates as follows: "The telicity of DA is thus fully linked to the semantic properties of its scalar core, not to the referential properties of the nominal expression that introduces the object that undergoes the change." This is similar to the view represented in this dissertation except that while Kennedy assumes that it is only the boundedness of the property scale that ensures the telicity of a DA, I assume (following Beavers 2012a) that it is the boundedness of the property scale and the referential properties of the affected argument that have a role in the lexical aspectual value of a given predicate.

an account of how exactly the theme determines the lexical aspectual value of predicates like those in (6). Before that, however, I first review two proposals that address the question of aspectual variability in some detail below.

5.1.2 Earlier accounts of variable telicity

As proposed by Smollett (2005), a possible explanation for the aspectual properties of *eat*-type predicates illustrated in (1)-(4) and (6) is that, contrary to popular belief in the literature (cf. Dowty 1991, Krifka 1989, 1992, 1998, Tenny 1987, 1994, Ramchand 1997), their incremental themes do not measure out the denoted event by providing them with a culmination point (i.e. quantized incremental themes do not delimit the event).⁵ Thus the assumption that there is a homomorphism between the part structure of the incremental theme and the part structure of the event argument can be abandoned. Incremental themes such as *the apple* in *ate the apple* are considered to only establish a scale along which the event progresses. Crucially, similarly to Filip and Rothstein (2006) and Filip (2008), Smollett (*ibid.*) argues that, unlike quantized themes, non-quantized themes do not give rise to a scale, which then explains why predicates such as *Kate ate soup* and *Tim built houses*, which both contain a non-quantized theme, are to be treated on a par with inherently atelic predicates such as *Davis ran* and *Carolyn danced*. Therefore, Smollett concludes that the telicity of a predicate containing only a verb and a quantized direct object is always due to contextual/pragmatic factors and it arises through conversational implicature. Telicity is entailed just in case the measuring verb⁶ (e.g. a creation/consumption verb) occurs with a true delimiter (in Smollett's terminology) such as a goal phrase, a resultative, or a particle as in *ran to the gate*, *painted the fence red*, and *ate up the soup*, respectively.⁷

An alternative characterization of variable telicity is provided by Hay et al. (1999), who argue that in the case of predicates like *cool* and *eat* as well as directed motion predicates

⁵By the term '*eat*-type predicate', I refer to consumption predicates in general. However, for purposes of simplicity and clarity, I mainly use the predicate *eat* to illustrate various facets of my argument.

⁶Smollett's (2005) "measuring" verbs are identical to Tenny's (1994) measuring-out verbs. The terminological difference is motivated by the fact that, for Smollett, quantized direct objects do not enforce an endpoint to the event (i.e. they do not measure out the event).

⁷Notice the inadequacy of this claim. English goal phrases, particles, and resultative expressions are not event delimiters, as is demonstrated by the atelic expressions *children ran to the gate*, *the girl ate up apples*, and *the man painted fences red* (cf. Section 4.3.2).

such as *ascend*, *descend*, *rise*, and *fall*, telicity often arises through implicature and thus it can be cancelled. As for the specifics of aspectual composition, recall that on this view telicity obtains if the difference value associated with the predicate is bounded (*ibid.*: 133).⁸ As discussed in Chapter 2, the boundedness of the difference value can stem from the lexical specification of a sentential element, as in *the soup warmed completely* or *Mary ran a mile*, or it is provided by contextual information as in *the soup warmed in 5 minutes* and *Peter ate the sandwich* (*ibid.*: 139). In the former case, telicity is an entailment of the predicate, and thus it cannot be negated, whereas in the case of the latter it arises via implicature, and thus it can be cancelled. Hay et al. (*ibid.*) claim that the aspectual duality of creation/consumption predicates (and others) follows given that their telicity arises through the latter mechanism.

Although these analyses are along the right lines in making the claim that variable telicity can characterize various predicates due to the fact that contextual factors often play a role in aspectual composition, they fail to provide a precise and motivated explanation for why this is the case. As for predicates such as *eat*, *drink*, and *build*, for instance, they do not answer the question of what it is in their lexical semantics that makes them behave slightly or significantly different from degree achievements such as *cool* and *widen*, canonical achievements such as *break* and *die*, and activities such as *run* and *walk*. Arguably, context and the internal direct object have different aspectual effects in the case of canonical achievements, degree achievements, and *eat*-type predicates (cf. the examples in (5) and (6)). As for the latter, it is often explicit or implicit in the literature that they constitute a unique predicate class by virtue of the fact that the scales associated with them, which are commonly referred to as extent scales (cf. Levin 2010, Rappaport Hovav 2008, and Section 2.3.2.3), are "qualitatively different from property and path scales" (Levin 2010: 14). Nonetheless, what is meant by "qualitative difference", which has ramifications for aspectual composition and most likely for argument structure, is rarely explicated in any detail.

⁸As was discussed in detail in Section 2.3.1, Hay et al. (1999) assume that predicates encoding a change in some property of the referent of the affected argument along a scale are associated with a difference value, which corresponds to the measure of the amount of change that the affected argument undergoes.

5.1.3 Instances of aspectual invariability

When describing instances of aspectual duality within the class of creation/consumption predicates, Smollett (2005) and Hay et al. (1999) never discuss the difference between predicates whose incremental theme is a specific indefinite or definite nominal expression and those that are modified by a numeral quantifier or a measure phrase. The aspectual significance of this distinction is illustrated in (7) below.

- (7) a. Kate ate an/the apple in/for ten minutes.
b. Kate ate three apples/two kg of apples in half an hour/??for half an hour.

The aspectual contrast between (7a) and (7b) is that whereas the predicate in the former is compatible with both the time-span adverbial and the durative adverbial, in the latter only the time-span adverbial is acceptable. This shows that *eat*-type predicates do not seem to be amenable to aspectual variability when containing themes modified by a numeral quantifier, as in *ate three apples*, or a measure phrase, as in *ate two kg of apples*.

Lack of variability can also be observed in the case of predicates containing non-quantized direct objects. Consider (8) below.

- (8) a. Mary ate apples for 10 minutes/*in 10 minutes.
b. Mary ate soup for 10 minutes/*in 10 minutes.

As for predicates like *ate apples* and *ate soup*, authors (cf. Tenny 1994, Smollett 2005, Beavers 2012a) tend to agree that they cannot receive a delimited reading. As was mentioned above, it is also often argued (cf. Smollett 2005, Filip 2008) that such predicates (i.e. *eat*-type predicates with non-quantized themes) are not characterizable in terms of a homomorphic mapping between the part structure of the theme and the part structure of the event.⁹ This, however, cannot be correct as even in the case of predicates like (8a) and (8b) the change of state of the theme reflects how the event progresses (i.e. the event progresses

⁹Related to this is Levin's (2010) and Rappaport Hovav's (2008) claim, namely that the extent scales of creation/consumption predicates are not lexicalized by the verbs heading such predicates, but are "provided by the entity in the denotation of the object of the verb" (*ibid.* 17) (cf. Section 2.3.2.3). This view is entertained in Ramchand (2008: 31) and Kennedy (2012: 113-121) as well.

as the theme is consumed in an incremental fashion).¹⁰ The only difference between predicates like *ate two apples* and *ate apples* is that the former specifies the bounds of the denoted event, while the latter does not. This problem does not arise in the analysis provided in this chapter since, following Beavers (2012a), I assume that possibly all dynamic predicates expressing some kind of change in some property of an event participant encode a scale along which change occurs.¹¹

Another instance of the lack of aspectual duality can be observed in the case of the conative, as illustrated in (9) and (10).

(9) Kathleen (slowly) ate at the apple for 10 minutes/*in 10 minutes.

(10) Susan (slowly) drank at a cup of tea for 10 minutes/*in 10 minutes.

An interesting property of creation/consumption predicates is that they are obligatorily atelic when appearing in the conative construction. In other words, the aspectual structure of predicates like *ate at the apple* in (9) and *drank at a cup of tea* in (10) is not affected by the quantization properties of the theme. As is argued in Beavers (2012a: 56-57), this property of the conative provides crucial evidence for the existence of multiple incrementality and figure-path relations in the domain of creation/consumption predicates. Specifically, Beavers claims that given that we must adhere to a model that maintains that creation/consumption predicates encode some kind of homomorphism (recall that it is an inherent property of consumption events that they advance as the referent of the theme disappears in an incremental fashion), the assumption of a single incremental relation between the part structure of the theme and the part structure of the event will not provide the atelicity facts of examples such as (9) and (10) above. Instead, it is more plausible that, similarly to motion predicates and other change-of-state predicates, multiple incremental themes play a role in aspectual composition in the case of creation/consumption predicates as well. In particular, these predicates, or more specifically the verbs heading these

¹⁰Recall that a similar type of homomorphism can be observed in the case of motion predicates such as *Peter walked*, where the event progresses in an incremental fashion along some kind of path. As was discussed in Chapter 2, the difference between consumption and motion predicates lies in the fact that in the latter the homomorphism (which is introduced as an SMR, to be replaced later by the more general notion MR, in Krifka's work) preserves spatial/temporal adjacency, which is not true of the homomorphism that obtains between the part structure of themes and the part structure of consumption events (which is referred to as a SINC by Krifka).

¹¹For a similar view, see Caudal and Nicolas (2004), who also claim that verbs such as *eat* lexicalize a scalar structure (or degree scale in their terminology).

predicates, are characterizable in terms of encoding a consumption scale and, in the case of *eat*, for instance, an "eatee" argument, which are related to each other and the event argument via the FPR. On this view, the aspectual contrast between the conative and the direct object variant lies in the fact that the former has a consumption scale associated with an existentially quantified goal point, while in the presence of a quantized theme, the latter supplies information about a specific goal point on the consumption scale. This is illustrated in (11) below.

(11) a. Caesar drank his beer.

$$\lambda e \exists s [\textit{drink}'(\textbf{caesar}, \textbf{beer}, s, e) \wedge \textit{GOAL}(\textbf{empty}, s, e)]$$

b. Caesar drank at his beer.

$$\lambda e \exists s \exists x [\textit{drink}'(\textbf{caesar}, \textbf{beer}, s, e) \wedge \textit{GOAL}(x, s, e)]$$

(Beavers 2012a: 57, (2.66a) and (2.66b))

The logical representations above indicate that the predicate in (11a) encodes complete disappearance of the referent of the theme (i.e. *his beer*), whereby the theme ends up possessing the property "empty" by virtue of ending up in the result state of emptiness that corresponds to a specific goal point on scale *s*,¹² whereas in (11b) the attainment of a specific state (i.e. a non-existing state) is not entailed despite the fact that the theme is quantized.¹³ The aspectual contrast is thus as follow: In (11a), since the minimal conditions for telicity obtain, i.e. it can be determined how much beer ends up where on scale *s*, a telic reading arises. In (11b), on the other hand, although the predicate specifies how much beer undergoes a change of state, the goal point on scale *s* is not identifiable, which in turn yields atelicity.

5.1.4 The aspectual effect of the internal complexity of the consumed theme

Another property of creation/consumption predicates, which needs to be addressed in an adequate analysis of lexical aspect, has to do with the relationship between the internal complexity of the theme and the durativity of the denoted event. Specifically, unlike

¹²This is in fact an imprecise characterization of the final state of the theme as it is not the state of emptiness in which the referent of the theme ends up but a non-existing state. This, however, does not jeopardize the argument.

¹³The example in (11b) does not entail that Caesar finished drinking his beer, though it is compatible with this context.

change-of-state predicates such as *wipe the pinhead clean*, consumption predicates cannot be conceptualized as denoting a durative event when containing an atomic theme.¹⁴ This contrast is illustrated in (12), which I took from Beavers (2012a).

- (12) a. John will eat a piece of popcorn in 37 minutes.
 (after reading) (Beavers 2012a: 56, (2.62a))
 b. I will wipe the pinhead clean (of that speck of dust) in 12 minutes.
 (after reading)
 c. I will wipe the pinhead clean (of layers of stubborn rust) in 12 minutes.
 (during/after reading) (Beavers 2012a: 55, (2.60a) and (2.60b))

That the time adverbial in (12a) can only be interpreted as referring to the amount of time that passes before the event denoted by the predicate begins indicates that *eat a piece of popcorn* can only denote a simplex change (i.e. a transition from an initial state to a final state with no other states in between).¹⁵ Conversely, the predicate *wipe the pinhead clean* can be conceptualized in two ways. The example in (12b) shows that, in the right context, this predicate allows only an *after* reading. In other words, it can be associated with a simplex scale and a simplex event, which gives rise to a punctual reading. On the other hand, however, (12c) illustrates that the same predicate can also receive a durative interpretation as it is compatible with both a *during* and an *after* reading, a property of durative predicates. This in turn suggests that *wipe the pinhead clean* can also be associated with a property scale that can be characterized in terms of being complex (i.e. it has at least three proper parts).

In this discussion, the crucial question is why consumption predicates containing atomic themes cannot be reconceptualized as ones that yield an interpretation in which the event has some duration (i.e. it is not only a transition from an initial state to a final state). Beavers (2012a: 58) notes that the reason for this could be that, unlike property scales of the type encoded by the predicate *wipe the pinhead clean*, for instance, consumption scales are directly determined by the theme argument. Therefore, an atomic theme can only be associated with a simplex event. Although the intuition seems to be along the right lines,

¹⁴Recall that, on Beavers's (2012a) view, the term "durative" is used to describe events that have duration. This contrasts with Verkuyl (1972, 1993), who defines durativity as a dual of terminativity.

¹⁵Having only an *after* reading with a modifier of the form "in X minutes" is indicative of being a punctual predicate (cf. Kearns 2000: 205).

the specifics of this relation are missing from the analysis. This is what I attempt to provide in the next section, where I also account for the other aspectual facts of the consumption predicates listed above.

5.2 A novel analysis of the aspectual structure of consumption/creation predicates

5.2.1 Consumption/creation scales

Intuitively, *eat*-type predicates denote events in the course of which some amount of the referent of the affected argument, but minimally one bit of food (in the case of *eat*, for instance), disappears completely. We can call this bit a bite, which is arbitrary in size. Additionally, as mentioned in the former section, these predicates also encode that the denoted event progresses as the theme undergoes a change of state in an incremental fashion, but they do not specify in what order the bites of the theme undergo this change. That is, in the case of *eat*, the referent of the theme is consumed bite by bite (where the bites are not ordered in any particular way) as the eating event advances. Therefore, I follow Beavers (2012a) in suggesting that, similarly to other dynamic predicates like degree achievements that express some change along some property scale, consumption predicates also denote a change along some consumption scale. However, unlike in the case of degree achievements, crucial properties of the scales with which consumption predicates are associated follow from the properties of the structure of the theme, which reflects the intuition that the aspectual structure of consumption predicates is very much determined by their theme arguments. Nonetheless, I will ultimately maintain that the theme and the scale are technically distinct entities that can both have an independent impact on the aspectual properties of the predicate. Also, as was already discussed in Section 4.2, an important assumption of the FPR model is that every predicate of change is potentially associated with a scale unique to that predicate. For instance, in the case of the degree achievement *the soup warmed from 20 °C to 90 °C*, the predicate is associated with a temperature scale such that it has atomic subparts that correspond to degrees in temperature spanning the degrees from 20 °C (the initial subpart, i.e. the source point) to 90 °C (the final subpart, i.e. the goal point) with these two degrees also on the scale. I advocate this conception of scales in the case of my (newly defined) consumption scales as well.

However, as was hinted at above, an important contrast between consumption scales and property scales as well as path scales is that the subparts of the former reflect various stages of the event by virtue of being intimately tied to the affected argument (i.e. the figure), whereas property scales and path scales exist independently of the figure arguments of their predicates. More specifically, the part structure of consumption scales reflects how the referent of the figure argument is consumed bite by bite in the course of the consumption event. There is no such correspondence, wherein the figure determines the scale, between, say, the temperature scale and the figure argument *the soup* in *the soup warmed from 20 °C to 90 °C* or the path scale and the figure argument *Peter* in *Peter walked from the bank to the station*. Put differently, the verb heading a given consumption predicate selects a consumption scale in light of the kind of theme that is also selected by the verb, whereas the temperature scale and the path scale of the above examples are only dependent on the head verbs of the predicates and never the theme. For instance, the type (and also the exact structure) of the scale of *ate two apples* is identifiable in light of the figure argument *two apples*, the type of scale of *the soup warmed from 20 °C to 90 °C* is specified lexically by the head verb *warm*, and the type of scale of *Peter walked from the bank to the station* is specified lexically by the head verb *walk*.¹⁶

Bearing all the above in mind, I propose that any *eat*-type predicate denotes a four-place relation between a consumption scale s , a causer y , a theme x , and an event e . While maintaining mereological part-whole structures and the FPR for consumption events, scales, and (consumed) themes, I extend Beavers (2012a) to assume that consumption scales constitute an independent set S_{cons} that forms a path structure. Atomic subparts of a given scale $s \in S_{cons}$ are states (e.g. s_0, s_1, s_2). These states correspond to the consumption of arbitrary units, to be illustrated here with the notion of bites that have been consumed in the event, and they serve to measure the progress of the denoted event with which the scale is associated. For instance, on a given scale $s \in S_{cons}$, the state s_i corresponds to a state of affairs where i bites of the theme have already been consumed. As was mentioned above, consumption scales (just like any other scales) are associated with a mereological part structure, which means that proper subparts of a scale s of a given predicate are also scales, though the predicate may apply to only one of them. This is illustrated by *ate three apples*, which has a scale s that reflects how the three apples are consumed bite by bite until they

¹⁶The PPs in the predicates *the soup warmed from 20 °C to 90 °C* and *Peter walked from the bank to the station* specify the scales coming from the head verbs even further.

are consumed completely. This scale has subparts, which are also scales of S_{cons} (e.g. the subpart that begins in state $s_i < s$ and ends in state $s_j < s$, where $i < j$, corresponds to the i th through the j th bites being consumed) but this predicate applies to only one scale, i.e. the one that begins where not a single bite has been consumed and ends where all bites that constitute the referent of the theme have been consumed.

With the discussion above in mind, I summarize the properties of consumption scales in (13), where S_{cons} is a set of directed, connected paths in a path structure.

- (13) a. Atomic elements in S_{cons} are s_i , where $i \geq 0$.
 b. For any $s, s_i, s_j \in S_{cons}$, where s_i and s_j are atomic, if s_i and s_j are proper parts of s , $s_i < s_j$ (i.e. s_i , the state of having consumed as many bites as i is ordered before s_j , the state of having consumed j bites) iff $i < j$.

In order to make this more transparent, in Figure 5.1 I illustrate how consumed themes determine consumption scales, where b_1, b_2 , etc. indicate the various bites the theme can be decomposed into. The numbering of the bites is arbitrary.

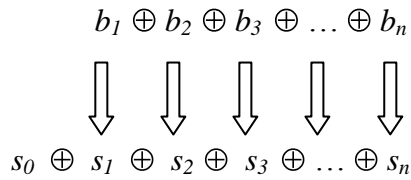


Figure 5.1 The determination of the (sub)part structure of consumption scales

Figure 5.1 demonstrates how the size of the scale is maximally determined by the size of the theme by virtue of the fact that the atomic subparts of a consumption scale s correspond to subparts of the theme. A consumption event commences in a way that the initial subpart corresponds to a state of affairs where not a single bite of the referent of the theme has been consumed. The event then progresses in a way that one bite is consumed from the referent of the theme, which can potentially be followed by a second bite that is consumed, and then this can be followed by a third bite that is consumed, and so on, depending on the type of theme the predicate contains. In other words, the source point of the scale, s_0 , corresponds to a state of affairs where not a single bite has been consumed, s_1 corresponds to a state of affairs where one bite has been consumed, s_2 corresponds to a state of affairs

where two bites have been consumed, and so on until the theme reaches s_n , i.e. the final state of all of the theme being consumed. A consumption predicate is interpreted telically just in case it supplies information as to the exact quantity of the theme, since in this case we can identify the goal point on the scale s_n (i.e. where the total number of bites constituting the theme have been consumed). An interesting result of this is that these predicates actually always supply specific information about the source point of the scale, which is s_0 (i.e. where not a single bite of the theme has been consumed).

Additionally, it is also worth highlighting that, although atomic parts of s are totally ordered, they can be paired up with various parts of the referent of the theme in a random fashion, thereby preserving the "random" nature of eating events. In other words, the states of the consumption scale may be ordered but the specific parts of the theme are not. This discrepancy between the theme and the corresponding scale, whereby parts of the theme are not inherently ordered, but parts of the scale are, also serves as evidence for the claim that *eat*-type predicates have both a theme that undergoes a change of state and a scale along which the denoted event progresses.

In light of this, an important question that we need to address is how the scalar structure of creation predicates like *build* and *write* fits into this analysis. Given the apparent similarity regarding how consumption and creation events unfold (notice that both are characterizable as incremental change which can be measured through the consumed and created theme, respectively), I propose that creation scales are structured similarly to consumption scales with the caveat that in this case the event progresses as the created theme comes about bit by bit. We can call these bits units of creation (e.g. u_1, u_2 , etc.). In other words, creation events can be thought of as progressing along a creation scale as units of creation come into existence one by one. I illustrate this schematically in Figure 5.2.

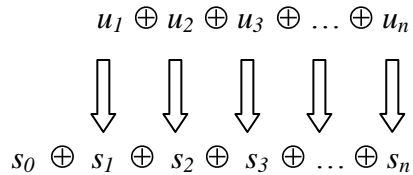


Figure 5.2 The determination of the (sub)part structure of creation scales

As shown above, subparts of a creation scale s are determined by the created theme in a way that the initial subpart s_0 corresponds to a state of affairs where not a single unit of the referent of the theme has come into existence yet. Then, s_1 corresponds to a state of affairs where one unit of the referent of the theme has come into existence, s_2 corresponds to a state of affairs where two units have come to existence, and so on until the theme reaches s_n , the final state of all of the theme being created. Similarly to consumption predicates, the telicity of a creation predicate (i.e. which obtains just in case the goal point on the scale is identifiable) is therefore guaranteed just in case the predicate supplies sufficient information as to the exact quantity of the theme, as in the case of *Rob built two houses* and *Mary wrote two books*. Moreover, even the source point on the scale is identifiable (it is s_0) given the scalar structure of creation predicates. It could be alternatively proposed that the ordering relation of the states on such scales is the exact opposite of what we saw above in the case of consumption predicates. More specifically, since creation events are in a way the opposite of consumption events, it could be proposed that creation scales are such that their subparts are ordered by a decreasing ordering relation, whereby the initial state on the scale corresponds to s_n (assuming that the created theme has quantized reference), the next state to s_{n-1} , and so on.¹⁷ However, this predicts invariable telicity for such predicates as *Peter built the fortress* since s_0 (i.e. the final state) would always be identifiable on this conception of creation scales.¹⁸ This is because s_0 is the same for all entities, unlike the state s_n , since n and thus s_n will vary according to the referential properties of the created theme. If the result state is always identifiable as a single, unique constant, then no variable telicity should be possible. As, however, this is falsified by examples such as (4b), I refute the idea and adhere to my original proposal, namely that creation/consumption scales are not simply the same set of states with the directionality reversed.

¹⁷This, of course, is due to the fact that, in the case of creation events, the referent of the theme incrementally comes into existence, whereas in the course of consumption events, the referent of the theme incrementally disappears as the event advances, which are opposites of one another.

¹⁸An important advantage of the scalar semantic analysis proposed here is that variable telicity of degree achievements like *the soup cooled* can be treated on a par with the variable telicity of creation/consumption predicates like *built the fortress*. Specifically, in both cases, the (a)telic interpretation of the predicate depends on whether a specific goal point on the scale can be identified.

5.2.2. The analysis at work

Now that an idea of how consumed and created themes determine consumption and creation scales has been given, we are one step away from ultimately providing the aspectual facts of Section 5.1. Specifically, we need to be able to pick out (i.e. specifically identify) the subpart of the scale which corresponds to the total number of bites that are consumed in the course of consumption events or the total number of units of creation that come into existence in the course of creation events. We can achieve this with function f' , which I define below:

- (14) $f'(x) = s_{\#(x)}$, where $\#(x)$ equals the total number of bites or units of creation that the consumed or created theme x is composed of.

In the case of a consumption predicate containing a quantized theme the output of this function gives us the state on the consumption scale that corresponds to the total number of bites (of the referent of the theme) that have been consumed, which is exactly what we need so that we can determine the goal point on the scale. In the case of a creation predicate containing a quantized theme this function yields the state on the creation scale that corresponds to the total number of units (of the theme) that have been created. Once we know how much of the theme ends up where on the scale, a telic interpretation arises.

An important upshot of assuming that creation/consumption predicates are characterizable in terms of lexicalizing an FPR between the figure and scale arguments, in which the spatially-defined properties of the figure determine the size of the scale, we can provide a motivated explanation for the above-mentioned intuition that the scale of consumption encoded by these predicates seems to be less dissociable (cf. Hay et al. 1999: 141) from the incremental theme argument than in the case of change-of-state predicates such as *the vase broke* or *the soup cooled*. This contrast between achievements, (open-scale) degree achievements, and consumption/creation predicates is illustrated in the examples (15) – (18) below.

- (15) Mary broke her vase. (telic)
 $\exists s \exists e [break'(\mathbf{mary}, \mathbf{vase}, s, e) \wedge GOAL(\mathbf{broken}, s, e)]$
- (16) a. The soup cooled. (atelic)
 $\exists s \exists g \exists e [cool'(\mathbf{soup}, s, e) \wedge GOAL(g, s, e)]$

- b. The soup cooled. (telic)¹⁹
 $\exists s \exists e [\text{cool}'(\text{soup}, s, e) \wedge \text{GOAL}(\text{cool}, s, e)]$
- (17) a. Mary ate two apples. (telic)
 $\exists s \exists x \exists e [\text{eat}'(\text{mary}, x, s, e) \wedge \text{SOURCE}(s_0, s, e) \wedge \text{GOAL}(f'(x), s, e) \wedge 2\text{apples}'(x)]$
- b. Mary ate at the apple. (atelic)
 $\exists s \exists g \exists e [\text{eat}'(\text{mary}, \text{apple}, s, e) \wedge \text{SOURCE}(s_0, s, e) \wedge \text{GOAL}(g, s, e)]$
- (18) a. Peter built two houses. (telic)
 $\exists s \exists x \exists e [\text{build}'(\text{peter}, x, s, e) \wedge \text{SOURCE}(s_0, s, e) \wedge \text{GOAL}(f'(x), s, e) \wedge 2\text{houses}'(x)]$
- b. Peter built on the house. (atelic)
 $\exists s \exists g \exists e [\text{build}'(\text{peter}, \text{house}, s, e) \wedge \text{SOURCE}(s_0, s, e) \wedge \text{GOAL}(g, s, e)]$

The examples above illustrate that achievements like *broke her vase* are invariably telic given the fact that they lexicalize a specific goal point on their property scale, which corresponds to the result state "broken" in the case of *break* in (15). Conversely, (open-scale) degree achievements such as *cool* are less specific as regards the identification of the goal point on their scale. Therefore, it is no surprise that, on their own (e.g. without extra, contextual clues), they are more likely to be interpreted atelically.²⁰ The example in (16a) illustrates this case. If, however, context or world knowledge provides the necessary information for the goal point on the scale to be interpreted with specific reference, a telic interpretation arises, which is what (16b) demonstrates. As for *eat* in (17a), the goal point on the scale can be calculated given the exact quantity of the theme and hence the predicate is telic. By contrast, in (17b) the predicate is interpreted atelically in spite of the quantized nature of the theme, since the conative form of the verb places no constraint on the interpretation of the goal point such that it be specific. Similarly to (17a), the creation predicate in (18a) also supplies information as to the exact quantity of the theme, which is sufficient for the identification of the goal point on the scale. This in turn gives rise to telicity. The atelicity of the conative variant in (18b) again follows the same way as that of (17b).

As was mentioned above, an interesting contrast falls out of this: predicates like (16b) fulfill only the necessary conditions for telicity by virtue of specifying only the goal point

¹⁹The telic reading of *the soup cooled* entails that the referent of the affected argument (i.e. the soup) cooled to some specific degree, here labeled as "cool".

²⁰For an instance of the claim that predicates such as *the soup cooled* are, by default, interpreted atelically, see Beavers (2011).

on the scale, whereas predicates like (17a) and (18a) specify even more since they supply information as to the source point and the goal point of their scale and also the number of parts of the scale. That the subpart structure of the scale is determined by the subpart structure of the theme is in line with the intuition that the scale is essentially determined by the theme (see Rappaport Hovav 2008, 2012 and Section 2.3.2.3).

Moreover, by assuming this analysis we can provide a motivated explanation for the fact that the aspectual properties of the conative form of *eat* are very similar to those of degree achievements such as *cool* (Beavers 2012b: 16). Specifically, on this view, the atelicity of both types of predicates (i.e. *ate at the apple* and *the soup cooled* (atelic)) is due to the fact that the value of the goal point on their encoded scales is not specifically determined. The only respect in which *eat at* and *cool* differ is that, in the case of the former, the fixing of the goal involves the licensing of the transitive variant of the predicate, whereby, for instance, *ate the apple* is licensed instead of *ate at the apple*, whereas in the case of *cool*, the goal can be fixed on the condition that sufficient contextual information is given or relevant world knowledge is available.

On the other hand, the fact that the size of the theme specifically determines the size of the scale also explains why consumption predicates cannot receive a durative interpretation when containing atomic themes (see example (12a)). Specifically, given an atomic theme, the consumption scale will be associated with exactly two atomic subparts, an initial subpart and a final subpart, which can only yield a punctual event. Crucially, no such correspondence is assumed for degree achievements like *warm* and *cool* and hence atomic themes will not yield punctual predicates in these cases.

Finally, before moving on to cases of variable and invariable (a)telicity within the domain of creation/consumption predicates, let us discuss another property of the conative, which I first illustrate by offering (19) for consideration.

- (19) a. Peter ate the apple halfway.
 b. ??Peter ate at the apple halfway.

The issue that is addressed above is that, while the adverbial *halfway* can modify the direct object variant of *eat* (as in (19a)), it is unacceptable with the conative, which is illustrated in (19b). As has been argued in the literature (see, for instance, Beavers 2006), in the first case, the semantic effect of the adverbial is that it "halves" the event denoted by the predicate that it modifies (i.e. it "indicates that the event was only half completed" (*ibid.*

84)).²¹ In order for this ("halving") to be possible, the quantity of the event associated with the predicate needs to be determined, since we can identify half of an entity only relative to the quantity of the whole entity. In (19a), this can be easily achieved since, given the FPR between the part structure of the (specific amount of) theme, the part structure of the consumption scale, which has a specific source point and a specific goal point, and the part structure of the event, the quantity of the event can be determined. In (19b), on the other hand, given that the predicate is associated with a consumption scale on which the goal point cannot be specifically determined, we cannot identify the exact "size" of the event. Therefore, the resulting effect is that the conative cannot be modified by the adverbial *halfway*.

I conclude this section with a brief commentary on predicates such as *ate the/an apple* (see (1) – (4) as well as (6b) and (6c)), which show signs of variable telicity and predicates such as *ate two apples* and *ate apples* (see (7b) and (8)), which are not characterizable as having aspectual duality. I begin with the latter, i.e. invariable telicity and invariable atelicity, since these two can be nicely captured in the proposed analysis of creation/consumption predicates. Invariable telicity of predicates like *ate two apples* and *built three houses* follows since, due to the unique scalar structure of these predicates, the specificity of the quantity of the theme results in the fact that we automatically get the final bound on the scale (and even its initial bound). Likewise, invariable telicity can be observed in the case of a certain subclass of creation/consumption predicates (see Section 2.1.2), where it is actually the verb that seems to be responsible for the invariability. Consider (20).

- (20) a. Peter devoured two chickens in an hour/*for an hour.
 b. Peter devoured a chicken in an hour/*for an hour.
 c. Peter devoured the chicken in an hour/*for an hour.

The invariable telicity of the predicate *devoured two chickens* is not unexpected given the invariable telicity of predicates like *ate two apples*. What is somewhat unique about (20), however, is that the expressions *devoured a chicken* and *devoured the chicken* do not show signs of variable telicity either, unlike *ate an apple* and *ate the apple*. This must have to do with a constraint that the verb (and not the theme) imposes on the scalar structure of the

²¹For an informal discussion on the semantics of the adverbial *halfway*, see also Tenny (1987: 169-172).

predicate, which is further evidence for the claim that the scalar structure of consumption predicates is specified jointly by the verb and the theme.

As for predicates like *ate apples* and *built houses*, the analysis is as follows: For any theme x and $x' < x$ where both x and x' can be described by *apples* and x is associated with a scale s and x' is associated with a scale s' , where $s' < s$, by the FPR both some e corresponding to x and s and some $e' < e$ corresponding to x' and s' are described by the predicate. Therefore, these predicates are invariably atelic.

What remains a mystery is why exactly predicates like *ate an apple* and *ate the apple* allow variable telicity. It is apparent that the three types of predicates that are of concern here (i.e. predicates having variable telicity, predicates having invariable telicity, and predicates having invariable atelicity) differ in the amount of quantificational material with which the incremental argument contained in them occurs. What this means more specifically is that invariably telic creation/consumption predicates are typically those that contain quantified nominal expressions, invariably atelic predicates contain no quantificational material and predicates that are amenable to aspectual variability are in between the former two predicate types. Therefore, what falls out of this is the following generalization: the more quantificational material a predicate contains, the more likely it is that invariable telicity obtains, whereas the lack of quantificational material gives rise to invariable atelicity. A crucial question that remains, however, is to determine what is it in the semantics of, for instance, *the/an apple* that yields aspectual duality in *ate the/an apple*, which does not characterize *three apples* in *ate three apples*, which is a quite straightforwardly telic predicate, or *apples* in *ate apples*, which is clearly atelic. Since I do not have a proper solution at this point, I set this question aside and proceed with the discussion of some Hungarian data.²²

5.3 The larger context: Hungarian consumption/creation predicates

Similarly to their English counterparts, Hungarian consumption/creation predicates can also receive a telic reading in the presence of a quantized theme. This is what the examples below illustrate:

²²For a possible account of the variable telicity of consumption predicates containing individual-denoting DPs and no overt measure expression like *ate Mr Unagi*, see Kennedy (2012: 118-120).

- (21) a. Kati 5 perc alatt evett egy szendvics-et
 Kati.NOM 5 minute under ate a sandwich-ACC
 'Kati ate a sandwich in 5 minutes.'
- b. János egy év alatt épített egy ház-at.
 János.NOM a year under built a house-ACC
 'János built a house in a year.'
- c. Mari egy óra alatt sütött egy kenyér-et.
 Mari.NOM an hour under baked a bread-ACC
 'Mari baked a loaf of bread in an hour.'
- d. Anna egy nap alatt festett egy festmény-t.
 Anna.NOM a day under painted a painting-ACC
 'Anna painted a painting in a day.'

The data in (21) are notable since they can receive a telic interpretation without a particle or a resultative XP, which were typical telicizing markers in the case of the degree achievements of Chapter 4. This somewhat unique property can, however, be easily accounted for in light of the analysis I proposed in the previous section for English predicates of the type *ate the apple* and *built a house*. Specifically, it was shown that the telicity of consumption/creation predicates is guaranteed by quantized themes which, in conjunction with the verb, have semantic content that is sufficient to bound both the scale and the denoted event given the unique relationship between the part structure of the theme and the part structure of the scale. In other words, such themes by themselves are sufficient in the predicate for telicity to obtain in Hungarian as well by virtue of satisfying the PTM. That is, quantized consumed and created themes can be treated as event-bounding constituents, just like the particles and resultative XPs that we saw in Chapter 4. An important respect in which quantized consumed and created themes, on the one hand, and particles and resultative XPs, on the other hand, are different is that the latter introduce event maximalization into the predicate thereby yielding quantized reference and telicity for the predicate, whereas the former give rise to telicity through quantized reference again by virtue of the simple fact that they, along with the verb, specifically determine the complete scalar structure of their predicates.

If this proposal is along the right lines, a quantized DP is also sufficient for the telicity of predicates expressing "intellectual" ingestion. Consider (22).

- (22) a. János 5 perc alatt olvasott egy vers-et.
 János.NOM 5 minute under read a poem-ACC
 'János read a poem in 5 minutes.'
- b. Kati 10 perc alatt tanult egy vers-et.
 Kati.NOM 10 minute under learned a poem-ACC
 'Kati learned a poem in 10 minutes.'
- c. Anna 10 perc alatt memorizált egy dal-t.
 Anna.NOM 10 minute under memorized a song-ACC
 'Anna memorized a song in 10 minutes.'

As is apparent from (22), the quantized nature of the theme (i.e. the object of intellectual ingestion) is sufficient for a telic interpretation in the case of *olvas* 'read', *tanul* 'learn', and *memorizál* 'memorize', just like in the case of canonical consumption predicates. Importantly, this is actually expected if we attribute the scalar structure proposed in Section 5.2 to these predicates as well.

A potential problem for the above analysis is that there is in fact a subset of the predicates in question where quantized reference of the theme does not give rise to telicity.²³ Consider (23).

- (23) a. Mari 5 perc-ig/*5 perc alatt eszegetett egy almá-t.
 Mari.NOM 5 minute-for/*5 minute under ate.small.bites an apple-ACC
 'Mari ate small bites from an apple for 5 minutes.'
- b. Sára 5 perc-ig/*5 perc alatt csipegetett egy almá-t.
 Sára.NOM 5 minute-for/*5 minute under ate.tiny.bites an apple-ACC
 'Sára ate tiny bites from an apple for 5 minutes.'
- c. Kati 5 perc-ig/*5 perc alatt iszogatott egy kólá-t
 Kati.NOM 5 minute-for/*5 minute under drank.small.sips a coke-ACC
 'Kati drank small sips from a coke for 5 minutes.'
- d. Anna 5 perc-ig/*5 perc alatt szürcsölgetett egy kólá-t.
 Anna.NOM 5 minute-for/*5 minute under drank.tiny.sips a coke-ACC
 'Anna drank tiny sips from a coke for 5 minutes.'

²³I thank É. Kiss Katalin for pointing this out to me.

The same phenomenon is observable among verbal predicates expressing intellectual ingestion, as is demonstrated in (24).

- (24) a. János 10 perc-ig/*10 perc alatt olvasgatott egy könyvet.
 János.NOM 10 minute-for/*10 minute under read.a.little a book-ACC
 'János read a little from a book for 10 minutes.'
- b. Kati 10 perc-ig/*10 perc alatt tanulgatott egy vers-et.
 Kati.NOM 10 minute-for/*10 minute under studied.a.little a poem-ACC
 'Kati studied a poem for 10 minutes.'
- c. Anna 10 perc-ig/*10 perc alatt memorizálgatott egy dal-t.
 Anna.NOM 10 minute-for/10 minute under memorized.a.little a song-ACC
 'Anna memorized a song for 10 minutes.'

A common property that the verbs in (23)-(24) share is that they all contain the diminutive morpheme *-gat/-get*, which is responsible for the predicate's expressing reduced intensity of the denoted action (cf. Kiefer 2006: 162-164). It seems that this morpheme has an aspectual effect, which is actually reminiscent of what we saw in the case of the English conative construction in Section 5.2. Specifically, both the English conative and Hungarian predicates exemplified in (23)-(24) are associated with a constraint such that they cannot be interpreted telically. In other words, they have similar aspectual structures in that they both encode a consumption scale whose goal point is existentially bound, which makes it plausible to assume that forms like *eszeget* and *iszogat* lexicalize what the English conatives *eat at* and *drink at* express in addition to the diminutive meaning component. This idea, namely that *-gat/-get* has a crucial role in invariable atelicity, is further strengthened by the fact that this morpheme is also responsible for the derivation of certain (strictly atelic) iterative predicates. The examples below illustrate this.

- (25) a. Kati 5 perc-ig/*5 perc alatt nyitogatta az ajtó-t.
 Kati.NOM 5 minute-for/*5 minute under iterative opened the door-ACC
 'Kati opened the door repeatedly for 5 minutes.'
- b. Péter 5 perc-ig/*5 perc alatt ütögette a hátam-at.
 Péter.NOM 5 minute-for/*5 minute under iterative hit the my.back-ACC
 'Péter hit my back for 5 minutes.'

- c. Mari 5 perc-ig/*5 perc alatt integetett.
 Mari.NOM 5 minute-for/*5 minute under waved
 'Mari waved for 5 minutes.'

In the case of (23) and (24), it is possible that a telic interpretation becomes available in the presence of a particle, as is shown in (26).

- (26) a. Kati 10 perc alatt/*10 perc-ig meg-eszegetett
 Kati.NOM 10 minute under/*10 minute-for PRT-ate.small.bites
 egy szelet pizzá-t.
 a slice pizza-ACC
 'Kati ate a slice of pizza in small bites in 10 minutes.'
- b. Péter 10 perc alatt/*10 perc-ig meg-iszogatott
 Péter.NOM 10 minute under/*10 minute-for PRT-drank.small.sips
 egy pohár sör-t.
 a glass beer-ACC
 'Péter drank a glass of beer in small sips in 10 minutes.'

The examples above are characterizable in terms of invariable telicity, which is evidenced by the fact that the durative adverbial *10 percig* 'for 10 minutes' is not compatible with these examples. This follows from the analysis of telicizing particles proposed in Chapter 4, since these elements presumably introduce event maximalization into the predicate, thereby giving rise to an obligatory telic reading through the quantized reference of the predicate.

Overall, then, we can draw two important conclusions: First, in the case of creation/consumption predicates, crucial properties of the part structure of the scale and thus the aspectual value of the event descriptions associated with them are determined by the part structure of the theme argument. More specifically, the identification of the quantity of these themes allows the identification of the endpoint on the encoded scales and hence that of the culmination point of the events described by the given predicates. Second, since the quantized figure arguments of creation/consumption predicates are such that they bound their scales (cf. the definition of telicity in the FPR), they actually play an event-bounding role in the predicate, which allows them to telicize Hungarian predicates in accordance with the PTM.

In light of the findings of this chapter, (at least) two questions arise: On the one hand, if the analysis above is correct, the expectation is that creation predicates encoding two-point scales such as *születik* 'be born' and *érkezik* 'arrive' can also receive a telic interpretation given that a quantized figure argument occurs in the predicate. On the other hand, one might also ask whether DPs can play a telicizing role in other predicate classes as well. I offer an answer to these questions, among others, in Chapter 6, where I address aspectual composition within the class of achievements like *születik* 'be born' and *érkezik* 'arrive' and accomplishments (exclusive of creation/consumption predicates).

CHAPTER 6

FIGURE-PATH RELATIONS AND THE PRINCIPLE OF TELIC MARKING IN OTHER DOMAINS

This chapter serves to illustrate the consequences of figure-path relations and those of the Principle of Telic Marking within the domain of Hungarian achievements and accomplishments (exclusive of creation/consumption predicates), thereby providing more strength to the scalar semantic analysis of telicity in Chapters 4 and 5.¹

As is well-known, a defining characteristic of accomplishments, which constitute one class in Vendler's (1957/1967) typology of aspectual verb classes and are represented by examples such as *paint a picture* and *draw a circle*, is that they "have a climax, which has to be reached if the action is to be what it is claimed to be" (Vendler 1957: 145). For instance, a painting event is in the denotation of *Peter painted a picture* just in case Peter finished painting a picture and a drawing event is denoted by *Mary drew a circle* just in case Mary finished drawing a circle. Another defining feature of accomplishments is that they occur in a stretch of time as opposed to achievements like *reach the hilltop* and *lose a password*, which are momentaneous.² From the point of view of the present discussion, the most important property of these two kinds of predicates is that they denote bounded events, i.e. they describe events that are characterizable in terms of having an inherent endpoint (cf. Section 3.2.1.1).

If the two central claims of the previous chapters are correct, namely that telic marking is driven by the PTM in Hungarian and that telicity is to be captured via figure-path relations that obtain between the part structure of incremental themes and the part structure of events as well as event bounding, two expectations arise. On the one hand, Hungarian achievements and accomplishments are expected to obligatorily contain an element that

¹The aspectual structure of accomplishments was already addressed in a somewhat haphazard manner in Chapters 4 and 5. In this chapter, however, I provide a more structured discussion of this type of predicates, focusing on examples expressing change of state and change of location.

²Vendler illustrates the durative and bounded nature of accomplishments metaphorically as follows: "[accomplishments] proceed toward a terminus which is logically necessary to their being what they are. Somehow this climax casts its shadow, giving a new color to all that went before" (Vendler 1957: 146).

serves as an event bounder.³ On the other hand, event bounding, which I take to be a maximalization operation in the case of predicates that do not express creation or consumption (as was argued in Chapters 4 and 5), should have well-definable semantic consequences on both the figure argument and the scalar argument of these predicates, in accordance with the FPR model.

In what follows I discuss a variety of examples and show that the claims mentioned above hold for these new type of data as well. I begin in Section 6.1 by considering aspectual composition within the domain of achievements. Then, in Section 6.2, I briefly address aspectual properties of accomplishments.

6.1 Some more predictions of the analysis: Hungarian achievements

As was mentioned in the preamble of this chapter, achievements are inherently delimited and they do not have a duration. Some members of this predicate class in English are illustrated by *A vase broke*, *A speedboat exploded*, *A neighbor died*, *A student lost a book*, *A girl forgot a password*, *A boy tore a letter*, where all examples contain a verb stem and one or two arguments. If the Principle of Telic Marking, which I proposed for Hungarian, is along the right lines, we expect that the Hungarian equivalents of these predicates contain an event-bounding element. The examples in (1), where each predicate contains a particle, and those in (2), where resultative XPs play the event-bounding role, bear this out.

- (1)
- | | | |
|----|-------------------------|--------------|
| a. | Egy váza | el-tört. |
| | a vase.NOM | PRT-broke |
| | 'A vase broke.' | |
| b. | Egy motorcsónak | fel-robbant. |
| | a speedboat.NOM | PRT-exploded |
| | 'A speedboat exploded.' | |
| c. | Egy szomszéd | meg-halt. |
| | a neighbor.NOM | PRT-died |
| | 'A neighbor died.' | |

³Recall that three types of event-bounding constituents have been discussed so far, namely particles, resultative XPs, and quantized DPs of creation/consumption predicates.

- d. Egy diák el-veszített egy könyv-et.
 a student.NOM PRT-lost a book-ACC
 'A student lost a book.'
- e. Egy lány el-felejtett egy jelszó-t.
 a girl.NOM PRT-forgot a password-ACC
 'A girl forgot a password.'
- f. Egy fiú el-tépett egy level-et.
 a boy.NOM PRT-tore a letter-ACC
 'A boy tore a letter.'
- (2) a. Egy váza darabok-ra tört.⁴
 a vase.NOM pieces-into broke
 'A vase broke into pieces.'
- b. Darabok-ra robbant egy motorcsónak.
 pieces-into exploded a speedboat.NOM
 'A speedboat exploded into pieces.'
- c. Egy fiú darabok-ra tépett egy level-et.
 A boy.NOM pieces-into tore a letter-ACC
 'A boy tore a letter into pieces.'

Evidence for the event-bounding role of the particles and resultative XPs in (1) and (2) comes from the fact that once they occur in the predicate, and categorically induce a telic interpretation, the figure argument must be such that it has quantized reference. By way of illustration, I provide (3) – (6).

- (3) a. *Kati el-tört vázák-at.
 Kati.NOM PRT-broke vases-ACC
 'Kati broke vases.'
- b. Kati el-tört három vázá-t.
 Kati.NOM PRT-broke three vase-ACC
 'Kati broke three vases.'

⁴The only difference between the particle *el* in (1a) and the resultative expression *darabokra* 'into pieces' in (2a), for instance, is that the latter carries more descriptive content regarding the result state that the referent of the affected argument attains.

- (4) a. *János fel-robbantott házak-at.
 János.NOM PRT-exploded houses-ACC
 'János exploded houses.'
- b. János fel-robbantott három ház-at.
 János.NOM PRT-exploded three house-ACC
 'János exploded three houses.'
- (5) a. *Vázák darabok-ra törtek.
 vases.NOM pieces-into broke
 'Vases broke into pieces.'
- b. Három váza darabok-ra tört.
 three vase.NOM pieces-into broke
 'Three vases broke into pieces.'
- (6) a. *Péter darabok-ra tépett levelek-et.
 Péter.NOM pieces-into tore letters-ACC
 'Péter tore letters into pieces.'
- b. Péter darabok-ra tépett három level-et.
 Péter.NOM pieces-into tore three letter-ACC
 'Péter tore three letters into pieces.'

As anticipated on an FPR view, telicity obtains just in case both the figure and scalar arguments of the predicate have specific, well-definable properties. This condition holds, and is crucially imposed by a particle or a resultative XP, only in the (b) examples above, where in each case a two-point scale (i.e. a scale with a specific source point and a specific source point) is encoded by the verb and the figure argument has quantized reference due to the numeral quantifier *három* 'three'.

Another interesting property of predicates like those in (1), which can be nicely explained in an FPR-based analysis that can handle event-bounding, is that these predicates are ungrammatical without a telic marker (i.e. an event-bounding element in Hungarian in the terminology of this dissertation) (cf. Dékány 2008, É.Kiss 2008a). For illustration, see the examples below:

- (7) a. *Egy váza tört.
 a vase.NOM broke.

- b. *Egy ház robbant.
a house.NOM exploded
- c. *Egy szomszéd halt.
a neighbor.NOM died
- d. *Egy diák vesztett egy könyv-et.
a student.NOM lost a book-ACC
- e. *Egy lány felejtett egy jelszó-t.
a girl.NOM forgot a password-ACC
- f. *Egy fiú tépett egy level-et.
a boy.NOM tore a letter-ACC

The intuition behind the ungrammaticality of the predicates in (7) has the following pillars: On the one hand, in the absence of an event-bounding element, predicates are expected to receive an atelic reading by virtue of the fact that they are not associated with a culmination point that has been reached at the termination of the event (cp. *Anna felmelegített egy tányért* 'Anna PRT-warmed a plate (telic)' and *Anna melegített egy tányért* 'Anna warmed a plate (atelic)'). On the other hand, however, this is not an option for achievements since these predicates characterize situations that cannot be conceptualized without their endpoints. A more precise characterization of (7) is as follows: If (i) telicity in Hungarian arises due to an event-bounding operation on predicates (as was argued in Chapter 4), (ii) predicates describing bounded events must be overtly marked as such (as formulated in the PTM), which is a condition fulfilled by particles, resultative XPs, or certain quantized DPs but not by basic verbs alone, (iii) scales of achievement verbs are inherently bounded by virtue of containing only an initial and a final subscale, and (iv) the figure argument is quantized, then an event-bounding element must occur in predicates like those in (7) and thus (7a) – (7f) are, quite expectedly, ungrammatical.⁵

The two-pointed nature of the property scale encoded by achievements leads to another (obvious) point. As has been noted in several places in the literature (É.Kiss 2002, 2008b, Kiefer 1992, 2006, Gyuris and Kiefer 2008), predicates like those in (1) are not compatible with imperfective viewpoint aspect. This is illustrated in (8).

⁵For an example illustrating the same problem in the class of semelfactives, see Halm (2012: 116).

- (8) a. *Kati 'tört 'el egy 'vázá-t, amikor Péter megérkezett.
 Kati.NOM broke PRT a vase-ACC, when Péter arrived
- b. *Kati 'felejtett 'el egy 'jelszó-t, amikor Péter megérkezett.
 Kati.NOM forgot PRT a password-ACC, when Péter arrived
- c. *Kati 'veszített 'el egy 'könyv-et, amikor Péter megérkezett.
 Kati.NOM lost PRT a book-ACC, when Péter arrived

The events described by the predicates in (8a) – (8c) cannot be viewed imperfectively, that is without their initial and final subparts, as these are the only (proper) parts that constitute them. This explains why their English counterparts are also unnatural, as shown in (9).⁶

- (9) a. ??Kate was breaking the vase when Peter knocked on the door.
 b. ??The little girl was reaching the hilltop when it started raining.
 c. ??The athlete was winning the race when I entered the arena.

Next, I mention two somewhat unique properties of Hungarian achievements. The first one is illustrated in (10).

- (10) a. Kati tört egy darab kenyér-et.
 Kati.NOM broke a piece bread-ACC
 'Kati broke a piece of bread off of a loaf of bread.'
- b. Anna tépett egy darab papír-t.
 Anna.NOM tore a piece paper-ACC.
 'Anna tore a piece of paper off of a larger piece of paper.'
- c. Két kisbaba született a falu-ban.
 two small.child.NOM was.born the village-in
 'Two babies were born in the village.'
- d. Két diák érkezett Debrecen-be.
 two student.NOM arrived Debrecen-to
 'Two students arrived in Debrecen.'

⁶If we insert the word "just" between the auxiliary and the progressive verb in each sentence in (9), the examples become more acceptable since, in this case, the meaning component that the action expressed in the sentence was about to happen is more readily available.

The peculiarity of the examples above lies in the fact that they are grammatical and interpreted telically despite the absence of a particle or a resultative XP, which is quite unexpected in light of the discussion above. However, this dilemma fades away once we notice that these predicates actually illustrate the creation pattern, an idea also proposed in Szabolcsi (1986: 332-334) and É. Kiss (2005: 70). Specifically, Szabolcsi (*ibid.*) argues that verbs like *érkezik* 'arrive', *születik* 'be born', *kap* 'get', *szerez* 'obtain', *főz* 'cook', *rajzol* 'draw', and *varr* 'sew', can all be characterized as creation verbs since they all share the meaning component BECOME AVAILABLE/EXISTENT, which has important consequences for their linguistic behavior.⁷ Therefore, from a scalar semantic perspective, the aspectual structure of predicates like *tör egy darab kenyeret* 'break a piece of bread off of a loaf of bread', *tép egy darab papírt* 'tear a piece of paper off of a larger piece of paper', *születik* 'be born', and *érkezik* 'arrive' in (10) can be characterized as follows: The subparts of their scale, of which there are exactly two, correspond to the states "not available/existent", to be treated on a par with the notion "not created", and "available/existent", to be treated on a par with the notion "created", which are the states that the referent of the figure argument is associated with at the outset and at the termination of the event respectively.⁸ For instance, in the case of (10a), the initial subpart of the scale corresponds to a state where the piece of bread is still part of the loaf of bread, and hence is not available (presumably for consumption), whereas the final subpart of the scale corresponds to a state where it is a separate entity and hence is available (for consumption). In another example, like (10d), the initial (atomic) subpart of the scale corresponds to a state where the two students are not "available" (i.e. they are not in Debrecen) and the final

⁷Szabolcsi (1986) observes that a sizeable group of Hungarian verbs including *érkezik* 'arrive', *születik* 'be born', *kap* 'get', *talál* 'find', *szerez* 'obtain', *főz* 'cook', *rajzol* 'draw', and *varr* 'sew', which all have an EXIST, a BECOME, and a PARTICULAR FASHION meaning component in common, are characterizable in terms of triggering the definiteness effect (DE), i.e. they "require that one of their complements (the DE-complement) be an indefinite" (*ibid.*: 321). This is illustrated by examples like **Érkezett a levél* 'The letter arrived' vs. *Érkezett egy levél* 'A letter arrived' and **A kislány született* 'The baby was born' vs. *Született egy kislány* 'A baby was born', where the verbs *érkezett* 'arrived' and *született* 'was born' can only appear with an indefinite argument or else the sentences these verbs appear in are ungrammatical. Various explanations of syntactic or semantic nature (or both) have been proposed for this phenomenon in the literature, including the possibility of interesting correlations between the aspectual class of these predicates and the DE (see Maleczki 1995). Since I do not have a precise understanding of such correlations at this point, I avoid pursuing this matter any further. For more on the DE, see Bende-Farkas (1995, 1999, 2002), É. Kiss (1995), and Kálmán (1995), among many others.

⁸That verbs like *eszik* 'eat' and *iszik* 'drink', *ír* 'write', and *épít* 'build' are also characterizable in terms of exhibiting the DE (Kálmán 1995, É. Kiss 1995) provides further support for the idea that *eszik* 'eat', *iszik* 'drink', *ír* 'write', *épít* 'build', *születik* 'be born', and *érkezik* 'arrive' be given the same analysis.

(atomic) subpart of the scale corresponds to a state where the two students are "available" (i.e. they are in Debrecen).⁹ This scalar structure, whereby the scale can be considered to be a creation scale, does not characterize predicates like *el-tört egy vázát* 'broke a vase' and *el-tépett egy levelet* 'tore a letter', as they express a change between the states "not broken" and "broken" and "not torn" and "torn", respectively (and not between the states "not available/existent" and "available/existent"). Assuming that examples like those in (10) express creation and that quantized created themes can give rise to telicity (and no particle or resultative XP is necessary for this effect, as was argued at length in Chapter 5), the grammaticality and the telicity of these predicates fall out of the analysis.

Finally, before turning to the aspectual structure of Hungarian accomplishments, I briefly address another unique property of predicates that contain verbs like *tör* 'causative break' and (yet) receive an atelic reading. Consider (11) below.

- (11) a. Anna dió-t tört.
 Anna.NOM walnut-ACC broke
 'Anna spent time cracking walnuts.'
- b. János dohány-t tört.
 János.NOM tobacco-ACC broke
 'János spent time pulling off the leaves of a tobacco plant.'

The examples above contain the base verb *tör* 'causative break' along with an affected argument that is instantiated via a bare nominal form (i.e. *diót* 'accusative-marked walnut' and *dohányt* 'accusative-marked tobacco' respectively) in the immediate preverbal position. Two important properties of these constructions are that they do not tolerate particles (or resultative XPs) and their internal arguments cannot occur with a determiner, as illustrated in (12).

- (12) a. *Anna dió-t el-tört.
 Anna.NOM walnut-ACC PRT-broke
- a'. *Anna a dió-t tört.
 Anna.NOM the walnut-ACC broke

⁹The figure arguments in (10a)-(10d) are associated with an atomic structure (cf. Section 2.3.4).

- b. *János dohány-t el-tört.
 János.NOM tobacco-ACC PRT-broke
- b'. *János a dohány-t tört.
 János.NOM the tobacco-ACC broke

As far as their aspectual properties are concerned, (11a) and (11b) describe events that have some duration but no inherent endpoint (i.e. they belong to activities in Vendler's classification). That *tört* 'causative break' in these examples deviates from what we saw earlier in (1) and (3) can be easily captured if we analyze *diót tört* 'spend time cracking walnuts' in (11a) and *dohányt tört* 'spend time pulling off the leaves of a tobacco plant' in (11b) as constructions that come about as a result of incorporation, which yields that the originally transitive verb turns into an intransitive verb and the nominal phrase denoting the entity that undergoes a change is no longer a separate referring expression.¹⁰ This in turn ensures that the events denoted by such predicates cannot be maximal and thus MAX_E cannot be applied, which derives atelicity. More specifically, given that it cannot be determined how much of the referent of the affected argument undergoes a change of state in the course of the event (since this argument has cumulative reference (cf. Maleczki 2008), these predicates are invariably atelic.

I also note in passing that this pattern, whereby the object is (at least semantically) incorporated into the verb and the outcome of incorporation is an activity-denoting expression, is not uncommon in Hungarian.¹¹ Expressions such as *újságot olvas* 'spend time reading one (or more than one) newspaper', *hagymát pucol* 'spend time peeling one (or more than one) onion', *esszét ír* 'spend time writing one (or more than one) essay' and *inget vasal* 'spend time ironing one (or more than one) shirt' can be described along the same lines as the examples *diót tört* 'spend time cracking walnuts' and *dohányt tört* 'spend time pulling off the leaves of a tobacco plant' in (11). Although such forms constitute a truly intriguing phenomenon in Hungarian, since further exposure of the topic would lead to digression from the main subject of this chapter, I set the matter aside for now.¹² Instead, in the following section, I conclude my scalar analysis with a brief exploration into how

¹⁰The singular forms *diót* 'walnut' and *dohányt* 'tobacco' do not refer to specific entities in the expressions *diót tört* and *dohányt tört*, respectively.

¹¹Hungarian is characterizable in terms of one version of Type I Incorporation in Mithun's classification (1984). Specifically, in this language the incorporated noun and the verb, which are separate words, are juxtaposed and form a tighter linguistic unit.

¹²For more on incorporation in Hungarian, see Farkas and de Swart (2003).

telicity arises within the class of Hungarian accomplishments other than creation/consumption predicates.

6.2 Some more predictions of the analysis: Hungarian accomplishments

Similarly to achievements, accomplishments describe events that have a culmination point. Thus in Hungarian, such predicates are expected to contain an element that is directly responsible for the bounded interpretation by virtue of placing a bound directly on the denoted event (and not just on the scale). This is observable in the case of the examples in (13), where I indicate event bounders in boldface.

- (13) *kisúrolja a kádat* 'wipe the tub (telic)', ***tisztára*** *súrolja a kádat* 'wipe the tub clean', *kifesti a szobát* 'paint the room (telic)', ***pirosra*** *festi a kerítést* 'paint the fence red', ***kikalapálja a kaszát*** 'hammer the scythe (telic)', ***laposra*** *kalapálja a vasat* 'hammer the iron flat', *beszalad* 'run in', and ***a konyhába*** *szalad* 'run to the kitchen'

As for the claim that maximal events are such that they are associated with multiple incremental themes which have specific, well-definable properties, an important piece of evidence is provided below within the domain of accomplishments. The expectation is that once the event is bounded, the figure argument must have quantized reference. This is illustrated in (14) and (15), where the (b) examples are ungrammatical as they do not conform to this constraint.

- (14) a. Kati piros-ra festett három kerítés-t.
 Kati.NOM red-into painted three fence-ACC
 'Kati painted three fences red.'
 b. *Kati piros-ra festett kerítések-et.
 Kati.NOM red-into painted fences-ACC
 'Kati painted fences red.'
- (15) a. Három egér ki-futott.
 three mouse.NOM PRT-ran
 'Three mice ran out.'

- b. *Egerek ki-futottak.
 mice.NOM PRT-ran
 'Mice ran out.'

Examples such as (14) and (15) point to an important difference between Hungarian and English regarding the aspectual effects of resultative XPs like *pirosra* and *into red* and particles like *ki* and *out*. Specifically, in English, such phrases bound scales only, and thus constructions such as *Kate painted fences red* and *mice ran out* are possible predicates, which are interpreted atelically. By contrast, Hungarian resultative XPs and particles are aspectually heavier by virtue of bounding both scales and events, which in turn explains why examples like **Kati pirosra festett kerítéseket* 'Kati painted fences red' and **Egerek ki-futottak* 'Mice PRT-ran' are not well-formed assuming that these are neutral sentences (see Section 4.3.2 and Section 5.1.2 for some discussion of the same point).

The fact that accomplishments denote events that have at least three subparts (i.e. an initial subevent, a final subevent, and (at least) one subevent between the initial and final subevents) has a rather obvious consequence. Specifically, the expressions in (13) can also occur without a particle or a resultative XP (unlike achievements like **A váza tört* 'The vase broke' and **A szomszéd halt* 'The neighbor died') with the difference that in this case they denote activities involving some kind of change. Let us see how this is manifested in the examples in (16) – (17), which all describe a change of state. The (a) examples contain predicates that denote events without an endpoint, while the (b) and (c) examples illustrate predicates describing bounded events, where boundedness is due to a particle or a resultative XP.

- (16) a. Kati 10 perc-ig/*10 perc alatt súrolt egy kád-at.
 Kati.NOM 10 minute-for/*10 minute under wiped a tub-ACC
 'Kati wiped a tub for 10 minutes.'
- b. Kati 10 perc alatt/*10 perc-ig ki-súrolt egy kád-at.
 Kati.NOM 10 minute under/*10 minute-for PRT-wiped a tub
 'Kati wiped a tub in 10 minutes.'
- c. Kati 10 perc alatt/*10 perc-ig tisztá-ra súrolt egy kád-at.
 Kati.NOM 10 minute under alatt/*10 perc-ig clean-into wiped a tub-ACC
 'Kati wiped a tub clean in 10 minutes.'

- (17) a. Péter 10 perc-ig/*10 perc alatt festett egy szobá-t.
Péter.NOM 10 minute-for/*10 minute under painted a room-ACC
'Péter painted a room for 10 minutes.' (unbounded)
- b. Péter 10 perc alatt/*10 perc-ig ki-festett egy szobá-t.
Péter.NOM 10 minute under/*10 minute-for PRT-painted a room-ACC
'Péter painted a room in 10 minutes.' (bounded)
- c. Péter 10 perc alatt/*10 perc-ig piros-ra festett egy szobá-t.
Péter.NOM 10 minute under/*10 minute-for red-into painted a room-ACC
'Péter painted a room red in 10 minutes.'

As expected from the temporal structure of accomplishments and the mechanism that Hungarian uses to mark telicity, which is codified in the form of the PTM, an invariably unbounded interpretation arises in the absence of an appropriate aspectual marker (i.e. an event boulder) and an invariably bounded interpretation in the presence thereof.

A similar picture emerges from the investigation of the predicates in (18) – (19), which all describe a change of location. In these cases, the endpoints on the encoded scales can be identified due to the particles *fel* (cf. (18b)) and *be* (cf. 19 (b)) or the locative XPs *az első emeletre* 'to the first floor' and *a konyhába* 'to the kitchen' since they all introduce a maximalization requirement into the predicate whereby the predicate ends up being quantized and hence boundedness of the scale follows.

- (18) a. Anna 10 perc-ig/*10 perc alatt mászott.
Anna.NOM 10 minute-for/*10 minute under climbed
'Anna climbed for 10 minutes.'
- b. Anna 10 perc alatt/*10 perc-ig fel-mászott.
Anna.NOM 10 minute under/*10 minute-for PRT-climbed
'Anna climbed up in 10 minutes.'
- c. Anna 10 perc alatt/*10 perc-ig az első emelet-re mászott.
Anna.NOM 10 minute under/*10 minute-for the first floor-to climbed
'Anna climbed to the first floor in 10 minutes.'
- (19) a. Mari 10 perc-ig/*10 perc alatt szaladt.
Mari.NOM 10 minute-for/*10 minute under ran
'Mari ran.'

- b. Mari 10 perc alatt/10 perc-ig be-szaladt.
 Mari.NOM 10 minute under/10 minute-for PRT-ran
 'Mari ran in in 10 minutes.'
- c. Mari 10 perc alatt/10 perc-ig a konyhá-ba szaladt.
 Mari.NOM 10 minute under/10 minute-for the kitchen-to ran
 'Mari ran to the kitchen in 10 minutes.'

Another quite common pattern that characterizes motion predicates is illustrated in (20), where in each case both a particle and a locative phrase appear in the predicate.

- (20) a. Anna fel-mászott az első emelet-re.
 Anna.NOM PRT-climbed the first floor-to
 'Anna climbed up to the first floor.'
- b. Mari be-szaladt a konyhá-ba.
 Mari.NOM PRT-ran the kitchen-to
 'Mari ran into the kitchen.'

In (20a) and (20b) the particles *fel* and *be* and the locative XPs *az első emeletre* 'to the first floor' and *a konyhába* 'to the kitchen' appear simultaneously in the respective predicates. As for their aspectual structure, these predicates can be treated on a par with those in (18b), (18c), (19b), and (19c) as they all express that the denoted event reaches a culmination point in time. It seems that the difference between (18b) and (20a), on the one hand, and (19b) and (20b), on the other hand, is that while the former examples only provide information about the existence of a fixed endpoint on the encoded scale, the predicates in (20) even further specify this endpoint by adding more descriptive content to the predicate.¹³ This type of denotational restriction with regard to the endpoint of the scale is actually observable in other predicate classes as well. The degree achievement in (21a) and the change-of-state predicate in (21b) below are illustrative of this:

- (21) a. Kati fel-melegített egy tányér leves-t 80 fok-ra
 Kati.NOM PRT-warmed a plate soup-ACC 80 degree-to
 'Kati warmed up the soup to 80 degrees.'

¹³Surányi (2009: 69) also claims that lexical locatives like *a boltba* 'into the shop' in *el-ment a boltba* 'PRT-went to the shop' denotationally restrict particles like *el* in the predicate.

- b. János be-festette a kerítés-t piros-ra.
 János.NOM PRT-painted the fence-ACC red-into
 'János painted the fence red.'

An important question that arises in light of examples like (20) and (21) is how an analysis assuming event bounding through event maximalization in the case of particles and resultative/locative XPs can handle both a particle and a locative/resultative XP in the same predicate. A plausible answer to this question is that both the particle and the endpoint-denoting expression (i.e. the locative XP or the resultative XP) introduce event maximalization into the predicate with the effect that one of these operators (the one that applies last) will be aspectually redundant since if MAX_E takes a quantized predicate, it will return a quantized predicate. Put differently, the predicates that are the outputs of event maximalization can be characterized in terms of having the same aspectual value (i.e. they are both telic) due to the fact that they are both interpreted with quantized reference.

A final characteristic of motion predicates that I discuss here is that they can be interpreted telically without a particle whenever their scalar argument receives quantized reference. Consider the examples in (22).

- (22) a. Kati egy óra alatt sétált 5 kilométer-t.
 Kati.NOM an hour under walked 5 kilometer-ACC
 'Kati walked 5 kilometers in an hour.'
- b. Dániel egy óra alatt úszott 5 hossz-t.
 Dániel.NOM an hour under swam 5 length-ACC
 'Dániel swam 5 laps in an hour.'
- c. Mari egy óra alatt futott 10 kör-t.
 Mari.NOM an hour under ran 10 circle-ACC
 'Mari ran 10 laps in an hour.'

In (22a) – (22c) the predicates specify the exact quantity of both the figure and the scale, which proves to be sufficient for the bounded interpretation of the denoted event. Notice that the exact quantity of the scale can be identified if the predicate supplies information about the entire extent of the scale including its source and goal points. This is ensured by the objects *5 kilométert* '5 kilometer', *5 hossz* '5 laps in swimming', and *10 kört* '10 laps in, for instance, running' in (22). Another example that can be characterized along the same

lines is the degree achievement predicate *melegedett fél fokot* 'warmed by half a degree' in (23).

- (23) A Föld 150 év alatt/*150 év-ig melegedett fél fok-ot.
 The Earth.NOM 150 year under/150 year-for warmed half degree-ACC
 'The Earth warmed by half a degree in 150 years.'

The above sentence illustrates that, similarly to the motion predicate of (22), degree achievements can also be interpreted telically when the predicate provides information as to the exact quantity of both the figure and the scale without particles or resultative XPs.¹⁴ If our analysis is correct, we expect that the predicate contains an event-bounding constituent such that it has specific semantic effects with respect to the incremental themes of the predicate. The examples in (24) serve to test if this is the case.

- (24) a. Az egerek 3 kör-t futottak.
 the mice.NOM 3 circle-ACC ran
 'The mice ran 3 laps.'
 b. *Egerek 3 kör-t futottak.
 mice.NOM 3 circle-ACC ran
- (25) a. A bolygók melegedtek fél fok-ot.
 the planets.NOM warmed half degree-ACC
 'The planets warmed by half a degree.'
 b. *Bolygók melegedtek fél fok-ot.
 planets.NOM warmed half degree-ACC

As the illustration above shows, the expressions *3 kört* '3 laps' and *fél fokot* 'half a degree' impose a constraint on the predicates in which they are contained, which has the effect that the figure argument must have quantized reference. If this requirement is not fulfilled, the predicate is ungrammatical, as in (24b) and (25b). This behavior is nicely predicted in an

¹⁴As was stressed in Chapter 5, an important difference between creation/consumption predicates and motion as well as degree achievement predicates is that in the case of the former a single argument (i.e. the figure argument) is sufficient for determining a quantized interpretation for the predicate if it has quantized reference. By contrast, as illustrated in this chapter, in the case of motion predicates and degree achievements, the same effect (i.e. quantized reference for the predicate) is achieved without a particle or a resultative XP just in case both a quantized figure argument and a quantized scalar DP appear in the predicate.

analysis that assumes event bounding and it actually allows us to round off the group of event-bounding constituents that introduce event maximalization (i.e. MAX_E) with quantized scalar DPs of the type *3 kört* '3 laps' and *fél fokot* 'half a degree' in predicates like *futott 3 kört* 'ran 3 laps' and *melegedett fél fokot* 'warmed half a degree' respectively.

A final but crucial point that I stress is how certain quantized DPs in Hungarian are eligible for the event-bounding role in the predicate. In the case of creation/consumption predicates, I showed that quantized consumed and created DPs, along with the head verbs, determine the structure of the corresponding scales, which then yields quantized reference for the predicate. A different strategy is observable in the case of the event boundaries of (22) and (23), which I referred to as quantized scalar DPs, as in their case it seems to be plausible to assume that the predicate is maximalized and is thus interpreted with quantized reference. Crucially, then, what falls out of this is the cross-linguistic finding that Hungarian telic predicates always have quantized reference. Some are quantized due to a semantic operation (i.e. event maximalization) attributable to particles, resultative/locative XPs, and quantized scalar DPs, while others, namely telic predicates expressing consumption or creation are quantized thanks to their unique scalar structure. This contrasts with English where quantized reference is generally not required so that predicates can be interpreted telically.

CHAPTER 7

CONCLUSION

In this dissertation my goal was to lay the foundations for providing a scalar semantic analysis of telicity in Hungarian. I have tried to achieve this while adopting Beavers's (2012a) model-theoretic approach, i.e. the FPR, supplemented with the notion of event maximalization from Filip and Rothstein (2006) and Filip (2008).

The specific findings of the dissertation are as follows: I identified a novel telic marking strategy, namely event bounding, as observable in Hungarian, and contrasted it with scalar bounding in English. I also formulated the Principle of Telic Marking, which characterizes the encoding of telicity in Hungarian.

- (1) **THE PRINCIPLE OF TELIC MARKING (PTM):** Telicity must be overtly marked by event bounders.

I identified two types of constituents that serve the event-bounding role in Hungarian verbal predicates: (1) telicizing particles, resultative/locative XPs, and quantized scalar DPs and (2) quantized created and consumed themes of creation/consumption predicates. I argued that the former achieve event bounding by introducing event maximalization into the predicate, while the latter determine the structure of the corresponding scales and events due to the scalar structure that the head verbs of these predicates encode. I also offered a novel characterization of this type of scalar structure, which is unique to creation/consumption predicates. This in turn provided the tools for accounting for crucial aspectual properties of these predicates.

As for the different parts of the dissertation, the main goal of **Chapter 2** was to introduce the FPR model along with some of the most important linguistic studies on telicity, such as Verkuyl (1993), Tenny (1994), Krifka (1989, 1992, 1998), and more recent scalar approaches such as Hay et al. (1999), Kennedy and McNally (2005), and Kennedy and Levin (2008), which all serve as predecessors to the FPR. In addition to preparing the reader for subsequent parts of the dissertation, this chapter also illustrated aspectual composition in English.

In **Chapter 3** I presented some facts of Hungarian. Specifically, I briefly discussed the topic-predicate articulation of the Hungarian sentence, verbal particles, focusing, and negation. Then I presented Smith's (1991/1997) two-component theory of aspect, which laid the groundwork for the assumption of the main facets of Smith's system in Hungarian in subsequent chapters.

The analysis that I elaborated in **Chapter 4** provided an explanation for a variety of aspectual phenomena in Hungarian within the FPR model, which has so far been assumed in the examination of the aspectual structure of English predicates only. More specifically, I accounted for the semantic and syntactic restrictions that Hungarian predicates containing event-bounding elements are associated with. In addition, I offered answers to why lack of aspectual variability characterizes most Hungarian verbal predicates and provided a possible explanation for the obligatory nature of particles in a subset of the class of degree achievements. Finally, I also gave insights into particle variability and invariability in this class.

In **Chapter 5** I accounted for the unique aspectual properties of creation/consumption predicates by providing a precise characterization of the scalar structure that characterizes these predicates. In addition to capturing a variety of English facts in this predicate class, this analysis was shown to be able to predict facts of Hungarian as well.

Finally, in **Chapter 6** I offered some more arguments for the main claims of the dissertation by examining data from the class of achievements and that of accomplishments (exclusive of creation/consumption predicates) and this discussion also rounded off the class of telicizing elements in Hungarian.

The research presented in this dissertation was intended to offer new insights into aspectual composition in general and enhance our understanding of the cross-linguistic variance that is observable in this linguistic domain in particular. It is hoped that this work will serve as impetus for further aspectual investigations both in Hungarian and across languages.

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