Aspect and Event Structure

The Morphosyntax of Polish Verbs from a Cross-Linguistic Perspective

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Abstract

This thesis presents a detailed analysis of Polish verb stems from a cross-linguistic perspective, couched in the framework of Distributed Morphology (Halle and Marantz 1993 *et seq.*). Polish verbs are decomposed into a number of functional projections responsible for aspect (perfective vs. imperfective) and event structure (simple event vs. complex change of state). The first part of the thesis focuses on the morphosyntax of event structure. Polish is classified as a weak satellite-framed language in a tripartite version of Talmy's typology (Acedo-Matellán, 2016). Just like Latin and Classical Greek, Polish has resultative prefixes, but no complex AP or PP resultatives. The properties of weak satellite-framed languages are captured by an *M-Merger Parameter*, which requires a non-branching resultative X/XP to incorporate into the verb at PF (Matushansky, 2006). The second part of the thesis turns to the morphosyntax of aspect, investigating the relationship between verbal affixes and the value of aspect in Polish and other Slavic languages. I discuss and dismiss proposals based on syntactic agreement (Biskup, 2019, 2022) and a semantic mapping from event structure to aspect (Klein, 1995; Ramchand, 2008a; Tatevosov, 2018, 2022). Instead, I develop a novel movement-based analysis, whereby *v*P-internal prefixes raise to AspP to license perfectivity. Special attention is paid to the function of secondary imperfective morphology, such s the suffix *-yw*. I argue that there is no such thing as a 'secondary imperfective operator' at the level of syntax/semantics, and that the secondary imperfective is a *dissociated morpheme* in the sense of Embick (1997), inserted only at PF. The emerging picture is consistent with a grammatical architecture in which morphology interprets the output of narrow syntax, but is not fully isomorphic with it. Morphological operations may filter out well-formed syntactic representations or insert morphemes that are absent from narrow syntax and LF.

Acknowledgements

In the 'real' world, the journey from *pisać doktorat* ('to be writing a dissertation', imperfective) to *napisać doktorat* ('to write a dissertation', perfective) is far longer than a single prefix. And while research in theoretical linguistics can be a solitary activity, there were many people who helped me along the way, making sure that I stayed approximately sane.

The chief among them were my supervisors, Víctor Acedo-Matellán and Matt Husband. Their passion, curiosity and rigour were truly infectious, and will remain with me for the rest of my life. Víctor's thinking on resultative constructions was a constant source of inspiration, and although my analysis diverges from his in many respects, his fine-comb feedback has led to a great many improvements in both content and presentation. When I failed to see the wood for the trees, he would always urge me to stand back and consider the theoretical implications of my work, bringing back a sense of excitement to it.

While Víctor became my co-supervisor after my first year of DPhil, Matt was the person who first interviewed me at Oxford when I applied to the undergraduate course in German and Linguistics back in 2013. I still remember our mind-expanding tutorial discussions on the difference between I-language and E-language and, a couple years later, on the mechanisms governing the retrieval of vocabulary items from memory. Throughout the years, he lent me many a fascinating book from his private collection, and I will always think back fondly to our meandering conversations, not only on linguistics but also encompassing psychology and philosophy of science, in his basement office at St Hugh's College.

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Contents

Chapter 1

Overview of the thesis

This is a thesis about verbs. More specifically, it is about verbs in Polish, their form and their meaning, and how they differ (or not) from verbal constructions in other languages. Cross-linguistically, verbs are used to describe eventualities, ranging from simple states (e.g. *love*, *sleep*) to simple events (e.g. *dance*, *read*) to events causing a change of state (e.g. *destroy*, *open*). In addition, many languages have complex resultative constructions, in which the verb expresses the manner of the event, while some non-verbal constituent expresses the result of the change of state (e.g. *write the name in*, *drink the cup empty*). All these distinctions fall into the category of *event structure*, one of the two main topics of this study. The question is: What change-of-state constructions are available in Polish, and why? For example, Polish has resultative constructions involving so-called 'lexical prefixes', similar to verb-particle constructions in English (e.g. *w-pisać* 'in-write' vs. *to write in*). However, unlike English, Polish lacks complex adjectival resultatives analogous to *drink the cup empty*. The goal of a generative theory is not only to derive the forms that are grammatical in a language, but also to provide an explanation for the ungrammaticality of the forms that are ruled out, and to capture the parametric differences between one group of languages and another. This task is taken very seriously in the following pages.

Apart from event structure, I also examine the morphological expression of aspect in

Polish and other Slavic languages. Informally, the category of aspect determines whether an eventuality is viewed as a completed whole (perfective) or whether it is ongoing or habitual (imperfective). The curious thing about Slavic verb morphology is that the notions of event structure and aspect seem to be at least partially intertwined. The class of lexical prefixes appears to perform a double function, acting as both resultative particles and perfectivisers.

(1) Two functions of lexical prefixes

a. Contribute a result state to the event structure

b. License perfective aspect

Consider the basic paradigm in (2) (where the superscripts $^{\text{I}}$ and $^{\text{P}}$ indicate the aspectual value of a verb). The prefixation of *w-* 'in' to *pisać*$^{\text{I}}$ 'to write' not only adds a result state to the event structure, but it also changes the value of aspect to perfective (2b). At the same time, the perfectivising effect of lexical prefixes can still be 'undone' by the attachment of the secondary imperfective suffix *-yw* (without affecting the event structure) (2c). This apparently 'semi-recursive' aspectual derivation raises many interesting questions about cross-linguistic variation and the relationship between syntax/semantics and morphology. Even though lexical prefixes in Slavic and resultative particles in Germanic make a similar contribution to event structure, only the former have a perfectivising effect. How can we capture the similarities and differences between them? And what is the semantic contribution of the secondary imperfective suffix *-yw*? Does it introduce some kind of imperfectivising aspectual operator? Or is the relationship between form and meaning less direct than that?

(2) a. pis -a -ć$^{\text{I}}$
write -TH -INF
'to write habitually / to be writing' (bare imperfective)

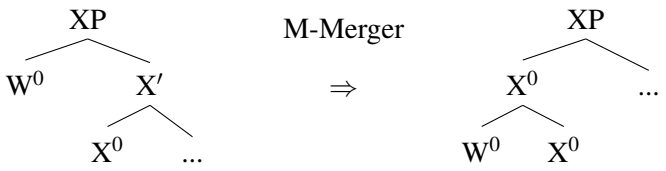
b. **w-** pis -a -ć$^{\text{P}}$
in- write -TH -INF
'to have written in' (lexically-prefixed perfective)

c. **w-** pis **-yw** -a -ć$^{\text{I}}$
in- write -SI -TH -INF

‘to write in habitually / to be writing in’ (secondary imperfective)

This thesis is organised as follows. **Chapter 2** ***Theoretical Background*** spells out the main theoretical assumptions underlying the rest of the book. It starts with the fundamental assumption that word formation takes place in narrow syntax. There is only one computational engine − the primitive combinatorial operation Merge − responsible for building both complex phrases and ‘words’. While the non-lexicalist hypothesis is shared by many modern frameworks, including Nanosyntax (Caha, 2009; Starke, 2010) and the Exo-Skeletal Model (Borer, 2005a,b, 2013), this thesis follows the framework of Distributed Morphology (e.g. Halle and Marantz 1993 *et seq.*, Embick and Noyer 2001, 2007, Embick 2010). After a brief overview of the grammatical architecture, the exposition proceeds in two parts. In the first part, I focus on the syntax and semantics of verbal predicates, using familiar English examples as illustration. This is where I introduce the two notions most central to this thesis: *event structure* and *aspect*. In line with a neo-constructionist approach to verb meaning, I assume that both of these concepts are encoded by dedicated functional heads. When it comes to event structure, I adopt the ‘flavours of *v*’ hypothesis, whereby the light verbal head *v* comes in different semantic flavours, each endowed with different event-related features (Folli and Harley, 2005). The most important contrast is the one between v_{Δ}, which is [+CHANGE OF STATE], and v_{DO}, which is [−CHANGE OF STATE]. In the final part of the chapter, I turn to the interface between syntax and morphology, surveying the standard set of post-syntactic operations available in Distributed Morphology. These operations convert the hierarchical structures delivered by narrow syntax to linear sequences of morphemes at PF. The most important ones are: (Generalised) Head Movement (Arregi and Pietraszko, 2021), M-Merger (Matushansky, 2006), and Vocabulary Insertion. M-Merger plays a key role in subsequent proposals. It is defined as an incorporation operation which takes two heads in a specifier-head configuration and combines them into a single complex head:

(3)



In **Chapter 3** ***The Morphosyntax of Event Structure: Weak Satellite-Framed Languages***, I examine the cross-linguistic variation in the encoding of change-of-state and change-of-location predicates. My point of departure is the tripartite version of Talmy's typology proposed by Acedo-Matellán (2010, 2016). In addition to the well-known dichotomy between verb-framed languages (Romance, Japanese) and satellite-framed languages (Germanic, Finno-Ugric, Mandarin Chinese), Acedo-Matellán recognises a distinct category of *weak satellite-framed languages* (Slavic, Latin, Classical Greek). Polish patterns as a weak satellite-framed language. It has resultative prefixes, but it cannot derive complex AP or PP resultatives like *drink the cup empty* or *dance Mary into the room*. The generalisation is that weak satellite-framed languages allow the result/path component to be expressed by a non-verbal satellite, but they require this satellite to be affixal. By situating Polish against the background of Talmy's typology, I emphasise the parallels between lexical prefixes, on the one hand, and Germanic particles and Latin and Classical Greek prefixes, on the other. Most importantly, this chapter makes a major theoretical contribution to the analysis of weak satellite-framed languages. Unlike most previous proposals on the structure of resultative constructions, it argues that non-verbal, result XPs merge in the specifier of v_{Δ}, and that the properties of weak satellite-framed languages are captured by the *M-Merger parameter*:

(4) *The M-Merger parameter*

Weak SF languages require the specifier of *v*P to undergo M-Merger.

(5) a. $[_{vP}$ **X/XP**$_{\textbf{(requires M-Merger)}}$ $[\ v_{\Delta}\ \sqrt{}\text{MANNER}\ ]\ ]$ (weak SF languages)

b. $[_{vP}$ **XP** $[\ v_{\Delta}\ \sqrt{}\text{MANNER}\ ]\ ]$ (strong SF languages)

M-Merger has the right properties to capture a wide range of facts about resultative particles in weak satellite-framed languages. Firstly, it triggers affixation in the morphology. Secondly, it applies only to non-branching specifiers, filtering out complex AP and PP resultatives at PF. Thirdly, assuming that M-Merger follows Generalised Head Movement (Arregi and Pietraszko, 2021), we derive the hitherto puzzling fact that, morphophonologically, Slavic, Latin and Classical Greek prefixes are the most peripheral elements in the verbal complex. Finally, the analysis is extended to resultative prefixes in Germanic languages, as well as to the phenomenon of particle shift in English. I conclude that while the application of M-Merger is obligatory in weak SF languages, it remains optional in Germanic.

While the focus of the previous chapters is largely restricted to event structure, **Chapter 4** ***Polish Aspect and Verb Morphology*** turns to aspect. Setting the background for Chapters 5 and 6, it presents a comprehensive survey of the syntactic, semantic and morphological properties of Polish verbs. According to the standard aspectual diagnostics, most Polish verbs fall into one of two natural classes: perfective or imperfective. However, the mapping between aspectual affixes and the value of aspect is many-to-many. On the one hand, perfective stems can be derived by means of lexical prefixes, superlexical prefixes or the semelfactive suffix *-nąć*, or they can be underived. On the other, imperfective stems can be either 'bare' or derived via a secondary imperfective suffix like *-yw*. To complicate matters even more, lexical prefixes can be embedded in imperfective stems, while secondary imperfective suffixes can be embedded in perfective stems. To all intents and purposes, the morphological derivation of Polish verbs appears to be semi-recursive, with the value of aspect changing from imperfective to perfective, then from perfective to imperfective, and then back to perfective again. This poses some important theoretical challenges, particularly from the standpoint of a syntactic approach to word formation like Distributed Morphology. I identify and explicate two such problems, which I call the *recursion problem* and the *long-distance problem*. The recursion problem revolves around the following question: Does a semi-recursive morphological derivation reflect the presence of multiple aspectual layers at

the level of syntax/semantics? I show that the answer to this question is negative, and that there is a single structural locus of aspect in Polish. The long-distance problem concerns the interaction between lexical prefixes, which are resultative particles merged in the domain of event structure, and perfective aspect, which is encoded in the temporal zone of the clause.

Chapter 5 ***Severing Aspect from Event Structure*** investigates whether there is a semantic correspondence between aspect and event structure in Polish. Such a correspondence has been previously proposed for Russian by a number of authors (e.g. Klein 1995, Ramchand 2008a, Tatevosov 2018, 2022). The idea is that Slavic aspect is sensitive to event structure: simple activities are interpreted as imperfective (e.g. *tańczyć*$^{\text{I}}$ 'to dance') while complex change-of-state predicates are interpreted as perfective (e.g. *w-tańczyć*$^{\text{P}}$ 'to dance in'):

(6) *The event-structure-to-aspect mapping*

event structure		aspect
simple	→	imperfective
complex (resultative)	→	perfective
complex (resultative) + SI morphology	→	imperfective

These proposals make an important empirical prediction, which has not been put to a systematic test before. Namely, they require all bare imperfective stems to denote simple activities (without a result). Even those bare imperfectives which are close in meaning to result verbs in English, such as *mdleć*$^{\text{I}}$ 'to faint' and *łamać*$^{\text{I}}$ 'to break', are predicted to lack a grammatically-accessible result state. Applying a host of event-structural diagnostics, I show that this prediction is not borne out in Polish. The results of the standard tests, including the scope of *znów* 'again' (von Stechow, 1996; Rapp and von Stechow, 1999), stative presuppositions with *też* 'also' (Spathas and Michelioudakis, 2021) and result-oriented reading of durative adverbials (Piñón, 1999), converge on the same conclusion: unprefixed, bare imperfectives can be resultative (7). This effectively confirms the null hypothesis, according to which the lexical semantics of unprefixed verbs like *mdleć*$^{\text{I}}$ 'to faint' and *łamać*$^{\text{I}}$ 'to

break' are not radically different from their English counterparts. Both incorporate a result state in their denotation. The only difference is that bare verbs in Polish are imperfective.

(7) *Resultative B-imperfectives*

Some B-imperfectives denote subenventally complex predicates (resultative).

In **Chapter 6** ***The Morphosyntax of Aspect: Prefix Movement and Secondary Imperfectives***, I make two contributions to the analysis of Polish aspect. Firstly, I argue for an EPP-based solution to the long-distance problem, whereby lexical prefixes raise to license the projection of perfective Asp (8). Although prefix movement is string-vacuous in Polish, I point out that resultative particles raise to Asp overtly in Hungarian (Csirmaz, 2008).

(8) $[_{\text{AspP}}$ LP [$\text{Asp}^{\text{EPP}}_{\text{PFV}}$ [... $[_{v\text{P}}$ ~~LP~~ [v_{Δ} $\sqrt{\text{ROOT}}$]] ...]]] (lexically-prefixed perfective)

Secondly, I put forward a novel analysis of secondary imperfective morphology, like the suffix *-yw*. I propose that secondary imperfective morphology is semantically dissociated from imperfective aspect. In fact, I argue that there is no such thing as a 'secondary imperfective operator' at the level of syntax/semantic at all. Instead, I analyse the secondary imperfective as a *dissociated morpheme* in the sense of Embick (1997) and Embick and Noyer (2001:558): 'these morphemes reflect certain syntactic properties (or configurations) but do not in any sense contribute these properties to syntax. Dissociated morphemes are not interpreted at LF, since they are inserted only at Spell-Out.' By hypothesis, the secondary imperfective morpheme is inserted whenever a prefix (i.e. a non-branching, min/max specifier) *does not* raise to AspP to license perfectivity, remaining in Spec-*v* instead:

(9) *SI insertion*

[*v*] $\rightarrow$ [*v* SI] / $[_{v\text{P}}$ $\text{Spec}^{min/max}$ [__]]

I identify three configurations in which a *v*P-internal prefix remains in situ, triggering SI insertion: i) Asp is imperfective (10); ii) perfective Asp is licensed by the external Merge

of a superlexical prefix (11); iii) there is no aspectual projection in the structure (12). The last of these configurations can be found in deverbal derivation, such as agent and instrumental *-acz/-arka* nominals and adjectival active *-ąc* participles. Crucially, although these constructions lack outer aspect, they still feature secondary imperfective morphology.

(10) $[_{\text{AspP}}\ (\text{Asp}_{\text{IPFV}})\ [\ \ldots\ [_{v\text{P}}\ \text{LP}\ [\ v_{\Delta}\ \sqrt{\text{ROOT}}\ ]\ ]\ \ldots\ ]\ ]$ (secondary imperfective)

(11) $[_{\text{AspP}}\ \text{SP}\ [\ \text{Asp}^{\cancel{\text{EPP}}}_{\text{PFV}}\ [\ \ldots\ [_{v\text{P}}\ \text{LP}\ [\ v_{\Delta}\ \sqrt{\text{ROOT}}\ ]\ ]\ \ldots\ ]\ ]\ ]$ (SP-perfective)

(12) a. $[_{n\text{P}}$ *-acz/-arka* $[_{v\text{P}}\ \text{LP}\ [\ v_{\Delta}\ ]\ ]\ ]$ (agent/instrument nominals)

b. $[_{a\text{P}}$ *-ąc* $[_{v\text{P}}\ \text{LP}\ [\ v_{\Delta}\ ]\ ]\ ]$ (adjectival active participles)

Finally, **Chapter 7** ***Conclusions and future prospects*** summarises the results of the thesis and explores their theoretical consequences. The emerging picture is consistent with a grammatical architecture in which morphology interprets the output of narrow syntax, but is not fully isomorphic with it. Firstly, morphological operations like M-Merger may filter out certain syntactic structures at PF. Secondly, dissociated morphemes are absent from narrow syntax, reflecting the syntactic configuration only indirectly. Overall, the relationship between syntax and morphology is less transparent than that between syntax and semantics, which is uniform and potentially universal. In line with the standard Minimalist desiderata, cross-linguistic variation can largely be reduced to the properties of the PF interface.

Chapter 2

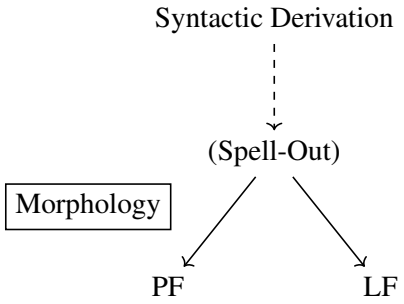
Theoretical Background

2.1 Distributed Morphology

The last few decades have seen a radical rethinking of the interface between syntax and morphology. The existence of a pre-syntactic word formation module (Halle, 1973; Aronoff, 1976) has been challenged on both empirical and conceptual grounds (e.g. Baker 1988; Marantz 1997; Caha 2009; Bobaljik 2012; Borer 2013; Bruening 2014, 2018b). Instead, a significant amount of research within Minimalism has pursued syntax-based approaches to word formation, formalised most prominently in the framework of Distributed Morphology (DM; Halle and Marantz 1993 *et seq.*, Embick 2010, Arregi and Nevins 2012).

DM is a *piece-based, realisational* approach to word formation. One of its main tenets is *Syntactic Hierarchical Structure All the Way Down*: complex words are distributed across syntactic space, with each morpheme occupying its own terminal node. Another defining feature of DM is *Late Insertion*: the atoms of syntactic computation are abstract bundles of formal and semantic features, which are matched to phonological exponents in the process of Vocabulary Insertion (VInsert). This means that morphological operations interpret the output of narrow syntax, in accordance with the classic grammatical architecture in (1).

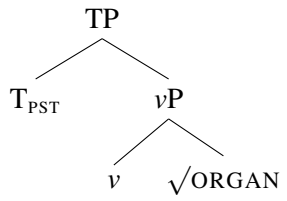
(1)



(Embick and Noyer 2007:292)

To illustrate, the past tense verb *organ-ise-d* corresponds minimally to the syntactic structure in (2), with the morpheme T_{PST} realisable by any of the Vocabulary Items in (2b). The choice of the correct exponent is determined by the syntactic and lexical context of the morpheme undergoing Vocabulary Insertion. In this case, T_{PST} is matched to the default exponent /d/.

(2) a. *Output of narrow syntax* b. *Vocabulary Items*



$T_{PST} \leftrightarrow$ Ø $\{\sqrt{}$HIT, $\sqrt{}$BREAK, ...$\}$

$T_{PST} \leftrightarrow$ /t/ $\{\sqrt{}$LEAVE, $\sqrt{}$BUY, ...$\}$

$T_{PST} \leftrightarrow$ /d/ elsewhere

In DM, the atoms of syntactic computation come in two ontological types: (i) the closed class of *functional heads* and (ii) the open class of *roots*. Roots contribute the idiosyncratic, conceptual component of meaning, which modifies the templatic, structural meaning associated with functional projections. The most important functional heads from the verbal, nominal and adjectival domains are listed in (3a), with examples of English roots in (3b).

(3) a. Functional heads: *v*, Voice, Asp, C, T, *n*, Num, D, *a*, CMP, SPRL, ...

b. Roots: $\sqrt{}$DANCE, $\sqrt{}$FORM, $\sqrt{}$CLEAR, $\sqrt{}$ELECTR, $\sqrt{}$STROY, ...

The exact properties of roots are still debated in the literature: Are roots allowed to project and take complements in the syntax (Alexiadou and Lohndal, 2017)? Are they associated with any constant phonological or conceptual content (Borer, 2013; Harley, 2014)? Why

is the distribution of some roots more flexible than others (Borer, 2005a,b, 2013; Acedo-Matellán, 2016; Beavers and Koontz-Garboden, 2020; Ausensi, 2021)? However, at least one property is largely agreed upon: roots lack a lexical category and need to be categorised by the syntactic configuration in which they are inserted. The standard DM assumption is that roots combine with one of the category-defining heads *v*, *n* or *a* to derive verbs, nouns and adjectives, respectively (Marantz, 1997, 2007, 2013b; Embick, 2010). This approach to category assignment is illustrated directly below. In English, *v* is either phonologically null (indicated by Ø) or realised by one of the derivational suffixes *-ise*, *-ate* and *-ify* (Harley, 2009). In other languages, *v* may be spelled out by one of the verbal 'theme vowels' (see Fábregas 2017 for Spanish, Svenonius 2004a and Biskup 2019 for Slavic).[1]

(4) a. [*v* $\sqrt{}$FORM]
b. [*n* $\sqrt{}$FORM]
c. [*a* $\sqrt{}$FORM]
d. [*v* [*a* $\sqrt{}$FORM]]

(5) a. form-Ø
b. form-Ø
c. form-al
d. form-al-ise

With the basic DM architecture in place, the next two sections turn to the more specific theoretical assumptions underlying this thesis. Section 2.2 focuses on the verbal domain, particularly on the syntax and semantics of event structure and verbal decomposition. Section 2.3 is devoted to the syntax-morphology interface, outlining the inventory of post-syntactic operations, including Head Movement, M-Merger, Linearisation and Vocabulary Insertion.

2.2 Building verbs in the syntax

2.2.1 Event structure

In the spirit of constructionalist approaches to verb meaning, I assume that the core aspects of event and argument structure are built in the syntax (e.g. Borer 2005b, Ramchand 2008a,

[1] See also Borer (2013, 2014), Belder and van Craenenbroeck (2015) and Acedo-Matellán and Real Puigdollers (2014, 2019) for alternative approaches to the categorisation of category-less roots in the syntax.

Harley 2011, Marantz 2013b, Acedo-Matellán 2016; see also Hale and Keyser 1993, 2002, Mateu 2002 for important precursors). In particular, I adopt the *flavours of v* approach, whereby the light verbal head plays a crucial role in defining the event-structural template (Folli and Harley, 2005). On this view, there are several semantic variants of the *v* head, each endowed with a different set of event-related features. The following four options come from Harley (2009). For the purposes of this discussion, I treat [±dynamic], [±change of state] and [±cause] as submorphemic features, but other interpretations are also possible. For example, Marantz (2013a:101) suggests that the semantic content of v could be 'contextually determined at the LF interface, rather than being featurally specified in the syntax'.

(6) a. v_{CAUSE} [+dynamic], [+COS], [+cause]

b. v_{BECOME} [+dynamic], [+COS], [−cause]

c. v_{DO} [+dynamic], [−COS], [−cause]

d. v_{BE} [−dynamic], [−COS], [−cause]

Starting from the top, v_{CAUSE} and v_{BECOME} are responsible for deriving causative and inchoative change-of-state (COS) predicates (e.g. *Daisy dried the towel* and *The towel dried*). Next, v_{DO} is used in transitive and unergative activities (e.g. *John danced polka*) as well as in Incremental Theme predicates (e.g. *The rabbit ate the carrot*). Finally, while v_{CAUSE}, v_{BECOME} and v_{DO} are all dynamic, v_{BE} gives rise to stative verbs (e.g. *Hannah hates crowds*).

This thesis focuses on [+dynamic] events, particularly on the contrast between [+COS] and [−COS] predicates. Since the distinction between v_{CAUSE} and v_{BECOME} is orthogonal to this, I collapse the two change-of-state flavours into one, labelled as v_{Δ} (where the subscript Δ stands for 'scalar change').[2] This leaves us with a binary contrast between v_{Δ} and v_{DO}.

(7) a. v_{Δ} [+dynamic], [+COS]

[2]The adoption of a single COS head v_{Δ} is supported by the results of Alexiadou et al. (2015), who show that the dichotomy between v_{CAUSE} and v_{BECOME} is empirically and theoretically redundant. This is because all COS predicates include a causational component (i.e. they are both [+COS] and [+cause]). They argue that the causative/inchoative alternation should be analysed as a Voice alternation, with active Voice deriving the transitive ('causative') alternant and absent/expletive Voice giving rise to the unaccusative ('inchoative') one.

b. v_{DO} [+dynamic], [−COS]

The contrast between v_{Δ} and v_{DO} is closely related to the dichotomy between *result verbs* and *manner verbs* familiar from the work of Malka Rappaport-Hovav and Beth Levin (e.g. Rappaport Hovav and Levin 1998, 2010; Levin and Rappaport Hovav 2013; Rappaport Hovav 2008, 2014). As the name implies, result verbs 'specify the coming about of a result state' (Rappaport Hovav and Levin 2010:21). They denote scalar change, which proceeds along a set of degrees ordered in a particular dimension. For example, the result verb *dry* entails that the degree of dryness associated with some entity gradually increases over the course of the event. Similarly, the directed-motion verbs *arrive* and *enter* entail that some entity moves along a path which terminates either at or inside some particular location. In turn, manner verbs identify the manner of carrying out an action, where the property of 'manner' involves either non-scalar change or no change at all. For example, the manner verb *flutter* describes many rapid changes in the shape and orientation of the wings, but these changes proceed in an unstructured, disorganised way. Similarly, the meaning of *scribble* is a cognitive-perceptual generalisation over numerous motions of the hand and the writing utensil over a surface, but these motions are potentially random and unordered.

The prototypical examples of manner and result verbs are listed in (8).

(8) a. Result verbs: clean, empty, fill, freeze, dry, open, arrive, enter, die, faint, ...

b. Manner verbs: read, eat, dance, laugh, rub, scribble, sweep, flutter, tiptoe, ...

Following much previous research, I assume that result verbs are built on v_{Δ} (9), while manner verbs incorporate v_{DO} (10) (e.g. Embick 2004, Folli and Harley 2005, Beavers and Koontz-Garboden 2020). The two *v* heads encode abstract, event-structural templates, which generalise across different verbs, and which determine many of their grammatical properties (e.g. argument selection patterns, sub-lexical modification, co-occurrence with result XPs). In contrast, roots are the locus of idiosyncratic, encyclopaedic information.

(9) a. [v_{Δ} $\sqrt{}$OPEN]
b. [v_{Δ} $\sqrt{}$DRY]

(10) a. [v_{DO} $\sqrt{}$DANCE]
b. [v_{DO} $\sqrt{}$EAT]

To make this more explicit, the denotations of *open* and *dance* are formalised in (11), following the standard event-decomopositional analysis of result verbs. Specifically, I assume that the natural language ontology is populated by individuals (type *e*), eventualities (type *v*) and truth values (type *t*) (Bach, 1986; Parsons, 1990), and that the type of eventualities is further subdivided into events and states. By convention, the variable *i* ranges over all eventualities, while *e* and *s* are reserved for events and states, respectively. Individuals are denoted by variables *x*, *y*, *z* , while capital letters *P*, *R*, *Q* stand for higher-order predicates and relations. Building on much previous work on event decomposition, including but not limited to Piñón (1999), Kratzer (2000), Embick (2004), Ramchand (2008a) and Beavers and Koontz-Garboden (2020), I make a fundamental distinction between *simple* (or *mono-eventive*) and *complex* (or *bi-eventive*) event structures. Simple event structures correspond to sets of events, while complex event structures correspond to relations between events *e* and states *s*. In the latter case, we say that *s* is the result state of *e*, or that *e* causes *s*. The relation between the event and its result state is denoted by *cause* in (11).

(11)

syntax	semantics	event structure
[v_{DO} $\sqrt{}$DANCE]	$\lambda e.[\textbf{dance}(e)]$	simple
[v_{Δ} $\sqrt{}$OPEN]	$\lambda e.\exists s[\mathit{cause}(e)(s) \wedge \textbf{open}(s)]$	complex

A step-by-step derivation of the result verb *open* is presented in (12). One thing to note here is that the v_{Δ} head semantically selects for a stative predicate *P*, and that this argument is saturated by the root, which denotes a set of states. More generally, I assume that roots can be used as predicates of states (e.g. $\sqrt{}$OPEN, $\sqrt{}$DRY) or events (e.g. $\sqrt{}$DANCE, $\sqrt{}$EAT).[3]

[3]This is not to say that roots are lexically hard-wired as either predicates of states or events. Many roots have multiple uses, depending on the context. For example, $\sqrt{}$BREAK is stative when used to derive a result verb (ia), but it can also be interpreted as eventive in the context of a directional particle or PP (ib). In the latter case, $\sqrt{}$BREAK modifies the manner of a complex motion event (i.e. forceful, destructive, unauthorised).

(12) a. $[\![v_\Delta]\!] = \lambda P \lambda e.\exists s[cause(e)(s) \wedge P(s)]$

b. $[\![\sqrt{\text{OPEN}}]\!] = \lambda s.[\textbf{open}(s)]$

c. $[\![[\ v_\Delta\ \sqrt{\text{OPEN}}\ ]]\!] = \lambda e.\exists s[cause(e)(s) \wedge \textbf{open}(s)]$

The structural decomposition of result verbs into an eventive component (provided by the *v* head) and a stative component (provided by the root) is supported by well-known empirical arguments. The key evidence comes from the phenomenon of *sublexical modification*. In English, the durative adverbial *for X time* is ambiguous between an event-oriented reading, which measures the duration of the event, and a result-oriented reading, which measures the duration of the result state (either actual or intended) (see e.g. Dowty 1979, Piñón 1999, Kratzer 2000 and Beavers and Koontz-Garboden 2020:18f.). This ambiguity is illustrated in (13). The semantic denotation of the *for*-adverbial is given in (14), where τ is a function mapping eventualities to their temporal traces. Crucially, the adverbial combines with an eventuality predicate *P*, which may be either a predicate of events or states.

(13) Sally opened the window for an hour.

a. The window was in an open state for an hour. (result-oriented)

b. The plural event of opening the window went on for an hour. (event-oriented)

(14) $[\![\text{for an hour}]\!] = \lambda P \lambda i.[P(i) \wedge hour(\tau(i)) \geq 1]$

The two interpretations of *for*-adverbials correspond to different syntactic structures. If the *for*-adverbial takes narrow scope, combining with the stative root, it receives the result-

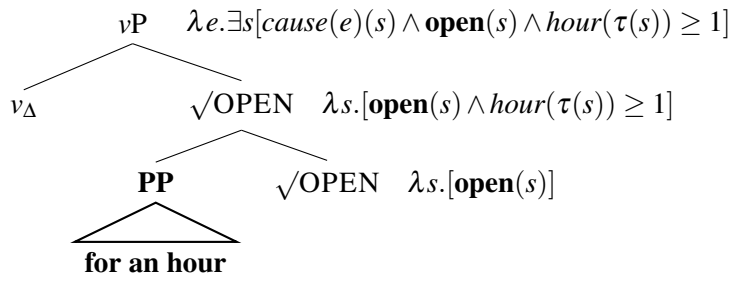
(i) a. John broke$_{Result}$ the vase.

b. John broke$_{Manner}$ into the house.

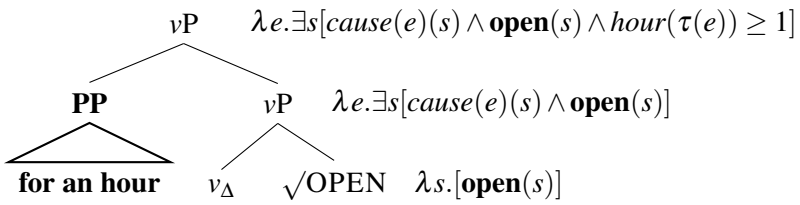
This shows that the semantic denotation of roots (as predicates of events, states or entities) is malleable and should be contextually determined at LF (see Borer 2005a,b for an in-depth study of the malleability of roots). The process of determining the interpretation of a root must take account of two things: its syntactic context and its conceptual content. Consider once again the case of *break into the house*. If $\sqrt{\text{BREAK}}$ were to denote a predicate of states, it would saturate the predicate argument of v_Δ, making it impossible to interpret *into the house* as the path/result of the event. This effectively forces $\sqrt{\text{BREAK}}$ to be used as an event predicate, an interpretation which happens to be compatible with its conceptual content. Furthermore, if $\sqrt{\text{BREAK}}$ were to merge with the nominal head *n*, it would be interpreted as a predicate of entities (e.g. *a break in the hedge*).

oriented reading, measuring the duration of the state (15a). If the *for*-adverbial takes wide scope, adjoining at the level of *v*P, the interpretation is event-oriented instead (15b).

(15) a. *Result-oriented*



b. *Event-oriented*



The structural nature of this ambiguity is confirmed by its interaction with word order and constituency. When *for an hour* occurs in the preverbal position, the result-oriented reading is lost (16a). The same thing happens when the *v*P is replaced by a pro-form (16b). This is fully expected if the result-oriented reading is linked to the low position of the adverbial.

(16) a. For an hour, Sally opened the window. (#result-oriented / event-oriented)

b. Sally did it for an hour. (#result-oriented / event-oriented)

Another well-known example of sublexical modification involves the variable scope of *again* (von Stechow, 1996; Beck and Johnson, 2004; Beck, 2006). More recently, a similar ambiguity has been reported for additive operators such as *also* and *too*, which give rise to stative as well as eventive presuppositions with a subset of COS verbs (Spathas and Miche-

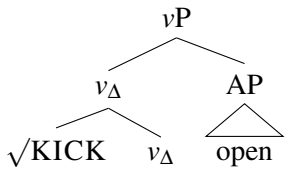
lioudakis, 2021). These and other event-decompositional diagnostics will be discussed in much more detail in Chapter 5, where they will be used to probe the event complexity of Polish verb stems. For now, suffice it to say that the evidence from sublexical modification supports the decomposition of result verbs into eventive and stative components. Manner verbs, which lack a result state, do not license the stative reading of these adverbials (17).

(17) John danced (a tango) for an hour. (#result-oriented / event-oriented)

2.2.2 Complex resultative constructions

So far, our discussion of the change-of-state flavour v_Δ has been limited to result verbs like *open* and *dry*. However, the same building block is used in the derivation of complex resultative constructions such as *kick open* and *dance off the stage*. Complex resultatives involve the simultaneous expression of manner and result in the same verbal complex: manner is encoded by the root (e.g. $\sqrt{}$KICK, $\sqrt{}$DANCE) while the result state is described by a non-verbal XP (e.g. *wide open*, *off the stage*). This result XP may take the form of an AP, a PP or a prepositional particle. The following structures illustrate the first two options:[4]

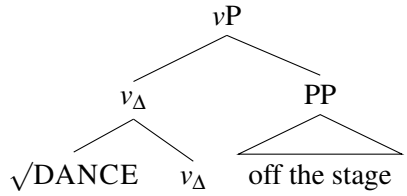
(18) a.



b. $\lambda e.\exists s[\textbf{kick}(e) \wedge cause(e)(s) \wedge \textbf{open}(s)]$

[4]Throughout this thesis, I will retain the traditional label AP to refer to adjectival phrases, particularly when their internal structure and complexity are not relevant to the discussion. However, it should be kept in mind that adjectives are internally complex, consisting minimally of a root and the category-defining head *a*.

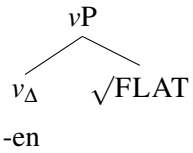
(19) a.



b. $\lambda e.\exists s[\textbf{dance}(e) \wedge cause(e)(s) \wedge \textbf{off}(s)(\textbf{stage})]$

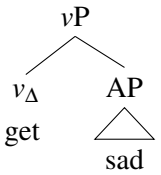
Complex resultatives are juxtaposed with simple resultatives, which do not involve the expression of manner.[5] Simple resultatives come in two types: result verbs like *flatten* (20) and light verb constructions like *get sad* (21). We can think of the inchoative *-en* and the light verb *get* as different morphophonological realisations of the abstract head v_Δ.

(20) a.



b. $\lambda e.\exists s[cause(e)(s) \wedge \textbf{flat}(s)]$

(21) a.



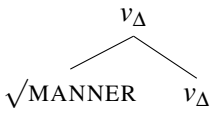
b. $\lambda e.\exists s[cause(e)(s) \wedge \textbf{sad}(s)]$

The representations in (18)-(21) instantiate one of the most common approaches to the syntax of resultative constructions. Firstly, the result predicate merges in the complement of v_Δ, where it serves as the semantic argument of this head. This applies to result roots as well as to result XPs. Secondly, the manner root adjoins directly to v_Δ, where it is interpreted as a semantic modifier of the event (e.g. Embick 2004, Mateu 2012, Acedo-Matellán 2016, Beavers and Koontz-Garboden 2020). This presupposes that there are two ways of inserting a root into the verbal phrase, depending on its contribution to the event structure. Manner roots like $\sqrt{}$DANCE and $\sqrt{}$KICK are introduced via head-to-head adjunction, creating a complex head in the syntax (22a). In contrast, result roots like $\sqrt{}$OPEN and $\sqrt{}$DRY are

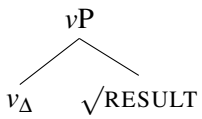
[5] We should take care to avoid terminological confusion here. The distinction between simple and complex resultatives is not identical to that between simple and complex event structures. All resultatives instantiate complex event structures built on v_Δ, but only complex resultatives contain a manner root.

generated in the complement position and subsequently incorporate into v_Δ via Head Movement (22b). These two strategies correspond to the formal distinction between *conflation* and *incorporation* processes in Haugen's (2009) seminal analysis of denominal verbs.

(22) a.



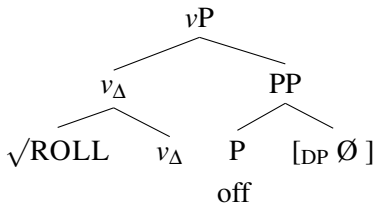
b.



I will refer to the operation that directly combines the manner root with v as *manner adjunction*. Since manner adjunction is relatively intuitive, and since it is widely adopted in the DM literature, I use it as a point of departure in this introductory discussion. However, to anticipate the developments in Chapter 3, I will ultimately reject manner adjunction on the grounds that it is incompatible with Bare Phrase Structure, and that it makes the wrong predictions about the morphophonology of resultative prefixes in Polish, Russian, Latin and Classical Greek. Instead, I will propose an alternative solution, according to which roots are always introduced in the complement of v_Δ, with non-verbal resultative XPs merged in the specifier position. This will eliminate the need for manner adjunction, simplifying the syntax of complex resultatives and producing the correct empirical results.

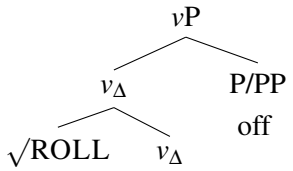
Finally, a brief comment on complex particle resultatives, as it is less clear how particles should be represented in the syntax. Consider the particle *off* in *The stone rolled off*. One option is to represent *off* as a run-of-the-mill preposition with a null or incorporated DP complement (23) (Svenonius 1996b, Hale and Keyser 2002:229–230). This analysis captures the common intuition that particles are intransitive counterparts of prepositions.

(23)



However, this intuition can be captured in another way. Suppose that the prepositional complement is absent from the syntax, and that particles are non-projecting, minimal phrases (i.e. *min/max* constituents in Bare Phrase Structure; Chomsky 1994). This option is shown in (24a) and adopted in the present study. While the preposition *off* was transitive, selecting for a Ground argument, expressed overtly in PPs like *off the stage*, the particle *off* has this argument existentially bound off at the level of semantic composition (24b).

(24) a.



b. $\lambda e.\exists s,x[\textbf{roll}(e) \wedge cause(e)(s) \wedge \textbf{off}(s)(x)]$

Like the previous proposal, this one also captures the categorial affinity of particles and prepositions as 'P elements' (Gehrke 2008), but it entails that particles are structurally smaller than PPs, an idea which will play a crucial role in the analysis of Polish prefixes in the next chapter. Note that the exact claim is that particles *may* be min/max constituents in the absence of a syntactically represented Ground argument, not that they *have to* be min/max. In English, modified particles clearly project non-minimal phrases, as in (25).

(25) a. The stone rolled [$_{PP}$ right off]. b. He walked [$_{PP}$ straight in].

2.2.3 Argument structure

Having discussed the syntax of event structure in some detail, let us now proceed to argument structure. Taking a fully Neo-Davidsonian approach, I assume that all arguments are 'severed' from the verb and introduced in the specifiers of dedicated functional projections. In the case of the external argument, the relevant projection is VoiceP, which is distinct from the category-defining head 'little *v*' (Kratzer, 1996; Pylkkänen, 2008; Harley, 2013; Alexiadou et al., 2015). The DP hosted in VoiceP is usually interpreted as a volitional Agent

controlling the event, but it may also be a Causer, an Instrument or an Experiencer. I will employ the more general label Effector for the event role assigned to the DP in this position (cf. Valin and Wilkins 1996). Semantically, the referent of this DP is related to the event that it initiates via the thematic function *effector*. The derivation is schematised in (26).

(26) a. $[\![\text{Voice}]\!] = \lambda P_{vt} \lambda x \lambda e.[P(e) \wedge \textit{effector}(e) = x]$

b. $[\![\text{[Voice [... } v \text{ ...]]}]\!] = \lambda x \lambda e.[[\![v\text{P}]\!](e) \wedge \textit{effector}(e) = x]$

c. $[\![\text{[DP [Voice [... } v \text{ ...]]]}]\!] = \lambda e.[[\![v\text{P}]\!](e) \wedge \textit{effector}(e) = [\![\text{DP}]\!]]$

Just like the external argument, the internal argument also originates in the specifier of a functional projection (Borer, 2005b, 2013; Lohndal, 2014). This projection might responsible for the assignment of accusative Case in transitive constructions, and it might also play a role in the syntactic and semantic composition of inner aspect (e.g. Kratzer 2004; Borer 2005b; Travis 2010). Since the fine-grained properties of this layer are not relevant to the goals of this thesis, I will simply label it as ThemeP. When Theme merges on top of v_{DO}, the semantic derivation proceeds almost exactly as before. The only difference is that the thematic function relating the participant to the event is *theme* rather than *effector*.

(27) a. $[\![\text{Theme}]\!] = \lambda P_{vt} \lambda x \lambda e.[P(e) \wedge \textit{theme}(e) = x]$

b. $[\![\text{[Theme [... } v_{\text{DO}} \text{ ...]]}]\!] = \lambda x \lambda e.[[\![v\text{P}]\!](e) \wedge \textit{theme}(e) = x]$

c. $[\![\text{[DP [Theme [... } v_{\text{DO}} \text{ ...]]]}]\!] = \lambda e.[[\![v\text{P}]\!](e) \wedge \textit{theme}(e) = [\![\text{DP}]\!]]$

We also need to consider the case when Theme merges with a projection of v_{Δ}. Our initial semantics of v_{Δ} made no mention of thematic roles. To alleviate this problem, I expand the denotation to (28a), with the final conjunct identifying the *theme* of the event with the *holder* of the result state. This equivalence ensures that the event is semantically coherent: the entity which undergoes the change of state is the same as the entity which comes to hold the result state. The rest of the derivation proceeds exactly as before: some argument x is asserted to be the Theme of the event e (28b). Since we know that x is the Theme of e and that the Theme of e is also the Holder of s, it follows that x is the Holder of s. In this way,

the internal argument is related to both subeventualities in the event structure (28c).

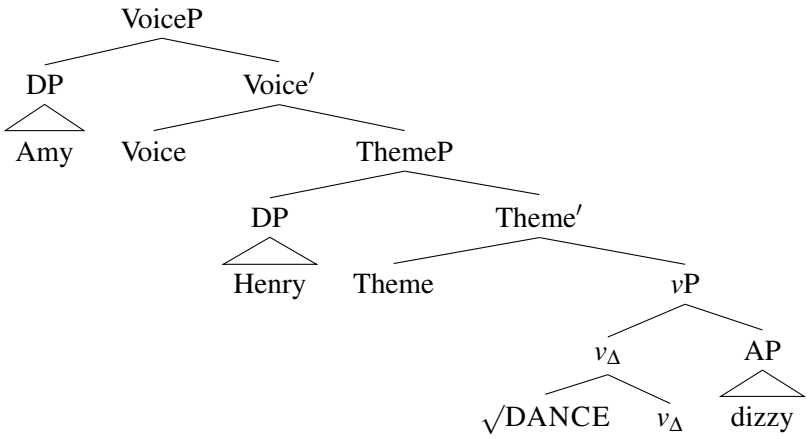
(28) a. $[\![v_\Delta]\!] = \lambda P \lambda e.\exists s[cause(e)(s) \wedge P(s) \wedge theme(e) = holder(s)]$

b. $[\![$[Theme [... v_Δ ...]]$]\!] = \lambda x \lambda e.\exists s[... \wedge theme(e) = holder(s) \wedge theme(e) = x]$

c. $[\![$[DP [Theme [... v_Δ ...]]$]\!] = \lambda e.\exists s[... \wedge theme(e) = holder(s) \wedge theme(e) = [\![\text{DP}]\!]]$
$= \lambda e.\exists s[... \wedge theme(e) = holder(s) = [\![\text{DP}]\!]]$

Putting all of this together, the sentence *Amy danced Henry dizzy* is assigned the structure in (29), with the internal argument in ThemeP and the external one in VoiceP. The semantic interpretation of this sentence is as follows: Amy (*effector*) did something to Henry (*theme*) by means of dancing (*manner*), and this caused Henry (*holder*) to be dizzy (*result*). The internal argument *Henry* is interpreted as the Theme of the event and the Holder of the result state. This corresponds roughly to the more traditional thematic role Patient or to the composite role Undergoer/Resultee in Ramchand's (2008b) system of verbal decomposition.[6]

(29) a.



b. $\lambda e.\exists s[\textit{effector} = \textbf{amy} \wedge \textbf{dance}(e) \wedge cause(e)(s) \wedge theme(e) = holder(s) = \textbf{henry} \wedge \textbf{dizzy}(s)]$

The contrast between the simple predicate *dance* and the complex predicate *dance dizzy*

[6] In Ramchand's (2008b) framework, the internal argument has to raise from Spec-Res to Spec-Proc in order to be interpreted as an Undergoer/Resultee. However, in the absence of any syntactic evidence for this movement, a semantic solution along the lines of (28) seems to be preferable. Furthermore, barring any additional stipulations, Ramchand's (2008b) analysis allows for the possibility of distinct Undergoer (Spec-Proc) and Resultee (Spec-Res) arguments, a possibility which does not seem to be attested in natural language.

demonstrates the influence of event structure on argument structure. When used in isolation, the unergative verb *dance* does not take a (non-cognate) object (30a). However, when *dance* is used in combination with the resultative AP *dizzy*, the presence of the internal argument becomes obligatory (30b). Result XPs have the ability to license *unselected objects*.

(30) a. Amy danced { *Henry / a dance }.

b. Amy danced Henry { dizzy / off the stage / away }.

The varying argument realisation patterns can be derived from the fundamental difference between v_{DO} and v_{Δ}. While *dance* is associated with a simple event structure built on v_{DO} (31a), *dance dizzy* is characterised by a complex event structure built on v_{Δ} (31b). By hypothesis, the presence of the result state in the event structure requires us to identify the Holder of that state. Levin (2017:583) refers to this requirement as the *Patient Realisation Condition*: 'the patient − the event participant that the scalar-valued attribute or the associated scalar change is predicated of − must be expressed [...] because to know that a state holds requires looking at the entity it holds of.' This condition is simply a special case of the more general *Argument-Per-Subevent* condition (Rappaport Hovav and Levin 2001:779).

(31) a. [$_{\text{VoiceP}}$ Amy [Voice [$_{v\text{P}}$ v_{DO} $\sqrt{\text{DANCE}}$]]]

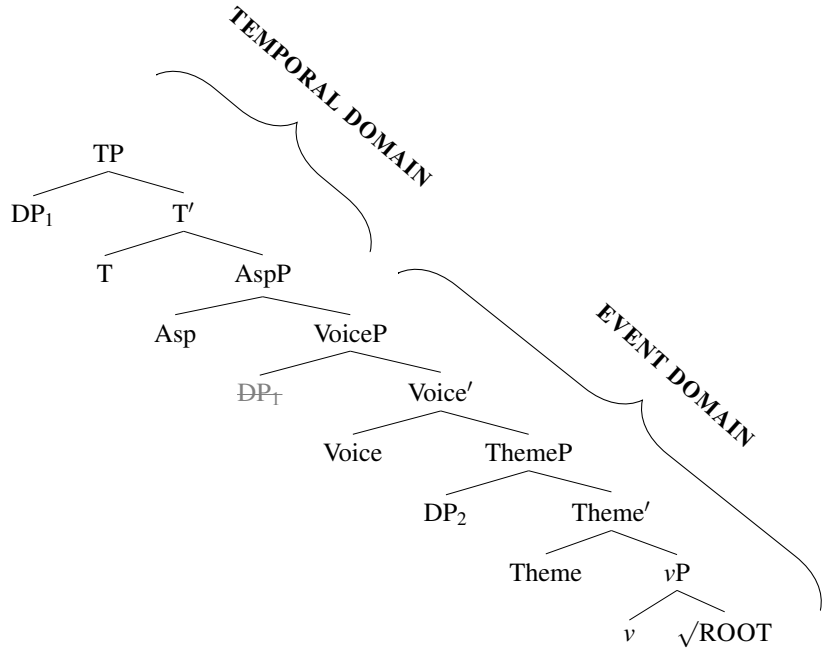
b. [$_{\text{VoiceP}}$ Amy [Voice [$_{\text{ThP}}$ Henry [Theme [$_{v\text{P}}$ [$_{v}$ $\sqrt{\text{DANCE}}$ v_{Δ}] [$_{\text{AP}}$ dizzy]]]]]]

As should be clear by now, the present study follows the complex predicate approach to resultative constructions (Johnson, 1991; Neeleman, 1994; Koopman, 1995; Zeller, 1999) rather than the small clause approach (Kayne, 1985; Hoekstra, 1988; den Dikken, 1995). This is because the structure in (29) contains a node dominating the complex predicate [$_{v\text{P}}$ *dance dizzy*], but it lacks a constituent corresponding to the small clause [$_{\text{SC}}$ *Henry dizzy*]. Resultative small clauses are motivated mostly by semantic considerations, but the syntactic evidence for their existence remains unclear. See also Bruening (2018a) for a recent argument against small clauses based on the interpretation of depictive predicates.

2.2.4 Aspect

I assume the standard division of the clause into two domains: the event domain (the traditional VP phrase) and the temporal domain (32). The temporal projections encode semantic features relevant to aspect (Asp) and tense (T). Following the semantic tradition going back to Reichenbach (1947) and elaborated in much subsequent work (e.g. Klein 1994 from the semantic perspective, Demirdache and Uribe-Etxebarria 2000, 2007 from the syntactic perspective), aspect and tense define relations between pairs of temporal intervals. We distinguish three kinds of temporal intervals: the event time (EVT-T), the assertion time (AST-T) and the utterance time (UT-T). Tense specifies the relation between the utterance time and the assertion time: the AST-T precedes the UT-T in the past tense, overlaps the UT-T in the present tense, and follows the UT-T in the future tense. Aspect encodes the relation between the assertion time and the event time: the AST-T includes the EVT-T in the perfective aspect (i.e. the event is 'viewed as a whole'); conversely, the EVT-T includes the AST-T in the imperfective aspect (i.e. the temporal bounds of the event are 'out of view').

(32)



The standard denotations of perfective and imperfective aspect are presented in (33). Aspectual operators combine with predicates of events (type *vt*) to derive predicates of times (type *it*). They bind the event *e* existentially, and they relate the runtime of this event (EVT-T) to the temporal variable *t* (AST-T). As mentioned above, perfective aspect asserts that the runtime of *e* is included in *t*, while imperfective aspect encodes the opposite relation.

(33) a. $[\![\text{PERFECTIVE}]\!] = \lambda P_{vt} \lambda t . \exists e [P(e) \wedge \tau(e) \subseteq t]$

b. $[\![\text{IMPERFECTIVE}]\!] = \lambda P_{vt} \lambda t . \exists e [P(e) \wedge t \subseteq \tau(e)]$

In many languages, including Slavic, imperfective aspect is ambiguous between progressive and iterative/habitual uses. One way of modelling this distinction, due to Ferreira (2005:99), is to maintain a single denotation for imperfective aspect, and to allow the decomposed VP to denote either singular (atomic) or plural (non-atomic) events. If IMP combines with a singular event predicate, we get a progressive reading (34a). Conversely, if IMP combines with a plural event predicate, the final interpretation is habitual or iterative (34b).

(34) a. $[\![\text{IPFV}_{sg}]\!] = \lambda P_{sg} \lambda t . \exists e [P(e) \wedge t \subseteq \tau(e)]$

b. $[\![\text{IPFV}_{pl}]\!] = \lambda P_{pl} \lambda t . \exists e [P(e) \wedge t \subseteq \tau(e)]$

I will return to aspect and Slavic aspectual morphology in the second half of this thesis. In Chapter 5, I will examine proposals that relate aspect to event structure in Slavic languages, concluding that aspect is dissociated from event structure in Polish. Then, in Chapter 6, I will investigate the long-distance relationship between resultative prefixes, merged in the event domain, and the aspectual operators PFV and IPFV, merged in the temporal domain.

2.3 From syntax to morphology

In DM, narrow syntax operates on abstract morphemes, combining them into complex hierarchical representations. Each 'word' starts its life as a set of terminals distributed across the syntactic space. For example, the subparts of the verb *organ-ise-d* are base-generated

as $\sqrt{\text{ORGAN}}$, *v* and T_{PST}. The mapping from syntactic structures to surface words takes place on the PF branch of the derivation. At spell-out, the output of narrow syntax is sent off to Morphology, where a series of post-syntactic operations convert it to a linear sequence of exponents. The standard toolkit of PF operations includes Head Movement, M-Merger, Linearisation and Vocabulary Insertion. These operations are ordered, with the output of one serving as the input to another (35) (where $\alpha \prec \beta$ means that α precedes β).

(35) *The order of post-syntactic operations*

Generalised Head Movement $\prec$ M-Merger $\prec$ Linearisation $\prec$ Vocabulary Insertion

The remaining sections go through these PF operations in the order in which they apply.

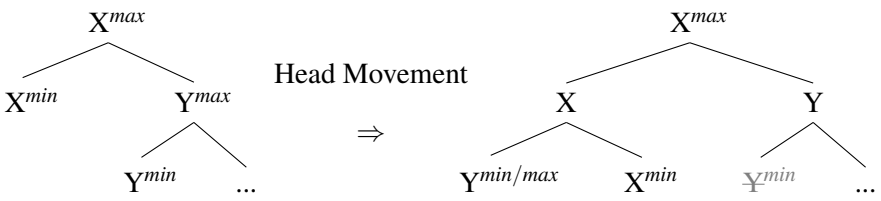
2.3.1 Problems with traditional Head Movement

Head Movement (HM) is a highly contentious operation in current Minimalist theory (see Dékány 2018 for an excellent overview of this debate). On the classical analysis, HM involves the movement of one head to another in the syntax (Travis, 1984; Baker, 1988). The output is the familiar head-to-head adjunction structure in (39). A well-known problem with head-to-head adjunction is that it violates the *Extension Condition* (cf. Chomsky 1995:254ff.), which is the requirement that movement operations must extend the tree at the root, and which in turn derives the c-command condition on movement. Rather than targeting the root of the derivation, traditional HM targets the head that is immediately dominated by the root. As a result of this, the head undergoing movement does not c-command its copy (unless a more complicated definition of c-command is adopted; see e.g. Baker 1988).

(36)

Head-to-head adjunction is also difficult to reconcile with the assumptions of Bare Phrase Structure (BPS) (Chomsky, 1994). In the days of X-bar theory, the notions 'head' and 'phrase' were stipulated as primitive labels or diacritics in the phrase-structural component. In BPS, 'head' and 'phrase' are derived notions, with purely relational definitions. Heads (or minimal projections) are simply categories that are not projected from anything, while phrases (or maximal projections) are categories that do not project any further. Consider what happens when we attempt to restate Head Movement in this framework. Without any further stipulations, the output of head-to-head adjunction is not a complex head; rather, it is an intermediate projection, projected from the head X and further projecting to the phrasal level. In essence, the concept of a 'complex head' is a contradiction in terms: any internally complex constituent is by definition an intermediate or a maximal projection. Dékány (2018:6) points out that this is a problem: 'As intermediate categories are generally thought to be inert, it is predicted that the complex head X will not be able to undergo movement to the next higher head. This is undesirable, as "roll-up" HM does occur.'

(37)



Apart from these theoretical issues, traditional HM has a significant empirical limitation. As a type of syntactic movement, HM proceeds strictly upwards: if X c-commands Y, then Y raises to X, not the other way around. The problem is that downward HM (i.e. lowering) is also widely attested across languages. The availability of upward and downward HM underlies the familiar variation in word order between French and English (Pollock, 1989). When V raises to T in French, the finite verb is pronounced in the higher position, preceding low adverbials like *souvent* 'often' at the left VP periphery (38a). When T lowers to V in English, the finite lexical verb is pronounced in the lower position, linearly following VP-

adjoined adverbials (38b). Traditional HM cannot account for the lowering case, where morphological complexity does not correlate with syntactic height. If V and T derive a complex head in the syntax, this head is predicted to spell out in T rather than in V.[7]

(38) a. Jean {*souvent embrass-ait / embrass-ait souvent} Marie.
John often kiss-PST kiss-PST often Mary
b. John {often kiss-ed / *kissed often} Mary.

One response to this conundrum is to analyse raising and lowering as two separate processes. On this view, raising results from syntactic Head Movement, while lowering is post-syntactic (Halle and Marantz 1993, Bobaljik 1995:57–109, Embick and Noyer 2001). This solution introduces a degree of redundancy into the grammar, essentially duplicating Head Movement at PF. A more parsimonious approach is to situate raising and lowering in the same grammatical component, be it syntax or morphology. This position has gained some traction in recent years, with many authors arguing for the unification of raising and lowering as two different manifestations of the same underlying phenomenon (Brody, 2000a,b; Harizanov and Gribanova, 2019; Arregi and Pietraszko, 2021). Empirically, this unification is motivated by the fact that raising and lowering have the same properties: both are cyclic, both produce morpheme orders consistent with the Mirror Principle, and both feed upward head displacement (see Arregi and Pietraszko 2021 for an in-depth discussion).

2.3.2 Generalised Head Movement

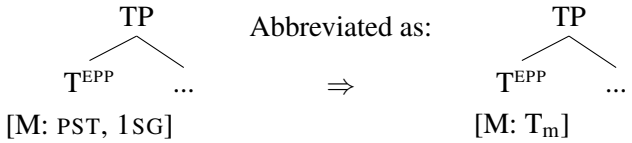
In a recent paper, Arregi and Pietraszko (2021) put forward an implementation of HM which avoids most of the problems plaguing traditional HM. They call this operation *Generalised Head Movement* (GenHM). Building on the previous ideas in Sabler (2001), Hale and Keyser (2002), Harley (2004), and Barrie (2017), Arregi & Pietraszko argue that GenHM is more akin to agreement than to phrasal movement: it manipulates features (like agreement) rather than syntactic constituents (like phrasal movement). The parallel with agreement

[7] Note that V is used a convenient label for the more articulated structure of the VP domain.

naturally explains why HM lacks the signature properties of a movement operation.

To make this more explicit, Arregi & Pietraszko make a formal distinction between *syntactic features* involved in structure building (e.g. EPP, c-selection) and *morphological features* which are shipped to PF for pronunciation (e.g. tense and ϕ features). By assumption, the set of morphological features is bundled into a single *M-value* for each head X, abbreviated as X_m (39). These M-values are manipulated by GenHM: 'an operation that relates a head with the head of its complement by creating a shared M-value for both heads'.

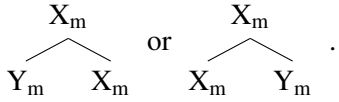
(39)



Specifically, GenHM takes the M-values of two heads X and Y as input, and it returns a single feature geometry as output, a hierarchical object made out of X_m and Y_m. Crucially, this new M-value is shared between X and Y, following a feature-sharing approach to agreement (e.g. Pesetsky and Torrego 2007). The formal definition of GenHM is given in (40).

(40) *Generalised Head Movement* (Arregi and Pietraszko 2021:244)

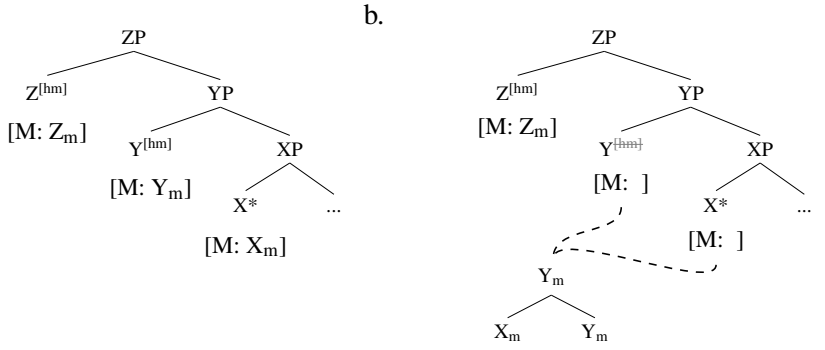
a. Structural description: a syntactic object XP such that
   - the head X of XP contains a feature [hm] and an M-value X_m, and
   - the head Y of the complement of X contains an M-value Y_m.

b. Structural change:
   - delete [hm] in X, and
   - replace X_m and Y_m with token-identical  or .

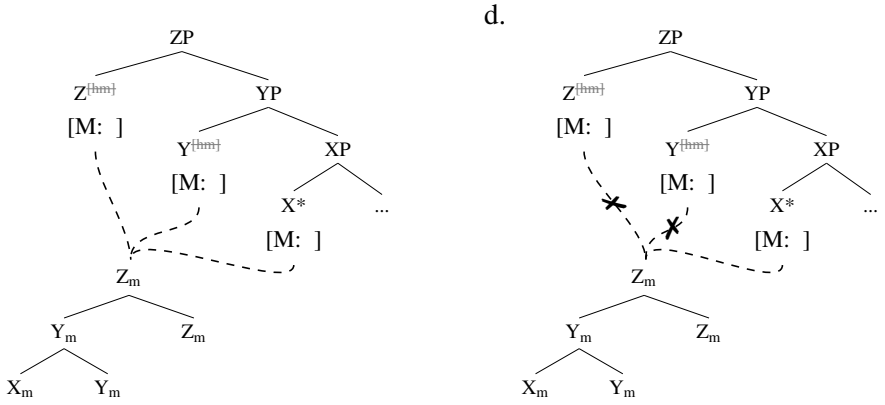
To see how GenHM works in action, consider the following derivation. In (41a), we start with a simple structure made out of three heads X, Y and Z, each associated with its own set of morphological features X_m, Y_m and Z_m. In (41b), GenHM combines the original M-

values of X and Y into the complex M-value [$_{Xm}$ X_m Y_m] associated with both. In (41c), GenHM applies to Z and Y, with the output M-value shared equally between X, Y and Z.

(41) a. b.



c. d.



The advantage of the feature-sharing approach to GenHM is that it effectively unifies upward and downward Head Movement in a single operation. To begin with, the M-values created by GenHM are linked to multiple syntactic positions at the same time. However, only one of these positions is ultimately chosen for pronunciation, while the other ones are delinked. The position in which the M-value is pronounced is determined by the strong diacritic feature (X*) in accordance with the *Head Chain Pronunciation* algorithm (42).[8] In the previous example (41d), X is strong, so the weak positions Y and Z are delinked.

(42) *Head Chain Pronunciation* (Arregi and Pietraszko 2021:246)

[8]Head Chain Pronunciation is similar to the Positioning Algorithm in Abels (2003:270). What is more, the strength diacritic (X*) performs a similar function to the linearisation point feature @ used in Brody's (2000a, 2000b) Mirror Theory and in Svenonius's (2016, 2018, 2020) direct linearisation system based on spanning.

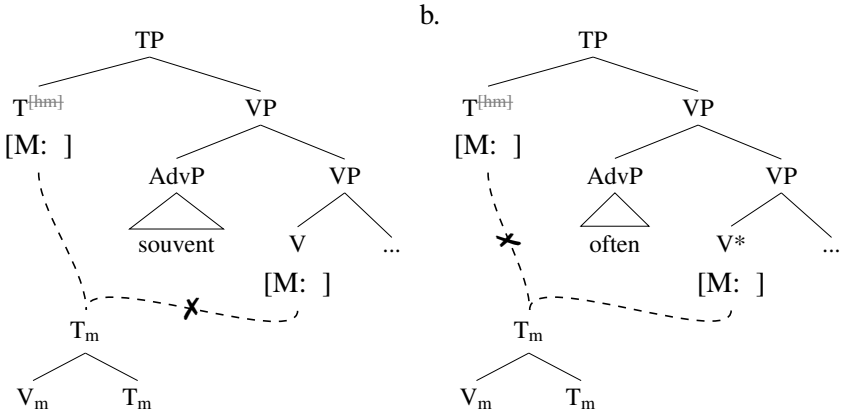
Delink all positions in a head chain except

a. the highest strong position, if any;

b. otherwise, the highest position.

Head Chain Pronunciation accounts for the different positioning of lexical verbs in French and English. In French, V and T are both weak, so the verb is pronounced in the highest weak position, above the VP-adjoined adverb (43a). In English, V is designated as the strong position, with the T head delinked and the verb pronounced below the adverb (43b).

(43) a. b.

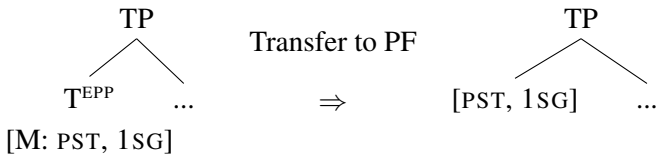


One outstanding question is whether GenHM is a syntactic or a post-syntactic operation. Arregi and Pietraszko (2021:248) situate GenHM in the syntax, but they acknowledge that a PF analysis is also viable: 'One firm stand we take in this debate is that upward and downward head displacement, being unified under GenHM, take place in the same derivational component, be it syntax or PF.' Although the results of the present study do not hinge on this decision, I will follow the tradition of research which places Head Movement at PF (e.g. Chomsky 2000, Boeckx and Stjepanovic 2001, Harizanov and Gribanova 2019).

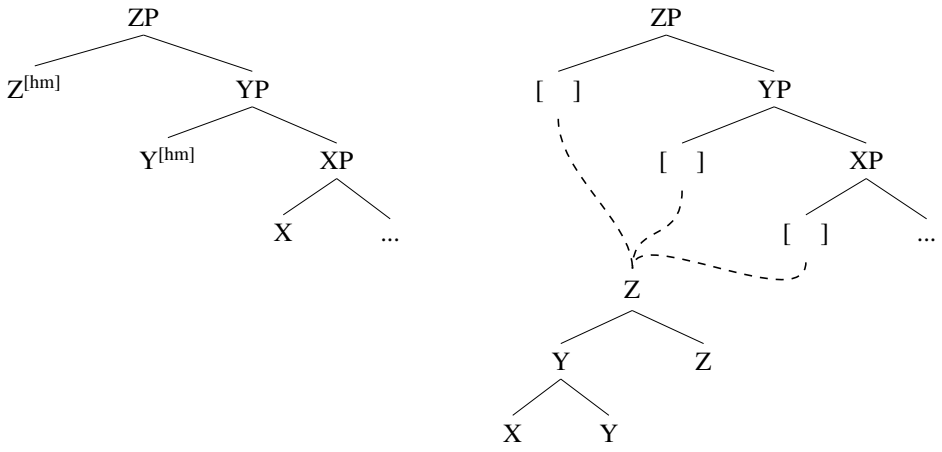
If GenHM is post-syntactic, then the distinction between syntactic and morphological features becomes irrelevant to its definition. This is because all syntactic features (e.g. [EPP], c-selection) are deleted before spell-out and only morphological features are shipped off to the interface with PF. Since every head in the input to PF is a bundle of morphological

features, we no longer need to distinguish between heads and their M-values at this level, so that $X = X_m$ for every X (44). This allows us to simplify our representations to (45).

(44)



(45) a. *Input to PF* b. *Output of GenHM*



Reformulated as a post-syntactic operation, GenHM blurs the line between agreement and movement in interesting ways. On the one hand, it has the characteristic properties of agreement: it manipulates sets of morphological features, and it creates feature-sharing configurations between its inputs. On the other hand, it applies to *all* the features in a head, rather than to a proper subset thereof (since heads are reduced to bundles of morphological features in the input to PF). This effectively means that the PF version of GenHM operates on heads, just like the post-syntactic HM operation in Harizanov and Gribanova (2019).

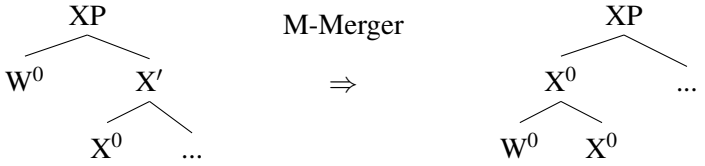
Far from being a contradiction, this is a welcome result, which goes some way towards unifying agreement-based and movement-based approaches to HM. On this view, the operation responsible for deriving complex words is best described as *post-syntactic agreement*

between heads. In the next section, I turn to M-Merger and its interaction with GenHM.

2.3.3 M-Merger

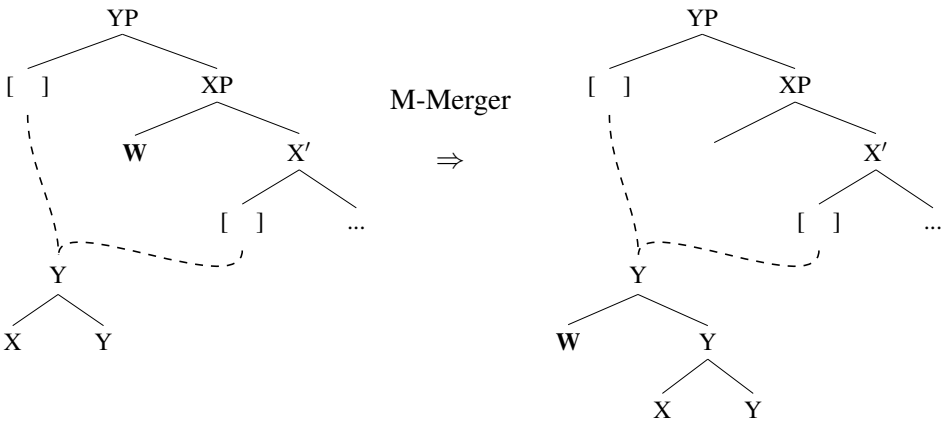
M-Merger is a post-syntactic lowering operation first proposed in Matushansky (2006). The input to this operation consists of two heads in a specifier-head relation, and its output is a single complex head (46).[9] Empirically, the element undergoing M-Merger tends to correspond to some kind of clitic. The list of potential candidates includes determiner clitics in Romance (Matushansky, 2006), object clitics in Bulgarian (Harizanov, 2014) and the negative *n't* contraction in English (Arregi and Pietraszko 2021; see below for details).

(46)



Like Generalised Head Movement, M-Merger manipulates heads at PF. Unlike GenHM, it does not create a feature-sharing configuration between its inputs, but simply incorporates the specifier into the M-value of the head. The M-Merger of W with X is illustrated in (47).

(47)



[9] Although M-Merger is defined as an operation which applies to two heads, the element W undergoing M-Merger is simultaneously a head and a phrase, or a minimal and maximal projection. It is a minimal projection (a head) because it is not projected from anything; it is also a maximal projection (a phrase) because it does not project any further. This type of constituent is labelled as $W^{min/max}$ in Bare Phrase Structure.

Consider the order in which the two operations apply: GenHM first applies to X and Y, then W incorporates via M-Merger into the complex M-value associated with X. In agreement with Arregi and Pietraszko (2021), I assume that M-Merger is always fed by GenHM (48).

(48) Generalised Head Movement $\prec$ M-Merger

What motivates the ordering of GenHM before M-Merger? For Arregi and Pietraszko (2021), this ordering follows from the assumption that GenHM is syntactic while M-Merger is post-syntactic, and that narrow syntax precedes PF. Given that I have reformulated GenHM as a post-syntactic operation, this explanation is unavailable to me. I offer two alternative reasons for the late application of M-Merger. Firstly, the head-complement relation is grammatically privileged over the head-specifier relation: more often than not, the head and its complement belong to the same Extended Projection (in the sense of Grimshaw 2005), while the specifier introduces a different Extended Projection, which may correspond to a different spell-out domain (see e.g. Boskovic2014a, Boskovic2014b). If the preference for complementation is reflected at PF, then we expect GenHM (which applies along the head-complement axis) to precede M-Merger (which applies along the head-specifier axis).[10] Secondly, as an agreement operation, GenHM modifies the output of syntax to a lesser extent than M-Merger, which is structure-destroying. If PF operations are ordered from least to most 'distorting', then GenHM is once again predicted to apply before M-Merger.

In addition to these theoretical considerations, there is also compelling empirical evidence for the late application of M-Merger. Consider negative contraction in English. As an optional rule, the negative particle *not* contracts into the verbal suffix *n't* (49a). In interrogative clauses, the *n't* contraction undergoes subject-auxiliary inversion together with the auxiliary verb (49b). This is not possible for the full particle *not*, which remains in situ (49c). The claim is that contracted negation is derived via (optional) M-Merger.

[10]The head-complement relation is also privileged in spanning-based systems like that of Svenonius (2012, 2016, 2020). In this theory, PF operates on *spans*, defined as sequences of heads related by complementation.

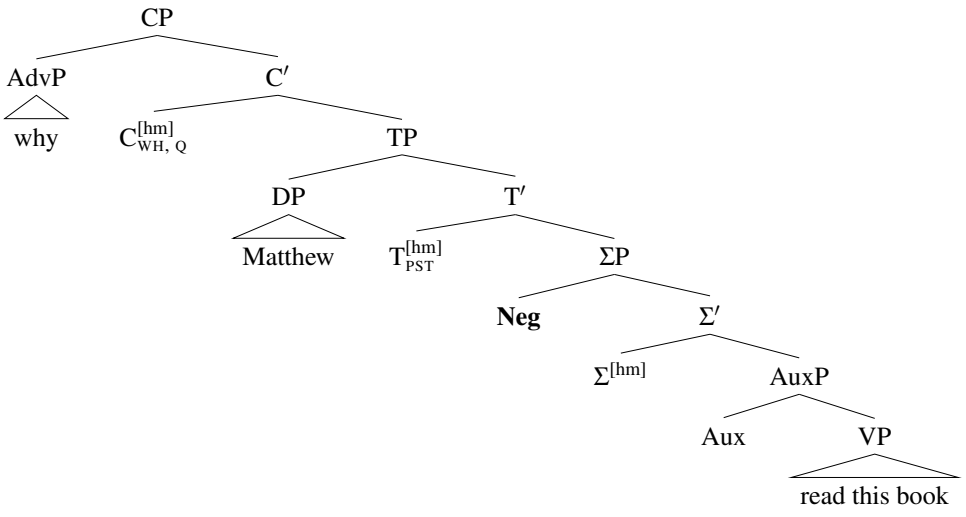
(49) a. Matthew had{n't / not} read this book.

b. Why had{n't / *not} Matthew read this book?

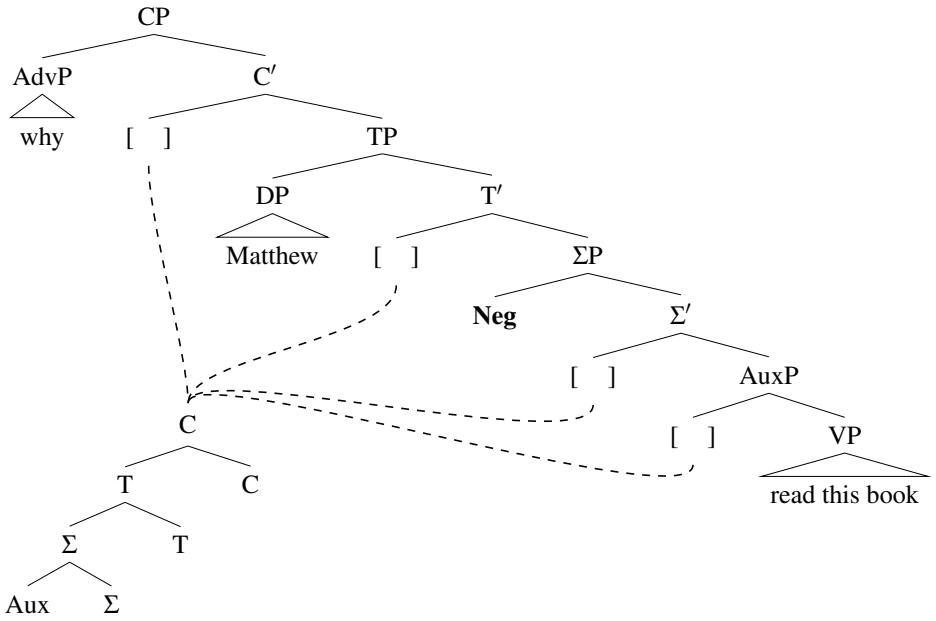
c. Why had Matthew {*n't / not} read this book?

A step-by-step derivation of sentence (b) is presented below. Arregi and Pietraszko (2021) argue that the negative particle Neg occupies the specifier of ΣP, itself positioned between TP and the auxiliary projection AuxP. If this is on the right track, and if GenHM is post-syntactic, then the output of narrow syntax looks like (50a). In the next step, GenHM applies to all the heads in the functional sequence, creating a single common M-value (50b). Finally, the negative particle Neg undergoes M-Merger, and the resulting M-value is linearised in the highest weak position C in accordance with Head Chain Pronunciation (50c). (If Neg does not undergo M-Merger, it is spelled out as *not* in its original position.)

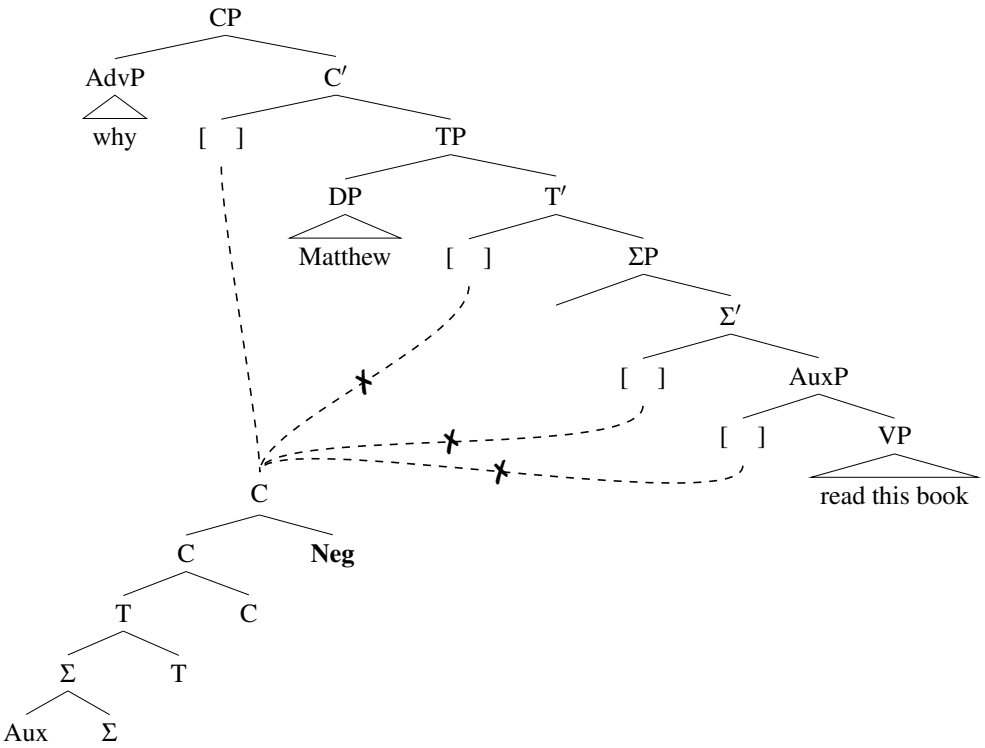
(50) a. *Output of syntax*



b. *Generalised Head Movement*



c. *M-Merger of Neg + Head Chain Pronunciation*



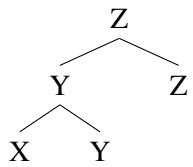
By applying after GenHM, M-Merger has the potential to derive morpheme orders which appear to violate the Mirror Principle (Baker, 1988). These morpheme orders are of the type $\sqrt{}$ROOT $\prec$ X $\prec$ Y, where X c-commands Y in the syntax. While not common, such Mirror Principle violations are indeed attested, and M-Merger provides us with the tools to accommodate them. In the case at hand, we derive the correct morpheme order Aux $\prec$ T $\prec$ Neg rather than the expected Aux $\prec$ Neg $\prec$ T. The auxiliary *have* forms a unit with T, which is realised as *had*, and the *n't* contraction attaches outside the inflected verb. More generally, heads incorporated via M-Merger are most peripheral in the corresponding word.

Looking ahead, M-Merger will play a significant role in this thesis. In Chapters 3 and 6, it will be argued to be *the* mechanism responsible for integrating Slavic prefixes into the verbal word. It will also be used to derive the ungrammaticality of complex AP and PP resultatives in Polish and other weak satellite-framed languages like Latin and Classical Greek. Overall, this study will provide much additional support for the existence of M-Merger, using it solve some long-standing puzzles in the domain of resultative prefixation.

2.3.4 Linearisation and Vocabulary Insertion

The complex M-values derived via GenHM and M-Merger encode hierarchical relations between sets of morphological features, but they do not specify their linear order. In principle, the M-value in (51) can be converted into any of the sequences in (52) (where the $\frown$ symbol stands for concatenation). In practice, we find that suffixation is cross-linguistically more common than prefixation. In order to reflect this fact, we can treat (52a) as the default option and add [PREFIX] diacritics to those terminals which are to be linearised to the left.

(51) *Output of GenHM/M-Merger*



(52) *Output of linearisation*

a. X$\frown$Y$\frown$Z (default)

b. Y$\frown$X$\frown$Z (prefixal Y)

c. Z$\frown$X$\frown$Y (prefixal Z)

d. Z$\frown$Y$\frown$X (prefixal Y and Z)

The assumption that Linearisation precedes Vocabulary Insertion is relatively standard in Distributed Morphology (e.g. Embick 2010, Arregi and Nevins 2012). VInsert applies to linear sequences of morphemes, matching each morpheme to an appropriate Vocabulary Item (VI). For example, a non-exhaustive list of VIs for the English plural is given in (53). These VIs read as 'PL has the exponent *-en* in the context of roots like $\sqrt{}$OX and $\sqrt{}$CHILD'.

(53) *Vocabulary Items*

PL $\leftrightarrow$ Ø $\{\sqrt{}$GOOSE, $\sqrt{}$MOUSE, ...$\}$__

PL $\leftrightarrow$ *en* $\{\sqrt{}$OX, $\sqrt{}$CHILD, ...$\}$__

PL $\leftrightarrow$ *s* elsewhere

The output of Vocabulary Insertion for a number of plural nouns is illustrated in (54). From top to bottom, these nouns are *alterations*, *referrals*, *bulls*, *oxen* and *geese*. Note that the category-defining head *n* may be realised overtly (*-ation*, *-al*) or it may be phonologically null (Ø). Similarly, while *-s* is the default plural suffix in English, PL may be realised by *-en* or Ø in the context of specific roots. This phenomenon is known as *contextual allomorphy*.

(54) *Output of Vocabulary Insertion*

a. [$\sqrt{}$ALTER, *alter*]⌢[*n*, *-ation*]⌢[PL, *-s*]

b. [$\sqrt{}$REFER, *refer*]⌢[*n*, *-al*]⌢[PL, *-s*]

c. [$\sqrt{}$BULL, *bull*]⌢[*n*, Ø]⌢[PL, *s*]

d. [$\sqrt{}$OX, *ox*]⌢[*n*, Ø]⌢[PL, *-en*]

e. [$\sqrt{}$GOOSE, *geese*]⌢[*n*, Ø]⌢[PL, Ø]

The application of Vocabulary Insertion is constrained by several principles. One of them is the *Subset Principle*, which states that a VI of the form F $\leftrightarrow$ Exp can be matched to a morphosyntactic terminal X only if F is a (proper or improper) subset of X. In case several VIs compete for insertion into X, the most specific VI wins. For example, *-s* competes with *-en* for insertion into PL in $\sqrt{}$OX-*n*-PL, but *-en* ultimately wins because it is more specific.

(55) *The Subset Principle* (Halle 1997:428)

a. *The Subset Clause:* A phonological exponent realizes a morpheme in the terminal string if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary item contains features not present in the morpheme.

b. *The Elsewhere Clause:* Where several Vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

Another constraint states that contextual allomorphy is limited to linearly adjacent elements (56). In other words, F can condition Vocabulary Insertion into T if and only if F and T are linearly adjacent. This constraint has been explored in Bobaljik (2000), Adger et al. (2001) and Embick (2010) (but see Merchant 2015 and Moskal and Smith 2016 for challenges).

(56) *Linear adjacency*

Contextual allomorphy is possible only with elements that are concatenated.

To give an example, this constraint prevents the insertion of root-conditioned allomorphs into PL or PST nodes across intervening exponents of *n* and *v*. Hypothetical plurals like **two zong-ment-en* are ruled out; only *zong-ment-s* is possible. Similarly, hypothetical past tense forms like **he wug-ify-Ø yesterday* are banned; *wug-ifi-ed* is the only option. Unable to access the root, the realisation of PL and PST defaults to *-s* and *-ed*, respectively (57).

(57) a. [$\sqrt{}$ROOT]⌢[*n*, *-ation*/*-al*/*-ment*]⌢[PL, *-s*/**-en*/*Ø]

b. [$\sqrt{}$ROOT]⌢[*v*, *-ize*/*-ify*/*-en*]⌢[PST, *-d*/**-t*/*Ø]

As a rule, null exponents do not count as interveners for linear adjacency. For example, in *ox-Ø-en* (54d) and *geese-Ø-Ø* (54e), the special realisation of PL can be conditioned by roots across intervening *n* nodes. To allow for this, Embick (2010) proposes that most null exponents are removed, or *pruned*, at PF. The application of *Pruning* is illustrated in (58).

(58) *Pruning schema* (adapted from Embick 2010:59)

$[\sqrt{\text{OX}}]^\frown[n, \text{Ø}]^\frown[\text{PL}] \Rightarrow [\sqrt{\text{OX}}]^\frown[\text{PL}]$

In our system of verbal decomposition, there are at least three heads separating the root from the past tense node: *v*, Theme and Voice. While *v* may or may not be realised overtly, Theme and Voice do not seem to have dedicated exponents in English and are always pruned (59). More generally, any model which invokes adjacency as a constraint on contextual allomorphy must resort to Pruning (or to some other mechanism for dealing with zero exponents).

(59) $[\sqrt{\text{HIT}}]^\frown[v, \text{Ø}]^\frown[\text{Theme}, \text{Ø}]^\frown[\text{Voice}, \text{Ø}]^\frown[\text{T}_{\text{PST}}] \Rightarrow [\sqrt{\text{HIT}}]^\frown[\text{T}_{\text{PST}}, \text{Ø}]$

Unlike M-Merger, Linearisation and Vocabulary Insertion do not play a major role in this thesis. This said, I will return to linear adjacency in Chapter 4, where I will discuss two ways of deriving secondary imperfective stems in Polish: suffixation with *-yw* and defaulting to *-aj*. The Subset Principle will prove useful in Chapter 6, where I will analyse the semelfactive suffix *-nąć* as a portmanteu morpheme realising the set of terminals [*v*, Voice, $\text{Asp}_{\text{PFV/SML}}$].

2.4 Conclusion

This chapter has laid out the core theoretical assumptions about the syntax and semantics of event structure and aspect underpinning this thesis. I have also traced the sequence of Distributed Morphology operations which map the output of narrow syntax to chains of exponents at PF, including Generalised Head Movement, M-Merger, Linearisation and Vocabulary Insertion. For ease of exposition, the discussion was restricted to English data.

Broadening the empirical scope significantly, the next chapter examines cross-linguistic variation in the morphosyntax of event structure. I will survey the set of resultative constructions in Polish, situating this language against the background of Talmy's typology.

Chapter 3

The Morphosyntax of Event Structure: Weak Satellite-Framed Languages

3.1 Talmy's typology – or how to package events into words

Talmy's typology aims to capture the cross-linguistic differences in the encoding of change-of-state and directed-motion predicates (Talmy, 1975, 1985, 1991, 2000). It groups languages into two types: *verb-framed* (e.g. Romance, Modern Greek, Japanese, Basque, Hebrew, Arabic) and *satellite-framed* (e.g. Germanic, Finno-Ugric, Mandarin Chinese). In verb-framed languages, both the result of a change-of-state event and the path of a directed-motion event must be encoded 'in the verb'; in satellite-framed languages, the result/path may be encoded by a non-verbal 'satellite' phrase, such as an AP, a PP or a prepositional particle, with the verb merely specifying the manner of the event.[1]

[1] I adopt the common assumption that change-of-state and directed-motion predicates share the same grammatical substructure. In the current framework, they are built on v_{Δ} rather than v_{DO}. This predicts that the parameter of verb/satellite-framedness should extend to all predicates of directed change in a given language, regardless of whether this change involves movement in space or some other property of the internal argument.

This chapter begins by providing a brief overview of Talmy's typology and the distinction between verb-framed (VF) and satellite-framed (SF) languages. It then goes on to situate Polish (Slavic) in this context, adopting the revised version of Talmy's typology due to Acedo-Matellán (2010, 2016). In his extended typology, the class of satellite-framed languages is split into *strong* SF languages, in which the result/path satellite can be an independent word or phrase, and *weak* SF languages, in which the satellite must be a verbal affix. In section §3.2, I show that Polish patterns as a weak SF language: it has resultative prefixes, but it lacks any other SF constructions, including complex AP and PP resultatives.

In sections §3.3-§3.5, I develop a novel analysis of the morphosyntax of weak SF languages. Firstly, I challenge the widespread assumption that result predicates are introduced in the complement of the verbal head *v* while manner roots are adjoined to *v* (i.e. the operation of *manner adjunction* from §2.2.2). Dispensing with manner adjunction, I introduce all roots in Comp-*v* and all non-verbal satellites in Spec-*v*. Secondly, I propose that weak SF languages have a requirement that any result/path satellite merged in Spec-*v* must undergo M-Merger. As we will see, this morphological requirement derives the differences between weak and strong SF languages, as well as making the correct predictions about the morphophonology of resultative prefixes in Polish, Russian, Latin and Classical Greek.

Before proceeding to weak SF languages, let us first discuss the binary opposition between VF and SF languages in more detail. This is the topic of the next section.

3.1.1 Verb-framed and satellite-framed languages

The defining property of SF languages is that they allow the expression of the result/path by a non-verbal satellite. The set of non-verbal satellites in English includes prepositional particles (1a), PPs (1b) and APs (1c). The verb itself does not encode a result, but merely provides information about the manner in which the result comes about (e.g. *crack*, *float*, *hammer*). In this way, SF constructions allow for the simultaneous expression of the manner and the result/path components in a single verbal complex, with the sentence in (1c)

paraphrasable as 'An event of hammering the metal caused the metal to be completely flat.'

(1) *SF constructions in English*

a. The lumberjack cracked$_{Manner}$ the handle off$_{Result}$.

b. The boat floated$_{Manner}$ [into the cave]$_{Result}$.

c. John hammered$_{Manner}$ the metal [completely flat]$_{Result}$.

In what follows, the label 'SF construction' will be used interchangeably with 'complex resultative construction' (see §2.2.2 in Chapter 2 for discussion and analysis). All of our examples of complex resultative constructions so far were limited to English. Below, I present several data points from a non-Germanic language, Hungarian, which range from the particle verb in (2a) to the PP resultative in (2b) to the AP resultative in (2c).

(2) *SF constructions in Hungarian*

a. János le -járta a lábát
John off walked the foot-his
'John walked his feet sore.'

(Kiss 2008:24)

b. A gyerek be-setált$_{Manner}$ [a ház-ba]$_{Result}$.
the child PRT-walk.PST.3SG the house-ILL
The child walked into the house.'

(Farkas 2021:15)

c. A munkás lapos-ra$_{Result}$ kalapácsolta$_{Manner}$ a fémet.
the worker flat-TRANSL hammer.PST the metal
'The worker hammered the metal flat.'

(Snyder 2001:337)

Mandarin Chinese constitutes another example of an SF language. It has resultative V-V compounds which encode manner and result components in a single verbal complex. In (3a), Lisi caused the handkerchief to be wet by crying on it. Similarly, the relevant reading of (3b) is that the riding caused the horse to be tired, not that Baoyu was tired while riding

the horse. Note that Mandarin is a head-initial language, hence the heads of the respective VPs are the manner verbs *ku* 'cry' and *qi* 'ride', not the resultative *shi* 'wet' and *lei* 'tired'.

(3) *SF constructions in Chinese*

a. Lisi ba shoujuan ku$_{Manner}$ -shi$_{Result}$ -le
Lisi BA handkerchief cry -wet -LE
'Lisi cried the handkerchief wet'

b. Baoyu qi$_{Manner}$ -lei$_{Result}$ -le neipi ma
Baoyu ride -tired -LE that horse
'Baoyu rode that horse tired.'

(Nishiyama 1998)

In contrast with SF languages, VF languages prohibit the formation of complex resultative constructions. They require the result/path to be encoded 'in the verb'. An example of a VF construction from Italian is provided in (4a). The verb *entrare* 'enter' is inherently directional, lexicalising the path of motion. As for the manner of motion, it may be optionally specified by an adjunct clause *galleggiando* 'floating', which is external to the verbal complex (not unlike the participle clause in the corresponding English translation). What is important is that the Italian equivalent of *The boat floated into the cave* is ungrammatical in the directional sense (4b). The only available reading is the locative one 'The boat floated *in* the cave', with the PP situating the entire event of floating rather than its final destination.

(4) *VF vs. SF constructions in Italian*

a. La barca entrò$_{Result}$ nella grotta (galleggiando$_{Manner}$).
the boat entered into.the cave floating
'The boat entered the cave (floating).'

b. *La barca galleggiò$_{Manner}$ [nella grotta]$_{Result}$.
the boat floated in.the cave
'The boat floated into the cave.' (ungrammatical in the directional sense)

(Folli and Harley 2020:427)

Other types of complex resultative constructions are also unattested in VF languages. The

ungrammatical sentences in (5) illustrate some failed attempts at deriving SF constructions in Catalan. These data confirm the general observation that a manner verb cannot co-occur with a result/path XP in this language. If a result/path component is present at all, it must be expressed directly in the verb, usually by a result root, as demonstrated in (90).

(5) *Ungrammatical SF constructions in Catalan*

a. *L'Elna martellejà$_{Manner}$ el clau (a) dins$_{Result}$.
the.Elna hammered the nail to in.
Intended: 'Elna hammered the nail in.'

b. *L'Elna ballà$_{Manner}$ [a dins de l'habitació]$_{Result}$.
the.Elna danced to in of the.room
Intended: 'Elna danced into the room.'

c. *L'Elna es ballà$_{Manner}$ grogui$_{Result}$.
the.Elna is danced dizzy
Intended: 'Elna danced herself dizzy.'

(Acedo-Matellán and Kwapiszewski 2021)

(6) *VF constructions in Catalan*

a. L'Elna entrà$_{Result}$ a l'habitació ballant.
the.Elna entered to the.room dancing
'Elna entered the room dancing.'

b. L'Elna obrí$_{Result}$ la porta.
Elna opened the door
'Elna opened the door.

(Acedo-Matellán and Kwapiszewski 2021)

Note that the opposition between VF and SF languages is not symmetrical. While Catalan has only simple resultative constructions, English has both simple and complex resultatives. In other words, the set of resultative constructions in English properly contains the set of resultatives in Catalan. Some examples of VF constructions in English are listed in (89).

(7) *VF constructions in English*

a. The lumberjack broke$_{Result}$ the axe.

b. The boat entered$_{Result}$ the cave.

c. John flattened$_{Result}$ the metal.

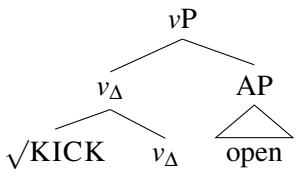
To make this more precise, we need to make a terminological distinction between VF and SF *languages*, on the one hand, and VF and SF *constructions*, on the other. While VF languages lack SF constructions, the reverse is not true: the VF pattern is widely attested in English and other SF languages (Mateu, 2012).[2] Table 3.1 illustrates this asymmetry.

	VF constructions	SF constructions
VF languages	✓	✗
SF languages	✓	✓

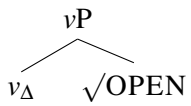
Table 3.1: VF/SF languages vs. VF/SF constructions

As a brief reminder, the structural analysis of SF and VF constructions is repeated in (8) from §2.2.2 in the previous chapter. There is a broad consensus in the morphosyntactic literature that the result/path component always merges in the complement of *v*, whether it is a result XP (8a) or a result root (8b). In turn, the derivation of SF constructions involves *manner conflation*, which combines the manner root with *v* into a complex verbal head (8a).

(8) a. *SF construction*
(root as adjunct)



b. *VF construction*
(root as complement)



[2]For the purposes of this thesis, SF constructions are defined as those in which the verb *does not* encode a result. Hence, the examples in (i), in which *freeze* introduces the result state and *solid* merely modifies that state, do not count as SF constructions. Washio (1997) refers to this type of construction as *weak resultative*. Weak resultatives are attested in VF languages (e.g. Romance, Japanese), but they do not constitute counter-evidence to the claim that VF languages lack SF constructions (i.e. *strong resultatives* in Washio's terminology).

(i) a. The ice cream froze solid.
b. boku-wa aisu kuriimu-o katikati-ni koorase-ta.
I-TOP ice cream-ACC solid-NI freeze-PST
'I froze the ice cream solid.' (Japanese; Washio 1997:5)

In order to capture the systematic differences between VF and SF languages, Mateu (2012) proposes that the availability of *manner conflation* is subject to cross-linguistic variation. Specifically, he formulates the syntactic parameter in (50) (which he relates to Snyder's (2001:328) 'compounding parameter'). In VF languages, this parameter is set to the unmarked value, precluding manner conflation and blocking the derivation of SF constructions. In SF languages, the marked setting allows manner roots to conflate with *v*.

(9) *The conflation parameter* (Mateu, 2012)
The grammar {disallows*, allows} conflation/compounding of a root with a null light verb during the syntactic derivation. [*unmarked value]

The treatment of VF languages as the unmarked case is motivated by two considerations, one typological, one acquisitional. Firstly, the VF pattern is cross-linguistically more common than the SF pattern, possibly even universal (see Table 3.1).[3] Mateu (2012:270) notes in this context that '[w]hile it has proven difficult to find clear examples of conflation in verb-framed languages like Romance or Japanese, it is much easier to find examples of incorporation in satellite-framed languages like English or Chinese'. From this point of view, it is the availability of SF constructions that requires an explanation: What allows the formation of complex resultatives in Germanic, Finno-Ugric, and so on?

The second consideration (not discussed by Mateu) comes from language acquisition. How does a child know whether they are acquiring a VF or an SF language? SF languages like English provide direct evidence for their S-framedness in the form of the complex resultative constructions in (1). For instance, a child who hears the sentence *John hammered the metal flat* can safely conclude that she is acquiring an SF language. In contrast, a child hearing *John flattened the metal* or *La barca entrò nella grotta* 'The boat entered the cave' cannot infer, on the basis of these utterances alone, that they are learning a VF language. While positive evidence is sufficient to acquire SF languages, the acquisition

[3]The hypothesis that the VF pattern is universal is discussed in more depth and substantiated in §5.5 in Chapter 5, where I argue that, contrary to previous claims about Slavic, Polish does have VF constructions.

of VF languages relies largely on negative evidence (i.e. the absence of SF constructions from the input). Although indirect negative evidence may be informative, it is not always reliable. Discussing a similar problem in the domain of German possessives, Eisenbeiß et al. (2010:147) note that '[t]here are many types of structures that children are never exposed to (e.g. sentences with long extractions), but are still not considered ungrammatical by adults'.

I conclude that, all other things being equal, an account which does not invoke indirect negative evidence is preferable to one that does, since it makes the problem of language acquisition more tractable for the learner. In the domain of Talmy's typology, this result is achieved by treating VF languages as the unmarked default, in accordance with the parameter in (50). An Italian-learning child, who does not encounter any SF constructions, will retain the default setting of the parameter and automatically acquire a VF language. An English-learning child, exposed to the positive evidence from complex resultative constructions, will set the same parameter to the marked value instead. In brief, the hypothesis that V-framedness is the default option has more explanatory adequacy (in the sense of Chomsky 1964) than a competing account in which S-framedness is the default while V-framedness is marked in some way. Like Mateu (2012), Real Puigdollers (2013) also analyses VF languages are unmarked. In contrast with these approaches, most other work on Talmy's typology assumes that VF languages are the explanandum: some property of these languages prevents the association of *v* with a manner root in the presence of a result. Recent proposals in this tradition include Acedo-Matellán (2010, 2016) and Folli and Harley (2020).

3.1.2 Strong and weak satellite-framed languages

In a seminal study of resultative and directed-motion constructions, Acedo-Matellán (2010, 2016) extends the VF/SF typology to Latin, Classical Greek and Slavic languages. He makes a distinction between two kinds of SF languages: *strong* and *weak* (10). In strong SF languages, the non-verbal satellite XP may be morphologically independent from the verb, surfacing as a separate word or phrase. In weak SF languages, the satellite element must be

realised as a verbal affix, forming a single morphological word with the verb.[4]

(10) *The Split S-framedness Hypothesis* (Acedo-Matellán 2010:207)

There are two types of SF languages: the ones which feature a morphologically independent Path − SF languages − and the ones which feature an affixal Path − weak SF languages.

Just like strong SF languages, weak SF languages allow the 'conflation/compounding of a root with a null light verb'. The grammar of these languages is capable of generating constructions in which the verbal root expresses the manner and a non-verbal satellite − the result/path. The difference is that the satellite must obligatorily surface as a prefix, which cannot be linearly separated from the verb. The examples below illustrate the contrast between verb-particle constructions in English, a strong SF language, and a pair of prefixed verbs in Classical Greek and Latin, both of which pattern as weak SF languages. Note that the strong and weak SF constructions are semantically equivalent, with the non-verbal particle encoding the path of motion and the verb modifying the manner of motion.

(11) a. step in
b. step down

(12) a. em-bainō
in-step.1SG
b. kata-bainō
down-step.1SG
(Classical Gr.)

(13) a. in-gredior
in-step
b. de-gredior
down-step
(Latin)

The next couple of examples illustrate constructions with unselected objects, a general feature of SF languages, in which the result/path satellite licenses an object that is not semantically selected by the base verb. For example, the Classical Greek sentence in (14) translates

[4]The Split S-framedness Hypothesis makes reference to the syntactic head 'Path'. Acedo-Matellán (2010, 2016) adopts a version of the small-clause approach to resultatives: *v* takes the directional projection PathP as complement, which in turn combines with the locative PlaceP. The internal argument originates in Spec-Place and subsequently re-merges in Spec-Path. His analysis of the VF construction *open the door* is presented in (ia) below. For comparison, my own analysis using v_Δ is repeated in (ib), with the internal argument in Spec-Theme.

(i) a. [$_{vP}$ *v* [$_{PathP}$ the door [Path [$_{PlaceP}$ ~~the door~~ [Place $\sqrt{}$OPEN]]]]]
b. [$_{ThemeP}$ the door [Theme [$_{vP}$ v_Δ $\sqrt{}$OPEN]]]

as ‘You ruined your wedding by dancing’ or ‘You danced your wedding into a disaster’. The result state of the wedding being ruined is expressed by the prefix *apo-* ‘away, from’, while the verb *orkhēsao* merely expresses the manner of ruining the wedding. In the absence of the prefix, *ton gamon* ‘marriage’ is not a possible object of this verb, as indicated by the asterisk. The Latin sentence in (15) works in a similar way: the prefix *ex-* ‘out’ allows the verb *tussire* ‘to cough’ to appear with an unselected object, *putamina* ‘shells’.

(14) *(Ap-)orkhēsao [...] ton gamon.
away-dance.PST.MED.2SG the.ACC.SG wedding.ACC.SG
‘You danced your wedding away.’ (i.e. ‘ruined by dancing’)

(Classical Greek; Hdt. 6, 129, apud Acedo-Matellán 2016:218)

(15) [Serpentes] [ova] solida hauriiunt, [...] atque
snake(M)NOM.PL egg.ACC.PL whole.ACC.PL swallow.3PL and
putamina *(ex-)tussiunt.
shell.ACC.PL out-cough.3PL
‘Snakes swallow the eggs whole and expel the shells through coughing.’

(Latin; Plin. Nat, 10, 197 apud Acedo-Matellán 2016:112)

This is where the similarities between strong and weak SF languages end. Unlike strong SF languages, Latin and Classical Greek ban the derivation of complex AP and PP resultatives. Example (16) shows that the equivalent of the AP resultative *drink the cup empty* is ungrammatical in Latin, even though the same verb *bibere* ‘drink’ supports this interpretation when prefixed with *e(x)-* ‘out’. Similarly, example (17) shows that complex PP resultatives are illicit in the absence of a prefix. The object *acta* ‘acts’ can be written *in aes* ‘in bronze’ only if the verb *caedo* ‘cut’ is prefixed with *in-*. Since the prefix *in-* is both necessary and sufficient for licensing the object, we can assume that the PP *in aes* acts as a mere modifier in this case. Similar facts obtain in Classical Greek (see e.g. Asyllogistou 2019).

(16) *Ovidia poculum vacuum bibit.
Ovidia.NOM cup.ACC empty.ACC drank.PRS.3PL
Intended: ‘Ovidia drank the cup empty.’

Cf. *Poculum e-bibere* 'out-drank', 'drank empty' (Plavt. Curc. 359)

(Latin, apud Acedo-Matellán 2016: 261)

(17) [Acta] in aes *(in-)cidit.
act.ACC.PL in bronze.ACC in-cut.PRF.3SG
'He engraved the acts on bronze.

(Latin; Cic. Phil. 1, 16, apud Acedo-Matellán 2016: 124)

To sum up, weak SF languages allow manner conflation, but they require the result/path satellite to surface as a verbal affix. This includes prefixal particles, but excludes any result/path XPs which are morphologically independent from the manner verb, such as full APs and PPs. The revised version of Talmy's typology is summarised in Table 3.2.

	manner conflation	result/path satellite
VF languages	✗	✗
weak SF languages	✓	must be an affix on the verb
strong SF languages	✓	can be an independent word or phrase

Table 3.2: An extension of Talmy's typology

3.2 Polish as a weak satellite-framed language

Having introduced the three-way distinction between VF, weak SF and strong SF languages, we can at last turn to Polish data, situating this language in the wider context of Talmy's typology. Like all Slavic languages, Polish belongs to the weak SF class: it has resultative prefixes but no AP or PP resultatives. This section surveys the range of resultative constructions available in Polish, starting with the so-called 'lexical prefixes'.

3.2.1 Lexical prefixes

The class of *lexical prefixes* (LPs) performs at least two distinct functions in Polish and in other Slavic languages. On the one hand, they have a perfectivising effect: an imperfective stem become perfective after prefixation. On the other, they have a similar meaning

and distribution to Germanic particles, a parallel which has been observed and discussed in much previous work on this topic (e.g. Svenonius 2004b; Gehrke 2008; Ramchand 2008a; Acedo-Matellán 2016). Lexical prefixes are commonly juxtaposed with *superlexical prefixes*, which have adverbial and quantificational functions. Superlexical prefixes and other aspectual affixes in Polish will be introduced in Chapter 4 and analysed in Chapters 5 and 6. In this chapter, I focus primarily on the resultative function of lexical prefixes (in bold).

(18) Two functions of lexical prefixes

a. **Contribute a result state to the event structure**

b. License perfective aspect

Lexical prefixes specify the result (or path) of a change-of-state predicate. This result may correspond to some stative property attributed to the internal argument, or it may be identified with the final location of a directed-motion event. Consider the three different kicking events described below. At the end of each kicking event, the ball is either *in* the goal (19a), *out* of the field (19b) or *across* on the rivals' side (19c). In each case, the final location is determined by the choice of the prefix (in conjunction with the prepositional phrase), while the manner of the motion event is specified by the root $\sqrt{\text{KOP}}$ 'kick'.

(19) *Change-of-location predicates*[5]

a. w- kop -a -ć^{P} piłkę (do bramki)
in- kick -TH -INF ball.ACC to goal.GEN
'to kick the ball into the goal'

b. wy- kop -a -ć^{P} piłkę (z boiska)
out- kick -TH -INF ball.ACC from field.GEN
'to kick the ball out of the field'

c. prze- kop -a -ć^{P} piłkę (na stronę rywali)
through- kick -TH -INF ball.ACC on side.ACC rivals.GEN
'to kick the ball across to the rivals' side'

[5]Abbreviations used in the glosses: TH = theme vowel, INF = infinitive, PST = past tense (the 'Ł-participle'), SML = semelfactive. The superscripts on Polish verbs specify their aspectual value: perfective ^{P} and imperfective ^{I}. See Chapter 4 for the segmentation of Polish verbs and an introduction to Slavic aspect.

The minimal pair in (20) makes a similar point with respect to change of state: the pen undergoes a writing event, which causes it to run out of ink (20a) or to be ready to write (20b). In both cases, the result state described by the prefix is predicated of the internal argument (i.e. the ball or the pen). As already mentioned, I assume that change-of-state and change-of-location predicates make use of the same grammatical resources, with parallel syntactic and semantic decompositions (e.g. Acedo-Matellán 2016). For example, if being at a particular location is conceived of as a state, then change of location is a special case of change of state. Conversely, if result states are conceptualised as abstract locations, then change of state is a metaphorical extension of change of location. In this thesis, I adopt the former perspective, using *change of state* as a superordinate category for both (19) and (20).

(20) *Change-of-state predicates*

a. wy- pis -a -ć^{P} długopis
out- write -TH -INF pen.ACC
'to use up all ink in the pen'

b. roz- pis -a -ć^{P} długopis
apart- write -TH -INF pen.ACC
'to get the pen to start writing'

Just like Germanic particles and prefixes in Latin and Classical Greek, lexical prefixes are associated with certain argument structure effects. For example, LPs may add an unselected object to an originally unergative predicate, such as *pracować* 'work' (21) or *spać* 'sleep' (22). The argument introduced by the LP tends to be obligatory in out-of-the-blue contexts.

(21) a. prac -ow -a -ć^{I} (*tę zagadkę)
work -*v* -TH -INF this puzzle.ACC
'to work (*this puzzle)'

b. roz- prac -ow -a -ć^{P} *(tę zagadkę)
apart- work -*v* -TH -INF this puzzle.ACC
'to work out *(this puzzle)'

(22) a. sp -a -ć^{I} (*imprezę)
sleep -TH -INF party.ACC

‘to sleep (*the party)’

b. ode- sp -a -ć^{P} *(imprezę)
off- sleep -TH -INF party.ACC
‘to sleep off *(the party)’

Even if the base stem is transitive or unaccusative, the addition of a lexical prefix may affect how the internal argument participates in the event. This is illustrated by the minimal pair in (23). Both predicates describe a breaking event, and hence a result state, but only the first one entails that the arm is being broken. The second sentence is compatible with a scenario in which the arm remains intact, but is separated from the wax figure in a ‘breaking manner’.

(23) a. łam -a -ć^{I} rękę woskowej figurze
break -TH -INF arm.ACC wax.ADJ figure.DAT
‘to be breaking / to habitually break the arm of a wax figure’

b. od- łam -a -ć^{P} rękę woskowej figurze
off- break -TH -INF arm.ACC wax.ADJ figure.DAT
‘to break off the arm from a wax figure’

In yet another parallel with Germanic particles and Latin/Classical Greek prefixes, LPs are semantically and phonologically related to the set of prepositions. The following prefixes in Polish are homonymous with independently attested prepositions: *do-* ‘to’, *na-* ‘on’, *nad-* ‘above’, *o-* ‘about’, *od-* ‘from’, *po-* ‘over’, *pod-* ‘under’, *przed-* ‘before’, *przy-* ‘near’, *u-* ‘at’, *w(e)-* ‘in’, *z(e)-/s-* ‘from’, *za-* ‘behind’). A couple of relevant examples are given below, illustrating the prefixal and prepositional uses of *w* ‘in’ (24) and *z* ‘from’ (25).

(24) a. w- maszer -ow -a -ć^{P}
in- march -v -TH -INF
‘to march in’

b. w pokoju
in room.LOC
‘in the room’

(25) a. z- my -ć^{P} plamę
from- wash -INF stain.ACC
‘to wash a stain off’

b. z parku
from park.GEN
‘from the park’

The correspondence between lexical prefixes and prepositions is far from perfect. In Polish,

there are four prefixes which lack any prepositional counterpart: *ob-* 'around', *roz-* 'apart', *wy-* 'out' and *wz-* 'upward'. Another prefix *prze-* 'through, over' is semantically related to the preposition *przez* 'through', which contains a final consonant. Despite these differences, the functional overlap between prefixes and prepositions is robust enough to warrant grouping them together under the label of *P(repositional) elements* (Gehrke 2008:183-187; see also Biskup 2019, who argues that lexical prefixes are incorporated prepositions). In the domain of morphophonology, Matushansky (2002) provides evidence for the formal identity of Russian prefixes and prepositions (but see Gribanova 2009 for some challenges).

On the semantic side, the interpretation of lexical prefixes often diverges from that of related prepositions. Most lexical prefixes are highly polysemous; they have abstract and idiosyncratic meanings, often conditioned by the verb or verb class to which they attach. As a general rule, the interpretation of lexical prefixes tends to be most predictable in conjunction with motion predicates. This is illustrated in (26), where the prefix *wy-* 'out' contributes the same meaning across the board: the final location is outside of some contextually specified reference point. In the case of change-of-state predicates, the contribution of the lexical prefix tends to be more abstract and more difficult to isolate. This is illustrated by the list of examples in (27), where the interpretation of *wy-* is at least partially idiosyncratic. In the case of (27a), the verb *wy-łączyć*^{P} 'to switch off' forms a contrastive pair with *w-łączyć*^{P} 'to switch on', with the prefixes *w-* 'in' and *wy-* 'out' denoting the 'on' and 'off' states of some application, device or machine. In the next example, we see that *wy-* denotes the abstract state of 'coming into existence': something is created at the end of a knitting event (27b). The final example hints at a more 'completive' interpretation of *wy-*, with the reflexive *wy-spać się*^{P} [out-sleep REFL] in (27c) denoting the result state of being well-rested. The existence of such variation requires us to draw a crucial theoretical distinction between the *conceptual content* and the *structural semantics* of a linguistic expression. While the conceptual content of a prefix like *wy-* varies from case to case, clustering around certain prototypical concepts like OUTSIDE, CREATION or COMPLETION, its structural semantics

remains constant: the LP adds a result state to the underlying event structure.

(26) *Change of location*

a. wy- jech -a -ć^{P}
out- drive -TH -INF
'to drive out'

b. wy- maszer -ow -a -ć^{P}
out- march -*v* -TH -INF
'to march out'

c. wy- plu -ć^{P}
out- spit -INF
'to spit out'

(27) *Change of state*

a. wy- łącz -*y* -ć^{P}
out- connect -v -INF
'to switch off'

b. wy- dzierg -a(j) -ć^{P}
out- knit -TH -INF
'to knit'

c. wy- sp -a -ć^{P} się
out- sleep -TH -INF REFL
'to get enough sleep'

Another example of variation in conceptual content is the phenomenon of non-compositionality. Lexical prefixes sometimes give rise to non-compositional meanings, which are not predictable from the meaning of the prefix and the verb on their own (28). A common assumption in DM is that non-compositional meanings are restricted to a low 'lexical' domain of syntax, where the assignment of idiosyncratic content is in principle possible, as opposed to a higher 'functional' domain, where meanings are composed in a fully regular and predictable fashion (e.g. Marantz 1997, 2007, 2013b). Since the meaning of lexical prefixes can be irregular, they must merge within the former, 'lexical' domain, relatively low in the syntactic structure (Svenonius 2004b, Ramchand 2008a, Biskup 2019:49-72).

(28) a. br -a -ć^{I}
take -TH -INF
'to take'

b. u- br -a -ć^{P}
at- take -TH -INF
'to put on (a piece of clothing)'

c. wy- br -a -ć^{P}
out- take -TH -ć^{P}
'to choose'

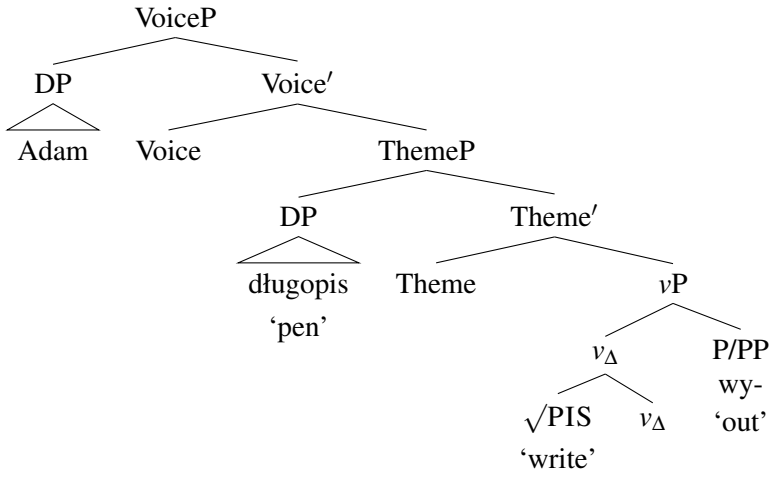
d. na- br -a -ć^{P}
on- take -a -ć^{P}
'to fool sb.'

All in all, I conclude that lexical prefixes are best analysed as resultative prepositional particles. This conclusion is widely shared in the literature on the syntactic and semantic decomposition of Slavic verbs (e.g. Svenonius 2004b, 2008; Jabłońska 2004, 2007; Arsenije-

vić 2006; Ramchand 2008a,b; Žaucer 2009; Acedo-Matellán 2016; Tatevosov 2018, 2022). Adopting the system of verbal decomposition from Chapter 2, the preliminary derivation of *wypisać*^{P} 'to write out of ink' is illustrated in (29). This syntactic structure is identical to that assigned to resultative particle verbs in English: the manner root is adjoined to v_{Δ}, while the particle *wy-* 'out' merges in the complement of v_{Δ} as a non-projecting adpositional element P/PP. By hypothesis, the difference between English and Polish particles is purely morphological: the former are realised as free-standing words while the latter are affixes. In later sections, I will formalise this word/affix parameter using M-Merger.

(29) a. Adam wy-pis-a-ł^{P} długopis.
Adam out-write-TH-PST pen.ACC
'Adam wrote a/the pen out of ink.'

b.



c. $\lambda e.\exists s[\mathit{effector}(e) = \textbf{Adam} \wedge \textbf{write}(e) \wedge \mathit{cause}(e)(s) \wedge \mathit{theme}(e) = \mathit{holder}(s) = \textbf{pen} \wedge \textbf{out-of-ink}(s)]$

3.2.2 No complex AP or PP resultatives

Although Polish permits the derivation of MANNER VERB + RESULT/PATH SATELLITE constructions, it imposes a stringent morphological restriction on the form of this satellite: it must be realised as a verbal prefix. This means that free-standing AP and PP satellites are

categorically ruled out, just like in the case of other weak SF languages.

Consider adjectival resultatives. Any attempts at deriving the equivalents of *drink a cup of coffee empty*, *cry the handkerchief wet* or *push the window open* are sharply ungrammatical in Polish. The APs in (30) cannot be interpreted as result predicates, which attribute some newly-acquired property to the object. The adjectives *pusty* 'empty' in (30a) and *otwarty* 'open' in (30c) are only licit as depictive predicates: 'Alice drank the cup of coffee *while* it was empty' and 'Patrick pushed the window *while* it was open'. However, the depictive interpretation is irrelevant to Talmy's typology. What matters is that Polish lacks adjectival resultatives. At best, the intended readings can be approximated using lexical prefixes (e.g. *wy-pić*^{P} 'to drink up', *za-płakać*^{P} 'to cover something with tears by crying').

(30) *Ungrammatical AP resultatives*

a. *Alicja pi-ł-a^{I} filiżankę kawy pustą.
Alice drink-PST-3SG.F cup(F).ACC coffee.GEN empty.SG.F.ACC
Intended: 'Alice drank a cup of coffee empty.'

b. *Tomek płak-a-ł^{I} chusteczkę mokrą.
Tom cry-TH-PST handkerchief(F).ACC wet.SG.F.ACC
Intended: 'Tom cried the handkerchief wet.'

c. *Patryk pch-ną-ł^{P} okno otwarte.
Patrick.NOM push-SML-PST window(N).SG.ACC open.SG.N.NOM/ACC
Intended: 'Patrick pushed the window open.'

In this respect, Polish patterns not only with Latin and Classical Greek, but also with other Slavic languages. The literal translation of *shoot someone dead* is impossible in Bulgarian:

(31) Te go (za-)streljaha (*umrial).
they him BEHIND-shot dead
'They shot him (dead).'

(Bulgarian; Acedo-Matellán 2016:174)

The issue of complex PP resultatives is slightly more complicated. Some verbs, such as *run*, *push* and *pull* in English, imply directed motion (see also Folli and Ramchand 2005,

Real-Puigdollers 2010 and Acedo-Matellán and Mateu 2015 for relevant cross-linguistic discussion). In Polish, the class of directed-motion verbs includes *iść*^{I} 'to walk', *biec*^{I} 'to run', *lecieć*^{I} 'to fly', *skakać*^{I} 'to jump', *maszerować*^{I} 'to march', *czołgać*^{I} *się* 'to crawl', *pchać*^{I} 'to push', *ciągnąć*^{I} 'to pull', and many others. Crucially, these verbs can be modified by directional PPs, even if there is no lexical prefix in the structure (32).

(32) a. Uczeń bieg-ł^{I} do szkoły.
pupil run-PST to school.GEN
'The pupil was running to school.'

b. Armia maszer-ow-a-ł-a^{I} na wzgórze.
army march-*v*-TH-PST-3SG.F on hill.ACC
'The army was marching onto the hill.'

c. Chłopiec pch-ną-ł^{P} pudło do garażu.
boy pull-*v*-PST box.ACC to garage.GEN
'The boy pushed the box into the garage.'

Recall from fn. 2 that weak adjectival resultatives like *freeze the ice cream solid* do not count as SF constructions: the adjective *solid* merely modifies the result state introduced by the verb. Similarly, directed-motion predicates like *biec*^{I} *do szkoły* should not be classified as SF constructions: the PP merely modifies the path component inherent to the verb. At the very least, this type of direct-motion construction should be distinguished from *bone fide* SF constructions like *Mary sneezed a handkerchief off the table*, in which *sneeze* is a 'pure' manner verb and the entailment of directed motion comes exclusively from the PP satellite

When we restrict our attention to those manner verbs which do not imply directed motion, the empirical picture becomes much clearer. It turns out that the presence of a directional PP is not by itself sufficient to derive a directed-motion predicate involving a 'pure' manner verb. Most importantly, unlike lexical prefixes, directional PPs do not have the ability to license unselected objects in Polish: the literal translations of *dance Mary into the room* (33b) and *sneeze a handkerchief off the table* (33c) are rejected by native speakers. The only way to make these sentences grammatical is to add a lexical prefix to the verb.

(33) *Ungrammatical PP resultatives*

a. Drwal siekierą *(od-)rąb-a-ł gałąź od drzewa.
lumberjack.NOM axe.INST off-chop-TH-PST branch off tree.GEN
'The lumberjack chopped a branch off a tree with an axe.'

b. Adam *(w-)tańcz-y-ł Marię do pokoju.
Adam.NOM in-dance-*v*-PST Mary.ACC
'Adam danced Mary into the room.'

c. Maria *(s-)kich-nę-ł-a chusteczkę ze stołu.
Mary from-sneeze-SML-PST-3SG.F handkerchief.ACC from table.GEN
'Mary sneezed a handkerchief off the table.'

This demonstrates that Polish lacks complex PP resultatives of the kind found in Germanic and Finno-Ugric. The same is true of other Slavic languages. For example, the phrase *dig out of the hole* cannot be rendered into Bulgarian without a prefix:

(34) *(Iz-)kopah sukrovishte (iz dupkata).
out-dig.PST.1SG treasure.the out hole.the
'I dug a treasure out of the hole.'

(Bulgarian; Acedo-Matellán 2016:175)

An outstanding issue concerns the status of directional PPs in Polish: Are they arguments or adjuncts? Following Spencer and Zaretskaya (1998) and Acedo-Matellán (2016:88), I assume that such PPs are adjuncts, which add further information about the result or the path described by the prefix or the verb.[6] In the words of Spencer and Zaretskaya (1998:29), 'the prefix is the obligatory marker of directionality and telicity' which 'realizes the core predication in a lexical resultative', while 'the adjunct is just that, an adjunct'.[7]

There are at least two considerations which favour the adjunct analysis of directional

[6]The alternative is to merge directional PPs as complements rather than adjuncts. For example, some authors situate directional PPs in the complement of Res/Pred, a predicational head hosting lexical prefixes (e.g. Gehrke 2008; Ramchand 2008a). Others locate directional PPs in the complement of the verb, analysing verbal prefixes as incorporated prepositions, with both copies of the P head realised overtly at PF (e.g. Biskup 2019). These proposals are sketched out in (ia)-(ib), with the + sign indicating Head Movement or incorporation.

(i) a. [V [Res PP]] ⇒ [Res+V [~~Res~~ PP]]
b. [V PP] ⇒ [P+V PP]

[7]In a departure from this quote, Chapter 4 shows that lexical prefixes are not necessary for telicity.

PPs. Firstly, such PPs can be omitted. While there is a preference for PPs to be present in out-of-the-blue contexts, it is relatively easy to construct a richer discourse which facilitates the omission of PPs. This is done in (35). Given that the first conjunct clause explicitly mentions the tree, the second one does not need to repeat this information. In contrast, no amount of contextual information can render the prefix *od-* optional. Whether the PP *od drzewa* is included or not, the prefix remains 'the obligatory marker of directionality'.

(35) Drwal pod-szed-ł^{P} do drzewa$_i$ i siekierą
lumberjack.NOM under-walk-PST to tree(N).GEN and axe.INST
*(od-)rąb-a-ł^{P} (od niego$_i$) gałąź.
off-chop-TH-PST off it.GEN branch.ACC
'The lumberjack walked up to the tree and chopped a branch off (it).'

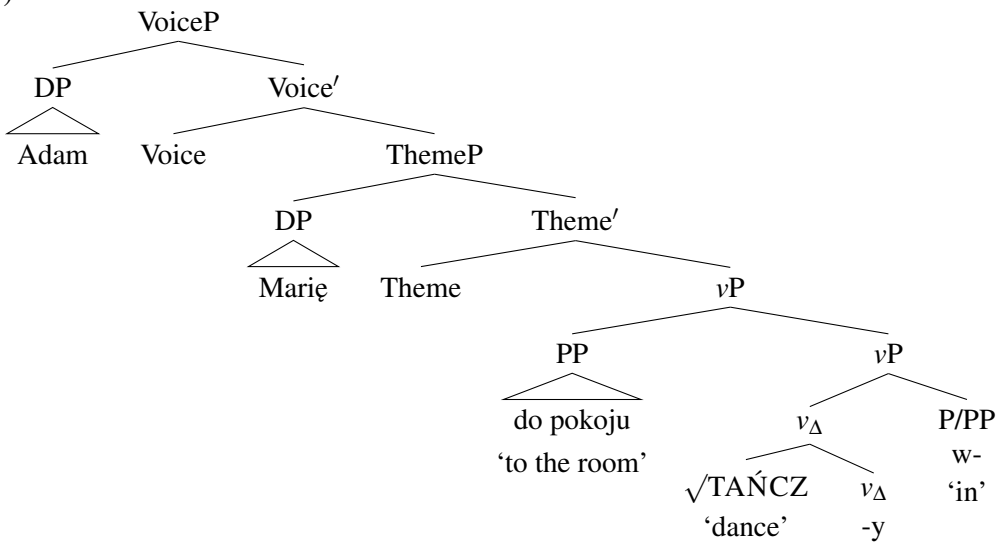
Secondly, most prefixes are compatible with a variety of directional PPs. In the following example, the prefix *w-* 'in' co-occurs with a wide range of PPs, including those headed by *do* 'to', *pod* 'under', *za* 'behind', *na* 'on', *w* 'in' and *ponad* 'above'. Although some prefixes happen to be homonymous with the corresponding prepositions, we see that this homonymy is more of an exception than a rule. This range of variation makes it difficult to maintain that the prefix 'selects' the directional PP, or that the prefix spells out a copy of the PP head, incorporated into the verb via Head Movement (*pace* Biskup 2019; see also fn. 6).

(36) Adam *(w-)tańcz-y-ł Marię { do pokoju / pod scenę /
Adam.NOM in-dance-*v*-PST Mary.ACC to room.GEN under stage.ACC
za kurtynę / na drugie piętro / w słup / ponad chmury}.
behind curtain.ACC on second floor.ACC in pillar.ACC / above clouds.ACC }
'Adam danced Mary { into the room / under the stage / behind the curtain / onto the second floor / into a pillar / above the clouds }.'

I conclude that directional PPs have the status of adjuncts. As such, they are largely peripheral to the core event-structural template built on v_{Δ}. The structure assigned to the complex directed-motion construction *w-tańczyć Marię do pokoju* 'to dance Mary into the room' is presented in (37). Tentatively, I suggest that the PP *do pokoju* is adjoined at the level of *v*P,

where it modifies the trajectory of the transition from the event to the final state or location.

(37)



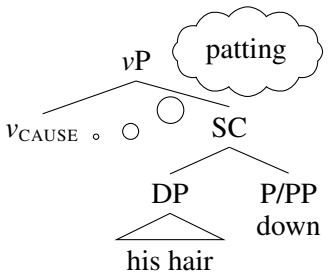
Taking stock, we have classified Polish as a weak SF language, with resultative prefixes but without complex AP or PP resultatives. However, we still do not know what weak S-framedness involves in formal terms. Given the theoretical apparatus of Distributed Morphology, how should we model the descriptive generalisation that ‘the result/path satellite must be a verbal affix’? Which operation or operations drive this morphological requirement? In the rest of this chapter, I will argue that M-Merger is the mechanism responsible for incorporating result/path prefixes into the verb, and that the difference between weak and strong SF languages is captured by a simple PF parameter. There is only one problem. Recall that the application of M-Merger is restricted to non-branching *specifiers*: ‘the input to M-Merger is two heads in a particular (specifier-head) configuration’ ((Matushansky 2006:94). However, up to now, lexical prefixes and other result XPs have been merged in the *complement* of *v*, which makes them ineligible for M-Merger. In the next section, I present an alternative analysis of the *v*P substructure based on a novel, semantics-based approach to manner conflation, in which lexical prefixes end up occupying the Spec-*v* position.

3.3 Rethinking manner conflation

A common assumption in much recent work on the morphosyntax of event structure is that manner roots combine with the verbal head *v* via some operation of *manner conflation*. Manner conflation is conceived of as a syntactic operation whose availability is subject to cross-linguistic variation: SF languages allow it, VF languages do not (Mateu, 2012). However, it is far from clear how to characterise this operation formally. Harley (2005) provides the most striking example of this uncertainty. Remaining agnostic about the structural specifics of manner conflation, she represents it simply with thought bubbles (38) (see also Folli and Harley 2020:434). Although Harley adopts a small-clause approach to resultatives, the base position of the object is orthogonal to the analysis of manner conflation.

(38) a. The boy patted his hair down.

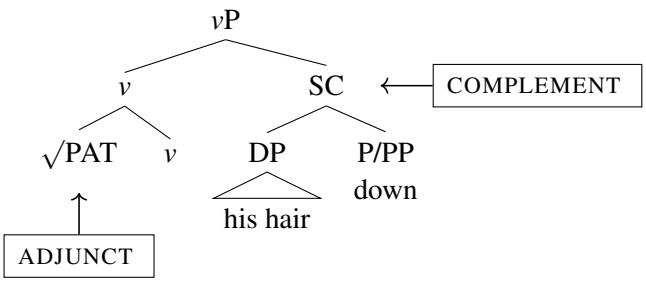
b.



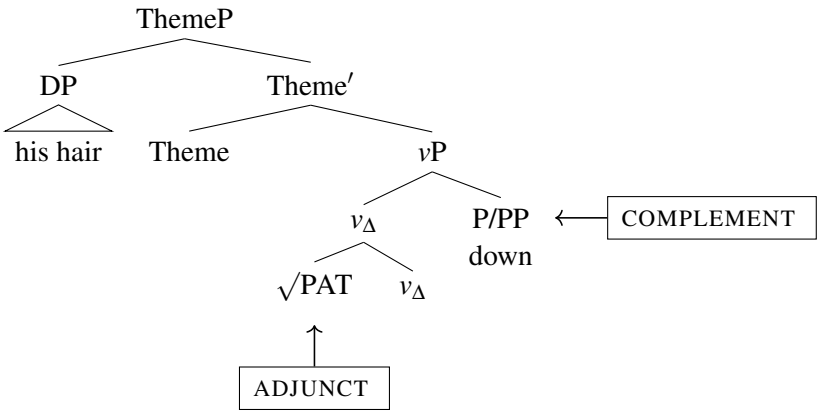
By far the most common implementation of conflation is in terms of the direct adjunction of a manner root to *v* (e.g. Embick 2004, McIntyre 2004, Zubizarreta and Oh 2007, Haugen 2009, Mateu 2012, Acedo-Matellán 2016, Alexiadou et al. 2015, Beavers and Koontz-Garboden 2020, Ausensi 2021). This is the operation of *manner adjunction* discussed in §2.2.2 in the previous chapter. Some authors refer to the combination of *v* with the manner root as *compounding* rather than adjunction, but since the syntactic representations they work with are the same, the difference seems to be mostly terminological. In both cases, the output of manner conflation is a single complex head, similar to the output of traditional Head Movement. In fact, Mateu (2012) suggests that the relationship between conflation

and Head Movement is analogous to that between external and internal Merge: the manner root is inserted directly from the numeration rather than being selected from within the derivation. Manner adjunction in combination with small clauses is illustrated in (39), while (40) shows a complex-predicate structure built on v_Δ, which is adopted in this thesis.

(39) *Manner adjunction: small-clause analysis*



(40) *Manner adjunction: complex-predicate analysis*



If manner conflation takes the form of head adjunction, then it suffers from some of the same theoretical problems as traditional Head Movement. Most importantly, the adjunction of one head to another is difficult to reconcile with the assumptions of Bare Phrase Structure. In BPS, the constituent [$_v$ $\sqrt{}$PAT v] is not a complex verbal head (i.e. a minimal projection) but rather an intermediate or maximal projection (see §2.3.1). I therefore conclude that, if

Head Movement is excluded from the syntax, then so is manner adjunction.

Some attempts have been made to move away from direct manner adjunction. Acedo-Matellán (2013) acknowledges the difficulty of modelling manner conflation in BPS. Building on Zwart (2009, 2011), he develops a Layered Derivation approach to conflation. Simplifying somewhat, the idea is that *v* merges with the manner root $\sqrt{\text{PAT}}$ in a separate derivation.[8] That subderivation is then returned to the numeration as a syntactic atom, indicated by enclosing the relevant constituent in a box. In the main derivation, the phrasal atom [$_{vP}$ *v* $\sqrt{\text{PAT}}$] is able to take a small clause or a result XP as complement (41b).

(41) a. Subderivation: [$_{vP}$ *v* $\sqrt{\text{PAT}}$]

b. Main derivation: [$_{vP}$ $\boxed{[_{vP}\ v\ \sqrt{\text{PAT}}\ ]}$ [$_{SC}$ his hair down]]

Unfortunately, this kind of approach runs the risk of not being sufficiently restrictive. What, if anything, prevents a layered derivation along the lines of (42)? In the first step, X takes a complement and then returns to the numeration as a syntactic atom. In the second step, this atom takes another complement, and once again returns to the numeration. In the third step, this atom takes yet another complement, returns to the numeration, and so on *ad infinitum*. By allowing phrasal atoms to take complements, we void the notion of complementation of any meaning. Most importantly, complements need no longer be unique.

(42) a. [$_{XP}$ X Comp-X]

b. [$_{XP}$ $\boxed{[_{XP}\ \text{X Comp-X }]}$ Comp-X]

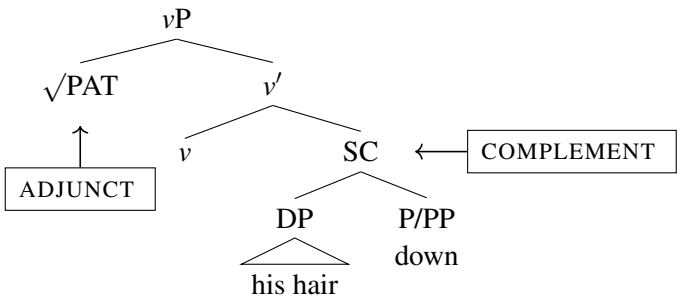
c. [$_{XP}$ $\boxed{[_{XP}\ \boxed{[_{XP}\ \text{X Comp-X }]}\ \text{Comp-X }]}$ Comp-X]

Yet another implementation has been recently proposed by Folli and Harley (2020). These authors decompose manner conflation into two distinct operations, one syntactic, one morphological. To begin with, the manner root merges in the syntax in the specifier of *v*P (43a).

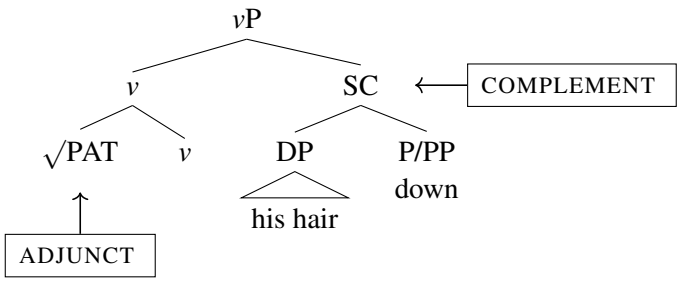
[8] To be precise, Acedo-Matellán (2013) assumes that *v* merges with the empty set Ø, a position filled by a root after Spell-Out (Belder and van Craenenbroeck, 2015). The reader is referred to his paper for details.

Then, after spell-out, the same root is lowered to *v* via M-Merger (43b).[9] Folli and Harley (2020) claim that '[t]he interpretation of the adjoined $\sqrt{}$ element as a manner adverbial follows naturally from this structure: the sister-to-*v*′ position is the classic locus for adverbial modification in general [...]. The fact that the root subsequently undergoes M-Merger with the *v* head does not affect its LF interpretation, which proceeds as for any adverbial'.

(43) a. *Output of syntax*



b. *Output of M-Merger*



A potential objection to Folli and Harley's (2020) approach concerns root categorisation. Assuming that M-Merger is a morphological operation, the manner root $\sqrt{}$PAT remains uncategorised at the level of narrow syntax and LF (43a). It is only at PF that this root is brought into a sufficiently local relation with the category-defining head *v* (43b). This is a problem because Folli and Harley (2020) explicitly assume that uncategorised roots are 'not legible at the interface' and that their presence causes the derivation to crash. If roots

[9]This implementation of manner conflation is simply the external counterpart of Matushansky's (2006) Head Movement, which consists of the internal Merge of a head (in the syntax) followed by M-Merger (at PF).

without a category label are not legible at LF, then the structure in (43a) is ill-formed.[10]

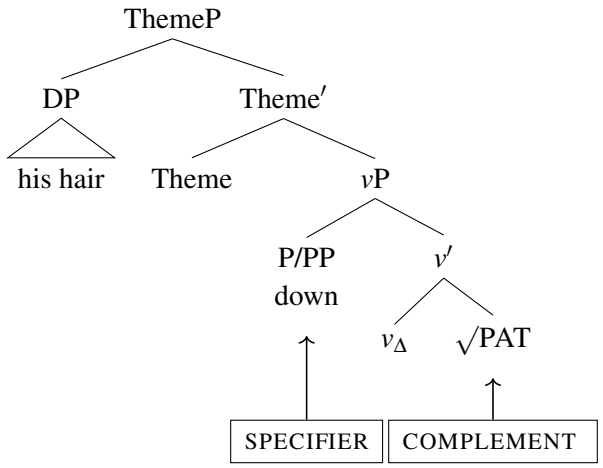
In sum, there is no consistent approach to manner conflation in the existing literature. From a purely technical standpoint, the difficulty in implementing conflation stems from the assumption in (44a), which underpins all the proposals cited above. If the Comp-*v* position is unique, and if it is occupied by a small clause or a result XP, then the manner root cannot be introduced in Comp-*v*. This requires us to integrate the root with *v* in some other way, with solutions ranging from direct head adjunction to layered derivations to M-Merger.

(44) a. Standard assumption: result XPs merge in Comp-*v*.

b. Revised assumption: result XPs merge in Spec-*v*.

In contrast with much previous work, I argue that the Comp-*v* position is always occupied by a root, which forces the result XP to merge in Spec-*v* in SF constructions. The adjunction structure in (40) can now be replaced with the simpler representation in (45). Note that the hierarchical relations between elements are exactly the same in both cases: v_Δ and $\sqrt{\text{PAT}}$ form a constituent, which forms an even larger constituent with the particle *down*.

(45) *A revised version of the complex-predicate structure in (40)*



[10] To be precise, Folli and Harley (2020) do not specify the interface at which the categorisation requirement is supposed to hold. However, most authors assume that categorisation is a requirement of syntax and/or LF.

Semantically, it does not matter whether the result XP is the specifier or the complement of v_Δ. On the standard interpretive approach to semantic composition à la Heim and Kratzer (1998), the meaning of a phrase is computed in a stepwise fashion on the basis of two things: (i) the meaning of lexical items, and (ii) the hierarchical structure delivered by the syntax. Crucially, the rules of semantic composition do not make any reference to the distinction between specifiers and complements. Functional Application is defined as in (46), with no mention of the phrase-structural status of β and γ ($[\![\text{X}]\!]$ is the semantic denotation of X).

(46) *Functional Application*

If α is a branching node, $\{\beta, \gamma\}$ is the set of α's daughters, and $[\![\beta]\!]$ is a function whose domain contains $[\![\gamma]\!]$, then $[\![\alpha]\!] = [\![\beta]\!]([\![\gamma]\!])$.

(Heim and Kratzer 1998:44)

With or without manner adjunction, the process of semantic composition proceeds in the same way. First, the root composes with v_Δ via the rule of *Event Identification*, which is 'one of several admissible conjunction operations' (Kratzer 1996:122). Event Identification combines an event predicate $[\![\beta]\!]$ (type vt) with a higher-order, composite function $[\![\gamma]\!]$ which has event predicates in its range (type $\langle vt, vt\rangle$ in this case). Identifying the event arguments of $[\![\beta]\!]$ and $[\![\gamma]\!]$, this rule simply conjoins the two denotations (type $\langle vt, vt\rangle$). This is how the manner root $\sqrt{}$PAT comes to be interpreted as an event modifier (47c). Finally, the resultative particle *down* saturates the argument of v_Δ via Functional Application (47d).

(47) a. $[\![\sqrt{}\text{PAT}]\!] = \lambda e.\mathbf{pat}(e)$

b. $[\![v_\Delta]\!] = \lambda P \lambda e.\exists s[cause(e)(s) \wedge P(s)]$

c. $[\![[\ v_\Delta\ \sqrt{}\text{PAT}\ ]]\!] = \lambda P \lambda e.\exists s[\mathbf{pat}(e) \wedge cause(e)(s) \wedge P(s)]$ (Event Identification)

d. $[\![[\ \text{down}\ [\ v_\Delta\ \sqrt{}\text{PAT}\ ]\ ]]\!] = \lambda e.\exists s[\mathbf{pat}(e) \wedge cause(e)(s) \wedge \mathbf{down}(s)]$ (Functional Appl.)

This exercise demonstrates that the structures in (40) and (45) are equivalent from the semantic point of view. Whether the result XP is a specifier or a complement, the semantic calculations stay the same. However, by situating result XPs in the specifier position, we

make the complement position available for the manner root. This removes the need for a *syntactic* operation of manner conflation, whether implemented via direct head adjunction, M-Merger or layered derivations. All that is required is the primitive combinatorial operation Merge and the standard assumptions about the relation between hierarchical structure and semantic composition. Manner conflation can now be defined in purely semantic terms as 'the interpretation of a manner root as an event modifier via Event Identification'.

A major advantage of this approach to conflation is that it simplifies our syntactic treatment of roots. All roots can be introduced uniformly in the complement position, rather than being either adjuncts or complements of v_Δ (cf. Alexiadou and Lohndal 2017 for a recent overview of the debate about the position of roots). In the case of VF constructions, result roots merge as complements to the verbal head, but they semantically combine with v_Δ via Functional Application, specifying the result state of a COS predicate (48).

(48) a. $[\![\sqrt{\text{OPEN}}]\!] = \lambda s.\mathbf{open}(s)$

b. $[\![v_\Delta]\!] = \lambda P \lambda e.\exists s[cause(e)(s) \wedge P(s)]$

c. $[\![[\ v_\Delta\ \sqrt{\text{OPEN}}\ ]\ ]\!] = \lambda e.\exists s[cause(e)(s) \wedge \mathbf{open}(s)]$ (Functional Application)

The semantic contrast between manner roots and result roots can be summarised as follows:

(49) a. Result roots compose with v_Δ via Functional Application.

b. Manner roots compose with v_Δ via Event Identification.

Having reinterpreted manner conflation as Event Identification, we must modify the *conflation parameter* accordingly (50). The revised parameter states that Functional Application is the default option, while Event Identification is marked. This makes sense intuitively: Functional Application saturates the first argument of $[\![\beta]\!]$ with $[\![\gamma]\!]$, returning an output of a simpler type. In contrast, Event Identification does not saturate any arguments, and it does not reduce the complexity of its inputs. To the extent that there is a preference for arguments to be saturated as soon as possible (which may be subsumed under some more general principle of economy), then VF constructions are indeed unmarked: the argument

of v_Δ is saturated immediately by the root (48b). In contrast, SF constructions are marked: argument saturation is delayed until v_Δ combines with its specifier (47c,d). This would explain why VF constructions are cross-linguistically widespread, if not universal, and why SF constructions can only be acquired on the basis of positive evidence in the input.

(50) *A revised conflation parameter*

The grammar {requires*, does not require} a root to compose with the verbal head via Functional Application. [*unmarked value]

Finally, we could take a different approach and explore various alternatives to the conflation parameter. Instead of assuming that manner conflation is disallowed, we could hypothesise that something prevents result XPs from merging in Spec-v in VF languages. This 'something' could be a morphosyntactic property of the v head, say, some kind of structural diacritic which has the opposite effect to the more familiar EPP feature (precluding rather than requiring the presence of a specifier). An analysis along these lines would make VF languages more similar to weak SF languages: the former do not allow any result XP to merge in Spec-v (51a), while the latter do, but only if this XP is a min/max constituent which incorporates into the verb via M-Merger (51b) (see the next section for details). Finally, strong SF languages do not impose any restrictions on the size of the result XP (51c).

(51) a. $[_{vP}$ ***XP** $[\ v_\Delta\ \sqrt{\text{MANNER}}\ ]\ ]$ (VF languages)

b. $[_{vP}$ **X/XP**$_{\textbf{(requires M-Merger)}}$ $[\ v_\Delta\ \sqrt{\text{MANNER}}\ ]\ ]$ (weak SF languages)

c. $[_{vP}$ **XP** $[\ v_\Delta\ \sqrt{\text{MANNER}}\ ]\ ]$ (strong SF languages)

This approach seems more promising than the one based on the conflation parameter. It situates the difference between VF and SF languages at the syntax-morphology interface, while keeping the mapping from syntax to semantics uniform across languages. This accords with the standard minimalist desiderata concerning the locus of cross-linguistic variation (see Real Puigdollers 2013, Acedo-Matellán 2016 and Folli and Harley 2020 for a discus-

sion of these desiderata in the context of Talmy's typology). However, since the focus of this chapter is on weak SF languages, I leave it for future work to determine which feature or operation is responsible for blocking the Spec-*v* position in VF languages. The next section turns to the parametric variation between weak and strong SF languages, capturing the requirement that result/path satellites must be affixal in Polish, Latin and Classical Greek.

3.4 The M-Merger parameter

In order to capture the status of Polish as a weak SF language, we must provide an explicit answer to two questions. Firstly, what is the mechanism responsible for incorporating resultative particles into the verb as lexical prefixes (52a)? Secondly, if manner conflation is allowed, then what goes wrong in the derivation of complex AP and PP resultatives (52b,c)?

(52) a. Adam *(wy)-pis-a-ł (*wy) długopis (*wy).
Adam out-write-TH-PST out pen.ACC out
'Adam used up all the ink in a pen.'

b. *Patryk pch-ną-ł okno otwarte.
Patrick.NOM push-SML-PST window(N).SG.ACC open.SG.N.ACC
Intended: 'Patrick pushed the window open.'

c. *Adam tańcz-y-ł Marię do pokoju.
Adam.NOM dance-*v*-PST Mary.ACC
Intended: 'Adam danced Mary into the room.'

I propose that the answer to both questions is *M-Merger*. In particular, weak SF languages are subject to the following requirement: any constituent in the Spec-*v* position must undergo M-Merger (53).[11] We can think of this parameter as a property of the *v* head, whereby some morphological feature on *v* triggers the obligatory application of M-Merger at PF.

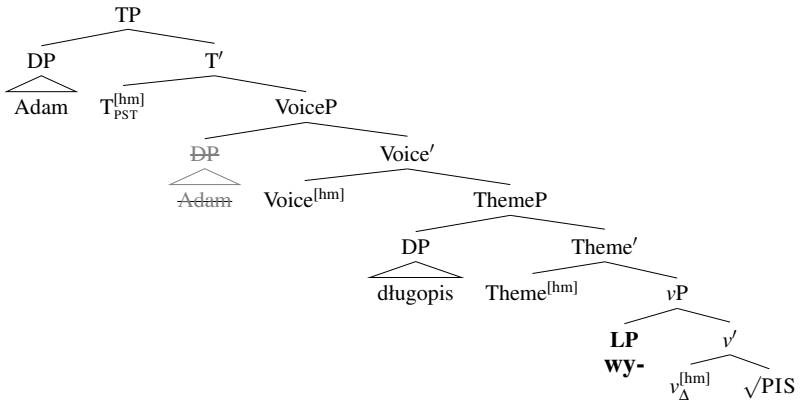
(53) *The M-Merger parameter*

Weak SF languages require the specifier of *v*P to undergo M-Merger.

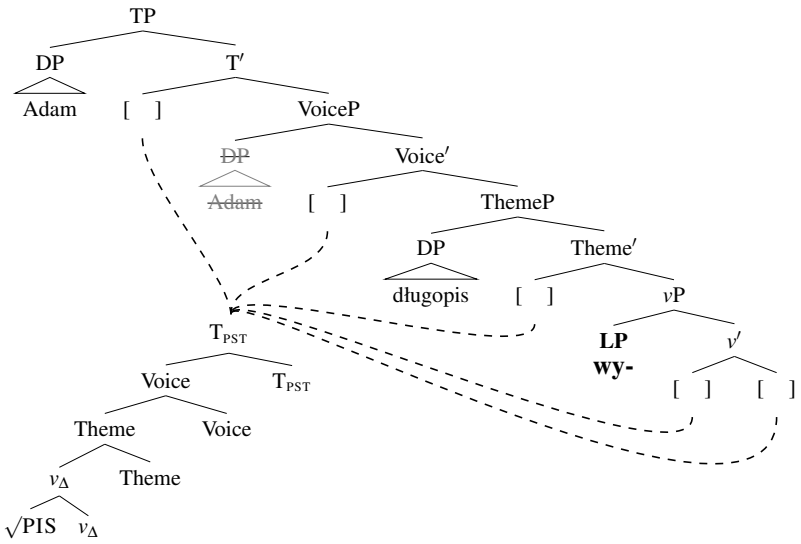
[11] The M-Merger reqeuirement is best formulated as an *if-then* statement: if some XP is the specifier of *v*P, then this XP must undergo M-Merger. This formulation makes it clear that the M-Merger requirement does not apply in the absence of any result/path XPs in the specifier position, that is, in VF constructions.

M-Merger explains how min/max particles incorporate into the verbal word. Consider once again the sentence in (52a). Its syntactic structure is diagrammed in (54a), with the P/PP particle labelled as LP ('lexical prefix'). On the PF branch of the derivation, Generalised Head Movement successively applies to each head in the verbal spine, deriving a single complex M-value (54b). In the next step, the LP incorporates into the resulting M-value via M-Merger (54c). Note that since M-Merger follows GenHM, the LP ends up at the periphery of the word. Finally, the M-value undergoes linearisation and VInsert (54d).

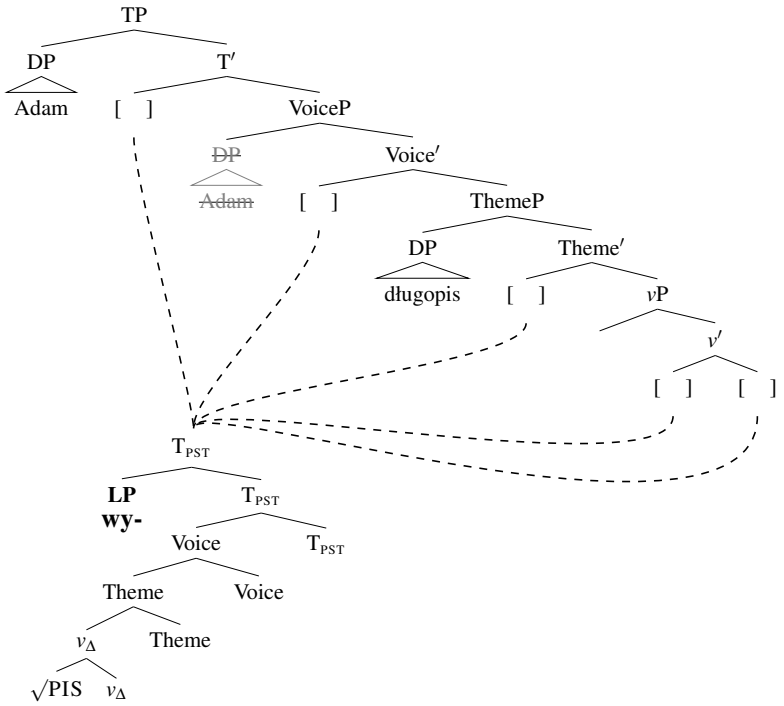
(54) a. *Output of syntax*



b. *Generalised Head Movement*



c. *M-Merger of the lexical prefix*



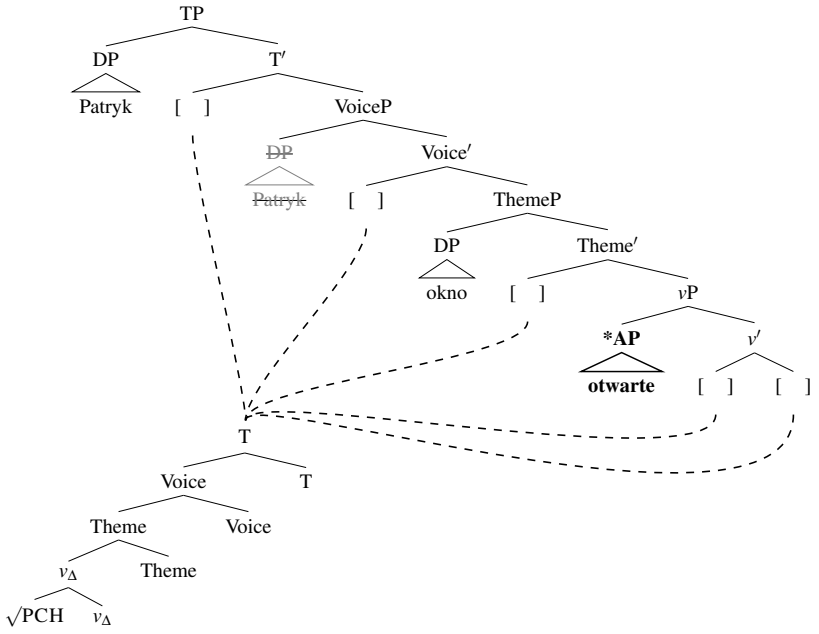
d. *Linearisation and Vocabulary Insertion*

[**LP**, *wy-*]⌢[$\sqrt{}$PIS, *pisa*]⌢[v_{Δ}, Ø]⌢[Theme, Ø]⌢[Voice, Ø]⌢[T_{PST}, *-ł*]

Apart from incorporating min/max particles into the verb, M-Merger filters out structures with branching constituents in the specifier of *v*P. Consider the AP resultative **Patryk pchnął okno otwarte*, a literal rendition of 'Patrick pushed the window open'. After the application of GenHM, M-Merger targets the AP *otwarte* 'open', but it fails because the AP is a branching phrase while 'the input to M-Merger is two heads' (Matushansky 2006:94). In Distributed Morphology, adjectives are syntactically complex, consisting minimally of a root and the category-defining head *a*. As such, they do not qualify as an input to M-Merger (see also Mateu 2002, Amritavalli and Jayaseelan 2003 and Acedo-Matellán 2022 for claims that adjectives are internally complex). The morphosyntactic complexity of APs is even more apparent in Polish: adjectives bear obligatory gender/number/case agreement, which

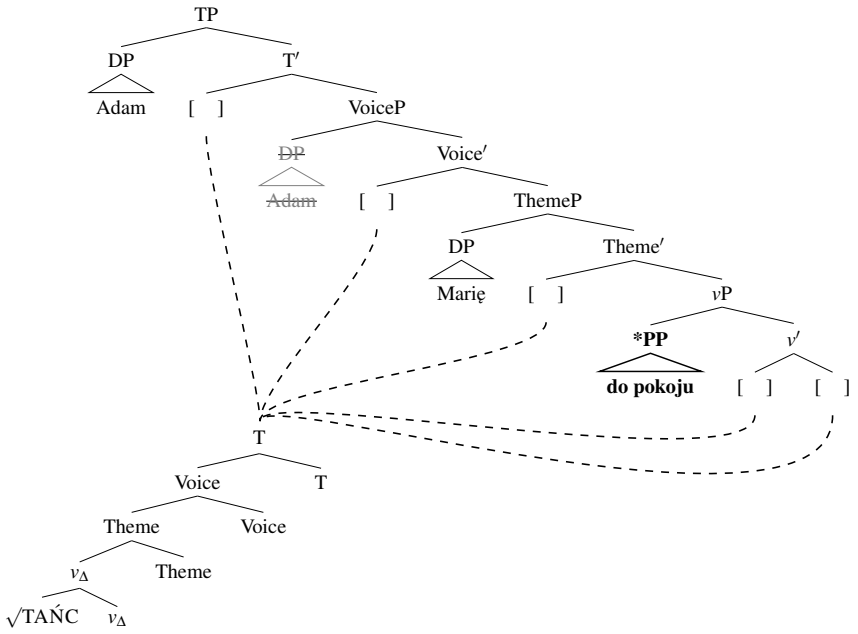
may correspond to a separate terminal node Agr. For example, *otwar-t-e* is N.SG.NOM/ACC, *otwar-t-ym* is M/N.SG.INST, *otwar-t-a* is F.SG.NOM, and so on. The root is $\sqrt{}$OTWÓR 'hole', while the passive participle suffix *-t* can be plausibly analysed as an exponent of the *a* head (or a separate PTCP head). Since the AP is not a head, the output of syntax does not match the structural definition of M-Merger, causing the derivation to crash at PF:

(55) *M-Merger cannot apply to a branching phrase ⇒ PF crash*



Complex PP resultatives like **Marek tańczył Anię do pokoju* (lit. 'Adam danced Mary to room') are ruled out for the same reason. The status of PPs as phrasal constituents is uncontroversial. Assuming that branching phrases cannot undergo M-Merger, the M-Merger requirement is violated, and the derivation is filtered out at the interface with PF.

(56) *M-Merger cannot apply to a branching phrase ⇒ PF crash*



Not everybody agrees that the application of M-Merger is restricted to min/max specifiers. For instance, Harizanov (2014:1068f.) reformulates M-Merger as an operation which 'adjoins labels', allowing it to apply 'in the context of non-branching specifiers, as intended in Matushansky (2006), as well as to branching specifiers — i.e., it is not constrained with respect to its input [...] Thus, when a branching projection undergoes M-Merger, a reduced version of the branching projection — its label — is adjoined to the head'. It should be clear that this implementation of M-Merger is incompatible with the current proposal. Our explanation for the ungrammaticality of complex AP and PP resultatives rests on the assumption that M-Merger *does not* apply to branching phrases. This, in turn, follows from the standard conception of M-Merger as an incorporation operation, which applies to constituents rather than labels. Branching specifiers (complex syntactic structures built via Merge) cannot incorporate into an M-value (a bundle of morphological features derived via GenHM). Only non-branching specifiers (syntactically atomic feature bundles) can incorporate at PF.

To recapitulate, the M-Merger parameter makes the right cut for weak SF languages: it

triggers the affixation of min/max particles to the verb, while simultaneously banning resultative APs and PPs from merging in the specifier of *v*P. Like many other morphological constraints, the M-Merger requirement is arbitrary. We are unlikely to find a 'deep' explanation for the fact that weak SF languages are restricted in this way. From the point of view of language acquisition, arbitrariness is not a problem, as long as there is enough evidence for it in the input. This is certainly true in Polish. Every time a child perceives a complex SF construction in which the result/path satellite surfaces as a prefix (e.g. *wy-pisać* 'to write out', *w-tańczyć* 'to dance in', *za-płakać* 'to cry all over'), the probability of the M-Merger requirement is increased. If the child is not exposed to any other SF constructions, they will automatically assume that M-Merger is obligatory in the target language.

This concludes the main part of the analysis. The rest of this chapter provides further evidence for the M-Merger parameter in Polish, Russian, Latin and Classical Greek. We will see the operation of M-Merger allows us to solve some long-standing puzzles concerning the morphophonology of resultative prefixes in weak SF languages.

3.5 Morphophonological predictions

3.5.1 The phonology of Slavic prefixes

In Slavic languages, lexical prefixes give rise to a well-known 'bracketing paradox'. On the one hand, the prefix and the root function as a semantic unit, which is often assigned an idiosyncratic, non-compositional meaning (57a). On the other hand, prefixes are external to the verb and its inflectional suffixes at the level of phonological structure (57b).

(57) a. Semantics: [[prefix root] inflection]

b. Phonology: [prefix [root inflection]]

The original discussion of this paradox is due to Pesetsky (1979), who focuses on the phonological realisation of Russian 'yers'. Yers are abstract vowels which may or may not surface

overtly. In the following examples, the forms on the left feature vowels (highlighted in bold) which are missing from the right-hand column. Vocalic alternations of this type are also observed in Polish (see e.g. Gussmann 1978, Rubach 2016 and references therein).

(58)

a.	p**ë**s’	NOM.SG	ps’-a	GEN.SG	‘dog’
b.	pal**o**k	GEN.PL	palk-a	NOM.SG	‘stick’
c.	d**e**n’	NOM.SG	dn’-a	GEN.SG	‘day’
d.	den-ëč-**e**k	NOM.SG	den-ëč-k-a	GEN.SG	‘day’ (double diminutive)

Pesetsky (1979) assumes that yers start out as the high vowels /I/ and /U/ in the phonology, and that they are subsequently lowered to [e] and [o]. The lowering rule applies only in the context of a following yer (59a). Finally, any non-lowered yers are deleted (59b).

(59) a. *Yer lowering (cyclic)*

Lower a yer if there is a yer in the following syllable (I/U $\rightarrow$ e/o / __C_0 I/U)

b. *Yer deletion (post-cyclic)*

Delete any non-lowered yers (I/U $\rightarrow$ Ø)

Consider the step-by-step derivation of the nominative *den-ëč-**e**k* and the genitive *den-ëč-k-a*. By assumption, the nominative suffix takes the form of the yer /U/, which triggers the lowering of the preceding /I/, but which itself undergoes deletion (60). In contrast, if the final suffix is not a yer, the outer /I/ vowel does not meet the conditions for lowering (61).

(60)

Underlying	[[[	[dIn]	Ik]	Ik]	U]	
Cycle 1		–				
Cycle 2: Yer lowering		e				
Cycle 3: Yer lowering			e			
Cycle 4: Yer lowering				e		
Post-cyclic: Yer deletion					Ø	
Output (with palatalisation):		**den-ëč-ek**				

(61)	Underlying	[[[	[dIn]	Ik]	Ik]	a]
	Cycle 1		–			
	Cycle 2: Yer lowering		e			
	Cycle 3: Yer lowering			e		
	Cycle 4: Yer lowering				–	
	Post-cyclic: Yer deletion				Ø	
	Output (with palatalisation):	**den-ëč-k-a**				

The case of left-to-right yer lowering is relatively straightforward. Things get more complicated when we take verbal prefixes into account. From pairs like [pod**o**žgla] 'she burned' and [podž**o**g] 'he burned', we know that the prefix /podU/ 'under' and the root /žUg/ 'burn' both contain yer vowels in Russian (see Gribanova 2015 for more examples of this sort). The appearance of the root vowel in [podž**o**g] is explained by assuming that the masculine suffix is underlyingly a yer, which conditions the lowering of the preceding /U/. But what about the yer in the prefix? Consider two derivations: one in which the prefix combines with the root before inflectional suffixes (62), and one in which the prefix is outermost in the phonological structure (63). The first derivation generates an incorrect output: the yer in the prefix is lowered before the yer in the root, which is then lowered before the yer in the masculine suffix. This yields the unattested form **podo-žog*. In contrast, the second derivation makes the right predictions: yer lowering applies to the root before the following /U/, thus bleeding the lowering of the yer in the prefix. The result is *pod-žog*.

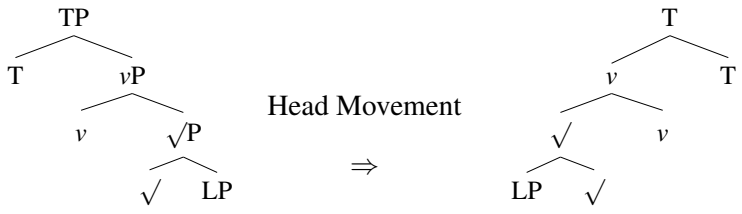
(62)	Underlying	[[podU	[žUg]]	U]
	Cycle 1		–	
	Cycle 2: Yer lowering	o		
	Cycle 3: Yer lowering		o	–
	Post-cyclic: Yer deletion			Ø
	Output:	***podo-žog**		

(63)	Underlying	[podU	[[žUg]	U]]
	Cycle 1		–	
	Cycle 2: Yer lowering		o	–
	Cycle 3: Yer lowering	–		
	Post-cyclic: Yer deletion	Ø		Ø
	Output:	**pod-žog**		

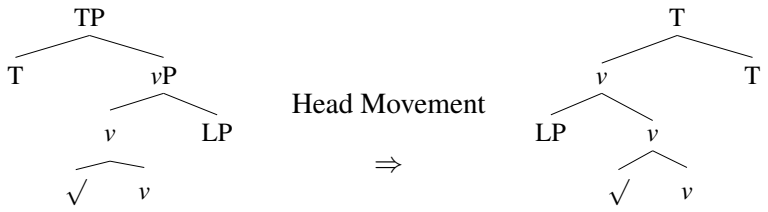
Further evidence that Russian prefixes are phonologically outside of the domain of the verb and the inflectional suffixes is discussed in Matushansky (2002), Gribanova (2009) and Blumenfeld (2012) (see also Booij and Rubach 1984 for Polish). It is clear that prefixed verbs involve a mismatch between semantic and phonological structure. It is also clear that this mismatch is difficult to capture if – following the bulk of the literature on this topic – lexical prefixes incorporate into the verb via Head Movement. For example, both Gribanova (2013, 2015) and Biskup (2019) merge lexical prefixes in the complement of the root, and they use HM to generate complex head adjunction structures similar to (64a) (the functional projections between *v* and T are omitted for brevity). Similarly, in his analysis of weak SF languages, Acedo-Matellán (2016) situates resultative prefixes in the complement of *v*, and then incorporates them into the verbal complex via post-syntactic HM. Since he uses manner adjunction, his derivations are slightly different from those of Gribanova and Biskup, but the main point remains unchanged: the prefix is structurally closer to the root than inflectional heads are (64b). It thus appears that the phonological properties of Slavic prefixes cannot be captured via HM (see also Svenonius 2008 for this point).

(64) *Incorporating lexical prefixes via Head Movement*

a.

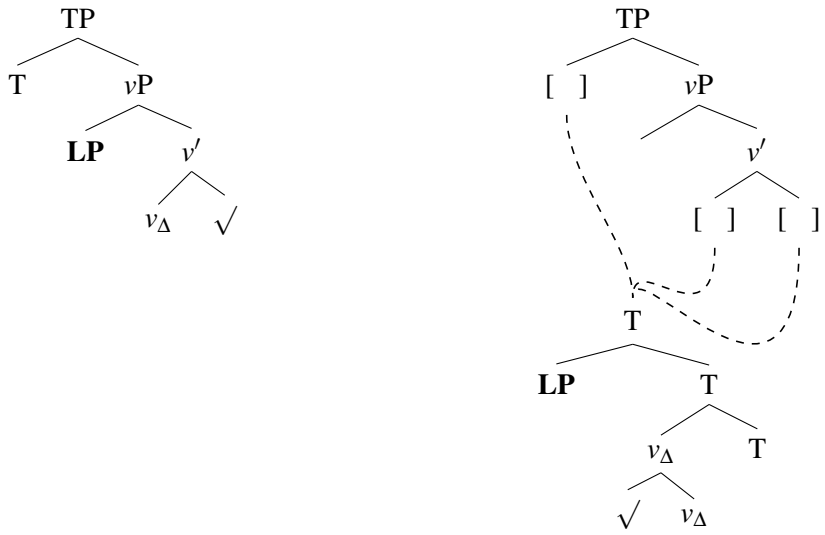


b.



The current proposal fares much better in this respect: the combination of GenHM and M-Merger solves the bracketing paradox without any further stipulations. At the level of syntax and semantics, the LP and the root form a complex predicate inside the *v*P projection (65a). If *v*P constitutes a domain of non-compositional meaning (Marantz, 1997, 2007), then the LP and the root may function as a semantic unit at LF. On the PF branch of the derivation, M-Merger follows the application of GenHM. Hence, the LP is the last element to incorporate into the complex M-value, which serves as the input to phonological computations (65b). Recall from Chapter 2 that Arregi and Pietraszko (2021) use M-Merger to model cliticisation (i.e. English negative contraction *n't*). Since resultative prefixes in weak SF languages are phonological clitics, it makes sense to analyse them using the same tool.

(65) a. *Output of syntax* b. *GenHM followed by M-Merger*



3.5.2 The linear order of Latin and Classical Greek prefixes

Remarkably, our conclusions about the morphophonology of Slavic prefixes generalise to other weak SF languages. Latin and Classical Greek provide even more striking evidence that resultative prefixes are incorporated into the verb via M-Merger rather than Head Movement. This evidence comes from the linear order of resultative prefixes and inflectional affixes. In Slavic, all inflectional material related to aspect, tense and agreement is suffixal, so the issue of ordering lexical prefixes with respect to inflectional affixes never arises in the first place. Latin and Classical Greek are more interesting because part of the inflectional material is prefixal rather than suffixal. In both languages − systematically in Greek and in some verbs in Latin − perfect stems are formed via a prefixal reduplication procedure (66)-(67). In verbs with resultative prefixes, the reduplicated syllable (in bold) is based on the phonological material of the root and always adjacent to it. Crucially, the resultative prefix is situtated further away from the root than the tense/aspect marker.

(66) a. kata- baín -ō
down- step -PRS.1SG
'I walk down'

b. kata- **bé**- bē -k -a
down- PRF- step -PRF -1SG
'I have walked down'

c. ***ke**-katá-bē-ka, ***be**-katá-bē-ka
(Classical Greek)

(67) a. de- curr -o
down- run -PRS.1SG
'I run down'

b. de- **cu**- curr -i
down- PRF- run -PRF.1SG
'I have run down'

c. ***de**-de-curr-i, ***cu**-de-curr-i
(Latin)

In a similar vein, past-tense forms in Classical Greek are prefixed with a vowel /e/, the so-called augment. In prefixed verbs, the augment systematically appears *after* the result/path particle, yielding morpheme orders that appear to violate the Mirror Principle (Baker, 1988).

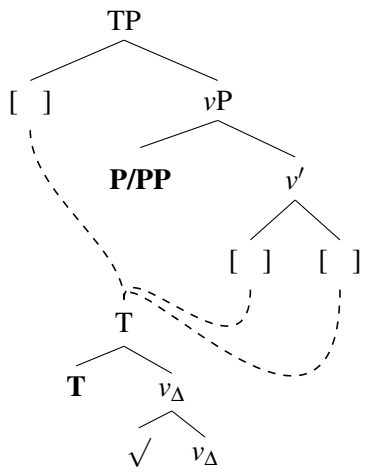
(68) a. kat- **é**- bain -o -n
down- PST- step -TH -1SG
'I was walking down'

b. ***e**-katá-bain-o-n

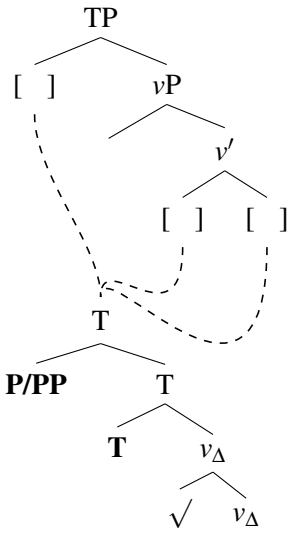
(Classical Greek)

Unlike Head Movement, the GenHM + M-Merger analysis correctly predicts the position of the particle at the periphery of the word. Consider the case of the Classical Greek tense augment (abstracting away from theme vowels and agreement). The derivation is virtually the same as before except that the tense node T is linearised to the left of the root (69a). Crucially, although the T head c-commands the particle in narrow syntax, their ordering is reversed by the timing of PF operations, with GenHM always feeding M-Merger (69b).

(69) a. *Output of GenHM*



b. *Output of M-Merger*



3.6 Resultative prefixes and particle shift in English

Weak SF languages require that any element merged in the specifier of *v*P must undergo M-Merger. Strong SF languages do not have this requirement, but they may still allow the application of M-Merger in certain well-defined environments. This section explores two types of resultative M-Merger found in English: *item-dependent* and *item-independent*.

Item-dependent M-Merger applies to a small set of resultative prefixes in Germanic

languages. In English, this includes Latinate prefixes like *con-*, *in-*, *de-*, *re-* and *trans-*, which are in complementary distribution with resultative particles. As pointed out by Folli and Harley (2020), it is possible to *write up an idea* but not to **com-pose up an idea*. An even more striking illustration comes from the minimal pair *con-fess* and *fess up* (cf. **con-fess up*). The most natural explanation for the complementary distribution between the prefix and the particle is that they compete for the same structural position in the *v*P.[12]

(70) *Latinate prefixes and roots in English*

a. con-flate, in-flate, de-flate

b. com-press, im-press, re-press, de-press

c. com-pose, im-pose, re-pose, de-pose, trans-pose

Another English example involves *out*-prefixation (Ahn, 2022). The prefix *out-* has a resultative meaning and licenses unselected objects (e.g. *This company #(out-)spent its competitors*). It also cannot co-occur with resultative particles (e.g. **He out-gunned them down*).

(71) *Out-prefixation in English*

out-run, out-gun, out-smart, out-compete, out-gerrymander, out-Picasso

Moving on to other Germanic languages, the set of inseparable prefixes in German includes *ent-*, *ver-* and *be-* (72c). The analysis of *ent-* as an incorporated prepositional element is explored in Biskup and Putnam (2014). In turn, Hoekstra and Mulder (1990) develop a

[12]The hypothesis that the prefix and the particle are in structural competition does not account for multiply-prefixed verbs like *de-com-pose*, where the prefix *de-* appears alongside *com-* (cf. also *super-im-pose*, *in-dis-pose*). If both *com-* and *de-* were resultative, we would have to abandon the claim that result XPs are unique, thus losing the explanation for the ungrammaticality of **com-pose up*. Alternatively, we could propose that, in this context, *de-* simply modifies the result state introduced by *com-*. This line of analysis is consistent with the uniqueness of the result component. The function of the prefix *de-* in *de-com-pose* could be seen as analogous to that of the low superlexical prefix *pere-* in Russian, which may also co-occur with the lexical prefix *za-*:

(i) **pere- za-** pis -a -t'[P]
RPT- behind- write -TH -INF
'to re-record, to write down again'

For more discussion of low superlexical prefixes in Slavic, see §4.3.2 in Chapter 4 and §6.2.2 in Chapter 6.

resultative analysis of the Dutch *be-* in constructions like *be-planten* 'to cover with plants'.

(72) a. Sie ent-steig-t dem Auto.
she ENT-climb-3SG DEF.N.DAT car
'She climbs out of the car.'

b. Sie ver-siegel-t die Tür.
she VER-seal-3SG DEF.F door
'She seals the door up.'

c. Er be-pflanz-t den Garten.
he BE-plant-3SG DEF.M.ACC garden
'He covers the garden with plants.'

(German)

I assume that prefixed verbs in English, German and Dutch have the same structure as those in Latin, Classical Greek and Slavic. This is to say that the particle merges in the specifier of *v*P and subsequently incorporates into the verb at PF. The difference between strong and weak SF languages concerns the trigger for M-Merger. In weak SF languages, M-Merger is a *structural* requirement associated with a particular syntactic position (i.e. Spec-*v*). In strong SF languages, M-Merger is a *lexical* requirement associated with specific particles (e.g. *com-*, *trans-*, *ent-*, *be-*). In other words, the application of M-Merger is item-dependent; it is obligatory, but only for a small set of lexical items, not across the board.

What about item-independent M-Merger? I would like to suggest that optional M-Merger is the mechanism behind particle shift in English. In the following examples, the prepositional particles *out* and *up* can either follow or precede the direct object (73)-(74). Note that this alternation is quite general, independent of the choice of the particle.

(73) a. Andy tossed the cigarette out.

b. Andy tossed out the cigarette.

(74) a. She tore the contract up.

b. She tore up the contract.

One of the most influential existing accounts of particle shift is due to Svenonius (1996a) and Ramchand and Svenonius (2002). Simplifying somewhat, these authors adopt a small-clause structure in which V takes the result projection ResP as complement, while Res combines with a particle phrase PrtP (essentially another small clause). The idea is that one of two things can move overtly from PrtP to ResP: the object or the particle. If the object raises to Spec-Res, we get the verb-object-particle order (75a). Conversely, if the particle undergoes Head Movement to Res, the resulting order is verb-particle-object (75b).[13]

(75) a. [$_{VP}$ toss [$_{ResP}$ the cigarette [Res [$_{PrtP}$ ~~the cigarette~~ out]]]]

b. [$_{VP}$ toss [$_{ResP}$ out+Res [$_{PrtP}$ the cigarette ~~out~~]]]

Apart from modifying the word order, particle shift has other properties which call for a principled explanation. Firstly, shifted particles cannot be modified by degree adverbs like *right* and *straight*. This is true regardless of whether *right* and *straight* modify the derived or the base-generated position of the particle (76). Secondly, only a single particle can undergo particle shift, and conjunctions of particles (e.g. *up and away*) are ungrammatical. Thirdly, even though particles and prepositions are both P elements, prepositions cannot undergo particle shift (78)-(79). Fourthly, resultative APs cannot shift either, even when they are not modified (80).[14] Although Ramchand and Svenonius (2002) do explain most of these properties, they offer a *different* explanation for each one. In what follows, I offer a much simpler analysis based on the optional application of M-Merger.

(76) *Shifted particles cannot be modified*

a. Andy threw the rat {right/straight} out.

b. Andy threw {*right/*straight} out the rat {*right/*straight} ~~out~~.

[13] As for the trigger of this movement, Svenonius (1996a) associates Res with an EPP feature in English.

[14] It should be noted that 'heavy' NP shift is a distinct operation which has no bearing on particle shift:

(i) a. We tossed in the sewer [every single rat that we found on the street].

b. We hammered flat [all the remaining metal stored in the warehouse].

(77) *Shifted particles cannot be conjoined*

a. Andy tossed the ball up and away.

b. *Andy tossed up and away the ball.

(78) *No shift with the head of a PP*

a. We tossed the rat in the sewer.

b. *We tossed in the rat ~~in~~ the sewer.

(79) *No shift with PPs*

a. We tossed the rat in the sewer.

b. *We tossed in the sewer the rat ~~in the sewer~~.

(80) *No shift with APs*

a. We hammered the metal flat.

b. *We hammered flat the metal ~~flat~~.

The key insight is that the verb-particle-object construction in English has similar properties to the prefix-verb construction in weak SF languages like Polish. Firstly, unlike full PPs, resultative prefixes cannot be modified by degree adverbs like *prosto* 'straight' (81) (cf. also Svenonius 2008 for parallel Russian data). Secondly, resultative prefixees cannot be conjoined (82). Thirdly, *bone fide* prepositions cannot leave their DP complement behind and incorporate into the verb (83).[15] Fourthly, we have already seen that weak SF languages cannot generate complex PP or AP resultatives (84). This mirrors the inability of resultative PPs and APs to shift in front of the object in English.

[15]Recall that the prefix *do* may co-occur with a PP headed by *do*, but it may also co-occur with PPs headed by *na* 'on' and *pod* 'under'. This is one of the reasons why such PPs were analysed as adjuncts in §3.2.2 The point in the main text is that the head of a PP cannot prefix to the verb while stranding the prepositional object.

(i) Adam do-szed-ł {do muzeum / na plażę / pod most}.
Adam to-walk-PST to museum.GEN on beach.ACC under bridge.ACC
'Adam walked all the way {to the museum / to the beach / under the bridge}.'

(81) *Prefixed particles cannot be modified*

a. Adam w-jech-a-ł^{P} (prosto) w słup.
Adam in-walk-TH-PST straight in pillar.ACC
'Adam drove straight into a pillar.'

b. Adam już (*prosto) w-jech-a-ł^{P} (*prosto).
Adam already straight in-drive-TH-PST straight
'Adam has already driven in.'

(82) *Prefixed particles cannot be conjoined*

a. *Adam wy- i- prze- kop-a-ł^{P} piłkę na drugą stronę.
Adam out- and- through- kick-TH-PST ball.ACC on second side.ACC.
Intended: 'Adam kicked the ball out and across to the other side.'

b. *Adam pod- i- od- rzuc-i-ł^{P} piłkę.
Adam under- and- off- throw-TH-PST ball.ACC.
Intended: 'Adam threw the ball up and back.'

(83) *No prefixation of the head of a PP*

a. Adam szed-ł^{I} do muzeum.
Adam walk-PST to museum
'Adam walked to the museum.'

b. *Adam do-szed-ł ~~do~~ muzeum.
Adam to-walk-PST to museum.GEN

(84) *No complex PP or AP resultatives*

a. *Patryk pch-ną-ł okno otwarte.
Patrick.NOM push-SML-PST window(N).SG.ACC open.SG.N.ACC
Intended: 'Patrick pushed the window open.'

b. *Adam tańcz-y-ł Marię do pokoju.
Adam.NOM dance-*v*-PST Mary.ACC
Intended: 'Adam danced Mary into the room.'

The similarities between particle shift in English and prefixation in weak SF languages are captured by the constraints in (85). The restriction to min/max constituents admits non-projecting P/PP particles, but it rules out PPs and APs (which minimally consist of the category-defining head *a* and the root). It also derives the ban on modified particles: the

branching constituents [straight out] and [right out] are non-minimal by definition.

(85) a. Weak SF languages require resultative XPs to be min/max constituents.

b. English requires *shifted* resultative XPs to be min/max constituents.

Both restrictions can be implemented via M-Merger, which is limited to min/max specifiers. Specifically, while the application of M-Merger is obligatory in weak SF languages, it appears to be optional in English. Consider the PF derivation of *Andy tossed out the cigarette*. First, the constituent parts of the verb are assembled via GenHM in the usual way (86a). Afterwards, the min/max particle *out* incorporates into the verb via M-Merger (86b). The complex M-value is pronounced in the highest strong position, which I assume to be Voice. This yields the correct word order, with the verb-particle complex preceding the object.[16]

Note that this derivation is almost identical to that of the prefixed verb *wy-pisać* 'out-write' in §3.4. The only difference is that the incorporated particle is linearised to the left in Polish and to the right in English. Assuming that M-values are hierarchical representations, and that linearisation takes place only at a later stage, the post-verbal/pre-verbal placement of the particle is orthogonal to M-Merger. In fact, all other things being equal, we fully

[16]This analysis also accounts for the phonological fact that shifted particles are obligatorily de-stressed in English (exactly like contracted negation *n't*). After all, they are incorporated into another word at PF.

More problematic is the ban on particle shift with pronominal objects. The particle-object word order is ungrammatical when the object takes the form of a pronoun like *me*, *us*, *you*, *them*, *him*, *her* or *it*. What makes the M-Merger of *out* acceptable in the presence of *the cigarette* but not in the presence of *it* in (i)? This restriction does not extend to all pronouns, as reflexive pronouns do not block the M-Merger of the particle (ii).

(i) Andy tossed {the cigarette / it} out {the cigarette / *it}.

(ii) The robot switched {itself / it} off {itself / *it}.

This suggests that the reason for the unacceptability of **toss out it* might well lie in the prosody of pronominal elements in English. If 'light' pronouns like *it* have the status of post-verbal clitics, and if English has only one post-verbal clitic position, then it follows that *it* and incorporated *out* are in complementary distribution. This line of reasoning is supported by the awkwardness of the double object construction with two 'light' pronouns:

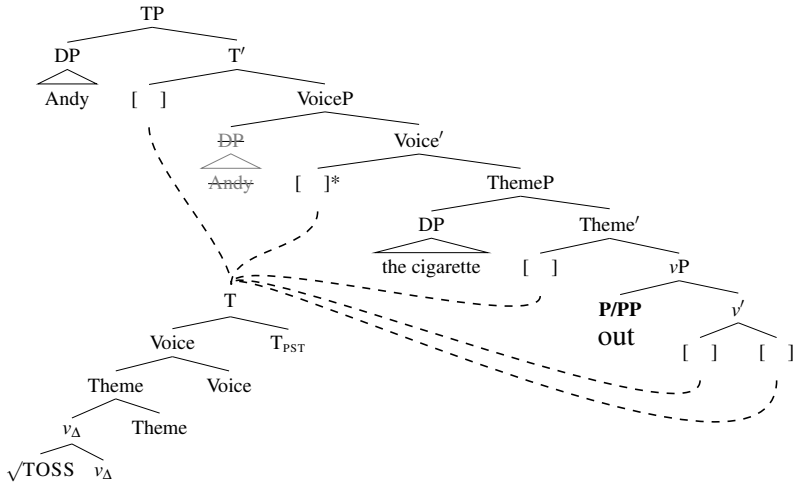
(iii) The robot showed them {the book / itself / ??it}.

While a full analysis of these data is outside of the scope of this thesis, the point is that the ungrammaticality of **toss out it* does not necessarily undermine the M-Merger approach to particle shift in English.

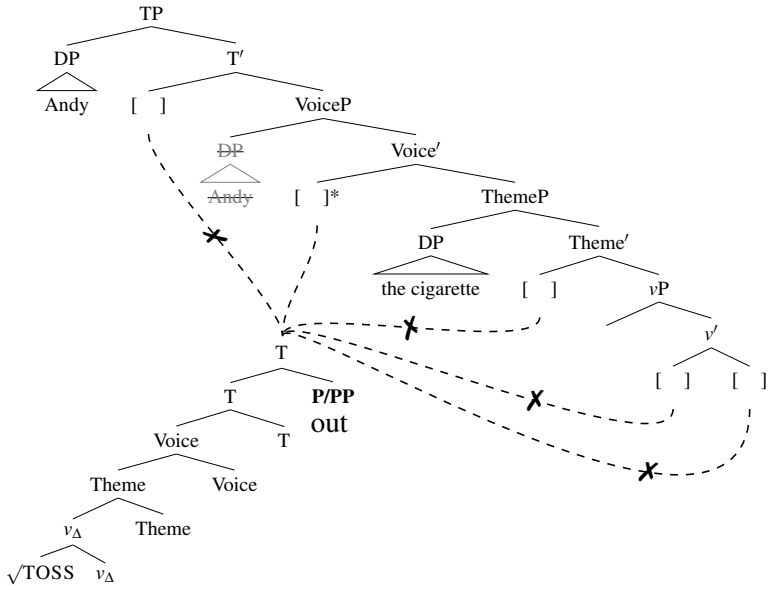
expect incorporated particles in some languages to be linearised as post-verbal 'suffixes'.[17]

(86) *Particle shift*

a. *Output of GenHM*



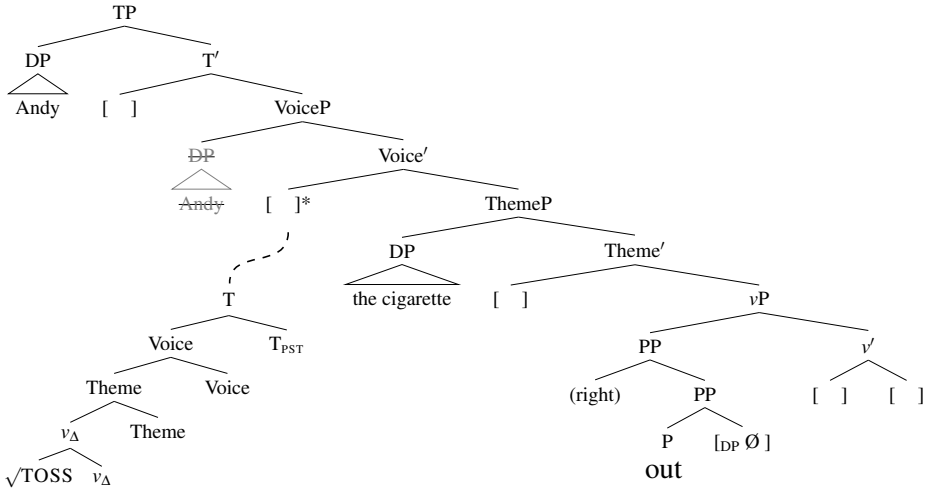
b. *Output of M-Merger + Head Chain Pronunciation*



[17]This said, it is at least intriguing that the two cases of truly optional M-Merger in English result in suffixation: contracted negation (e.g. *hasn't*) and particle shift (e.g. *toss out the cigarette*). The other cases of M-Merger investigated in this thesis are obligatory and result in prefixation, whether triggered structurally across the board (as in weak SF languages) or lexically by specific particles (as in English, German and Dutch).

When the result/path satellite in the specifier of *v*P is a branching phrase, M-Merger simply does not apply. The derivation of *Andy tossed the cigarette (right) out* is shown in (87).

(87) *No particle shift*



There is additional evidence that non-shifted particles are more complex than incorporated ones. As observed in Borer (2005b:211), the presence of non-shifted particles requires the verbal predicate to be telic (88a). In contrast, incorporated particles are compatible with both telicity and atelicity, as diagnosed by the adverbial modification test (88b). Moreover, when the definite object *the letter* is replaced with the bare mass noun *poetry*, the telic reading becomes unavailable, rendering the non-shifted variant ungrammatical (89).

(88) a. Kim wrote the letter up (*for several hours/in several hours). (telic)

b. Kim wrote up the letter (?for several hours/in several hours). (atelic/telic)

(89) a. *Kim wrote poetry down. (*telic)

b. Kim wrote down poetry (for several hours/*in several hours). (atelic/*telic)

Tentatively, I suggest that this telicity requirement correlates with the presence of a null Ground argument in the complement of P (see (87); cf. also Svenonius 1996b). This DP imposes a boundary on the path denoted by the particle, giving rise to a telic reading. If

this is on the right track, then all incorporated particles in English are non-projecting P/PP, while all non-incorporated particles are branching phrases with a null Ground complement.

3.7 Conclusion

We have seen that languages differ in the morphosyntactic expression of event structure. In the revised version of Talmy's typology, Polish (/Slavic) patterns as a weak satellite-framed language, alongside Latin and Classical Greek. Weak SF languages may encode the result/path component in a non-verbal satellite, but this satellite cannot be realised as an independent word or phrase. Instead, it is required to surface as an affix on the verb.

This chapter has made two novel contributions to the analysis of change-of-state constructions. Firstly, I have argued that the syntactic mechanism of manner conflation is redundant, and that the standard rules of semantic composition are sufficient to derive the denotation of complex resultatives like *The boy patted his hair down*. All we need to assume is that result XPs are introduced in the specifier of v_{Δ}, and that manner roots, which merge in the complement position, combine with the verbal head via Event Identification.

Secondly, the differences between strong and weak SF languages are driven by M-Merger. This operation has the right set of properties to capture a wide range of facts about resultative particles in weak SF languages. Firstly, it triggers affixation in the morphology. Secondly, it applies only to min/max specifiers, filtering out complex AP and PP resultatives. Thirdly, it follows the application of Generalised Head Movement, making the correct predictions about the morphophonology and linear order of Slavic, Latin and Classical Greek prefixes. Finally, we have seen that the account can be easily extended to resultative prefixes in Germanic and to particle shift in English, which turns out to involve optional M-Merger. I am not aware of any other analysis which captures the same range of facts.

Chapter 4

Polish Aspect and Verb Morphology

4.1 Introducing aspect

The scope of the previous chapter was largely limited to *v*P-internal event structure. As such, it had relatively little to say on the topic of *v*P-external functional projections, particularly those responsible for aspect and aspectual morphology. Looking ahead, Chapter 5 will investigate the relationship between aspect and event structure in Polish and Russian. Chapter 6, in turn, will present a comprehensive analysis of aspectual affixes in Polish, including secondary imperfective suffixes, superlexical prefixes and the semelfactive *-nąć*.

In order to address these questions effectively, however, we must first introduce the core semantic and morphological properties of Polish verbs. These include: the semantic functions of perfective and imperfective aspect, including the relation between (im)perfectivity and (a)telicity (§4.1.1-§4.1.2), aspectual morphology (§4.1.4), and the structure of Polish verbs (§4.2). I will also explain the distinction between lexical and superlexical prefixes (§4.3) and touch upon 'perfectivity without prefixation', a category which includes semelfactive and bare perfective stems (§4.4). In the last section, I will review the main theoretical issues posed by Slavic aspectual morphology, including the *recursion problem* and the *long-distance problem* (§4.5). This discussion, together with the results of the previous

chapter, will provide important background for Chapters 5 and 6.

Much of the material covered in the following sections will be familiar from previous descriptions of Slavic prefixation and aspect in the generative literature (e.g. Schoorlemmer 1995, Babko-Malaya 1999, Filip 1999, 2005, 2008, Jabłońska 2004, 2007, Romanova 2004, 2006, Svenonius 2004a,b, Arsenijević 2006, Borik 2006, Willim 2006, Gehrke 2008, Łazorczyk 2010, Biskup 2019). Even so, many descriptive details, particularly those specific to Polish morphology, as well as the framing of certain theoretical issues, should be of interest even to those readers who are well-versed in the rich literature on this subject.

4.1.1 Imperfective

The vast majority of Polish verbs fall into one of two natural classes: perfective and imperfective.[1] Descriptively speaking, perfective verbs denote bounded, delimited or culminating eventualities, while imperfective verbs exhibit a wide range of unbounded or non-delimited uses, including stative, atelic, progressive, iterative, habitual and generic ones. I begin by describing the main functions of imperfective aspect, mostly in comparison with English. I will also pay close attention to the relationship between (im)perfectivity and (a)telicity.

The imperfective is best seen as the unmarked member of the perfective/imperfective opposition (e.g. Jakobson 1932, Forsyth 1970 for Russian). Willim (2006:205) goes so far as to say that semantically 'imperfective aspect is a non-aspect'. The following examples illustrate the stative (1) and the durative/progressive (2) use of the imperfective. In each pair of sentences, the first one contains an unprefixed, 'bare' imperfective verb and the second one – a prefixed, 'secondary' imperfective verb. The morphological distinction between bare and secondary imperfectives will be discussed in detail in §4.1.4. For now, the important thing to note is that bare and secondary imperfectives have the exact same range of uses. Note also that superscripts $^{\text{I}}$ and $^{\text{P}}$ are used to indicate the aspectual value of

[1] The only exception are bi-aspectual verbs, such as *nominowac*$^{\text{I/P}}$ 'to nominate', which are ambiguous between perfective and imperfective uses. In comparison with other Slavic languages, Polish has relatively few verbs of this type, most of which are of foreign origin. I set the issue of bi-aspectual verbs aside in this thesis.

a verb, TH stands for 'theme vowel', and that brackets signal phonological deletion.

(1) *Stative*

a. Elżbieta koch-a^{I} Jerzego.
Elizabeth love-3SG.NONPST George.
'Elizabeth loves George.'

b. Perspektywa wojny prze-raż-a(j)^{I} Marka.
perspective war.GEN through-hit-TH Mark.ACC
'The prospect of war terrifies Mark.'

(2) *Durative/progressive*

a. Anna pras-uj-e^{I} w tej chwili koszulę.
Anna iron-*v*-3SG.NONPST in this moment.LOC shirt.ACC
'Anna is ironing a shirt right now.'

b. Arek właśnie się u-bier-a(j)-ł^{I}, kiedy ktoś zapukał^{P} do drzwi.
Arek just REFL at-take-TH-PST when someone knock.PST to door.GEN
'Arek was just getting dressed when someone knocked on the door.

The next pair of sentences illustrates the so-called *general-factual* use of imperfective aspect. It asserts that an event of a certain kind has occurred, but without specifying how many times, or whether it was completed or not. In English, the sentence *Mary has already read this book* implies strongly that Mary has already finished the whole book. In Polish, the general-factual imperfective *Maria już czytała*^{I} *tę książkę* is consistent with this telic, whole-book interpretation, but it is also compatible with a weaker reading on which Mary read only a few chapters of the book without finishing it (3a). The emphasis is on the fact that a book-reading event took place, not on its completion. In order to unambiguously assert that Mary has read the whole book, it is necessary to use the perfective verb *prze-czytać*^{P} 'to read' instead. The same holds true for the second sentence: we can be confident that the guide has some prior experience of climbing a particular mountain, but we do not strictly know if he ever made it all the way to the top (3b). The imperfective sentence remains true even if he broke his leg and was rescued before reaching the peak. If we wanted to exclude this possibility, we would have to use the perfective *w-spiąć*^{P} *się* 'to

climb' instead. English has no direct equivalent of the general-factual use, but its meaning can be approximated by means of the paraphrase *to engage in the act of V-ing*.

(3) *General-factual*

a. Maria już czyt-a-ł-a^{I} tę książkę.
Mary already read-TH-PST-3SG.F this book.ACC
'Mary has already engaged in the act of reading this book.'

b. Ten przewodnik już kiedyś w-spin-a(j)-ł^{I} się na tę górę.
this guide already before in-climb-TH-PST REFL on this mountain.ACC
'This guide has already engaged in the act of climbing this mountain before.'

The existence of the general-factual reading shows that imperfective verbs do not entail culmination. This has led some authors to argue that Slavic imperfectives are always atelic (particularly bare imperfectives), and that prefixes are markers of telicity (see e.g. Bohnemeyer and Swift 2004; Borer 2005b; MacDonald 2008a; Łazorczyk 2010). This is not true. When we examine the *pluractional* use of imperfective verbs, it becomes clear that bare imperfectives are compatible with telicity. Once again, a comparison with English will prove informative. In English, all telic predicates can be iterated, describing the repeated occurrence of the same kind of event. The examples below illustrate what MacDonald (2008a,b) refers to as the *Sequence-of-Identical-Events (SIE)* interpretation: the same plane is spotted over and over again, and the same goat is carried into the barn repeatedly.[2] The second sentence is particularly interesting as it shows the co-occurrence of *in X time* and *for X time* adverbials. Assuming that time-frame adverbials are a diagnostic of telicity, the SIE reading must decompose into a telic predicate in the scope of an iterative operator, as schematised in (5). On this analysis, the time-frame adverbial modifies each telic subevent of John carrying the goat into the barn, while the durative adverbial scopes over the entire plural eventuality.

(4) *Sequence of Identical Events*

[2] I assume that the SIE reading is always available grammatically, but not always supported by context or world knowledge. For example, the sentence *??John ate a sandwich for an hour* (as well as other predicates of consumption and creation) are difficult to interpret iteratively because sandwiches can be consumed only once. This fact reflects our knowledge of normal eating events rather than anything about the grammar of English.

a. John spotted a plane for an hour.

b. John carried a goat into the barn **in thirty seconds** for an hour straight.

(MacDonald 2008a:130f.)

(5) [for an hour straight [ITER [in thirty seconds [VP_{telic}]]]]

In Polish, imperfective aspect is compatible with the SIE interpretation, while perfective aspect is not. Consider the minimal pair in (6). The imperfective denotes a plural eventuality made up of individual telic events of John carrying a goat to the barn in two minutes (6a). In contrast, the perfective denotes a single event of carrying a goat into the barn (6b).

(6) *Sequence of Identical Events (imperfective) vs. Single Event (perfective)*

a. Jan (godzinami) nos-i-ł^{I} kozę do stodoły **w dwie minuty**.
John hours.INST carry-TH-PST goat.ACC to barn.GEN in two minutes.ACC
'John carried a goat to the barn in two minutes (for hours).'

b. Jan (*godzinami) za-niós-ł^{P} kozę do stodoły **w dwie minuty**.
John hours.INST LP-carry-PST goat.ACC to barn.GEN in two minutes.ACC
'John carried a goat to the barn in two minutes (once only).'

Additional examples of the SIE reading in Polish are presented in (7). Whether bare or secondary, imperfective verbs turn out to be compatible with time-frame adverbials in pluractional contexts. This suggests that imperfectivity cannot be equated with atelicity.

(7) *Sequence of Identical Events*

a. Zmęczony uczeń przez dobre pół godziny czyt-a-ł^{I} ten sam
tired pupil for good two hours.ACC read-TH-PST this same
akapit **w niecałą minutę**.
paragraph.ACC in not.whole minute
'A tired pupil read one and the same paragraph in less than a minute for half an hour straight.'

b. Zepsuty robot cały dzień od-kurz-a(j)-ł^{I} ten sam dywan **w pięć minut**.
broken robot all day from-dust-TH-PST this same carpet in five minutes
'The broken robot hoovered the same carpet in five minutes all day long.'

For completeness, we should add that MacDonald distinguishes a second type of iterative reading apart from the SIE one, which he calls the *Sequence of Similar Events (SSE)*. The following examples assert that John ate one pizza after another for an hour, and that he drank one soda after another for two hours. The subevents are similar rather than identical because each one involves a different pizza and a different can of soda in the extension of the bare plurals *pizzas* and *sodas*. However, they can be analysed in a similar way: a telic predicate modifiable by a time-frame adverbial is embedded in the scope of an iterative operator (9).

(8) *Sequence of Similar Events*

a. John ate pizzas in ten minutes for an hour straight.

b. John drank sodas in three minutes for two hours straight.

(9) [for an hour straight [ITER [in three minutes [VP_{telic}]]]]

Just like the SIE interpretation, the SSE reading requires the use of imperfective aspect in Polish. The imperfective in (10a) asserts that Tom ironed shirts for an hour, and that it took him ten minutes to iron each shirt in the denotation of the plural *koszule* 'shirts'. In contrast, the perfective in (10b) describes a single telic event of ironing a specific quantity of shirts.

(10) *Sequence of Similar Events (imperfective) vs. Single Event (perfective)*

a. Tomek przez godzinę pras-ow-a-ł^{I} koszule **w dziesięć minut**.
Tom for hours iron-*v*-TH-PST shirts in ten minutes
'Tom ironed shirts in ten minutes for an hour straight.'

b. Tomek (*przez godzinę) wy-pras-ow-a-ł^{P} koszule **w dziesięć minut**.
Tom for hour iron-*v*-TH-PST shirts in ten minutes
'Tom ironed the shirts in ten minutes.'

To sum up, both bare and secondary imperfectives can be assigned an SIE/SSE interpretation. If this interpretation involves an embedded telic predicate, then it is not true that bare imperfectives must be atelic, and that prefixation is necessary for the emergence of telicity

(*pace* Bohnemeyer and Swift 2004, Borer 2005b, MacDonald 2008a, Łazorczyk 2010).[3] The logical relationship between imperfectivity and (a)telicity is stated in (11). While imperfective aspect does not necessarily entail culmination, it does not exclude it, either.

(11) imperfective → telic or atelic

Apart from stative, durative/progressive, general-factual and iterative uses, the remaining functions of imperfective aspect include *generic* and *habitual*. These can also be classified as pluractional (see e.g. Ferreira 2005 for an analysis of habituals in terms of event pluralities). Just like SIE and SSE imperfectives, habitual imperfectives can be built on top of telic predicates, as evidenced by the grammaticality of the time-frame adverbial in (13a).[4]

(12) *Generic*

a. Palenie szkodz-i^{I} zdrowiu.
smoking harm-*v* health.DAT
'Smoking harms health.'

b. Palenie za-bij-a(j)^{I}.
smoking behind-hit-TH
'Smoking kills.'

(13) *Habitual*

a. Jacek codziennie pis-a-ł^{I} dwie strony swojej powieści (**w**
Jack every day write-TH-PST two pages.ACC REFL.POSS novel.GEN in

[3] See also Milosavljević (2021) for a similar argument with reference to Serbo-Croatian, including evidence that bare imperfectives have the SSE interpretation in that language.

[4] While imperfective aspect is the preferred option for making generalisations about the world, perfective generics also exist in Polish. The examples in (i) express general statements about the dispositions of Janek and Julia, and most likely involve some form of generic quantification over singular events. Their generic character might be related to the future use of perfective aspect, making predictions about the future behaviour of Janek and Julia. See Klimek-Jankowska (2008, 2012) and Mueller-Reicheau (2017) for further discussion.

(i) a. Janek po-ciesz-y^{P} w potrzebie.
John LP-comfort-*v* in need
'John will comfort you in need.'

b. Julia nie wy-pij-e^{P} taniego wina.
Julia NEG out-drink-3SG cheap wineGEN
'Julia will not drink cheap wine.'
(Klimek-Jankowska 2008:319)

niecałe trzy godziny).
not.whole three hours.ACC
'Every day Jack wrote two pages of his novel in less than three hours.'

b. Anna zawsze roz-pak-ow-uj-e^{I} najpierw największy prezent.
Anna always apart-pack-*v*-SI-3SG.NONPAST first biggest present
'Anna always unwraps the biggest present first.'

Finally, imperfective verbs can be used in the *historic present* tense as well. This is yet another context in which imperfective verbs are compatible with telicity/culmination.

(14) *Historic present*

a. W 1834 roku te dwa państwa godz-ą^{I} się na sojusz.
in 1834 year.LOC these two countries agree-3PL REFL on alliance.ACC
'In 1834 these two countries agree to an alliance.'

b. W ostatnim rozdziale główny bohater u-mier-a(j)^{I}.
in last chapter.LOC main hero at-die-TH
'The protagonist dies in the last chapter.'

4.1.2 Perfective

We have already seen some examples of perfective verbs denoting *singular telic events*. In order to strengthen our intuitions about the semantics of perfective aspect, consider the English verb *to iron*. This is one of the many English predicates that alternate between a telic, culminating use and an atelic, non-culminating one (see Kratzer 2004 for more examples of this kind). This variability is evidenced by the fact that the phrase *iron a shirt* can be modified by both time-frame adverbials like *in ten minutes* (15a) and durative adverbials like *for ten minutes* (15b). In out-of-the-blue context, English speakers tend to prefer the telic interpretation of *Tom ironed a shirt*, but this seems to be just a default preference, which can be overridden by the insertion of *for ten minutes*.

(15) a. Tom ironed a shirt in ten minutes (#but he hasn't finished yet).

b. Tom ironed a shirt for ten minutes (but he hasn't finished yet).

Now consider the Polish verb *wy-prasować*^{P}, which is the perfective counterpart of the bare imperfective *prasować*^{I} 'to iron'. The perfective verb can be modified by the time-frame adverbial *w dziesięć minut* 'in ten minutes', but not by the durative adverbial *dziesięć minut* 'for ten minutes', which is strongly ungrammatical in (16). Unlike in English, the implication of culmination cannot be negated or overridden by a durative adverbial. This indicates that telicity/culmination is a semantic entailment of the perfective verb.

(16) Tomek wy-pras-ow-a-ł^{P} koszulę {w dziesięć minut / *dziesięć minut}.
Tom out-iron-*v*-TH-PST shirt.ACC in ten minutes ten minutes
'Tom ironed a shirt in ten minutes.'

There is another reason to think that perfective verbs must be telic. In English, the telicity of many predicates is computed compositionally on the basis of the quanficational properties of the internal argument (e.g. Krifka 1989, 1992; Borer 2005b). If the object is a mass noun or a bare plural, the predicate is atelic (17a) (excluding the Sequence-of-Similar-Events interpretation of bare plurals). If the object is quantized, the predicate can be telic (17b).

(17) a. John read letters {*in an hour / for an hour}. (single event reading)

b. John read the letters {in an hour / ?for an hour}.

In Polish, the quantity of the object does not affect the telicity of perfective verbs. If anything, the influence seems to go in the other direction. Since Polish does not have overt determiners, the bare plural *listy* 'letters' is in principle ambiguous between a definite and an indefinite interpretation. However, given that the perfective verb entails culmination, and given that the event of reading can culminate only with respect to some specified quantity of letters, the object is necessarily interpreted as definite. This *definiteness effect* is reflected by the English translation of (18) (see also Wierzbicka 1967, Krifka 1992 and Piñón 2001).

(18) Anna prze-czyt-a-ł-a^{P} listy {w pięć minut / *pięć minut }.
Anna through-read-TH-PST-3SG.F letters.ACC in five minutes five minutes
'Anna read **the letters** in five minutes.'

What tends to be overlooked is that English-style aspectual composition is actually attested in *imperfective* clauses in Polish. Take the habitual imperfectives below. The first sentence has a bare plural object *listy*, which can be interpreted as definite ('the letters') or indefinite ('letters'). Depending on its interpretation, the predicate should be either telic or atelic, and indeed both types of adverbials are felicitous (19a). However, if the object is a mass noun like *poezja* 'poetry', or if there is no object at all, the telic reading disappears (19b). This demonstrates that − even in Polish − the quantity of the object plays a crucial role in the computation of inner aspect, and that telicity is compositional to some extent.

(19) *Aspectual composition in Polish habituals*

a. Wieczorami Anna zawsze czyt-a-ł-a^{I} listy {w pięć
evenings.INST Anna always read-TH-PST-3SG.F letters.ACC in five
minut / pięć minut }.
minutes five minutes
'In the evenings Anna always read {the letters in 5 mins. / letters for 5 mins.}.

b. Wieczorami Anna zawsze czyt-a-ł-a^{I} (poezję) {*w pięć
evenings.INST Anna always read-TH-PST-3SG.F poetry.ACC in five
minut / pięć minut }.
minutes five minutes
'In the evenings Anna always read (poetry) {*in 5 minutes / for 5 minutes}.'

A similar point can be made with reference to motion verbs and path-denoting PPs. Take the bare imperfective *maszerować*^{I} 'to march', one of those verbs which lexically imply directed motion (as discussed in §3.2.2 in the last chapter). When the accompanying PP denotes a bounded path, such as *do sąsiedniej wioski* 'to the neighbouring village', the predicate can be telic (20a). In contrast, when the PP denotes an unbounded path, such as *w kierunku sąsiedniej wioski* 'in the direction of the neighbouring village', or if there is no PP at all, only the atelic reading is available. It turns out that the interaction between (a)telicity and the (un)boundedness of the path is similar to what has been observed for English.

(20) a. Codziennie rano Adam maszer-ow-a-ł^{I} do sąsiedniej wioski {
everyday morning Adam march-*v*-TH-PST to neighbouring village.GEN

w godzinę / ?godzinę }.
in hour hour
'Every morning, Adam marched to the neighbouring village {in an hour / ?for an hour}.'

b. Codziennie rano Adam maszer-ow-a-ł[I] (w kierunku sąsiedniej
everyday morning Adam march-*v*-TH-PST in direction.INST neighbouring
wioski) { *w godzinę / godzinę }.
village.GEN in hour hour
'Every morning, Adam marched in the direction of the neighbouring village {*in an hour / for an hour}.'

How can we make sense of these data? Although perfective verbs are telic, the reverse does not seem to be true: not all telic predicates are embedded in perfective clauses. The logical relationship between (im)perfectivity and (a)telicity in Polish is summarised in (21).

(21) a. Perfective → telic

b. Imperfective → telic or atelic (depends on the object, adverbials, PPs, context)

Another way of thinking about this relationship is suggested in (22). At the VP level, predicates can be either telic or atelic, just like in English.[5] Their (a)telicity depends on the quantity of the object, the presence of various PPs and adverbials, and wider linguistic and extra-linguistic context. Where English and Polish differ is at the level of outer aspect. While IPFV does not impose any semantic restrictions on the denotation of the VP (22b), PFV is restricted to telic predicates, filtering out atelic inputs (22a). In other words, we can think of telicity as a selectional requirement or a presupposition of the PFV operator (23).

(22) a. [$_{\text{AspP}}$ PFV [$_{\text{VP}}$ telic / *atelic]]

b. [$_{\text{AspP}}$ IPFV [$_{\text{VP}}$ telic / atelic]]

(23) $[\![\text{PFV}]\!] = \lambda P_{vt} \lambda t : \mathit{telic}(P).\exists e[P(e) \wedge \tau(e) \subseteq t]$

[5] I use the label VP as an abbreviation for multiple functional projections, including *v*, Theme and Voice. Inner aspect is computed below the level of Voice (Kratzer, 2004; Borer, 2005b; MacDonald, 2008b).

Of course, any discussion of the semantics of perfective aspect would be incomplete without a few remarks on the class of semelfactives. Semelfactive verbs are suffixed with *-nąć*, and they pattern as perfective in all the standard aspectual diagnostics (see the next section).

(24) a. Koń kop-ną-ł^{P} Marka.
horse kick-SML-PST Mark.ACC
'A horse gave Mark a kick.'

b. Pies szczek-ną-ł^{P}.
dog bark-SML-PST
'A dog barked once.'

The key observation is that semelfactives do not encode a result state. For example, they cannot be modified by result-oriented durative adverbials such as *na pięć minut* 'for five minutes', a type of adverbial headed by the preposition *na* 'on' in Polish. The intended interpretation of (25) is that Mark remained in a 'kicked' state for five minutes after the event, a pragmatically plausible reading, involving Mark writhing on the ground in pain and nursing his bruises, but not one that is semantically licensed by the verb *kopnąć*^{P} 'to kick'.

(25) Koń kop-ną-ł^{P} Marka (#na pięć minut).
horse kick-SML-PST Mark.ACC on five minutes
'The horse gave Mark a kick (#for five minutes).'

If it is true that the perfective operator selects for telic predicates in Slavic (cf. (23)), then semelfactives must be classified as telic, and telicity must carefully distinguished from resultativity. While resultativity is characterised by the presence of a grammatically-accessible result state in the event structure, telicity must be defined in mereological terms as either quantisation (Krifka, 1992) or quantity (Borer, 2005b). Without going into too much detail, the guiding intuition is that no proper subpart of a single kick can be described by *kopnąć*^{P} 'to give a kick', no proper subpart of a bark can be described by *szczeknąć*^{P} 'to bark once', and so on. The important point is that a predicate does not need to have an appreciable result state to qualify as telic. What about the adverbial modification test? The punctual events described by semelfactives are generally too short to be modified by time-frame adverbials

like *w pięć minut* 'in five minutes' or *w godzinę* 'in an hour', but when we choose a shorter duration, such as *w ćwierć sekundy* 'in a quarter of a second', the judgements markedly improve. Although the time-frame adverbial in (26) might shound a little awkward, it is much better than the durative one, which is ungrammatical. This supports the hypothesis that semelfactives are telic, and that the perfective operator combines with telic inputs.

(26) Koń kop-ną-ł^{P} Marka { ?w ćwierć sekundy / *ćwierć sekundy }.
horse kick-SML-PST Mark.ACC in quarter.ACC second.GEN quarter.ACC second.GEN
'The horse gave Mark a kick {in a quarter of a second / *for a quarter of a second}.'

Finally, an alternative approach to telicity/perfectivity is developed in Filip (2005, 2008, 2017) (see also Filip and Rothstein 2006 and Altshuler 2014). Filip identifies PFV with the maximalisation operator MAX_E, which applies to an ordered set of event stages and returns the maximal stage in the denotation of the verbal predicate. This approach might well be consistent with the sort of data discussed in this section, but I will not pursue it here.

(27) *The maximisation operator MAX_E* (adapted from Filip 2017:181)

The maximisation operator on events MAX_E is a monadic operator, such that $\text{MAX}_E(\Sigma) \subseteq \Sigma$ (where Σ is the set of eventualities). MAX_E is applied to (a partially ordered set of) stages of a certain eventuality type P (interpreted at the type of predicates *vt*) and maps them onto sets of maximal stages MAX_E(P) (type *vt*).

4.1.3 Aspectual diagnostics

The opposition between perfective and imperfective verbs is not just a matter of semantics. There is a number of syntactic and morphological constructions in Slavic languages which subcategorise for imperfectives to the exclusion of perfectives. These constructions are used as aspectual diagnostics: if a given stem appears in a given construction, it formally patterns as imperfective. The first such diagnostic is illustrated in (28): only imperfective verbs can

serve as complements of so-called *phasal* verbs, such as *zacząć* 'to begin', *przestać* 'to stop' and *skończyć* 'to finish'. Perfective verbs are strongly ungrammatical in this context.[6]

(28) Tomek s-kończ-y-ł^{P} { pras-ow-a-ć^{I} / *wy-pras-ow-a-ć^{P} } koszulę.
Tom PRF-finish-*v*-PST iron-*v*-TH-INF out-iron-*v*-TH-INF shirt.ACC
'Tom finished ironing a shirt.'

Likewise, only imperfective verbs form the periphrastic future construction with the auxiliary *być* 'to be', as shown in (29). Perfective verbs do not appear in this construction, but they have a future-time reference in the morphological non-past tense. This is illustrated by the contrast between the perfective in (30a), which refers to a future time point, and the imperfective in (30b), which has a present progressive or habitual interpretation.

(29) Tomek będzi-e { pras-ow-a-ć^{I} / *wy-pras-ow-a-ć^{P} } koszulę.
Tom be.FUT-3SG iron-*v*-TH-INF out-iron-*v*-TH-INF shirt.ACC
'Tom will be ironing a shirt.'

(30) a. Tomek wy-pras-uj-e^{P} koszule.
Tom out-iron-*v*-3SG.NONPST shirts.ACC
'Tom will iron the shirts.'

b. Tomek pras-uj-e^{I} koszule.
Tom iron-*v*-3SG.NONPST shirts.ACC
'Tom is ironing shirts right now / habitually irons shirts.'

Finally, present active participles are derived from imperfective stems in Polish. The result of adding the participle suffix *-ąc* to a perfective stem is strongly ungrammatical (31).

(31) { Pras-uj-ąc^{I} / *wy-pras-uj-ąc^{P} } koszulę, Tomek
iron-*v*-ACT.PTCP out-iron-*v*-ACT.PTCP shirt.ACC Tom
o-gląd-a-ł^{I} telewizję.
about-watch-TH-PST television.ACC

[6]The imperfectives in this section are all unprefixed, but secondary imperfectives pattern in the same way. I illustrate with *pod-pis-yw-a-ć*^{I} in (i), the secondary imperfective (SI) derivative of *pod-pis-a-ć*^{P} 'to sign'.

(i) Tomek s-kończ-y-ł^{P} { *pod-pis-a-ć^{P} / pod-pis-yw-a-ć^{I} } dokumenty.
Tom PRF-finish-*v*-PST under-write-TH-INF under-write-SI-TH-INF documents.ACC
'Tom finished signing the documents.'

'While ironing a shirt, Tom was watching TV.'

The three constructions mentioned above – phase verbs, periphrastic future, and present active participles – constitute positive tests for imperfective aspect: they admit imperfective stems while excluding perfective ones. Discussing the analogous diagnostics in Russian, Zinova and Filip (2015:324) make the following comment: 'The key point to be made here and one that has not yet been emphasized enough in the research on Russian aspect, is that there is no positive test for perfectivity.' After putting forward a new positive diagnostic for perfectivity based on discourse structure and narration, they conclude: 'The fact that syntactic and morphological properties are used for a positive identification of imperfectivity, but the dicourse level is needed in order to positively establish perfectivity of a given verb, is in itself an intriguing indication about another difference between imperfective and perfective aspect, which has not yet been noticed' (Zinova and Filip 2015:330). In my view, the prevalence of syntactic and morphological constructions which select for imperfective aspect is simply a symptom of the default, unmarked status of the imperfective. As is well known, unmarked values tend to have a freer distribution and appear in more environments.

At the same time, Polish offers an interesting counterexample to Zinova and Filip's (2015) observation. Unlike Russian, Polish does have a positive *syntactic* test for perfective aspect. This test involves the formation of the verbal passive, a periphrastic construction with an auxiliary and a past passive participle form of the verb (the so-called *n/t* participle). Perfective participles co-occur with the auxiliary *zostać*$^{\text{P}}$ 'to become', which is itself perfective (32a), while imperfective participles co-occur with the auxiliary *być*$^{\text{I}}$ 'to be', which is itself imperfective (32b). This means that the ability to form *zostać*-passives in Polish can be used as a positive test for perfective aspect (albeit one restricted to transitive verbs).[7]

[7] In Polish, perfective participles co-occur with the auxiliary *być* 'to be' in the adjectival passive construction, illustrated in (ib). Unlike verbal passives, which are eventive, adjectival passives are stative, refer to the result state of a change-of-state event, and can be modified by *ciągle* 'still'. The alternation between *zostać* in (ia) and *być* in (ib) is reminiscent of that between *werden* and *sein* passives in German (Kratzer, 2000). The added complication is that *być* is also used to derive the verbal passive of imperfective verbs (see (32b) above).

(32) a. Ta koszula { *by-ł-a^{I} / zosta-ł-a^{P} }
This.SG.F shirt.NOM be-PST-3SG.F become-PST-3SG.F
wy-pras-ow-a-n-a^{P} przez Tomka.
out-iron-*v*-TH-PASS.PTCP-SG.F by Tomek.ACC
'This shirt was ironed by Tomek.'

b. Ta koszula { by-ł-a^{I} / *zosta-ł-a^{P} }
This.SG.F shirt.NOM be-PST-3SG.F become-PST-3SG.F
pras-ow-a-n-a^{I} przez Tomka.
iron-*v*-TH-PASS.PTCP-SG.F by Tomek.ACC
'This shirt was being ironed by Tomek / was habitually ironed by Tomek.'

When I refer to 'perfective stems' and 'imperfective stems' in this thesis, this can be understood as 'stems which pattern as perfective/imperfective in accordance with the standard aspectual diagnostics'. For convenience, these diagnostics are summarised in (33) below.

(33) A subset of aspectual diagnostics in Polish

a. Only imperfectives can be used in the complement of phasal verbs

b. Only imperfectives form the periphrastic future with *być* 'to be'

c. Only imperfectives derive present active participles ending in *-ąc*

d. Only imperfectives have a present-tense interpretation in the morphological non-past tense (perfectives have a future-time orientation)

e. Perfectives and imperfectives form verbal passives with the help of the auxiliaries *zostać* 'to become' and *być* 'to be', respectively

(i) a. Ta opona **zosta-ł-a^{P}** (*ciągle) na-pomp-ow-a-n-a^{P}.
This.SG.F tire.NOM become-PST-3SG.F still on-pump-*v*-TH-PASS.PTCP-SG.F
'This tire was inflated.'
(Verbal passive)

b. Ta opona **była^{I}** ciągle na-pomp-ow-a-n-a^{P}.
This.SG.F tire.NOM be-PST-3SG.F still on-pump-*v*-TH-PASS.PTCP-SG.F
'This tire was still inflated.'
(Adjectival passive)

None of this changes the fundamental fact that *zostać*-passives are diagnostic of perfective aspect in Polish. For more details, the reader is referred to Bondaruk and Rozwadowska (2018:440-442) and references therein.

4.1.4 Aspectual morphology

Having established the grammatical opposition between perfective and imperfective stems, let us now proceed to the relation between aspect and verb morphology: How is the value of aspect morphologically expressed? The main generalisations are as follows.

To begin with, bare, unprefixed stems are almost always imperfective (34a) (with only a handful of exceptions such as *rzucić*^{P} 'to throw' or *chwycić*^{P} 'to seize'). The attachment of a *lexical prefix* (LP) turns the stem perfective, as well as adding a directional, resultative or idiosyncratic component to its meaning (34b). The status of LPs as resultative prefixes was discussed extensively in the previous chapter (especially §3.2), but their perfectivising effect still needs to be explained. This task is made much more difficult by the fact that the presence of an LP does not guarantee the emergence of perfective aspect: when a lexical prefix co-occurs with *secondary imperfective* (SI) morphology, such as the suffix *-yw*, the value of aspect is imperfective again (34c). On a descriptive level, the addition of *-yw* has an 'imperfectivising' effect on the stem, but it does not change its lexical meaning, simply deriving the imperfective counterpart of a perfective verb. Crucially, the SI suffix cannot be attached to a bare imperfective stem (34d).[8] I will henceforth refer to these three stem types as *B-imperfectives*, *LP-perfectives* and *S-imperfectives*. Note how these labels are constructed: the first part relates to the morphological make-up of the stem (i.e.'bare', 'lexically prefixed', 'secondary'); the second part specifies its aspectual value.

(34) a. got -ow -a -ć^{I}
cook -*v* -TH -INF
'to cook / to be cooking' (B-imperfective)

b. **roz-** got -ow -a -ć^{P}
apart- cook -*v* -TH -INF

[8] Some bare stems in Polish seem to falsify this generalisation, most notably *pis-yw-a-ć*^{I}, *czyt-yw-a-ć*^{I}, *jad-a(j)-ć*^{I} and *byw-a(j)-ć*^{I}. However, they are very few in number, and they have a semantically restricted habitual function, translating as *write / read / eat / be from time to time*, respectively. Such forms appear to be linguistic fossils inherited from an earlier stage of the language. As such, they do not impact the analysis of the SI morpheme in the synchronic grammar. It is also worth noting that here Czech has a productive habitual suffix which is functionally distinct from, albeit homophonous with, SI morphology (Biskup, 2022).

'to overcook completely' (LP-perfective)

c. **roz-** got -ow **-yw** -a -ć^{I}
apart- cook -*v* -SI -TH -INF
'to overcook / to be overcooking' (S-imperfective)

d. *got -ow -**yw** -a -ć
cook -*v* -SI -TH -INF

Although S-imperfectives are morphologically much more complex than B-imperfectives, containing at least one more prefix and one more suffix, the two pattern together in all the aspectual diagnostics. They also have the same range of functions, including stative, progressive, general-factual, iterative and habitual. The fact that bare and secondary imperfectives form a natural class raises non-trivial questions about the relationship between syntax/semantics and morphology. This is because there is no single prefix or suffix in Slavic languages whose presence always correlates with perfectivity or imperfectivity (i.e. the mapping between affixes and the aspectual value of a stem is many-to-many). Imperfectives may be unmarked, but they may also be suffixed with *-yw*. Similarly, the presence of a lexical prefix correlates with perfective aspect, but only in the absence of SI morphology.

The mapping between aspectual affixes and aspect becomes even more complicated when we take into account superlexical prefixes (SP), semelfactives and bare perfectives. All of these will be discussed in much more detail below. For now, suffice it to say that the presence of a SI suffix is not sufficient for the emergence of imperfective aspect: certain prefixes turn S-imperfective stems perfective again (35). At the same time, prefixation is not a necessary condition for perfective aspect: the semelfactive suffix *-nąć* also gives rise to perfectivity (36), and while bare perfectives are rare in Polish, they do exist (37).

(35) Adam **po**-prze-pis-yw-a-ł^{P} wiersze.
Adam DIST-through-write-SI-TH-PST poems.ACC
'Adam rewrote the poems one by one.' (SP-perfective)

(36) Pies nagle kich-**nął**^{P}.
dog suddenly sneeze-SML-PST
'The dog suddenly sneezed (once).' (Semelfactive)

(37) Anna rzuc-i-ł-a^{P} piłkę do Emilii.
Anna throw-*v*-PST-3SG.F ball.ACC to Emily.GEN
'Anna threw a ball to Emily.' (B-perfective)

At the end of this chapter, I will return to the theoretical problems posed by Slavic aspectual morphology, particularly from the perspective of a piece-based, late-insertion model of morphosyntax like DM. But first, I turn to the morphological structure of Polish verb stems, focusing on the analysis of different theme vowels and the formation of S-imperfectives.

4.2 Polish verb stems

Table 4.1 presents the morphological parse of B-imperfectives, LP-perfectives and S-imperfectives for six different stem classes: *-owa-*, *-a-*, *-e-*, *-aj-*, *-i/y-* and the 'athematic' Ø class. The aim of the next two subsections is to explain and motivate the proposed segmentation. I will start by discussing the status of the root-adjacent morphemes commonly known as *theme vowels* (even though not all of these thematic elements are phonological vowels). Then, I will discuss the formation of S-imperfectives, making a distinction between two operations: the suffixation of *-yw* and the defaulting of the theme vowel to *-aj*.

The main point argued in this section is that we need to recognise three positions of exponence between the root and inflectional morphology proper. These three positions are labelled as *v* (the category-defining head), SI (the secondary imperfective morpheme) and TH (a higher structural position associated with the 'high' theme vowels *-a*, *-e* and *-aj*).

4.2.1 Theme vowels

Two main approaches to theme vowels can be distinguished in the literature. According to one tradition, theme vowels perform the same function as verbalising suffixes (e.g. Svenonius 2004a, Biskup 2019; see also Fábregas 2017 for Spanish). In a parallel with *-ify*, *-ise* and *-ate* in English, theme vowels are analysed as exponents of the category-defining head *v*. The alternative approach is to analyse theme vowels as so-called *dissociated mor-*

stem class	LP	√ROOT	*v*	SI	TH	INF	translation
		got	ow		a	ć	'to cook' (I)
-ow-a-	**roz**	got	ow		a	ć	'to overcook' (P)
	roz	got	ow	**yw**	a	ć	'to overcook' (I)
		pis	Ø		a	ć	'to write' (I)
-a-	**pod**	pis	Ø		a	ć	'to sign' (P)
	pod	pis	Ø	**yw**	a	ć	'to sign' (I)
		widzi	Ø		e	ć	'to see' (I)
-e-	**prze**	widzi	Ø		e	ć	'to foresee' (P)
	prze	wid	Ø	**yw**	a	ć	'to foresee' (I)
		czyt	Ø		a(j)	ć	'to read' (I)
-aj-	**w**	czyt	Ø		a(j)	ć	'to read in' (P)
	w	czyt	Ø	**yw**	a	ć	'to read in' (I)
		top	i		Ø	ć	'to melt' (I)
-i-/-y-	**wy**	top	i		Ø	ć	'to smelt' (P)
	wy	t**a**p	i	**Ø**	**a(j)**	ć	'to smelt' (I)
		my(j)	Ø		Ø	ć	'to wash' (I)
Ø	**z**	my(j)	Ø		Ø	ć	'to wash off' (P)
	z	myw	Ø	**Ø**	**a(j)**	ć	'to wash off' (I)

Table 4.1: The morphological decomposition of five stem classes in Polish (partially based on the work of Czaykowska-Higgins 1998; cf. also Gribanova 2015 for Russian).

phemes, which are absent from narrow syntax, and which adjoin to functional heads in the morphological component, where they mark the conjugation class of the verb (see e.g. Oltra-Massuet 1999, Oltra-Massuet and Arregi 2005 and Embick and Halle 2005). What is more, since these two approaches are not mutually exclusive, it is perfectly possible to analyse some theme vowels as verbalisers and others as dissociated morphemes. This kind of hybrid approach has been defended in Gribanova (2015), who decomposes the Russian suffix *-ova* into *-ov*, an exponent of *v*, and the conjugation marker *-a*, an exponent of TH, a post-syntactic morpheme adjoined to Asp. In what follows, I defend a similar analysis for Polish, classifying *-ow* and *-i* as verbalisers and *-a*, *-aj* and *-e* as dissociated morphemes.

Let us start *-ow*, the default realisation of *v* in Polish, which is used to verbalise a wide range of roots, nouns and words of foreign origin. A few examples showcasing the productivity of *-ow* are given in (38). Interestingly, apart from deriving verbs, *-ow* is also used to derive adjectives from nouns (39c). While we could posit the existence of two homonymous

suffixes *-ow*, one verbal and one adjectival, it is also possible that the category-defining heads *v* and *a* have one or more features in common, and that the Vocabulary Item for *-ow* is simply underspecified for the categorial distinction between verbs and adjectives.[9]

(38) a. email **-ow** -a -ć^{I}
email -*v* -TH -INF
'to email'

b. paraliż **-ow** -a -ć^{I}
paralisis -*v* -TH -INF
'to paralyse'

c. program **-ow** -a -ć
program -*v* -TH -INF
'to program, to code'

(39) a. postęp
progress
'progress' (noun)

b. postęp **-ow** -a -ć^{I}
progress -*v* -TH -INF
'to act; to progress' (verb)

c. postęp **-ow** -y
progress -*a* -NOM.SG.M
'progressive' (adjective)

The verbaliser analysis is also plausible for the theme vowel *-i* (realised as the central vowel [ɨ] after velars, orthographic <y>). This suffix can derive verbs from stems that are otherwise attested as adjectives (40)-(41), but it is synchronically less productive than *-ow*, and it much less likely to be used to spontaneously coin new verbs. It is also not entirely clear whether the complex adjective in (41b) is verbalised by *-i* or by the prefix *u-* 'at', whose presence in the verbal complex is also obligatory (cf. **nie-ruch-om-i-ć*).

(40) a. plugaw -y
filthy -NOM.SG.M
'filthy'

b. plugaw **-i** -ć
filthy -*v* -INF
'to befoul'

(41) a. nie- ruch -om -y
NEG- motion -*a* -NOM.SG.M
'motionless'

b. u- nie- ruch -om **-i** -ć^{P}
at- NEG- motion -*a* -*v* -INF
'to make motionless'

We also find a few isolated examples of *-i* and *-ow* alternating with each other. These verbs

[9] To be more specific, we could adopt the well-known categorial feature system in (i) (e.g. Chomsky 1981:48), with *v* specified as $[-N,+V]$ and *a* as $[+N,+V]$. By analysing *-ow* as an exponent of $[+V]$, we would allow it to be inserted in both verbal and adjectival contexts, in accordance with the Subset Principle.

(i) $[+N,-V]$ nouns $[+N,+V]$ adjectives
$[-N,+V]$ verbs $[-N,-V]$ prepositions

are derived from the nouns *kucharz* 'a cook' (42) and *matka* 'a mother' (43). The *-i* and *-ow* variants have the same meaning, suggesting that *-i* and *-ow* perform a similar function.

(42) a. kuch -arz **-y** -ć^{I}
cook *-n* *-v* -INF
'to cook, to act like a cook'

b. kuch -arz **-ow** -a -ć^{I}
cook *-n* *-v* -TH -INF
'to cook, to act like a cook'

(43) a. matcz **-y** -ć^{I}
mother *-v* -INF
'to mother, to act like a mother'

b. matk **-ow** -a -ć^{I}
mother *-v* -TH -INF
'to mother, to act like a mother'

An even more conclusive argument for *-i* being a verbaliser comes from the domain of argument structure. A number of roots in Polish alternate between causative/transitive and inchoative/unaccusative variants, with a couple of examples given in (44)-(45). In each pair, the causative/transitive variant is marked with *-i* while the inchoative/unaccusative variant is marked with *-nq* or *-ej*.[10] Given their syntactic and semantic properties, the unaccusative suffixes *-nq* and *-ej* are best analysed as exponents of the change-of-state head v_{Δ} (see §**??** in the next chapter; cf. also Jabłońska 2007). Since *-nq* and *-ej* are in complementary distribution with *-i*, it seems plausible to analyse *-i* as an exponent of the v_{Δ} head as well, but one inserted only in the context of Voice. This contextual restriction ensures that *-i* will appear only in syntactically transitive constructions, where Voice is present, but not in unaccusative ones, where Voice is missing, and where either *-ej* or *-nq* surface instead. This analysis is sketched out in more formal terms in (46)-(47). If Voice is present, $v_{\Delta} \leftrightarrow i$ wins the competition for insertion as the most specific Vocabulary Item in this context. [11]

[10]The unaccusative *-nq* is formally identical to the semelfactive *-nq*. However, these two suffixes have different syntactic and semantic properties: the unaccusative *-nq* derives unaccusative change-of-state predicates, which are imperfective by default, while the semelfactive *-nq* derives unergative or transitive predicates, which pattern as perfective. This suggests that the two suffixes should be kept apart, and that this is a case of accidental homonymy rather than syncretism (but cf. Taraldsen Medová and Wiland 2018 for an opposing view).

[11]This analysis is slightly simplified: it presupposes that *-i* is an exponent of v_{Δ}. While it is true that *-i* is found in many change-of-state verbs (e.g. *plugaw-i-ć*^{I} 'to befoul', *u-nie-ruch-om-i-ć*^{P}, *syc-i-ć* 'to satiate'), we also encounter it in some non-COS predicates (e.g. *rob-i-ć* 'to make, to do', *pal-i-ć* 'to smoke', *tańcz-y-ć* 'to dance'). Hence, it seems more likely that *-i* is underspecified for the distinction between v_{Δ} and v_{DO}.

(44) a. mocz **-y** -ć^{I}
wet -*v* -INF
'to make wet' (transitive)

b. mok **-ną** -ć^{I}
wet -*v*- INF
'to get wet' (unaccusative)

(45) a. biel **-i** -ć^{I}
white -*v* -INF
'to make white' (transitive)

b. biel **-e(j)** -ć^{I}
white -*v*- INF
'to get white' (unaccusative)

(46) a. $v_{\Delta} \rightarrow i$ / $\sqrt{}$MOK__Voice

b. $v_{\Delta} \rightarrow ną$ / $\sqrt{}$MOK__

(47) a. $v_{\Delta} \rightarrow i$ / $\sqrt{}$BIEL__Voice

b. $v_{\Delta} \rightarrow ej$ / $\sqrt{}$BIEL__

Although *-ow* and *-i* are analysed as realisations of *v*, I do not extend this approach to all theme vowels in Polish. Instead, I follow Czaykowska-Higgins (1998) in assuming that the set of Polish theme vowels is heterogeneous, and that there is an important distinction to be made between the 'low' themes *-ow* and *-i* and the 'high' themes *-a*, *-e* and *-aj*.In her paper, Czaykowska-Higgins (1998) refers to these two groups as *Verbalising Suffix 1 (VS1)* and *Verbalising Suffix 2 (VS2)*, respectively. Furthermore, she divides the templatic structure of Polish verbs it into a *Derivational Stem (DS)*, which feeds derivational morphology, and the inflected *Verb Word (VW)*, complete with tense markers (TM) and person/number (P/N) suffixes. Her proposal is formalised in an early DM framework and summarised in (48).

(48) Proposal for Verb Word Structure (Czaykowska-Higgins 1998:42)

[$_{VW}$ [$_{DS}$ (PRE) [$\sqrt{}$ROOT] **VS1** $_{DS}$] **VS2** - TM - (P/N) $_{VW}$]

When we compare this template with the structure in (49), we see that VS1 corresponds to the verbalising head *v*, while VS2 corresponds to some higher structural position, labelled as TH. The TH position represents conjugation class markers, which are purely morphological, with no representation in narrow syntax or at LF (cf. Gribanova 2015). The main difference between Czaykowska-Higgins's (1998) proposal and the current one is that I situate lexical prefixes at the periphery of the word structure (as a result of M-Merger; see §3.5.1).

(49) [(LP) [$\sqrt{}$ROOT - ***v*** - **TH** - TENSE - AGREEMENT]]

What is the evidence for the structural distinction between *v* (realised by *-ow*, *-i*) and TH (*-a*, *-aj*, *-e*)? What prevents us from analysing all theme vowels in the same way? If the suffix *-owa* is decomposed into *-ow* and *-a*, and if *-ow* is the realisation of *v*, then *-a* must correspond to a different position of exponence. By analysing *-a* as an exponent of TH, we capture the fact that *-owa-* stems and *-a-* stems belong to the same conjugation class, taking the same set of inflectional endings. This is illustrated in the second and third columns of Table 4.2 on the example of *pisać*$^{\text{I}}$ 'to write' and *gotować*$^{\text{I}}$ 'to cook'. In first- and third-singular non-past forms, the inflectional endings are *-ę* (nasal) and *-e* (oral). Note also that thematic *-a* disappears before vowels and in the imperative, with the preceding consonant undergoing Iotation (e.g. /s/ shifts to [ʃ], ortographic <sz>).[12] The fact that *-ow* /ov/ shifts to *-uj* [uj] in the same environments in which *-a-* stems undergo Iotation (i.e. everywhere except in infinitive and past-tense forms) supports the decomposition of *-owa* into *ow* + *a*.

	-aj- stem	*-a-* stem	*-owa-* stem
INF	cios-a(j)-ć	pis-a-ć	got-ow-a-ć
PST / Ł-PTCP	cios-a(j)-ł	pis-a-ł	got-ow-a-ł
3PL NPST	cios-aj-ą	pisz-ą	got-uj-ą
2SG IMP	cios-aj	pisz	got-uj
1SG NPST	cios-a(j)-**m**	pisz-**ę**	got-uj-**ę**
3SG NPST	cios-a(j)-**Ø**	pisz-**e**	got-uj-**e**

Table 4.2: Partial conjugation of *-aj-*, *-a-* and *-owa* stems.

Finally, this section concludes with a brief comment on the contrast between *-a* and *-aj*. This important distinction is easy to overlook because the phonological difference between *-a* and *-aj* is neutralised in infinitives and *ł*-participles: both of the theme vowels surface as [a]. This is illustrated in the first two rows of the partial paradigms of the verbs *ciosać*$^{\text{I}}$ 'to hew' and *pisać*$^{\text{I}}$ 'to write', with round brackets indicating phonological deletion.

It is only when we examine the other cells of the paradigm that the differences between

[12] Iotation affects the subset of consonants in (i), producing the surface forms on the right. The angle brackets give the corresponding orthographic symbols. See Rubach (1984:77f.) for more details.

(i) t, d, s, z, st, zd → [t͡s] <c>, [d͡z] <dz>, [ʃ] <sz>, [ʒ] <ż>, [ʃt͡ʃ] szcz, [ʒd͡ʒ] <żdż>

-a- and *-aj-* stems become apparent. Most importantly, the final glide /j/ of *-aj* surfaces before vowels (in the third-person plural non-past form) and in the imperative (which must always end in a consonant in Polish). In contrast, the theme *-a* disappears in these contexts. What is more, *-a-* stems and *-aj-* stems belong to different conjugation classes, conditioning the insertion of different inflectional endings. This is most apparent in the first- and third-person singular non-past forms (e.g. the nasal vowel *-ę* vs. the nasal stop *-m*, or *-e* vs. Ø). In order to differentiate between *-a* and *-aj* in the Polish data, I represent the latter as *-a(j)* in those cases when the final glide /j/ undergoes phonological deletion.

We have already seen that the evidence for *-a* as an exponent of TH (rather than *v*) comes from its co-occurrence with *-ow*. The main reason for analysing *-aj* in the same way comes from secondary imperfective morphology, which is the subject of the next section.

4.2.2 Secondary imperfectivisation

Czaykowska-Higgins (1998) situates the SI morpheme between 'low' VS1 and 'high' VS2 positions, inside the Derivational Stem. This is shown in (50). I achieve the same ordering in (51) by situating the SI morpheme between the *v* head and the dissociated morpheme TH.

(50) Secondary Imperfective Template (Czaykowska-Higgins 1998:50)

[$_{DS}$ (PRE) [$\sqrt{}$ROOT] VS1 **SI** $_{DS}$] VS2 - TM - (P/N) $_{VW}$]

(51) [(LP) [$\sqrt{}$ROOT - *v* - **SI** - TH - TENSE - AGREEMENT]]

In Polish, there are two main ways of deriving secondary imperfectives. The first one is straightforward, involving the suffixation of *-yw*/*-iw* (the latter surfacing after the velar stops /k/ and /g/). This is illustrated on the example of the *-owa-* stem from before. The class of *-owa-* stems is the only one where all three positions of exponence are realised overtly: *v* as *-ow*, SI as *-yw* and TH as *-a*. Note also that the SI suffix *-yw* co-occurs with the theme vowel *-a* in (52b), in the same way in which the verbalising suffix *-ow* does in (52a). In more technical terms, both *-ow* and *-yw* condition the insertion of *-a* into TH.

(52) a. roz- got -ow -a -ć^{P}
apart- cook -*v* -TH -INF
'to overcook completely'

b. roz- got -ow **-yw** -a -ć^{I}
apart- cook -*v* -SI -TH -INF
'to overcook / to be overcooking'

The classes of *-i-/-y-* stems and athematic Ø stems derive their secondary imperfective forms in a different way. In B-imperfectives and LP-perfectives, these stems take a null theme vowel TH (see the (a) examples). In S-imperfectives, this theme vowel changes to *-aj* (see the (b) examples). We can refer to this derivational process as *defaulting to -aj* on the assumption that *-aj* is the default exponent of TH (≈default conjugation class marker).

(53) *-i-/-y-* stem

a. (wy-) top -i **-Ø** -ć
out- melt -*v* -TH -INF

b. wy- t**a**p -i **-Ø -a(j)** -ć
out- melt -*v* -SI -TH -INF

(54) Ø stem

a. (z-) my(j) -Ø **-Ø** -ć
from- wash -*v* -TH -INF

b. z- myw -Ø -Ø **-a(j)** -ć
from- wash -*v* -SI -TH -INF

The analysis of secondary imperfectivisation as a shift in conjugation class is put forward in Czaykowska-Higgins (1998), who uses [±VS1], [±VS2] and [+1] as conjugations class features. As illustrated in (55b), the insertion of Ø into SI changes the conjugation class of the stem from [−VS2] to [+VS2]. Sadler et al. (1997) develop a similar account of S-imperfectives in Russian within the morphomic model of Aronoff (1994). For these authors, secondary imperfectivisation completely erases the conjugation class features of the input. Both of these proposals involve a direct manipulation of conjugation class features by the morphological component of the grammar: the operation of secondary imperfectivisation literally changes the conjugation class of *-i-* and Ø stems to the default *-aj-* class. More recently, a similar class-shifting account has been developed by Bloch-Trojnar (2015), who adopts the Lexeme Morpheme Based Morphology model of Beard (1995). She proposes that '*[t]he addition or resetting of abstract conjugation class features* can be effected only by lexical operations. (...) Therefore, aspectual pairs formed by means of suffixation and morpho-phonological modifications will be regarded here as offshoots of *abstract deriva-*

tional class shifting operations [emphasis mine]' (Bloch-Trojnar 2015:496f.).

(55) a. SI → *iw/yw* /]$_{[+VS2]}$ __]$_{[+1]}$

b. SI → Ø /]$_{[-VS2]}$ __]$_{[+VS2]}$ (Czaykowska-Higgins 1998:50)

I propose that, from the standpoint of modern DM, a better solution involves linear intervention by the SI morpheme. The appearance of SI disrupts the adjacency between *v* and TH, blocking any allomorphic interactions between them and causing the exponence of TH to default to *-aj*. The relevant examples, post-linearisation structures and Vocabulary Items are in (56)-(58). In each row, the (a) examples trace the derivation of a B-imperfective/LP-perfective, while the (b) examples illustrate the formation of an S-imperfective.

(56) a. (wy-) top -i -Ø -ć
out- melt -*v* -TH -INF

b. wy- tap -i -Ø -a(j) -ć
out- melt -*v* -SI -TH -INF

(57) a. $v_{[+Ø]}$ ⌢TH (adjacent)

b. $v_{[+Ø]}$ ⌢SI⌢TH (non-adjacent)

(58) a. TH ↔ Ø / $v_{[+Ø]}$ __

b. TH ↔ *aj* (default)

I assume that conjugation class features are associated with the *v* head rather than with the root, as explicitly argued in Zdziebko (2019) (see also Acquaviva 2008 for Italian). Furthermore, I assume that *-i-* and Ø stems share some conjugation class feature [+Ø], which triggers the insertion of Ø into TH (cf. the Vocabulary Item in (58a)). According to Embick (2010), a morpheme A must be linearly adjacent to another morpheme B in order to condition its realisation at VInsert. If this adjacency requirement is correct, it follows that TH has access to $v_{[+Ø]}$ in (57a), where they are linearly adjacent, but not in (57b), where they are separated by the SI morpheme. The intervention by SI renders $v_{[+Ø]}$ inaccessible to TH, preventing the insertion of the null exponent in (58a). As a result, only the default VI *-aj* in (58b) remains eligible for insertion into TH. Crucially, this approach is more restrictive than that of Czaykowska-Higgins (1998) and Sadler et al. (1997) since it does not require the morphological component to directly manipulate the conjugation class features of the

verb: the SI morpheme itself does not introduce any new conjugation class features into the derivation; it simply renders the existing class features inaccessible to other morphemes.

If the intervention account is correct, it shows that not all null exponents are subject to *Pruning*. In other words, while many null exponents are pruned at PF and hence do not count when it comes to computing linear adjacency, others remain phonologically active (see §2.3.4 in Chapter 2). This is consistent with Embick's (2010) own remarks on Pruning:

> Pruning rules are, evidently, not obligatory for all nodes with zero exponents. There might be some cases in which it appears that a head with a null exponent is present in concatenation statements. Whether or not there are significant generalisations about which zeroes are pruned and which are not remains to be investigated. (Embick 2010:59)

I propose that the SI morpheme is immune to Pruning, allowing it to intervene between $v_{[+\emptyset]}$ and TH. This is not a mere stipulation designed to 'make the analysis work': the presence of SI has certain phonological effects on the root which confirm that it is visible at PF. Specifically, the S-imperfectives of *-i-* stems exhibit the lowering of the root-final vowel from /o/ to [a] (see e.g. Rowicka and van de Weijer 1994 and references therein).[13] The following examples exhibit a vocalic alternation between *krocz*/*kracz* and *rob*/*rab*.

(59) a. prze- krocz -y -ć^{P}
through- step -*v* -INF
'to cross'

b. prze- kr**a**cz -(y) -a(j) -ć^{I}
through- step -*v* -SI -TH -INF
'to be crossing'

(60) a. pod- rob -i -ć^{P}
under- make -*v* -INF
'to forge'

b. pod- r**a**b -i -Ø -a(j) -ć^{P}
under- make -*v* -SI -TH -INF
'to be forging'

In DM, the lowering of /o/ to [a] can be handled either by a phonological readjustment rule, which 'adjusts' the form of the root in the context of the SI morpheme, or by inserting a

[13] As expected, this lowering is also attested in unaccusative *-nq-* stems and some athematic Ø stems, both of which rely on defaulting to *-aj* (rather than insertion of *-yw*) for their S-imperfective forms.

non-segmental exponent into SI (e.g. a floating vocalic feature [+LOW] which docks on /o/ vowels and triggers the observed alternation).[14] The exact mechanism is not important. What matters is that the lowering of /o/ to [a] would be unexpected if its trigger − the SI node − were to be pruned at PF. In turn, if SI is not pruned, and if allomorphic interactions are constrained by adjacency, then SI formation via defaulting to *-aj* is explained.[15]

To round up our discussion of SI morphology in Polish, consider Table 4.3. This table shows that S-imperfectives derived via defaulting to *-aj* belong to the same conjugation class as base *-aj-* stems. Similarly, S-imperfectives derived via suffixation with *-yw* belong to the same conjugation class as base *-a-* and *-owa-* stems. These data strongly support the analysis of *-a* and *-aj* as exponents of TH, distinct from the verbalising suffixes *-ow* and *-i*.

	bare *-aj*	secondary *-aj*	bare *-a*	secondary *-yw-a*
INF	cios-a(j)-ć	wy-tap-i-a(j)-ć	pis-a-ć	prze-pis-yw-a-ć
Ł-PTCP	cios-a(j)-ł	wy-tap-i-a(j)-ł	pis-a-ł	prze-pis-yw-a-ł
3PL NPST	cios-aj-ą	wy-tap-i-aj-ą	pisz-ą	prze-pis-uj-ą
2SG IMP	cios-aj	wy-tap-i-aj	pisz	prze-pis-uj
1SG NPST	cios-a(j)-**m**	wy-tap-i-a(j)-**m**	pisz-**ę**	prze-pis-uj-**ę**
3SG NPST	cios-a(j)-**Ø**	wy-tap-i-a(j)-**Ø**	pisz-**e**	prze-pis-uj-**e**

Table 4.3: Partial conjugation of *-a-* and *-aj* stems and two types of S-imperfectives.

Finally, apart from suffixation with *-yw* and defaulting to *-aj*, there is also a third way of deriving secondary imperfectives: suppletion. This phenomenon is limited to a few isolated cases, such as (61)-(62). What is interesting about the first example is that − at first

[14] The parse in (60b) makes it look like *-i* intervenes between the root vowel and the SI position, making the lowering rule non-local. However, this appearance is just an artefact of Polish orthography. In both (59) and (60), the [i]/[i] vowel is deleted before *-a(j)* and merely surfaces as palatalisation on the preceding consonant. With [i]/[i] out of the picture, the lowering rule affects the first vowel on the left from SI. See also fn. 15.

[15] The formation of S-imperfectives from *-i-* stems is accompanied by another phonological process: the vowel /i/ deletes before other vowels, including the vowel of *-aj*, surfacing only as palatalisation on the preceding consonant. Hence, while *wytopić*^{P} is transcribed as [vitop^{j}it͡ɕ], with the vowel [i] palatalising [p^{j}], *wytapiać*^{I} is transcribed as [vitap^{j}at͡ɕ], with palatalised [p^{j}] but no [i] vowel on the surface. Orthographically, the disappearance of /i/ becomes clearer in examples like *przekroczyć*^{P} */ przekraczać*^{I} 'to step through, to cross'. The root $\sqrt{}$KROK ends in a velar stop /k/, which is palatalised to [t͡ʃ] <cz> before /i/. Subsequently, this /i/ sound is shifted to the back vowel [ɨ] <y>, which surfaces before consonants (ia) but deletes before vowels (ib).

(i) a. (prze-) krocz -y -Ø -ć
through- step -*v* -TH -INF

b. prze- kr**a**cz -(y) **-Ø -a(j)** -ć
through- step -*v* -SI -TH -INF

glance – it appears to form an ABA pattern, with the B-imperfective root identical to the S-imperfective one, and the LP-perfective root suppletive. This is potentially problematic since ABA patterns have been argued to be underivable at PF (e.g. Bobaljik 2012 in DM, Caha 2009 and much subsequent work in the Nanosyntax framework). I will discuss suppletive roots in more detail in §4.5.1, where I will use them as evidence against the hypothesis that S-imperfectives are syntactically derived from perfective structures.

(61) a. kła(d) -śćᴵ
put -INF
'to be putting; to put habitually' (B-imperfective)

b. w- łoż -y -ćᴾ
in- put -*v* -INF
'to put in' (LP-perfective)

c. w- kład -a(j) -ćᴵ
in- put -TH -INF
'to be putting in; to put in habitually' (S-imperfective)

(62) a. i -śćᴵ
walk -INF
'to walk in a particular direction' (determinate B-imperfective)[16]

b. chodz -i -ćᴵ
walk -*v* -INF
'to walk without a direction or habitually' (indeterminate B-imperfective)

c. wy- j -śćᴾ
out- walk -INF
'to walk out' (LP-perfective)

d. wy- chodz -i -ćᴵ
out- walk -*v* -INF
'to be walking out; to walk out habitually' (S-imperfective)

[16]For the distinction between determinate (directed) and indeterminate (non-directed) verbs of motion, see e.g. Piñón (1997) for Polish, Kagan (2008, 2010) and Gepner (2016) for Russian.

4.3 Superlexical prefixes

Much has been written about the syntax, semantics and morphology of Slavic prefixes, both within the generative tradition and from the more traditional perspective. We already discussed the class of lexical prefixes in Chapter 3, analysing them as min/max adpositional elements P/PP, comparable to resultative particles in English and prefixes in Latin and Classical Greek. This section focuses on the properties and distribution of *superlexical prefixes* (SPs) (e.g. Babko-Malaya 1999; Romanova 2004; Svenonius 2004b; cf. also the distinction between *internal* and *external* prefixes in Sciullo and Slabakova 2005). There are many systematic differences between LPs and SPs. Firstly, while LPs contribute a result state to the event structure, superlexical prefixes have quantificational and/or adverbial functions (e.g. distributivity or temporal delimitation). Secondly, while LPs may be non-compositional, the meaning of SPs is fully transparent. Thirdly, LPs are closer to the verb stem than SPs, which suggest that they are lower in the syntactic structure. For example, in an influential paper, Svenonius (2004b) argues that LPs are VP-internal while SPs are VP-external. Finally, there can be only one LP in the verbal complex, while SPs are allowed to stack.

	lexical prefixes	superlexical prefixes
meaning	resultative/directional	quantificational/adverbial
compositionality	may be non-compositional	fully compositional
position	adjacent to the verb	above LPs
stacking	cannot stack	multiple SPs can stack

Table 4.4: The contrasting properties of lexical and superlexical prefixes.

I begin with an overview of superlexical prefixes in Polish. Afterwards, I introduce the more recent distinction between *high* and *low* superlexicals, showing that Polish has only high SPs, and giving examples of low SPs from other Slavic languages (Biskup, 2021a,b).

4.3.1 High superlexical prefixes

In comparison with other Slavic languages, Polish has relatively few superlexical prefixes: cumulative *na*$_{\text{CUM}}$-, saturative *na*$_{\text{SAT}}$-, distributive *po*$_{\text{DIST}}$- and delimitative *po*$_{\text{DELIM}}$- (see Łazorczyk 2010 for a detailed description). These SPs attach to morphologically imperfective stems, both B-imperfectives and S-imperfectives, and 'perfectivise' them. In Polish, superlexical prefixation can be fed by − but does not feed − secondary imperfectivisation.

Let us begin with the cumulative prefix *na*$_{\text{CUM}}$-. This SPs quantifies over the internal argument, translating roughly as *a lot* or *a large amount*. Given the quantificational semantics of *na*$_{\text{CUM}}$-, the argument in the scope of this operator must be either a bare plural or a mass noun. This argument must also be in the genitive rather than accusative case (63).[17]

(63) Marek **na- pod-** pis **-yw** -a -ł$^{\text{P}}$ dokumentów / *dokumentu.
Mark CUM- apart- load -SI -TH -PST document.PL.GEN document.SG.GEN
'Mark signed a lot of documents / *a document.'

The cumulative use of *na-* is related to the saturative one. The internal argument is still in the genitive case, but now the reflexive pronoun *się* is also present, relating quantification back to the external argument. Semantically, the sentence in (64) asserts that Mark had enough of watching TV, or that he has watched so much TV that he is 'saturated' with it.

(64) Marek **na- o-** gląd **-Ø -a(j)** -ł$^{\text{P}}$ się telewizji.
Mark SAT- about- look -SI -TH -PST REFL television.GEN
'Mark has had his fill of watching TV / watched TV to his heart's content.'

Having introduced the two uses of *na-*, let us turn to *po-*, which has distributive and delimitative uses. The *po*$_{\text{DIST}}$- variant distributes the event over other elements in the clause, usually the internal argument, but sometimes also an oblique or even the external argument. The following example asserts that Anna unloaded the trucks one by one (65). Since *po*$_{\text{DIST}}$- requires a multiplicity of atomic objects to distribute over, the direct object *ciężarówki* 'trucks' must be plural rather than singular. In the second example, the event of opening one and the

[17] In order to make these data more readable, SPs, LPs and SI suffixes are highlighted in bold.

same window is distributed over the external argument *nauczyciele* 'teachers' (66).[18]

(65) Ania **po- roz-** ład -ow **-yw** -a -ł -a^{P} ciężarówki / *ciężarówkę.
Anna DIST- apart- load -*v* -SI -TH -PST -3SG.F truck.PL.ACC truck.SG.ACC
'Anna unloaded each of the trucks.'

(66) Nauczyciele **po- o-** twier **-Ø -a(j)** -l -i^{P} to okno (jeden za drugim).
teachers DIST- about- create -SI -TH -PST -3PL.M this window.ACC one after another
'The teachers each opened this window (one after another) (e.g. during a fire drill).'

(Łazorczyk 2010:190)

The distributive prefix *po*$_{\text{DIST}}$- is homonymous with, but semantically distinct from, the delimitative prefix *po*$_{\text{DELIM}}$-. The latter quantifies over the temporal runtime of the event, specifying that the event lasted only a short amount of time. The semantic function of *po*$_{\text{DELIM}}$- most closely corresponds to that of the English temporal adverbial *for a while*.

(67) Karolina **po- o-** gląd **-Ø -a(j)** -ł -a^{P} telewizję.
Caroline DELIM- about- look -SI -TH -PST -3SG.F television.ACC
'Caroline watched TV for a while.'

[18] Interestingly, Tatevosov (2018) claims that the Russian distributive prefix *pere*$_{\text{DIST}}$- cannot take scope over the external argument, citing the somewhat infelicitous example (ib). The fact that *pere*$_{\text{DIST}}$- scopes below the external argument *rozbojniki* 'thieves' is supposed to show that this prefix merges below Voice (his *v*). However, it is also possible that this sentence is degraded for pragmatic reasons. The verb *otkryvat'* 'open' is resultative, denoting a transition into an open state. In a scenario with a single thief and multiple doors, this result state plausibly holds for each door at the end of the event (ia). In contrast, in a scenario with multiple thieves and a single door (or Sesame), the same door has to go in and out of an open state throughout the event. The closing events are necessary for the sentence to make sense, but they are not asserted, and the difficulty of inferring them might account for the degraded judgements. This is why (66) is most felicitous in a situation like fire safety training, with the teachers queueing up one after another to open one and the same window (or door).

(i) a. Rozbojnik pere-otkry-va-l dveri.
thief DIST-open-SI-PST doors
'The thief opened the doors one by one.'
b. ??Razbojniki pere-otkry-va-l-i Sezam.
thieves DIST-open-SI-PST-PL Sesame
'The thieves opened Sesame one by one.'

To the extent that Polish *po*$_{\text{DIST}}$- can scope over the external argument, it must merge above the level of VoiceP. This is fully consistent with the hypothesis that high SPs merge in the specifier of AspP (see below).

As expected, we can use the standard aspectual diagnostics to verify that the output of superlexical prefixation is a perfective verb. For example, verbs prefixed with po_{DIST}- make use of the auxiliary *zostać* rather than *być* in the passive voice. The following data demonstrates that LP-perfectives (68b) and SP-perfectives (68d) pattern together with respect to passive auxiliary selection, contrasting with B-imperfectives (68a) and S-imperfectives (68c).

(68) a. Te ciężarówki **były** powoli ład-ow-a-n-e$^{\text{I}}$.
these trucks(NM) were slowly load-*v*-TH-PASS.PTCP-NM
'These trucks were slowly being loaded.'

b. Te ciężarówki **zostały** powoli **roz-**ład-ow-a-n-e$^{\text{P}}$.
these trucks(NM) became slowly apart-load-*v*-TH-PASS.PTCP-NM
'These trucks were slowly unloaded.'

c. Te ciężarówki **były** powoli **roz-**ład-ow-**yw**-a-n-e$^{\text{I}}$.
these trucks(NM) became slowly apart-load-*v*-SI-TH-PASS.PTCP-NM
'These trucks were slowly being unloaded.'

d. Te ciężarówki **zostały** powoli **po-roz-**ład-ow-**yw**-a-n-e$^{\text{P}}$.
these trucks(NM) became slowly DIST-apart-load-*v*-SI-TH-PASS.PTCP-NM
'Each of these trucks was slowly unloaded.'

Unfortunately, the passivisation test cannot be applied to other cases of superlexical prefixation in Polish. Unlike distributive po_{DIST}- verbs, cumulative and saturative $na_{\text{CUM/SAT}}$- verbs do not enter the verbal passive construction (69). This is either because the direct object has a weak interpretation (i.e. as a bound variable in the scope of a quantifier), or because it is assigned genitive case by the prefix, blocking its promotion to a nominative subject.

(69) a. *Dokumenty zostały / były wczoraj
document.PL.NOM became.3PL.NM were.3PL.NM yesterday
na-pod-pis-**yw**-a-n-e$^{\text{P}}$.
CUM-under-write-SI-TH-PASS.PTCP-3PL.NM.NOM

b. *Dokumentów zostało / było wczoraj
document.PL.GEN became-3SG.N were-3SG.N yesterday
na-pod-pis-**yw**-a-n-ych$^{\text{P}}$.
CUM-under-write-SI-TH-PASS.PTCP-3PL.NM.GEN
Intended: 'A lot of documents were signed yesterday.'

Fortunately, the results of other diagnostics are more informative. Cumulative and saturative *na*$_{\text{CUM/SAT}}$- verbs are categorically excluded from the periphrastic future construction (70a) and from the complement of a phase verb (70b). This confirms that verbs prefixed with high SPs always pattern as perfective, forming a natural class with LP-perfectives.

(70) a. *Marek będzie **na-pod-**pis**-yw**-a-ć$^{\text{P}}$ dokumentów.
Mark will CUM-under-sign-SI-TH-INF document.PL.GEN
Intended: 'Mark will sign a lot of documents.'

b. *Marek skończył$^{\text{P}}$ **na-pod-**pis**-yw**-a-ć$^{\text{P}}$ dokumentów.
Mark finished CUM-under-sign-SI-TH-INF document.PL.GEN
Intended: 'Mark finished signing a lot of documents.'

All of the verbs considered so far involve the attachment of a superlexical prefix to an S-imperfective stem. Using the distributive *po*$_{\text{DIST}}$- for illustration, let us examine the distribution of high SPs more closely. The first set of examples shows that the input to superlexical prefixation must be morphologically imperfective. This category includes both B-imperfectives (71a) and S-imperfectives (71c) but excludes LP-perfectives (71b).

(71) a. **po-** ład -ow -a -ć$^{\text{P}}$
DIST- load -*v* -TH -INF
'to load one by one' (SP + B-imperfective)

b. ***po- roz-** ład -ow -a -ć
DIST- apart- load -*v* -TH -INF
Intended: 'to unload one by one' (*SP + LP-perfective)

c. **po- roz-** ład -ow **-yw** -a -ć$^{\text{P}}$
DIST- apart- load -*v* -SI -TH -INF
'to unload one by one' (SP + S-imperfective)

As already mentioned, superlexical prefixation does not feed secondary imperfectivisation in Polish. The result of adding the SI suffix *-yw* to the perfective verb *po-ład-ow-a-ć*$^{\text{P}}$ 'to load one by one', is strongly ungrammatical (72b). Across the board, SP-perfectives lack imperfective counterparts, even though there is no obvious semantic reason for this gap. For example, the intended reading of (72b) is not difficult to interpret: 'to be in the process

of unloading each of something' or 'to habitually unload each of something'. Nonetheless, this hypothetical interpretation cannot be expressed using *po*$_{\text{DIST}}$- in combination with *-yw*.

(72) a. **po-** ład -ow -a -ć^{P}
DIST- load -*v* -TH -INF

b. *__po-__ ład -ow __-yw__ -a -ć
DIST- load -*v* -SI -TH -INF

The next example shows that, when an LP and an SP co-occur in the same verb, the SP obligatorily precedes the LP. The reverse ordering gives rise to ungrammaticality (73b).

(73) a. **po- roz-** ład -ow **-yw** -a -ć^{P}
DIST- apart- load -*v* -SI -TH -INF

b. ***roz- po-** ład -ow **-yw** -a -ć
apart- DIST- load -*v* -SI -TH -INF

Finally, high SPs stack not only on top of LPs, but also on top of other SPs, yielding verbs with three or more prefixes.[19] The following examples come from Łazorczyk (2010):

(74) a. Studenci **po- na- za-** prasz **-Ø -a(j)** -l -i^{P} się tego
students DIST- SAT- behind- ask -SI -TH -PST -3PL.M REFL this
nauczyciela.
teacher.GEN
'The students each did a lot of inviting of this teacher.'

[19]Not all orderings and combinations of SPs are equally viable. For example, some speakers cannot reverse *po*$_{\text{DIST}}$- and *na*$_{\text{SAT}}$- in (74a) above, while others (the present author included) accept either ordering, with a slight preference for *po*$_{\text{DIST}}$- > *na*$_{\text{SAT}}$-. More categorically, *po*$_{\text{DELIM}}$- cannot co-occur with *na*$_{\text{SAT}}$-, as shown in (ic). This restriction is most likely due to the conflicting semantic contributions of these elements, with *po*$_{\text{DELIM}}$- translating roughly as 'for a short time' and *na*$_{\text{SAT}}$- specifying a large quantity of the event.

(i) a. Jacek po-bieg-a(j)-ł.
Jack DELIM-run-TH-PST
'Jack ran a little / for a short time.'
b. Jacek na-bieg-a(j)-ł się.
Jack SAT-run-TH-PST REFL
'Jack ran a lot / has had his fill of running.'
c. *Jacek na-po-bieg-a(j)-ł / po-na-bieg-a(j)-ł się.
Jack SAT-DELIM-run-TH-PST DELIM-SAT-run-TH-PST REFL
Intended: 'Jack ran a lot for a short time.'

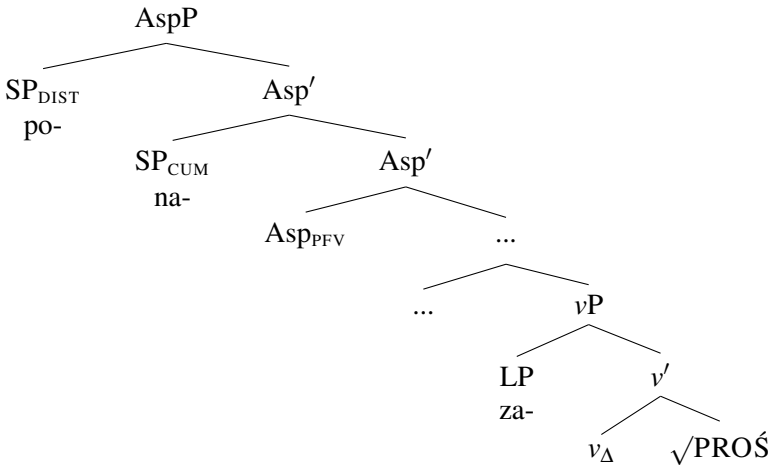
Co-occurrence restrictions *within* the class of high SPs are interesting, and they deserve to be studied in their own right, but they lie largely outside the scope of the present thesis. What matters is that, in principle, it is possible to have more than one high SP on a verb, but it is not possible to have more than one LP.

b. Mikołaj **po- po- przy-** nos -i -ł^{P} wszystkim zabawek.
Santa DELIM- DIST- at- carry.SI -*v* -PST everyone.DAT toys.GEN
'Santa brought some toys for each of them.'

(Łazorczyk 2010:210f)

The phenomenon of SP stacking is interesting because − at first glance − it seems to falsify the descriptive generalisation that 'high SPs select for imperfective stems'. Consider the first example in (74a). At the point when *po*$_{\text{DIST}}$- attaches to *na*$_{\text{SAT}}$*-za-prasz-a(j)-ć*^{P} *się* 'to do a lot of inviting', the base for superlexical prefixation is perfective rather than imperfective. The same applies to the attachment of *po*$_{\text{DELIM}}$- to the perfective base *po*$_{\text{DELIM}}$*-przy-nosi-ć*^{P} 'to bring one by one' in (74b). If each superlexical prefix is analysed as a separate unit with its own selectional properties, the mechanism of SP stacking becomes difficult to explain. At best, we end up with an inelegant disjunctive statement: 'high SPs select for *either* imperfective stems *or* stems perfectivised by other high SPs, but not for LP-perfectives'. This formulation misses the point, failing to capture the distribution of high SPs in a simple and explanatory manner. A better solution involves the multiple-specifier structure in (75).

(75)



The idea that high SPs originate in the specifier of the aspectual projection AspP is entertained in Svenonius (2004b) and Ramchand (2008a), among others. This is also the analysis adopted in the present study. The advantage of this configuration is that SPs are formally

separated from the perfective operator: while SPs merge in Spec-Asp, the perfective operator is introduced by the aspectual head Asp_{PFV}. Put differently, SPs do not perfectivise the verb directly, but merely license the structural projection responsible for perfective aspect. This naturally captures the possibility of multiple SPs associated with a single Asp head.

With the multiple-specifier structure, the distribution of high superlexical prefixes can be restated in terms of the position and selectional properties of the Asp_{PFV} head. If Asp_{PFV} 'selects for imperfective inputs' in some sense, then the data in (71) and (74) are derived. Furthermore, if Asp_{PFV} is syntactically high, merging above the level of LPs and SI morphology, then the ungrammaticality of (72b) and (73b) is also captured correctly.

Of course, the full analysis of high SPs depends on our answers to the following questions: How does Asp_{PFV} 'select for imperfective inputs' (if at all)? Are there multiple aspectual projections in the clause? What is the function and position of SI morphology? These and related questions will be tackled explicitly in Chapter 6.

4.3.2 Low superlexical prefixes

In addition to the binary split between lexical and superlexical prefixes, there is now a growing recognition that SPs do not constitute a homogeneous class, either. For example, Tatevosov (2008) puts forward a three-way classification of Russian prefixes into lexical, superlexical and *intermediate*. Using slightly different terminology, and focusing primarily on Russian and Czech, Biskup (2021a,b, 2022) divides the class of SPs into *high* and *low*.

Low SPs also have fully compositional, adverbial meanings, but their distribution differs from that of high SPs. Since Polish arguably lacks low SPs, I will present the data from Russian instead. All of the Russian examples cited in this section are based on Tatevosov (2008), who refers to this class of prefixes as *intermediate*. Instances of low SPs can also be found in other Slavic languages: Žaucer (2013) discusses similar cases in Slovenian (analysing them as modifiers of the result state), while Biskup (2022) identifies low SPs in Czech. The existence of low SPs in different Slavic languages suggests that they are an

integral part of aspectual morphology, and that any analysis which seeks to be generalisable and to capture the empirical reality of Slavic aspect must take them into account.

Two prefixes are classified as 'intermediate' in Russian: completive *do-* and repetitive *pere-* Tatevosov (2008). The latter has a similar meaning to the English prefix *re-*.

(76) *Low SPs in Russian*

a. completive do_{CMP}-

b. repetitive $pere_{\text{RPT}}$-

Just like high SPs, low SPs are highly productive, contributing a constant semantic denotation to a variety of verbs (77)-(78). Furthermore, they have a perfectivising effect on the clause, deriving perfective stems from morphologically simple imperfectives.

(77) a. **do**-pisat'$^{\text{P}}$
'to complete writing'

b. **do**-myt'$^{\text{P}}$
'to complete washing'

c. **do**-ot-kryt'$^{\text{P}}$
'to complete opening'

(78) a. **pere**-pisat'$^{\text{P}}$
'to write again, re-write'

b. **pere**-myt'$^{\text{P}}$
'to wash again'

c. **pere**-iz-brat'$^{\text{P}}$
'to elect again'

Similarly to high SPs in Polish, multiple low SPs stack in Russian, with the linear order reflecting their scope. The following examples illustrate the stacking of do_{CMP}- and $pere_{\text{RPT}}$-.

(79) a. Vasja **do**-**pere**-pisal stat'ju.
Vasja CMP-RPT-write-PST.M paper.ACC
'Vasja completed re-writing a paper.'

b. Vasja **pere**-**do**-pisal stat'ju.
Vasja RPT-CMP-write-PST.M paper.ACC
'Again, Vasja performed a final stage of writing a paper.'

What are the differences between high and low SPs? Firstly, low SPs feed the derivation of S-imperfectives (80b). This aligns them with LPs rather than with high SPs.

(80) a. **do/pere-** pis -a -t'^{P}
CMP/RPT- write -TH -INF
'to complete writing / re-write' (perfective)

b. **do/pere-** pis **-yv** -a -t'^{I}
CMP/RPT- write -SI -TH -INF
'to complete writing / re-write' (imperfective)

Secondly, low SPs may attach to morphological LP-perfectives (81a). Just like before, the resulting form undergoes secondary imperfectivisation (81b). For comparison, if we were to replace *do*$_{\text{CMP}}$-/*pere*$_{\text{RPT}}$- with the high SP *na*$_{\text{CUM}}$-, the first example would be ungrammatical (82a), while the second one would be perfective rather than imperfective (82b).

(81) *Low SPs feed secondary imperfectivisation*

a. **do/pere- za-** pis -a -t'^{P}
CMP/RPT- behind- write -TH -INF
'to complete recording / re-record' (perfective)

b. **do/pere- za-** pis **-yv** -a -t'^{I}
CMP/RPT- behind- write -SI -TH -INF
'to complete recording / re-record' (imperfective)

(82) *High SPs do not feed secondary imperfectivisation*

a. ***na- za-** pis -a -t'
CUM- behind -TH -INF

b. **na- za-** pis **-yv** -a -t'^{P}
CUM- behind write -SI -TH -INF
'to record a lot' (perfective)

The descriptive generalisation is that high SPs are fed by − but do not feed − secondary imperfectivisation. The opposite holds for low SPs and LPs: they feed − but are not fed by − the attachment of the SI suffix. This ordering is summarised in (83). It now becomes clear that the labels 'high' and 'low' refer to the position of SPs with respect to SI morphology.

(83) *The descriptive order of affixation*

$\text{LP} \prec \text{SP}_{\text{low}} \prec \text{SI} \prec \text{SP}_{\text{high}}$

As expected, when high SPs, low SPs and LPs co-occur in a single verbal complex, the linear order is always $SP_{high} > SP_{low} > LP$ (84). Any other ordering leads to ungrammaticality.

(84) Vasja nemnogo **po**-**pere**-**za**-pis-yv-a-l^{P} diski (i ušel domoj)
Vasja for.a.while DELIM-RPT-behind-write-SI-TH-PST.M CDs and went home
'Vasja spent some time re-recording CDs (and went home).'

To capture the order of high and low SPs with respect to each other, as well as the position of prefixes with respect to SI morphology, Tatevosov (2008) proposes a hierarchical representation along the lines of (85) (see also Biskup 2021a, 2022 for a similar structure). On this analysis, LPs and low SPs feed secondary imperfectivisation because they are in the scope of the SI operator. In contrast, high SPs are introduced in some higher syntactic position. The asterisk * indicates that there can be one or more superlexical prefix.

(85) [SP_{high}* [... [SI [... [SP_{low}* [... [$_{VP}$ ... LP ...]]]]]]]

While this structure is descriptively accurate, it does not spell out the relationship between aspectual affixes and perfective/imperfective aspect: Is the value of aspect computed at multiple points in the derivation or only once? Are there multiple aspectual projections in the clause? What is the function of the SI operator? I return to these questions in §4.5.1, where I talk about the recursion problem in Slavic aspectual morphology.

For now, let us revisit the inventory of Polish prefixes. At the beginning of this section, I mentioned that Polish does not have low SPs. This fact is not a universally accepted. Most recently, Klimek-Jankowska and Błaszczak (2021) have cited the following as examples of *v*P-external superlexical prefixes in Polish (building on the previous work of Wiland 2012):

(86)

a.	**pod**-dus-i-ć^{P}	'to stew a bit'	(attenuative)
b.	**prze**-krzycz-e-ć^{P}	'to shout louder than sb'	(excessive)
c.	**prze**-rob-i-ć^{P}	'to do sth again, to make over'	(repetitive)
d.	**prze**-sp-a-ć^{P}	'to sleep through the length of sth'	(perdurative)
e.	**do**-kroi-ć^{P}	'to slice more of sth'	(completive)
f.	**od**-śpiew-a(j)-ć^{P}	'to sing a song from start to finish'	(terminative)

If these prefixes were superlexical, they would count as low SPs because they undergo secondary imperfectivisation (e.g. *pod-dusz-a(j)-ć*^{I}, *prze-krzyk-iw-a-ć*^{I}, *prze-rab-i-a(j)-ć*^{I}). The problem is that their distribution is much more restricted than that of low SPs in Russian, Czech and Slovenian. Compare the completive *do-* and repetitive *prze-* in Polish with the cognate prefixes in Russian. The former do not stack at all: they are in complementary distribution with lexical prefixes (87a)-(87b) as well as with each other (87c)-(87d).

(87)

a. *do- za- pis -a -ć
CMP- behind- write -TH -INF
Intended: 'to complete recording'

b. *prze- za- pis -a -ć
REP- behind- write -TH -INF
Intended: 'to re-record'

c. *do- prze- pis -a -ć
CMP- REP- write -TH -INF
Intended: 'to complete re-writing'

d. *prze- do- pis -a -ć
REP- CMP- write -TH -INF
Intended: 'to once again complete writing'

I conclude that *pod-*, *do-*, *prze-* and *od-* do not meet the structural criteria for superlexicality in Polish. It seems that the main argument for analysing these prefixes as SPs is based on their meaning: 'their semantics is predictable and they are productive' (Klimek-Jankowska and Błaszczak, 2021). However, compositionality/productivity is not a sufficient criterion for superlexicality: it is not the case that the meaning of LPs *must* be non-compositional,

only that it *can* be, as diagrammed in (88). A more plausible solution is to analyse this group of prefixes as LPs endowed with a relatively stable semantic content. Their inability to stack on top of other LPs would follow from the fact that LPs are structurally unique.

(88) a. LP → compositional or non-compositional

b. SP → compositional

This analysis entails variation in the prefix inventories of Russian and Polish: in Russian, *do*$_{\text{CMP}}$- and *pere*$_{\text{REP}}$- function as low SPs; in Polish, the cognate prefixes are categorised as LPs. The semantic differences between them still need to be carefully investigated, but this sort of variation is certainly not uncommon. Biskup (2021a) gives the example of the delimitative *po*$_{\text{DELIM}}$- in Russian and Czech. In Russian (and Polish), *po*$_{\text{DELIM}}$- functions as a high SP, attaching to an existing secondary imperfective stem (89). In Russian, *po*$_{\text{DELIM}}$- patterns as a low SP, feeding secondary imperfectivisation (90). This confirms that cognate prefixes in different Slavic languages may have different grammatical properties.

(89) a. ot- kry -va -t'$^{\text{I}}$
away- cover -SI -INF

b. po- ot- kry -va -t'$^{\text{P}}$
DELIM- away- cover -SI -INF
(Russian)

(90) a. po- od- krý -t'$^{\text{P}}$
DELIM- away- cover -INF

b. po- od- krý -va -t'$^{\text{I}}$
DELIM- away- cover -SI -INF
(Czech)

4.4 Perfectivity without prefixation

In many cases, the presence of a lexical or superlexical prefix is a precondition for perfective aspect. However, there are two classes of exceptions to this rule: semelfactives and bare perfectives. The former are productive and morphologically marked with *-nąć*. The latter are idiosyncratic and must be listed as exceptions in any description of Polish grammar.

4.4.1 Semelfactives

Semelfactive verbs are derived by means of the suffix *-nąć*. They are either unergative or transitive, and they denote single punctual events, which can be described as naturally atomic (see Smith 1991; cf. also Markman 2008, Bacz 2012, Taraldsen Medová and Wiland 2018 and Wiland 2019 for more recent work on the morphosyntax and semantics of semelfactive verbs). Semelfactive verbs pattern as perfective in all the standard aspectual diagnostics. For example, they are ungrammatical in the complement of the phase verb *zacząć* 'to begin' (91a) and they form the verbal passive with the auxiliary *zostać* 'to become' (91b).

(91) a. Pies zaczął {*szczek-ną-ć^{P} / szczek-a(j)-ć^{I}}
Dog began bark-SML-INF bark-TH-INF
'The/a dog began to bark.'

b. Tomek {został / *był} kop-nię-t-y^{P} przez konia.
Tom.NOM became was kick-SML-PART-3SG.M by horse.GEN
'Tom was kicked by the/a horse.'

Some further examples of B-imperfectives and semelfactives derived from the same root are listed in (92) and (93). It should be observed that the semelfactive suffix *-nąć* is in complementary distribution with the verbalising suffixes *-i* and *-ow* as well as with the conjugation class markers *-a*, *-aj* and *-e*. Similarly, it is not possible to imperfectivise a semelfactive verb by attaching a SI suffix to it (cf. **kop-n(ą)-yw-a-ć*, **kop-yw-nąć*).

(92) *Bare imperfectives*

a. kop-a-ć^{I}
kick-TH-INF
'to kick'

b. wal-i-ć^{I}
hit-*v*-INF
'to hit'

c. szczek-a(j)-ć^{I}
bark-TH-INF
'to bark'

(93) *Semelfactives*

a. kop-nąć^{P}
kick-SML-INF
'to give a kick'

b. wal-nąć^{P}
hit-SML-INF
'to hit once'

c. szczek-nąć^{P}
bark-SML-INF
'to bark once'

d. krzycz-e-ć^{I}
shout-TH-INF
'to shout'

e. drż-e-ć^{I}
twitch-TH-INF
'to twitch'

f. fund-ow-a-ć^{I}
fund-*v*-TH-INF
'to fund'

d. krzyk-ną-ć^{P}
shout-SML-INF
'to give a shout'

e. drg-ną-ć^{P}
twitch-SML-INF
'to twitch once'

f. fund-ną-ć^{P}
fund-SML-INF
'to fund (informal)'

Since semelfactives denote simple activities, without a result component, I conclude that they are built on the verbal flavour v_{DO} rather than v_{Δ}. In some cases, however, semelfactives combine with lexical prefixes, and those require the presence of v_{Δ} in the structure. Lexically-prefixed semelfactives are not particularly productive, but the attested cases still need to be accounted for. A few examples are given in (94) (see also Bacz 2012:115).

(94) a. (wy-) kop -ną -ć^{P}
out- kick -SML -INF
'to kick (out)'

b. (ze-) pch -ną -ć^{P}
from- push -SML -INF
'to push (off)'

c. (przy-) cis -ną -ć^{P}
at- press -SML -INF
'to press (down)'

d. (o-) mi -ną -ć^{P}
about- pass -SML -INF
'to pass (around)'

e. (od-) krzyk -ną -ć^{P}
from- shout -SML -INF
'to shout (back)'

f. (od-) szep -ną -ć^{P}
from- whisper -SML -INF
'to whisper (back)'

4.4.2 Bare perfectives

A small number of bare, unprefixed verbs in Slavic languages patterns as perfective rather than imperfective. These verbs must be listed as exceptions and memorised as such by native speakers and second-language learners. An exhaustive list of bare perfectives in Polish is presented in (95) (see also Czochralski 1975:107, Schuyt 1990:188).

(95)
a. *chyb-i-ć*^{P} 'to miss (a target)'
b. *chwyc-i-ć*^{P} 'to grasp'
c. *czep-i-ć*^{P} *się* 'to cling to sth.'
d. *da-ć*^{P} 'to give'
e. *kup-i-ć*^{P} 'to buy'
f. *lec*^{P} 'to fall in battle (archaic)'
g. *pa-ść*^{P} 'to fall down'
h. *puśc-i-ć*^{P} 'to release'
i. *rusz-y-ć*^{P} 'to move'
j. *rzec*^{P} 'to say' (archaic)
k. *rzuc-i-ć*^{P} 'to throw'
l. *traf-i-ć*^{P} 'to hit (a target)'
m. *sią-ść*^{P} 'to sit down'
n. *starcz-y-ć*^{P} 'to be sufficient'
o. *staw-i-ć*^{P} 'to place, to put'
p. *strzel-i-ć*^{P} 'to shoot'
q. *skocz-y-ć*^{P} 'to jump'
r. *traf-i-ć*^{P} 'to hit; to reach'

Almost all bare perfectives have imperfective counterparts (apart from the archaic *rzec*^{P} 'to say' and *lec*^{P} 'to fall in battle', which are perfective only). These imperfective forms are derived by changing the stem class to the default *-aj*, as in (96). The only exception is *kup-i-ć*^{P} 'to buy', which forms an aspectual pair with the B-imperfective *kup-ow-a-ć*^{I} (96d).

(96)
a. chyb-i-ć^{P} - chyb-i-**a(j)**-ć^{I}
miss-*v*-INF miss-*v*-TH-INF
'to miss'
b. chwyc-i-ć^{P} - chwyt-**a(j)**-ć^{I}
grasp-*v*-INF grasp-TH-INF
'to grasp'
c. da-ć^{P} - daw-**a(j)**-ć^{P}
give-INF give-TH-INF
'to give'
d. kup-i-ć^{P} - kup-ow-a-ć^{I}
buy-*v*-INF - buy-*v*-TH-INF
'to buy'
e. pa-ść^{P} - pad-**a(j)**-ć^{I}
fall-INF fall-TH-INF
'to fall down'
f. rusz-y-ć^{P} - rusz-**a(j)**-ć^{I}
move-*v*-INF move-TH-INF
'to move'
g. strzel-i-ć^{P} - strzel-**a(j)**-ć^{I}
shoot-*v*-INF shoot-TH-INF
'to shoot'
h. skocz-y-ć^{P} - skak-**a(j)**-ć*ipf*
jump-*v*-INF jump-TH-INF
'to jump'

Is there anything theoretically interesting to say about bare perfectives, or do we simply have to accept their existence as listed exceptions? My suggestion here is that B-perfectives

should be unified with semelfactive verbs. This is plausible at least on semantic grounds. For most B-perfectives, it is possible to find a semelfactive with a similar meaning (97)-(98).

(97) *Bare perfectives*

a. chwyc-i-ć^{I}
'to grab'

b. kup-i-ć^{P}
'to buy'

c. rzuc-i-ć^{P}
'to throw'

d. rzec^{P}
'to say (archaic)'

e. sią-ść^{P}
'to sit down'

f. strzel-i-ć^{P}
'to shoot'

g. skocz-y-ć^{P}
'to jump'

(98) *Semelfactives*

a. cap-ną-ć^{P}
'to grab, steal (informal)'

b. gwizd-ną-ć^{P}
'to steal (informal); to whistle'

c. cis-ną-ć^{P}
'to press, to hurl'

d. szep-ną-ć^{P}
'to whisper'

e. sta-ną-ć^{P}
'to stand up'

f. pal-ną-ć^{P}
'to shoot'

g. kic-ną-ć^{P}
'to hop'

Further, just like semelfactives, B-perfectives are compatible with lexical prefixation, as in *wy-rzuc-i-ć*^{P} 'to throw out' and *od-strzel-i-ć*^{P} 'to shoot off'. The final consideration is diachronic: B-perfectives are reanalysed as semelfactives over time. For example, Łazorczyk (2010:16) mentions that Czech has only five B-perfectives, and that 'many formerly bare perfectives in Czech have been reanalysed as containing the perfective-marking suffix *–n*'.

I will return to the analysis of semelfactives and bare perfectives in Chapter 6.

4.5 Theoretical issues

The final section describes two theoretical problems posed by the system of aspect marking in Polish and other Slavic languages. These problems are sometimes acknowledged in the literature, but they are rarely pursued with sufficient theoretical rigour. I will refer to them as the *recursion problem* and the *long-distance problem*. After giving a brief overview below, I will tackle these problems in the remaining chapters of the thesis. The solutions to both of these problems should be of interest not only to Slavicists, but also to anyone interested in the syntax and semantics of aspect, and in the interface between syntax and morphology. To anticipate my conclusions, I will argue that lexical prefixes undergo syntactic movement, and that the secondary imperfective suffix is a dissociated morpheme inserted at PF. This analysis is consistent with a grammatical architecture in which morphology interprets the output of syntax, but in which the mapping between the two is not necessarily one-to-one.

4.5.1 The recursion problem

Descriptively speaking, the aspectual value of Slavic verbs seems to be determined by their 'derivational history' (a notion originally ascribed to Karcevski 1927, cited in Biskup 2021a). In a typical derivation, the aspect of a stem 'flips' under the influence of successive affixes, first from IPFV to PFV, then from PFV to IPFV, and then back to PFV again. The morphological derivation of aspect in Slavic languages would thus be *semi-recursive*.

(99) a. [got-ow-]^{I}

b. [roz- [got-ow-]^{I}]^{P}

c. [[roz- [got-ow-]^{I}]^{P} yw]^{I}

d. [po$_{DIST}$- [[roz- [got-ow-]^{I}]^{P} yw]^{I}]^{P}

At its core, the recursion problem concerns the relationship between syntax/semantics and morphology (100). Does the *semantic* computation of Slavic aspect mirror the semi-recursive 'derivational history' of each verb? Is aspect computed at every step in the deriva-

tion, in a recursive manner, with IPFV overwriting PFV and PFV overwriting IPFV? Or is the correspondence between morphological and semantic derivations less direct than that?

(100) *The recursion problem*

Does a semi-recursive morphological derivation reflect the presence of multiple aspectual features and/or projections at the level of syntax/semantics?

This section explores the recursion problem, with particular emphasis on the function of SI morphology. Our starting point is the structure in (101) (repeated from §4.3.2). While this structure captures the surface ordering of affixes, it does not represent information about the value of aspect in any way. There is no way to tell how individual affixes affect the computation of perfectivity/imperfectivity, or how aspect is represented in the first place.

(101) [SP_{high}* [... [SI [... [SP_{low}* [... [$_{VP}$ ... LP ...]]]]]]]

Let us begin by imagining a positive answer to the recursion question: Slavic aspect is computed in a semi-recursive manner with multiple aspectual features and/or projections. Two variants are diagrammed below. Either the value of aspect is computed cyclically after the attachment of every aspectual affix, with the grammar keeping track of PFV and IPFV features at every bracket (102a), or there are multiple aspectual projections in the clause (102b). In the second scenario, superlexical prefixes are introduced in the specifiers of perfective layers Asp_{PFV}, while SI spells out some imperfectivising operator Asp_{SI}. Derivations with two or more aspectual layers have been previously proposed by Jabłońska (2004) and Łazorczyk (2010) for Polish, Arsenijević (2006:208-210) and Bešlin (2022) for Serbo-Croatian, Gehrke (2008:176f.) for Russian, and Caha and Ziková (2016:369) for Czech.[20]

(102) *Aspect computed at multiple points in the derivation*

a. ^{PFV}[SP_{high}* [... ^{IPFV}[SI [... ^{PFV}[SP_{low}* [... ^{PFV}[$_{VP}$ ... LP ...] ...]

[20]To be precise, Łazorczyk (2010) argues for (semi-)recursion at the level of inner aspect rather than outer aspect. She analyses LPs and SPs as telicisers and SI suffixes as atelicisers. For more details, see fn. 21 below.

b. [SP_{high}* [**Asp_{PFV}** [... [**Asp_{SI}** [... [SP_{low}* [**Asp_{PFV}** [... [$_{VP}$ ... LP ...] ...]

These sorts of recursive derivations are problematic, particularly from the perspective of syntax-based approaches to word formation. To make this more concrete, consider the derivation of S-imperfectives. Taking the morphological bracketing in (103) at face value, we see that the SI suffix *-yw* attaches to perfective stems and derives imperfective stems. This suggests that SI morphology corresponds to some imperfectivising aspectual operator at the level of syntax/semantics, labelled as SI or Asp_{SI}. Crucially, this aspectual operator attaches to *semantically* perfective inputs and renders them *semantically* imperfective (104).

(103) *Morphological bracketing*

[[roz- [got-ow-]^{I}]^{P} yw]^{I}

(104) *SI as an imperfectivising operator in the syntax/semantics*

a. ^{IPFV}[SI [... ^{PFV}[$_{VP}$ ... LP ...]]]

b. [Asp_{SI} [... [**Asp_{PFV}** [... [$_{VP}$ ... LP ...]]]]]

The idea that the SI operator attaches to *semantically* perfective inputs makes certain empirical predictions, which it should be possible to verify. If words are built in narrow syntax (rather than encapsulated in some pre-syntactic lexicon), the entire 'derivational history' is sent off to LF for interpretation. This includes not only the topmost aspectual node (i.e. IPFV/Asp_{SI}) but also any intermediate nodes (i.e. PFV/Asp_{PFV}). In other words, we expect the embedded PFV layer (in bold) to be fully legible at LF and to make at least *some* difference to interpretation. This prediction does not seem to be borne out: I am not aware of any syntactic or semantic evidence for the presence of a PFV operator within S-imperfectives.

For example, we know that the PFV operator gives rise to a *definiteness effect*, whereby a mass noun or a bare plural object is obligatorily interpreted as definite and/or specific (Wierzbicka 1967, Piñón 2001; see also §4.1.2). This effect is clearly related to the presence of perfective aspect in the syntax/semantics (105a)/(106a). The crucial observation

is that S-imperfectives do not inherit this property from LP-perfectives, and that they pattern with B-imperfectives in permitting indefinite readings of bare plurals and mass nouns (105b)/(106b). This militates against deriving S-imperfectives from perfective inputs.

(105) a. Karol na-praw-i-ł^{P} rowery.
Charles on-right-*v*-PST bikes
'Charles repaired the bikes.' (LP-perfective)

b. Karol na-praw-i-Ø-a(j)-ł^{I} rowery.
Charles on-right-*v*-SI-TH-PST bikes
'Charles was reparing (the) bikes.' (S-imperfective)

(106) a. Bartek roz-pląt-a-ł^{P} wełnę / supły.
Bartek apart-tangle-TH-PST wool knots
'Bartek untangled the wool / the knots.' (LP-perfective)

b. Bartek roz-pląt-yw-a-ł^{P} wełnę / supły.
Bartek apart-tangle-SI-TH-PST wool knots
'Bartek was untangling (the) wool / (the) knots.' (S-imperfective)

Similarly, another property associated with the PFV operator is event culmination. Do S-imperfectives exhibit this property in any way? Suppose that the putative Asp_{SI} operator has two distinct functions: progressive and iterative (see Jabłońska 2007:142). The entailment of culmination is understandably suspended in the progressive, but we might well expect it to be preserved in pluractional contexts (e.g. iterative, habitual). The prediction is that pluractional S-imperfectives should denote sequences of culminating events, obtained by pluralising the denotation of the perfective substructure in the scope of Asp_{SI} (107b).

(107) a. [$Asp_{SI\ (PROGRESSIVE)}$ [... [$Asp_{PFV\ (CULMINATED)}$ [... [$_{VP}$ ... LP ...]]]]]

b. [$Asp_{SI\ (ITERATIVE)}$ [... [$Asp_{PFV\ (CULMINATED)}$ [... [$_{VP}$ ... LP ...]]]]]

Is this prediction correct? As expected, the perfective sentence in (108a) denotes a single culminated event of Charles repairing a bike (which cannot be continued with *but he never finished*). In contrast, the imperfective sentences in (108b) and (108c) make reference to an indefinite number of bike-repairing events, either involving the same bike or many different

bikes. Crucially, none of these individual sub-events need to have culminated, which is unexpected if S-imperfectives embed the PFV operator. More generally, I am not aware of any systematic differences between bare and secondary imperfectives − whether syntactic or semantic − which suggest that the latter embed a PFV layer while the former do not. This makes it unlikely that S-imperfectives are *semantically* derived from perfective inputs.[21]

(108) a. Karol na-praw-i-ł^{P} ten rower (#ale jeszczez nie skończył^{P}).
Charles on-right-*v*-PST this bike but yet NEG finished
'Charles repaired this bike (#but he hasn't finished yet).'

b. Karol codziennie na-praw-i-Ø-a(j)-ł^{I} ten sam rower (ale jeszcze nie
Charles every.day on-right-*v*-SI-TH-PST this sam bike but yet NEG
skończył^{P}).
finished
'Charles engaged in the act of repairing one and the same bike every day (but he hasn't finished yet).'

c. Karol zawsze na-praw-i-Ø-a(j)-ł^{I} inny rower po pracy (ale
Charles always on-right-*v*-SI-TH-PST different bike after work but

[21] The arguments in this section explicitly challenge the view of SI as an imperfectivising operator selecting for perfective aspect. The main argument is that there is no evidence for semantic perfectivity embedded under the putative SI layer. However, not everybody agrees that SI is an imperfectivising operator in the first place. Following Borer (2005b), Łazorczyk (2010) analyses lexical prefixes as licensors of *quantity* (i.e. *telicisers*). She then goes on to argue that the SI morpheme is a *homogenising* operator (i.e. *ateliciser*), defined as in (i). On this analysis, the SI operator acts as a kind of 'universal grinder', a semantic operation which selects for quantity/telic predicates and renders them homogeneous/atelic in terms of their mereological structure.

(i) $[\![\text{SI}]\!] = \lambda e \lambda P \lambda e' [P(e) \wedge e' \leq e \wedge \textit{homogenous}(e')]$ (Łazorczyk 2010:138)
The S-imperfective operator takes an event of which predicate P *holds, and returns a homogenous subpart of that event.*

Łazorczyk explicitly claims that Slavic has semi-recursive derivations, but she locates this recursion at the level of inner aspect rather than outer aspect: 'the Slavic system provides for a semi-recursive (a)telicity marking system, where a predicate can be made telic, then atelic, and then telic again' (Łazorczyk 2010:13). The S-imperfective structure in (ii) is almost identical to that in (104b), except that the outer-aspectual heads Asp_{PFV} and Asp_{SI} have been replaced by the inner-aspectual ones $\text{InnerAsp}_{\text{quantity}}$ and $\text{InnerAsp}_{\text{SI}}$, respectively.

(ii) [$\text{InnerAsp}_{\text{SI}}$ [$\text{InnerAsp}_{\textit{quantity}}$ [$_{\text{VP}}$ ... LP ...]]] (S-imperfective)

The arguments leveraged against semantic recursion at the level of outer aspect can also be used to challenge semantic recursion at the level of inner aspect. Most notably, there is no evidence for the presence of an embedded telic/quantity layer in S-imperfectives (and its absence in B-imperfectives). The evidence from ABA patterns in the morphology, discussed shortly, is also problematic for Łazorczyk's (2010) account. By giving a negative answer to the recursion problem, I thus reject not only the idea that SI is an imperfectivising operator selecting for perfective inputs, but also that it is a homogenising operator selecting for quantity/telic inputs.

jeszcze żadnego nie naprawił^{P}).
yet any NEG repaired
'Charles always engaged in the act of repairing a different bike after work (but hasn't repaired any yet).'

At this point, it seems that the only way to rescue a semi-recursive derivation of secondary imperfectives is to argue that Asp_{SI} somehow 'cancels' or 'deletes' the semantic contribution of Asp_{PFV}, so that the latter is simply not interpreted at LF. I reject this idea on the grounds that it violates the Monotonicity Hypothesis, according to which 'a derivational process can add but not eliminate some element of meaning in a word' (Kiparsky 1982:8). Although the Monotonicity Hypothesis has been most prominently discussed in the context of the causative alternation (e.g. Doron 2003, Koontz-Garboden 2007, 2009, 2012, Alexiadou et al. 2015), I see no reason why it should not also apply to the derivation of S-imperfectives. Koontz-Garboden defines the Monotonicity Hypothesis as follows:

(109) *Monotonicity Hypothesis* (Koontz-Garboden, 2007)
Word formation operations do not remove operators from lexical semantic representations.

In what way does the derivation of S-imperfectives violate Monotonicity? Given the preceding discussion, the semantic contribution of SI morphology seems to consist solely in eliminating the [PFV] feature and/or replacing it with [IPFV] (depending on whether the aspectual opposition is seen as binary or privative). Viewed from this perspective, secondary imperfectivisation appears to be the perfect example of a non-monotonic operation, removing the perfective aspect operator from the semantic representation of the verb.

(110) got-ow-^{I} → roz-got-ow-^{P} → roz-got-ow-yw-^{I}
[IPFV]/[ ] → [PFV] → [IPFV]/[ ]

As pointed out by Koontz-Garboden (2012:144), the Monotonicity Hypothesis can be evaluated in both lexicalist and non-lexicalist frameworks 'because the MH is simply a hypothesis

about what kinds of meanings can be derived from what kinds of meanings; it has nothing to say about the structural side of word formation'. Working on Polish in a strictly lexicalist framework, Bloch-Trojnar (2015:502-506) conceives of secondary imperfectivisation as one of the lexical operations which 'reset the semantic and morpholexical features of verbal stems'. The following rule, which is based on her account, clearly violates Monotonicity:

(111) Secondary imperfectivisation (based on Bloch-Trojnar 2015)

a. shift the semantic value from **[+p/−i] (perfective)** to **[−p/−i] (imperfective)**

b. add the SI suffix as the corresponding class shift marker

In addition to Monotonicity, there is also a morphological argument against analysing SI as an imperfectivising operator (hinted at in the conclusion of §4.2.2). It relies on the reasoning about (the ungrammaticality of) suppletive ABA patterns described in Bobaljik (2012). Consider the realisation of the root $\sqrt{}$KŁAD, which surfaces as *kład* in B-imperfectives (112a), S-imperfectives (112c) and zero nominalisations (113), but takes the suppletive form *łoż* in LP-perfectives (112b) (for every lexical prefix). A natural conclusion is that *kład* is the default exponent of $\sqrt{}$KŁAD while *łoż* is inserted in the context of Asp_{PFV} (114).[22]

(112) *Verb forms*

a. **kład** -ą$^{\text{I}}$
put- 3PL
'they are putting' (B-imperfective)

b. w- **łoż** -ą$^{\text{P}}$
in- put- 3PL
'they will put in' (LP-perfective)

c. w- **kład** -aj -ą$^{\text{I}}$
in- put -TH -3PL

[22]Polish does have a bare imperfective verb *łoż-y-ć*$^{\text{I}}$ 'to bear the cost of something', but it is relatively infrequent and literary. One of the original meanings of *łoż-y-ć* was 'to put', but this sense has been supplanted by *kłaść*, yielding the pattern in (112). The existence of *łoż-y-ć* does not undermine the idea that *łoż* is a suppletive realisation of $\sqrt{}$KŁAD, especially for those speakers who do not have this verb in their vocabulary.

'they put are putting in' (S-imperfective)

(113) *Zero nominalisations*

a. w-**kład** / *w-łoż
'an input, a contribution'

b. wy-**kład** / *wy-łoż
'a lecture'

c. za-**kład** / *za-łoż
'a bet; a factory'

d. pod-**kład** / *pod-łoż
'foundation'

(114) *Vocabulary Items*

a. $\sqrt{}$KŁAD ↔ *kład*

b. $\sqrt{}$KŁAD ↔ *łoż* / __ Asp_{PFV}

Given the Vocabulary Items in (114), the recursive structure in (115a) wrongly predicts the S-imperfective to be the suppletive **w-łoż-aj-ą* rather than the attested *w-kład-aj-ą*. This is because the structure of the S-imperfective properly contains that of the LP-perfective, down to the perfective Asp_{PFV} head which triggers the realisation of $\sqrt{}$KŁAD as *łoż* (115a). If we assume that the perfective layer is missing, then the problem disappears (115b).[23]

(115) a. *[Asp_{SI} [... [$\textbf{Asp}_{\textbf{PFV}}$ [... [$_{\text{VP}}$ ... LP ... $\sqrt{}$**KŁAD** → ***łoż***]]]]]

b. [Asp_{SI} [... [$_{\text{VP}}$ ... LP ... $\sqrt{}$**KŁAD** → ***kład***]]]]]

More generally, if Asp_{SI} selects for Asp_{PFV}, then the paradigm in (112) violates the well-established constraint against ABA patterns in the morphology, with the intermediate form suppletive and the maximal one non-suppletive (Caha, 2009; Bobaljik, 2012).

[23] Another suppletive root which patterns in this way is $\sqrt{}$GLĄD 'look'. It is realised as *jrz* in LP-perfectives (ia) and as *gląd* in S-imperfectives (ib). The only difference is that **gląd-a(j)-ć* is archaic and no longer exists as a standalone verb. We know that *gląd* is the unmarked default because it appears in zero-derived nouns (ii).

(i) a. wy- **jrz** -ą$^{\text{P}}$
out- look- 3PL
'they will look out' (LP-perfective)

b. wy- **gląd** -aj -ą$^{\text{I}}$
out- look -TH -3PL
'they are looking out' (S-imperfective)

(ii) a. wy-**gląd** / *wy-jrz
'appearance'

b. prze-**gląd** / *prze-jrz
'an overview'

c. pod-**gląd** / *pode- jrz
'preview'

Where does this leave us? If we want to maintain the ban on suppletive ABA patterns in the morphology, and if we want to maintain the Monotonicity Hypothesis as a constraint on word formation and semantic composition, then we must give a negative answer to the recursion problem posed at the beginning of this section. In particular, we must argue that the 'derivational history' of a verb does not reflect its semantic/syntactic derivation, and there is only one structural locus of aspect in narrow syntax. The structure in (116) instantiates this one-aspect approach: it contains a unique aspectual projection AspP. Single-aspect representations of this type have been explored in a series of papers by Tatevosov (2011, 2015, 2018, 2022), who advocates severing lexical prefixes and SI morphology from aspect, as well as in Biskup (2021a,b, 2022), who separates all aspectual affixes from aspect.

(116) *A single structural locus of aspect*

[SP_{high} [**Asp$_{PFV}$** [... [SI [... [SP_{low} [... [$_{VP}$ ... LP ...]]]]]]]

When it comes to SI morphology, we must give up on the idea that it realises an imperfectivising operator which selects for perfective inputs. In particular, there is no PFV layer embedded in the structure, no aspectual information below the level of AspP at all. The value of aspect is calculated once − and once only − in the temporal domain of the clause.

(117) a. [**Asp$_{IPFV}$** [... [$_{VP}$ ...]]] (B-imperfective)

b. [**Asp$_{PFV}$** [... [$_{VP}$ ... LP ...]]] (LP-perfective)

c. [**Asp$_{IPFV}$** [... [SI [... [$_{VP}$ ... LP ...]]]] (S-imperfective)

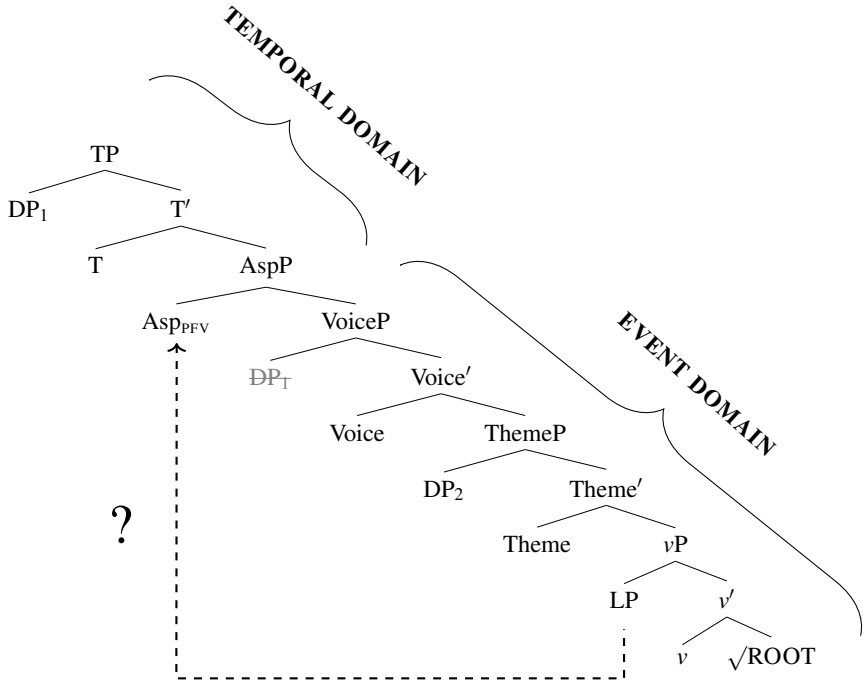
The advantage of this approach is that it unifies the aspectual representation of bare and secondary imperfectives: the fact that they have the same range of temporal functions and pattern together in all the standard diagnostics receives a natural explanation. The disadvantage is that we lose the local relationship between aspectual affixes and aspect. This gives rise to some non-trivial questions: If SI morphology does not have an imperfectivising effect, then what is its semantic function? And how do VP-internal lexical prefixes license

the projection of Asp_{PFV} 'at a distance', despite being separated from it in syntactic space? This long-distance aspectual effect of lexical prefixes is the subject of the next section.

4.5.2 The long-distance problem

A version of the long-distance problem has been previously discussed in Borik (2009) under the name of the 'interface problem'. She frames it as follows: 'The question is how a [derivational] morphological mechanism such as prefixation can influence, or be associated with, the semantics of temporal relations, syntactically encoded much higher in the sentence structure' (Borik 2009:22). In the present system, the long-distance problem arises from the fact that LPs originate as *v*P-internal resultative particles in the event domain, while aspect is encoded higher up, in the temporal zone of the clause. From this perspective, the 'long-distance semantic effect of the aspectual prefix' can be represented as in (118), with the dashed arrow signifying some as-yet-unspecified relation between the LP and Asp.

(118)



This structure presupposes several things, all of which are relatively uncontroversial. Firstly, the Slavic categories 'perfective' and 'imperfective' pertain to the level of grammatical (or outer) aspect (e.g. Comrie 1976, Smith 1991, Klein 1995, Borik 2006). Secondly, the value of aspect is encoded by an aspectual projection Asp, which dominates the decomposed VP domain. Crucially, this ordering applies not only to Slavic but also to other languages with outer aspect: the position of Asp above Voice and *v* is hard-wired as part of the universal sequence of functional projections. In the previous literature, the Asp > Voice/*v*/V ordering is assumed in Schoorlemmer (1995) for Russian and Polish, in Svenonius (2004b), Ramchand (2008a) and Tatevosov (2011, 2015, 2018, 2022) for Russian, in Jabłońska (2007) for Polish, and in Biskup (2019) for Russian, Czech and Polish.

The essence of the long-distance problem is simple: How do LPs license perfective aspect despite being separated from Asp in the syntactic space? In other words: What is the nature of the dependency represented by the dashed arrow in (118)?[24] The solutions to this problem can be classified into two types: semantic and syntactic. The semantic solution states that aspect is sensitive to event structure, and that there is a default mapping from resultativity to perfective aspect in Slavic languages (Klein, 1995; Ramchand, 2008a; Tatevosov, 2018, 2022). In the next chapter, I will provide a detailed critique of this approach, arguing that aspect is semantically dissociated from event structure in Polish.

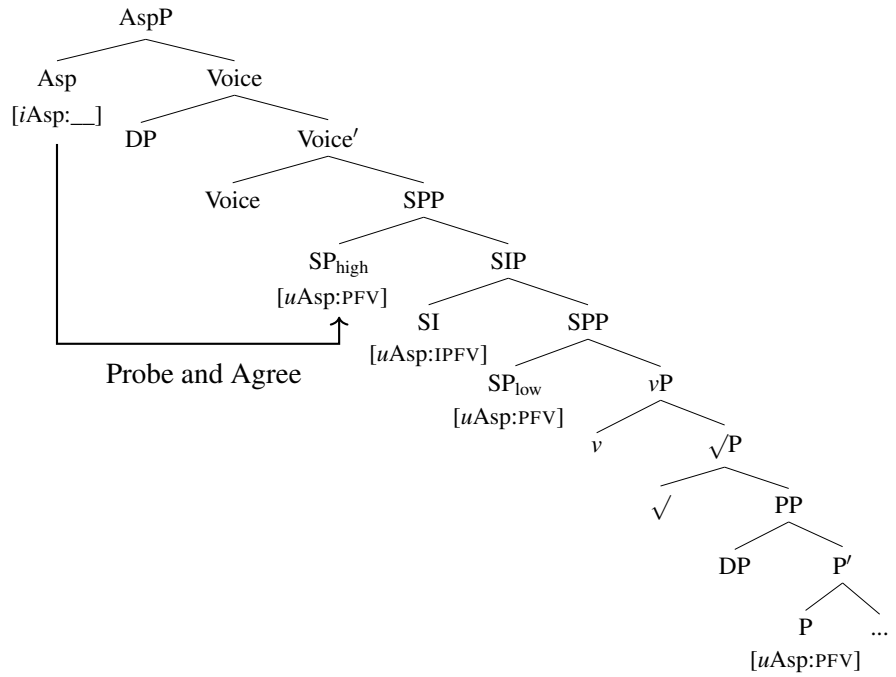
The syntactic solutions include the movement of prefixes to AspP (Svenonius, 2004b) and agreement (Biskup, 2019, 2021a,b, 2022). Looking ahead, I pursue a version of the prefix-movement approach in Chapter 6, where I relate it to the movement of result XPs in Hungarian. The remaining part of this section is devoted to Biskup's Agree-based analysis.

Biskup (2021a, 2022) adopts the syntactic structure in (119), in which LPs are incorporated prepositional heads P, while SPs are functional heads below the level of Voice. He also assumes that verbs are assembled via syntactic Head Movement, but this is not represented below. By hypothesis, every aspectual affix bears a valued but uninterpretable

[24]The long-distance problem is not limited to lexical prefixes but extends to any other aspectual morphemes merged below the level of AspP. This becomes clear by looking at the structure in (119) below.

feature [*u*Asp:PFV] or [*u*Asp:IPFV], while the Asp head is specified for the interpretable but unvalued feature [*i*Asp:__]. Unvalued Asp triggers the Agree operation, which probes for the closest aspectual value in its c-command domain. This captures the generalisation that 'the morphological aspect is determined by the last attached aspectual morpheme'. The last attached morpheme in (119) happens to be the high SP, rendering the clause perfective. If it were absent, Asp would instead agree with [*u*Asp:IPFV] on the SI head. In the absence of both SI and the low SP, Asp would agree with the [*u*Asp:PFV] feature on the LP.

(119)



While this analysis solves the recursion problem, the worry is that it not restrictive enough. At spell-out, the full structure in (119) undergoes transfer to LF with three uninterpretable features, one on SI, one on SP_{low}, and one on the LP. This would normally be assumed to violate the principle of Full Interpretation, according to which every element in the syntax must be licensed at the interface with PF and/or LF (Chomsky, 1986). Biskup (2022) explicitly states that uninterpretable features are not offending at the interface with LF, and he claims that only unvalued features are fatal. However, he does actually allow for the possi-

bility of Asp not finding its aspectual value in the case of B-imperfectives (120). To rescue this derivation, [*i*Asp:__] receives the default value IPFV when it is sent to the interfaces.

(120) [$\text{Asp}_{[i\text{Asp:\_\_}] \rightarrow [i\text{Asp:IPFV}]}$ [DP [Voice [*v* $\sqrt{}$]]]] (B-imperfective)

If unvalued features can be assigned default values, and if uninterpretable features can be simply ignored, then the concern is that our theory of syntactic features and agreement might be too powerful and not sufficiently constrained. At the very least, these assumptions need to be more carefully investigated, and substantiated with evidence from other languages, before the Agree mechanism can be accepted as a solution to the long-distance problem.

Another limitation of this analysis is that it has little to say about the co-occurrence of different aspectual affixes. Take the SI suffix *-yw*. What rules out the derivation in (121a)/(122a), in which *-yw* attaches to an unprefixed stem? After all, the inclusion of $\text{SI}_{[u\text{IPFV}]}$ in this structure would enable Asp to be valued as imperfective without resorting to default feature assignment. Similarly, why cannot we omit the SI morpheme in (121c)/(122c)? Asp finds its aspectual value on the high superlexical prefix, so the SI morpheme seems to be redundant here, and yet its presence remains obligatory (121d)/(122d).

(121) a. *got -ow -**yw** -a -ć
cook -*v* -SI -TH -INF

b. **roz-** got -ow -**yw** -a -ć$^{\text{P}}$
apart- cook -*v* -SI -TH -INF

c. ***po-** **roz-** got -ow -a -ć
DIST- apart- cook -*v* -TH -INF

d. **po-** **roz-** got -ow -**yw** -a -ć$^{\text{P}}$
DIST- apart- cook -*v* -SI -TH -INF

(122)

a.	*[**Asp**$_{[i\text{IPFV}]}$	[Voice		[**SI**$_{[u\text{IPFV}]}$	[v [$\sqrt{}$	]]]]]
b.	[**Asp**$_{[i\text{IPFV}]}$	[Voice		[**SI**$_{[u\text{IPFV}]}$	[v [$\sqrt{}$ [P$_{[u\text{PFV}]}$ ...	]]]]]]
c.	*[**Asp**$_{[i\text{IPFV}]}$	[Voice	[**SP**$_{[u\text{PFV}]}$		[v [$\sqrt{}$ [P$_{[u\text{PFV}]}$ ...	]]]]]
d.	[**Asp**$_{[i\text{PFV}]}$	[Voice	[**SP**$_{[u\text{PFV}]}$	[SI$_{[u\text{IPFV}]}$	[v [$\sqrt{}$ [P$_{[u\text{PFV}]}$ ...	]]]]]]

Apart from syntactic agreement, some other mechanism is needed to capture the distribution of aspectual affixes. However, there is a real possibility that once we discover this mechanism, we will no longer need the Agree operation to solve the long-distance problem.

4.6 Conclusion

This chapter has provided a high-level overview of Polish aspect and aspectual morphology. The standard syntactic and semantic diagnostics point to the existence of two aspectual classes in Polish: perfective and imperfective. However, there is no single morphological marker of perfectivity or imperfectivity. Instead, the mapping between aspectual affixes and the value of aspect is many-to-many. On the one hand, perfective stems can be derived by means of lexical prefixes, superlexical prefixes or the semelfactive suffix *-nąć*. On the other, imperfective stems can be either simple (B-imperfectives) or derived (S-imperfectives).

The morphological structure of Polish verbs is schematised in (123). The category-defining head *v* is realised by the 'low' post-verbal suffixes *-i* and *-ow*, as well as by the inchoative/unaccusative change-of-state verbalisers *-nąć* and *-ej* (Jabłońska, 2007). The TH slot is occupied by the 'high' suffixes *-a*, *-aj* and *-e*, and it is most likely added at PF as a conjugation class marker (Gribanova 2015; see also Oltra-Massuet 1999, Oltra-Massuet and Arregi 2005 and Embick and Halle 2005). The exponent of SI is either *-yw* or Ø, the latter triggering the insertion of the default theme marker *-aj* into TH.

(123) [(PREFIXES) [$\sqrt{}$ROOT - *v* - (SI) - TH - TENSE - AGREEMENT]]

I have explored two theoretical problems posed by aspectual morphology in Polish and

other Slavic languages: the recursion problem and the long-distance problem. In particular, I have identified three potential solutions to the long-distance problem, which concerns the interaction between (*v*P-internal) lexical prefixes and (*v*P-external) outer aspect. These solutions are: agreement, movement, and semantic mapping from event structure to aspect (124). The problems with an Agree-based analysis were discussed in the previous section. I turn to the other solutions next, starting with the semantics-based proposals in Chapter 5.

(124) *Potential solutions to the long-distance problem*

a. Syntactic agreement (this chapter, §4.5.2)

b. Semantic mapping from event structure to aspect (Chapter 5)

c. Syntactic movement (Chapter 6)

Another issue concerns the function of secondary imperfective morphology. We have already seen some arguments against analysing SI as an imperfectivising operator. In Chapter 6, I will argue that there is no such thing as a 'SI operator' at the level of syntax/semantics at all, and that SI is inserted at PF as a *dissociated morpheme* (in the sense of Embick 1997).

Chapter 5

Severing Aspect from Event Structure

5.1 Proposals relating Slavic aspect to event structure

Lexical prefixes perform two functions in Slavic: they contribute a result state to the event structure, and they license perfective aspect (at least in the absence of SI morphology). As argued extensively in the previous chapters, LPs share the resultative function with Germanic particles as well as Latin and Classical Greek prefixes. In contrast, the aspectual function of LPs seems to be peculiar to Slavic languages (though see §6.1.3 in the next chapter for remarks on the interaction between resultative XPs and aspect in Hungarian).

(1) Two functions of lexical prefixes

   a. Contribute a result state to the event structure

   b. License perfective aspect

This presents us with a non-trivial theoretical question: How should we model the aspectual effect of LPs? At the end of Chapter 4, I referred to this issue as the *long-distance problem* because it concerns the long-distance dependency between a *v*P-internal resultative particle,

merged low in the domain of event and argument structure, and the value of outer aspect, encoded on an aspectual head in the temporal zone of the clause.

The *pars destruens* of this chapter focuses on semantic solutions to the long-distance problem. This is an influential class of proposals, which attempt to derive the perfectivising function of lexical prefixes from their resultative semantics. The main claim is that the value of aspect depends on the complexity of the event structure: by default, resultative predicates are perfective, while non-resultative predicates are imperfective. We need to specify 'by default' because the addition of SI morphology may override the default mapping from event structure to aspect. The essence of this approach is summarised in (2). I will henceforth refer it as the *event-structure-to-aspect mapping*, or ESTAM for short.

(2) *The event-structure-to-aspect mapping (ESTAM)*

event structure		aspect
simple	→	imperfective
complex (resultative)	→	**perfective**
complex (resultative) + SI morphology	→	imperfective

A number of recent works have pursued a version of this mapping with reference to one Slavic language or another (see e.g. Žaucer 2005 for Slovenian, Jabłońska 2007 for Polish, Mueller-Reicheau 2020 for Russian). In what follows, I review three accounts that have made this mapping most explicit: Klein (1995), Tatevosov (2018, 2022) and Ramchand (2008a). All three accounts were formulated on the basis of Russian data, which are identical to Polish in all the relevant respects. After a brief overview of these proposals, I go on to discuss their empirical predictions in §5.2. Afterwards, in §5.3, I show that these predictions are falsified by the Polish data. All the standard diagnostics for event structure, including the scope of *znów* 'again' and result-oriented durative adverbials, converge on the same conclusion: bare imperfectives can be subeventally complex, incorporating a grammatically accessible result state in their denotation (§5.4). This finding falsifies the ESTAM

approach. If bare imperfectives can be subeventally complex, then it is not the case that all subeventally complex predicates give rise to perfective aspect by default. In other words, the entailment in (3) contradicts the middle entailment in (2) (highlighted in bold).

(3) *Empirical finding in Polish*

B-imperfective $\rightarrow$ simple or complex (resultative)

The main purpose of this chapter is to clarify the relationship between aspect and event structure in Slavic languages: Do they interact in the semantics, or are they independent from each other? I will argue that aspect is independent from event structure in Polish.

5.1.1 Klein (1995)

It seems natural to start with the oldest and most influential of the ESTAM approaches. Klein's (1994; 1995) theory of tense and aspect makes use of three temporal intervals: (i) the *situation time* or the *event time* (EV-T), the time at which the event takes place, (ii) the *assertion time* (AST-T), the time for which the assertion is made, and (iii) the *utterance time* (UT-T), the time of the utterance itself. Tense is defined as the relation between UT-T and AST-T, while aspect is defined as the relation between the AST-T and the EVT-T. The temporal intervals represented by UT-T, AST-T and EV-T can be ordered by one of three relations: precedence ($\prec$), overlap ($\otimes$) and inclusion ($\subset$). Different orderings between these intervals yield different tense and aspect interpretations, both within and across languages. For example, simple past and past progressive sentences in English are analysed in (4)-(5).

(4) a. John ate an apple.

b. Past tense: AST-T $\prec$ UT-T

Perfective aspect: AST-T $\subset$ EVT-T

(5) a. John was eating an apple.

b. Past tense: AST-T $\prec$ UT-T

Progressive aspect: EVT-T $\subset$ AST-T

Focusing specifically on Russian aspect, Klein (1995) makes a crucial distinction between the lexical content of *1-state* and *2-state expressions*. The former describe homogeneous states or processes (e.g. *to love*, *to rain*), while the latter denote a transition from a source state to a target state (e.g. *to die*). Put differently, 2-state expressions are subeventally complex, involving a change of state, while 1-state expressions are subeventally simplex. Note that the meaning of 'state' in Klein's terminology comes closer to the meaning of 'eventuality', comprising both events (*to rain*) and states (*to love*). Klein (1995:685) puts forward the following generalisations about the morphosemantics of Russian verbs:

(6) a. Simple verbs express 1-state contents.

b. Prefixation results in a 2-state content.

c. Adding a so-called imperfective suffix to a 2-state verb marks its source state as a distinguished state for aspect marking.[1]

Klein assumes that simple and prefixed verbs differ in event complexity: the former denote a simple state or activity (e.g. Russian *pisat'*^{P} 'to write'), while the latter denote a transition from a prior state or event to some *target state* or result state (e.g. *za-pisat'*^{P} 'to record').[2] By hypothesis, the lexical content of Russian verbs – their subevental complexity – interacts with the interpretation of aspect. The formal definitions of perfective (PFV) and imperfective (IPFV) aspect make explicit reference to source states and target states (cf. (7)), which are the semantic primitives of event structure rather than outer aspect.

(7) a. PFV: The AST-T overlaps the source state and the target state.

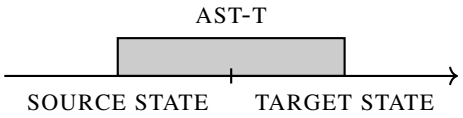
b. IPFV: The AST-T overlaps only the distinguished state (the only state in 1-state expressions and the source state in 2-state expressions)

[1] A distinguished state is defined as the only state of a 1-state expression and the source state of a 2-state expression. Klein (1995) stipulates that SI morphology marks the source state as distinguished in Russian.

[2] Klein (1995) speaks of 'target states' rather than 'result states', but I use these terms interchangeably here.

In the perfective aspect, the AST-T extends over the source state and the target state of a 2-state expression, illustrated schematically in (8). This captures the traditional intuition that perfective aspect presents the situation as 'completed', with some 'internal boundary'.

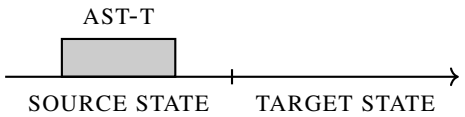
(8) *LP-perfective*



In the imperfective aspect, the AST-T does not overlap the target state. Instead, it overlaps the distinguished state, which is the only state in 1-state expressions (i.e. bare imperfectives) or the source state in 2-state expressions (i.e. secondary imperfectives). In the latter case, we can say that the situation is presented as 'incomplete', with 'no internal boundary'.

(9) *B-imperfective*

(10) *S-imperfective*



If the majority of morphologically simple verbs in Russian are 1-state expressions, and if the denotation of perfective aspect requires the presence of two distinct states in the input (cf. (7a)), then it follows that simple verbs cannot be perfective (with a small number of exceptions). In other words, 1-state expressions are necessarily imperfective. As for 2-state expressions, they are perfective by default, and imperfective if marked with SI morphology. In this way, event complexity emerges as *the* organising principle of Russian aspect.

Of course, some issues remain outstanding. The most important one is whether we can formalise this analysis in a fully compositional semantic framework. How would we define distinguished states in such a framework? And how would we define the denotation of SI morphology to ensure that it marks the source state as a distinguished state?

The more recent proposals by Sergei Tatevosov (2018, 2022) and Gillian Ramchand

(2004, 2008a) preserve the essence of Klein's approach. Just like Klein, these authors also hypothesise that Russian aspect is sensitive to event complexity, but they implement the semantics of aspect in a fully formal compositional framework, and they take into account the more modern developments in the syntax and semantics of event structure.

5.1.2 Tatevosov (2018, 2022)

In recent work, Tatevosov (2018, 2022) reformulates Klein (1995)'s analysis of Russian aspect in an event semantic framework. He does so by modelling 1-state expressions as simple predicates of events and 2-state expressions as relations between events and states. This correspondence is summarised in (11) (adopted from Tatevosov 2018). Note that there is an important type-theoretic difference between 1-state and 2-state expressions. The former are functions from eventualities to truth values (type *vt*), the latter are functions from eventualities to functions from eventualities to truth values (type *v, vt*).

(11) a. 1-state expression = a predicate of events
λe.P(e)

b. 2-state expression = a relation between events and states
λsλe.P(e) & Q(s) & **cause**(e)(s)

In keeping with Klein (1995), Tatevosov assumes that (i) morphologically simple stems in Russian denote simple event predicates, and that (ii) lexical prefixation adds a result state to the denotation of the verb. His semantics for simple and prefixed verbs are illustrated below (adopted from (116)-(117) in Tatevosov 2018 with some modifications). Abstracting away from the semantic contribution of aspect and tense, the simple verb denotes a predicate of writing events whose agent is Volodja and whose theme is the letter (12). The prefixed verb, in turn, denotes a relation between an event of recording and a result state of having been recorded (13) (see also Biskup 2019 for similar denotations). In the latter case, the referent of *pismo* 'letter' is simultaneously the theme of the event and the holder of the result state.

(12) *B-imperfective*

a. Volodja pis-a-l^{I} pism-o.
Volodja write-TH-PST letter-ACC
'Volodja was writing a letter.'

b. $\lambda e.\mathbf{write}(e) \wedge agent(\mathbf{Volodja})(e) \wedge theme(\mathbf{letter})(e)$

(13) *LP-perfective*

a. Volodja za-pis-a-l^{P} diski.
Volodja LP-write-TH-PST CDs
'Volodja recorded the CDs.'

b. $\lambda s\lambda e.\mathbf{record}(e) \wedge agent(\mathbf{Volodja})(e) \wedge theme(\mathbf{CDs})(e) \wedge cause(e)(s) \wedge \mathbf{recorded}(s) \wedge holder(\mathbf{CDs})(s)$

The definitions of perfective and imperfective aspect are the same as in Klein (1995). The PFV operator in (14a) applies to subeventally complex predicates (type v, vt). It requires the assertion time t to overlap both the runtime of the event e and the runtime of the result state s (where τ is the temporal trace function mapping eventualities to their runtimes). The IPFV operator in (14b) combines with subeventally simple predicates (type vt). It imposes a relatively weak requirement on the assertion time, which need only overlap the event time.

(14) a. $[\![\text{PFV}]\!] = \lambda R_{v,vt}\lambda t.\exists e, s[R(e)(s) \wedge \tau(e) \otimes t \wedge \tau(s) \otimes t]$

b. $[\![\text{IPFV}]\!] = \lambda P_{vt}\lambda t.\exists e[P(e) \wedge \tau(e) \otimes t]$

The function of the secondary imperfective operator is to mark the event argument as somehow *distinguished* for the purposes of aspect marking. Tatevosov (2015, 2018, 2022) implements this idea by analysing the SI suffix *-(iv)aj* as an *Eventiser*, a semantic operator which binds off the state variable of a subeventally complex predicate (15) (cf. Paslawska and von Stechow 2003). The application of this operator does not affect the lexical content of the predicate. It only changes its semantic type from $\langle v, vt\rangle$ to $\langle v, t\rangle$, thus deriving a predicate of events from a relation between events and states. As derived event predicates, secondary

imperfectives have the correct semantic type to compose with IPFV, but not with PFV.

(15) *Secondary imperfective as an Eventiser*

$[\![\text{SI}]\!] = \lambda R_{v,vt} \lambda e.\exists s[R(e)(s)]$

(16) *Secondary imperfective*

a. Volodja za-pis-yv-a-l$^{\text{I}}$ diski.
Volodja LP-write-SI-TH-PST CDs
'Volodja was recording CDs.'

b. $\lambda e.\exists s[\textbf{record}(e) \wedge \textit{agent}(\textbf{Volodja})(e) \wedge \textit{theme}(\textbf{CDs})(e) \wedge \textit{cause}(e)(s) \wedge \textbf{recorded}(s) \wedge \textit{holder}(\textbf{CDs})(s)]$

We thus arrive at the following correspondences between event structure and the value of aspect. Firstly, subeventally simple predicates are necessarily imperfective (17a). Secondly, subeventally complex predicates are perfective (17b). Thirdly, the SI operator shifts the semantic type of the input predicate, making it compatible with IPFV again (17c).

(17) a. [$_{\text{AspP}}$ *PFV / IPFV [... [$_{\text{VP}}$ pis-] ...]]

b. [$_{\text{AspP}}$ PFV / *IPFV [... [$_{\text{VP}}$ za-pis-] ...]]

c. [$_{\text{AspP}}$ *PFV / IPFV [... [SI ... [$_{\text{VP}}$ za-pis-] ...] ...]]

At its core, the Klein/Tatevosov model is a kind of matching system. It posits two values of aspect (perfective vs. imperfective) and two types of event structure (simple vs. complex). Out of the four possible logical combinations, Russian is argued to allow only two: perfective/complex and imperfective/simple. This restriction is implemented as semantic selection by the aspectual operators PFV and IPFV, which are sensitive to event structure. Lexical prefixes themselves are aspectually inert, merely adding a result state to the event.

5.1.3 Ramchand (2008a)

The final proposal to be reviewed here is due to Ramchand (2008a).[3] Like Klein and Tatevosov, Ramchand also hypothesises that Russian aspect is sensitive to event structure, but she eliminates the distinction between PFV and IPFV operators. Instead, she defines one default aspectual head Asp, which has a constant denotation across the board. This makes her account more explanatory than the previous analysis based on semantic matching.

Ramchand models the semantics of Russian aspect in the decompositional framework of First Phase Syntax (Ramchand 2008b). In this framework, the traditional VP domain is decomposed into at most three structural layers: InitP, ProcP and ResP. Each of these projections introduces a distinct eventuality and licenses a corresponding event role in its specifier. ProcP is the main eventive layer, while InitP and ResP are stative, with the difference between Init and Res being purely configurational (i.e. Init c-commands Proc, which c-commands Res). The following descriptions are taken from Ramchand (2017:239):

(18) a. *Init*P introduces the causation event and licenses the external argument ('subject of cause' = INITIATOR)

b. *Proc*P specifies the nature of the change or process and licenses the entity undergoing change or process ('subject of process' = UNDERGOER)

c. *Res*P gives the 'telos' or 'result state' of the event and licenses the entity that comes to hold the result state ('subject of result' = RESULTEE)

While ProcP is obligatory for all dynamic events, the projections InitP and ResP may be missing. If both InitP and ResP are present, the structure is interpreted as a caused-result accomplishment or achievement. This is illustrated for the sentence *Katherine broke the stick* in (19). Ramchand (2008b:82-95) assumes that English has a null causativising head

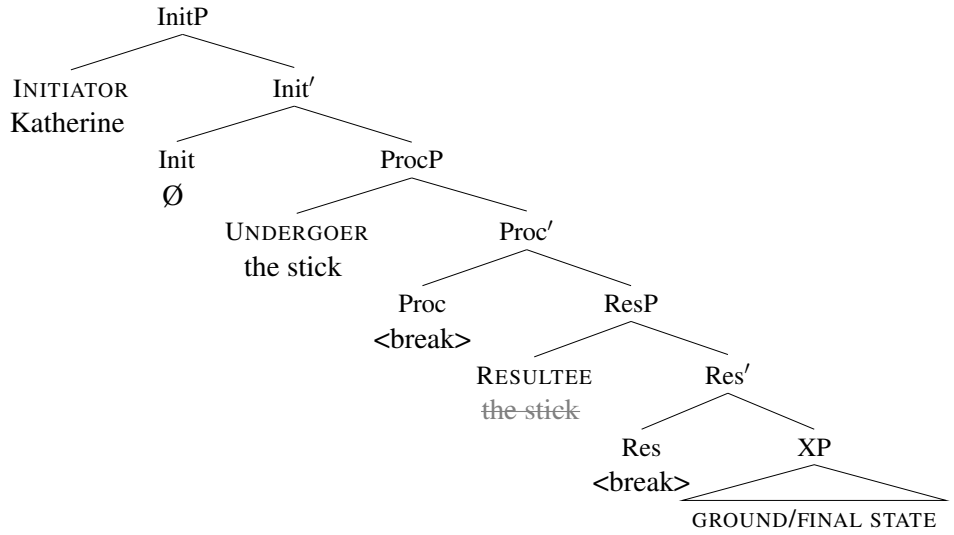
[3]This paper originally appeared as Ramchand (2004) in the special issue of *Nordlyd* devoted to Slavic prefixes. In 2008, it was republished in *Lingua* with some revisions. Both versions use the labels v, V and R for the heads Init, Proc and Res familiar from Ramchand's (2008b) monograph *Verb Meaning and the Lexicon: A First Phase Syntax*. In this section, I label Ramchand's structures with Init, Proc and Res in order to avoid confusion between the verbalising/eventive *v* and the external-argument-introducing v (here labelled as Voice).

Ø and that the root *break* lexicalises the span of heads <Proc, Res>. The verbal argument *Katherine* is interpreted as the INITIATOR, while *the stick* bears the composite role UNDERGOER-RESULTEEE, acquired via movement from Spec-Res to Spec-Proc.

(19) *Caused-result accomplishments and achievements*

a. Katherine broke the stick.

b.



Having sketched out the fundamentals of First Phase Syntax, let us turn to Ramchand's (2008a) analysis of Russian aspect. She identifies the category of outer aspect with the functional projection AspP, which denotes a set of time instants representing the assertion time.[4] Her main innovation is to relate Viewpoint Aspect to the semantics of *definiteness*. In particular, she defines imperfective aspect as an *indefinite assertion time* and perfective aspect as a *definite assertion time* (where 'definite' is understood to mean 'unique').

In agreement with Klein and Tatevosov, Ramchand (2008a) assumes that morphologically simple and lexically-prefixed verbs in Russian differ in event complexity. This is to say that simple verbs lexicalise Proc (20), while lexical prefixes lexicalise Res (21). Note

[4]Many authors assume that the assertion time is a temporal *interval* rather than an *instant* (e.g. Klein 1994, 1995, Demirdache and Uribe-Etxebarria 2000, Borik 2006). However, it is important for the success of Ramchand's analysis that AspP should denote a set of temporal instants (i.e. points in time).

that the causing projection InitP does not play any role in this analysis. All that matters is whether the lower portion of the event structure is complex (Proc+Res) or not (only Proc).

(20) *B-imperfective*

$$[\ \underbrace{\text{Asp}}_{\varnothing}\ [\ \underbrace{\text{(Init)}\ [\ \text{Proc}}_{root}\ \text{XP}\ ]\ ]\ ]$$

(21) *LP-perfective*

$$[\ \underbrace{\text{Asp}}_{\varnothing}\ [\ \underbrace{\text{(Init)}\ [\ \text{Proc}}_{root}\ [\ \underbrace{\text{Res}}_{lexical\ prefix}\ \text{XP}\ ]\ ]\ ]\ ]$$

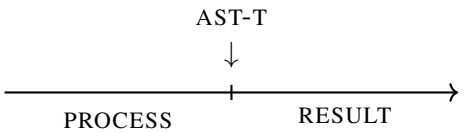
As mentioned above, this analysis does not recognise PFV and IPFV as distinct aspectual operators. Instead, Russian has one default aspectual head Asp, which is phonologically null, and which has the underspecified semantics in (22). In words, Asp requires the assertion time to be included in the runtime of the event e and all lexically identified subevents of e.

(22) $[\![\text{Asp}]\!] = \lambda P_{vt} \lambda t \exists e[P(e) \wedge t \in \tau(e) \wedge \forall e'[\textit{subevent}(e', e)\ \textit{and}\ e'\ \textit{is lexically identified}][t \in \tau(e')]]$

There is a P-*event* e *such that the assertion time* t *is included in* e*, and for all lexically identified subevents* e′ *of* e*,* t *is also included in the runtime of* e′.

Consider how the interpretation of Asp interacts with the subevental complexity of the verb. If both Proc and Res are present, the AST-T must be included in the runtime of both subevents: the main dynamic event and the result state. The only time instant which meets this requirement is the unique moment of transition from the process to the result, rendering the AST-T definite, and hence perfective. This scenario is schematised in (23).

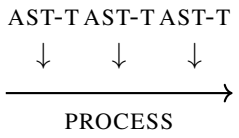
(23)



If the event predicate is subeventally simple, lacking ResP, the AST-T can be any time

instant within the runtime of the main dynamic event. This leaves the AST-T indefinite, and hence imperfective. This possibility is illustrated in (24).

(24)



What about secondary imperfectives? Ramchand (2008a) proposes that the secondary imperfective is an aspectual operator which cancels the default entailment from Res to perfective aspect. It does so by situating the AST-T within the process portion of a subeventally complex predicate, leaving the AST-T as indefinite, and hence imperfective (26)-(27).[5]

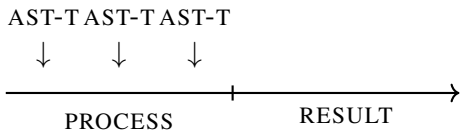
(25) *S-imperfective*

$[\ \underbrace{\text{Asp}_{\text{SI}}}_{\textit{-(yv)aj}}\ [\ \underbrace{\text{(Init)}\ [\ \text{Proc}}_{\textit{root}}\ [\ \underbrace{\text{Res}}_{\textit{lexical prefix}}\ \text{XP}\ ]\ ]\ ]\ ]$

(26) $[\![\text{Asp}_{\text{SI}}]\!] = \lambda P \lambda t \exists e[P(e) \wedge \exists e'[\textit{subevent}(e', e) \wedge \textit{Proc}(e') \wedge t \in \tau(e')]]$

There is a P*-event* e *such that some* e′ *is the process subevent of* e *and* t *is included in the runtime of* e′.

(27)



Once again, event complexity has been identified as the main factor governing the interpretation of Russian aspect: predicates without ResP are imperfective; predicates with ResP are perfective by default, and imperfective when suffixed with SI morphology. At first glance, this class of proposals seems to fare well with respect to the recursion problem (there is only one Asp head) and the long-distance problem (the relationship between the value of aspect

[5]Note that this denotation captures only the progressive use of Asp_{SI}. Ramchand does not offer a worked-out analysis of the iterative, habitual, generic and stative uses of SI morphology. This is an important limitation of her study, requiring us to define not one but several distinct Asp_{SI} operators in the semantics.

and lexical prefixes is fundamentally semantic). However, these proposals make certain predictions about the event structure of Slavic verbs, which turn out not to be correct.

5.2 Predictions of the semantic proposals

Although they differ in details of implementation, the proposals by Klein, Tatevosov and Ramchand agree on one important thing: the event complexity of a verbal predicate determines its aspectual behaviour. In particular, all three authors are committed to some version of the semantic mapping between event structure and aspect, repeated in (28). Sensitivity to event structure is viewed as a *semantic property of aspect in Russian* (and presumably in other Slavic languages as well). By themselves, lexical prefixes are devoid of any aspectual properties (see also Tatevosov 2011 for an argument that lexical prefixes are severed from aspect). In particular, LPs do not introduce a perfectivising operator (*pace* Svenonius 2004b) or an uninterpretable perfective feature (*pace* Biskup 2019, 2021a, 2022). Instead, the interaction between prefixes and aspect is indirect: lexical prefixes add a result state to the event structure, which in turn constrains or determines the value of aspect.

(28) *The event-structure-to-aspect mapping (ESTAM)*

event structure		aspect
simple	→	imperfective
complex (resultative)	→	**perfective**
complex (resultative) + SI morphology	→	imperfective

Although the mapping in (28) is semantic in nature, it presupposes an extremely close correspondence between event structure and morphology. The key assumption is that morphologically simple verbs denote subeventally simple predicates (e.g. *got-ow-a-ć*$^{\text{I}}$ 'to cook'), while morphologically complex verbs denote subeventally complex predicates (e.g. *roz-got-ow-a-ć*$^{\text{P}}$ 'to overcook').[6] The latter category includes all lexically prefixed verbs, whether

[6]For the purposes of this discussion, a morphologically simple verb is one without a prefix or an aspectual

perfective (e.g. *roz-got-ow-a-ć*^{P} 'to overcook') or secondary imperfective (e.g. *roz-got-ow-yw-a-ć*^{I} 'to overcook'). The only exception to this rule is the small class of bare perfectives (e.g. *rzuc-i-ć*^{P} 'to throw'), which are assumed to denote complex events (cf. 'the few unprefixed roots that are subeventally complex' in Ramchand 2008a:1704).

(29) *Correspondence between morphological complexity and event complexity*

stem type	morphological complexity	event complexity
B-imperfective	**simple**	**simple**
LP-perfective	lexical prefix	complex (resultatibve)
S-imperfective	lexical prefix + SI	complex (resultative)
B-perfective (rare)	simple	complex (resultative)

The first row of this table (in bold) can be falsified by finding examples of B-imperfectives that are subeventally complex, incorporating a result state. Such evidence would undermine the ESTAM approach to Slavic aspect because − in the absence of SI morphology − subeventally complex predicates should be interpreted as perfective rather than imperfective (see the middle row in (28)). Consider the Polish imperfective verbs *łam-a-ć*^{I} 'to break' and *mdl-e(j)-ć*^{I} 'to faint'. The corresponding English verbs are commonly analysed as result verbs: they entail that the Resultee argument undergoes a change-of-state from *intact* to *broken* (30a) or from *conscious* to *unconscious* (30b). In Tatevosov's system, such verbs would be analysed as relations between events and states (type *v,vt*). In Ramchand's framework, *break* and *faint* would lexicalise the process and result projections <Proc, Res>.

(30) a. Mary broke the twig ⇒ The twig is broken

b. The boy fainted ⇒ The boy is unconscious

Crucially, unlike the equivalent verbs in English, the Polish verbs *łam-a-ć*^{I} and *mdl-e(j)-ć*^{I} do not entail that the result state was attained: the branch does not necessarily become

suffix (semelfactive or secondary imperfective). Verbalisers, theme vowels and inflectional suffixes are ignored.

broken in (31a), and the boy does not necessarily become unconscious in (31b).

(31) a. Maria łam-a-ł-a^{I} gałąź ⇏ Gałąź jest
Mary break-TH-PST-3SG.F branch.ACC branch is
z-łam-a-n-a
PFX-break-TH-PASS.PTCP-3SG.F
'Mary was breaking a branch ' ⇏ 'The branch is broken'

b. Chłopiec mdl-a-ł^{I} ⇏ Chłopiec jest nie-przytomn-y
boy faint-TH-PST boy is NEG-conscious-3SG.M
'The boy was fainting' ⇏ 'The boy is unconscious.'

There are two ways of interpreting the lack of result entailments in (31). Firstly, we could conclude that − despite having a superficially similar meaning to *break* and *faint* − the verbs *łam-a-ć*^{I} and *mdl-e(j)-ć*^{I} do not include a result state in their event structure. This interpretation is consistent with the ESTAM approaches to Slavic aspect and event complexity (see (28)-(29)). If *łam-a-ć*^{I} and *mdl-e(j)-ć*^{I} denote simple events, then their aspectual value is correctly predicted to be imperfective. In other words, we first infer that *łam-a-ć*^{I} has a simple event structure from the fact that it does not entail a result, and then we use that simple event structure to explain why the verb is imperfective rather than perfective.

(32) *The first line of reasoning (consistent with the ESTAM approach)*
no result entailment → simple event structure → imperfective aspect

However, this line of reasoning can easily be reversed. Instead of using the lack of result entailments to derive imperfective aspect, we can use imperfective aspect to explain why the result state is not entailed. If imperfective aspect requires AST-T to merely overlap EV-T, then the result state may fall outside of the assertion time, just like in the case of the English progressive sentences *Mary was breaking a branch* and *The boy was fainting*. In short, it is perfectly possible that *łam-a-ć*^{I} and *mdl-e(j)-ć*^{I} are subeventally complex, but that the assertion of the result state is 'cancelled' by the contribution of imperfective aspect.

(33) *The second line of reasoning*

imperfective aspect → no result entailment (simple or complex event structure)

Hence, the entailment data in (31) cannot be used to support the claim that all B-imperfectives are subeventally simple. What we need is diagnostics for event complexity that are independent from aspect. In the absence of such diagnostics, the link between event structure and aspect is impossible to verify, and the analysis runs the risk of being circular.

For a similar reason, when diagnosing the event structure of Slavic verbs, we should avoid comparing the properties of B-imperfectives and LP-perfectives directly. This is because any differences between, say, *got-ow-a-ć*$^{\text{I}}$ 'to cook' and *roz-got-ow-a-ć*$^{\text{P}}$ 'to overcook' can be attributed either to event structure (simple vs. complex) or to aspect (imperfective vs. perfective), thus confounding the results of our research. A better approach, methodologically, is to compare the properties of B-imperfectives and S-imperfectives. Since the value of aspect is the same in both cases, any differences between pairs like *got-ow-a-ć*$^{\text{I}}$ 'to cook' and *roz-got-ow-yw-a-ć*$^{\text{I}}$ 'to overcook' can only be attributed to event structure, allowing us to control for the contribution of aspect. If the picture in (28)-(29) is correct, the tests for event complexity should yield the following outcome: B-imperfectives should always pattern as subeventally simple, while S-imperfectives should always pattern together with LP-perfectives as subeventally complex. This prediction is formulated in (34).

(34) *Predictions of the ESTAM approaches*

a. All B-imperfectives denote subeventally simple predicates (non-resultative).

b. All S-imperfectives denote subeventally complex predicates (resultative).

To anticipate the conclusions of this chapter, I will demonstrate that this prediction is not borne out in Polish. In particular, it is not the case that *all* B-imperfectives are subeventally simple. A large number of B-imperfectives do pass the standard tests for event complexity, which include the scope of the adverbials *almost* (Rapp and von Stechow, 1999) and *again* (von Stechow, 1996), stative presupposition with additive operators like *also* (Spathas and Michelioudakis, 2021), and compatibility with result state-oriented durative adverbials

(Piñón, 1999). All of these diagnostics converge on the conclusion in (35), which falsifies the semantic correspondence between event structure and aspect in Polish.

(35) *Resultative B-imperfectives*

Some B-imperfectives denote subenventally complex predicates (resultative).

5.3 Diagnosing event structure in Polish

The predictions of the ESTAM approaches are often taken for granted. In this section, I will put them to a test, arguing that B-imperfectives may incorporate a result state after all.

The most in-depth empirical argument in support of these predictions is presented in Tatevosov (2018, 2022). After claiming that bare and secondary imperfectives differ in event complexity, Tatevosov provides evidence for this claim using a number of tests adopted from the rich literature on event decomposition (Dowty, 1979; von Stechow, 1996; Rappaport Hovav and Levin, 1998; Rapp and von Stechow, 1999; Kratzer, 2000; Rothstein, 2004). He applies the following diagnostics to different verb types in Russian: (i) interpretation under negation, (ii) the scope of *almost*, and (iii) the scope of *again*.

In the next few sections, I will discuss Tatevosov's arguments in some depth, showing that they are not valid in Polish (and probably not in Russian either). To preview my conclusions, I will argue that (i) is a test for aspect, not for event structure, whereas (ii) and (iii) reveal that at least some B-imperfectives include a grammatically relevant result state. This finding will be corroborated by two additional tests: (iv) the availability of stative presuppositions with additive operators like *also* (Spathas and Michelioudakis, 2021) and (v) compatibility with result state-oriented durative adverbials (Piñón, 1999).

5.3.1 A non-diagnostic: interpretation under negation

This first diagnostic to be discussed here concerns the interpretation of event predicates in the scope of negation. As mentioned many times above, simple event predicates denote

properties of events, while complex event predicates denote relations between events and states. According to Tatevosov (2022), when a complex predicate is negated, an ambiguity ensues: either there is no activity at all, or there is some activity but no result state. In slightly more formal terms, the inner conjunction in (37) is false if at least one of its conjuncts is false (which, in turn, makes its negation true). The prediction is that subeventally complex predicates should be ambiguous between a no-event and a no-completion reading, but that only the former reading should be available to subeventally simple predicates (36).

(36) *Simplex Event under Negation*

$\neg\exists e[event(e)]$ (No event)

(37) *Complex Event under Negation*

$\neg\exists e, s[event(e) \wedge state(s)]$

(i) $\neg\exists e[event(e)]$ (No event)

(ii) $\neg\exists s[state(s)]$ (No completion)

Tatevosov (2022) cites the following Russian data as proof that bare and secondary imperfectives differ in event complexity. As predicted, the bare imperfective (38a) receives only the no-event reading, according to which Volodja did not even begin reading the book. The perfective (38b) is ambiguous: Volodja might have never started reading *Das Kapital*, or he might have started but not finished. Strikingly, the S-imperfective patterns with the LP-perfective in this respect: it is also compatible with Volodja starting the book without finishing it (38c). At first glance, these results appear to prove Tatevosov right, supporting the relevant distinction between bare and secondary imperfectives.

(38) a. Volodja ni razu ne **čit-a-l^{I}** "Kapital".
Volodja not once NEG read-TH-PST Das.Kapital.ACC
'Volodja has never read *Das Kapital*.'

(i) ✓ The event did not begin.

(ii) ✗ The event began but did not culminate.

b. Volodja ni razu ne **pro-čit-a-l^{P}** “Kapital”.
Volodja not once NEG LP-read-TH-PST Das.Kapital.ACC
‘Volodja has never read *Das Kapital*.’

(i) ✓ The event did not begin.

(ii) ✓ The event began but did not culminate.

c. Volodja ni razu ne **pro-čit-yv-a-l^{I}** “Kapital”.
Volodja not once NEG LP-read-SI-TH-PST Das.Kapital.ACC
‘Volodja has never read *Das Kapital*.’

(i) ✓ The event did not begin.

(ii) ✓ The event began but did not culminate.

(Russian, Tatevosov 2022)

Does this result replicate in Polish? The first problem we encounter is that, unlike Russian *pročitat’*^{P}, the cognate verb *prze-czyt-a(j)-ć*^{P} ‘to read’ does not undergo secondary imperfectivisation (cf. **prze-czyt-yw-a-ć*). This is not surprising since the prefix *prze-* is ‘empty’ or ‘purely perfectivising’ in this context: it does not modify the lexical content of the original verb, but merely indicates that ‘the process denoted by the verb is completed’ (Babko-Malaya 1999:51).[7] Empty prefixes are known to block the formation of S-imperfectives in many − though not in all − cases. The paradigms in which an S-imperfective co-exists alongside a B-imperfective with the same lexical content are known as *aspectual triples*. The set of aspectual triples in Polish includes *pi-ć*^{I} − *wy-pi-ć*^{P} − *wy-pij-a(j)-ć*^{I} ‘to drink’ and *je-ść*^{I} − *z-je-ść*^{P} − *z-jad-a(j)-ć*^{I} ‘to eat’. Both of these triples replicate the pattern of results observed for Russian, with the LP-perfective and the S-imperfective patterning together, in contradistinction to the B-imperfective. I illustrate for *jeść*^{I} ‘to eat’ in (39).

(39) a. Marek nie **jad-ł^{I}** nigdy kiełbasy.
Mark NEG eat-PST never sausage.GEN

[7] Whether or not empty prefixes constitute a distinct class from lexical, or resultative, prefixes is an open issue. The existence of empty prefixes is assumed in Boguslawski (1960), Grzegorzczykowa et al. (1984), Babko-Malaya (1999) and Jabłońska (2004), among others, and disputed in Filip (1999) and Janda et al. (2013). In this thesis, I will continue to refer to perfective verbs prefixed with empty prefixes as LP-perfectives, treating empty prefixes as a special class of lexical prefixes. However, nothing of importance hinges on this assumption.

'Mark has never eaten a sausage.' ✓No event ✗No culmination

b. Marek nie **z-jad-ł^{P}** nigdy kiełbasy.
Mark NEG PFX-eat-PST never sausage.GEN
'Mark has never eaten a (whole) sausage.' ✓No event ✓No culmination

c. Marek nie **z-jad-Ø-a(j)-ł^{I}** nigdy kiełbasy.
Mark NEG PFX-eat-SI-TH-PST never pizza.GEN
'Mark has never eaten a (whole) sausage.' ✓No event ✓No culmination

While I do not deny the judgements in (38)-(39), there are reasons to think that the interpretation-under-negation test is not actually sensitive to event structure, and that the pattern of results reported in Tatevosov (2022) is more of an exception than a rule. When the same diagnostic is applied to S-imperfectives that *do not* belong to an aspectual triple, the contrast between bare and secondary imperfectives disappears. This is demonstrated in (40) and (41), where the prefixes *roz-* and *od-* are semantically contentful (i.e. not 'empty'). The interpretation of the S-imperfective is no longer ambiguous: Adam must have never participated in any garage-building activity for (40c) to be true; similarly, (41c) entails that Robert has never engaged in an act of replying to a particular message.

(40) a. Adam nie **bud-ow-a-ł^{I}** nigdy garażu.
Adam NEG build-v-TH-PST never garage.GEN
'Adam has never built a garage' ✓No event ✗No culmination

b. Adam nie **roz-bud-ow-a-ł^{P}** nigdy garażu.
Adam NEG apart-build-*v*-TH-PST never garage.GEN
'Adam has never extended a garage' ✓No activity ✓No culmination

c. Adam nie **roz-bud-ow-yw-a-ł^{I}** nigdy garażu.
Adam NEG apart-build-*v*-SI-TH -PST never garage.GEN
'Adam has never extended a garage' ✓No activity ✗No culmination

(41) a. Robert nie **pis-a-ł^{I}** nigdy tej wiadomości.
Robert NEG write-TH-PST never this message.NEG.
'R. has never written this message.' ✓No event ✗No culmination

b. Robert nie **od-pis-a-ł^{P}** nigdy na tę wiadomość.
Robert NEG from-write-*v*-PST never on this message.ACC

'R. has never replied to this message.' ✓No event ✓No culmination

c. Robert nie **od-pis-yw-a-ł**$^{\mathbf{I}}$ nigdy na tę wiadomość.
Robert NEG from-write-*v*-SI-TH-PST never to this message.ACC
'R. has never replied to this message.' ✓No event ✗No culmination

Since examples (40)-(41) represent the general case, interpretation-under-negation turns out to be a test for aspect, not for event structure. It systematically sets apart LP-perfectives, on the one hand, from bare and secondary imperfectives, on the other. As such, this test does not reveal any differences in event complexity between bare and secondary imperfectives.

If negation is a test for aspect rather than event structure, we now face the challenge of accounting for the unexpected behaviour of S-imperfectives in aspectual triples. Why do empty prefixes give rise to the no-culmination reading in (38)-(39)? I suggest a possible explanation based on Engelberg's (2002) case study of the German particle verb *auf-essen* 'to eat up' and Piñón's (2008) analysis of the Hungarian particle *meg* in verbs such as *meg-ír* 'to write' and *meg-fest* 'to paint'. These authors propose that *auf* and *meg* are polysemous, with two different lexical entries, labelled as *finish*$_1$ and *finish*$_2$ in Piñón (2008). The first entry asserts that the whole event took place. The second entry is more complex, consisting of two parts: (i) an assertion of the final subevent; and (ii) a presupposition that the initial subevent had occurred at an earlier point in time. The two readings of *auf-essen* are illustrated in (42a) and (42b), respectively. The presupposition associated with the second example is similar to the one introduced by the aspectual verb *to finish*. For instance, a sentence like *John finished eating the apple* asserts the existence of a final subevent of eating an apple, and presupposes that the initial subevent had already taken place.

(42) a. Wer hat meinen Schokoriegel auf-gegessen?
who has my chocolate.bar up-eaten
'Who ate my chocolate bar?' (the whole bar in one eating event)

b. Er hat seine Suppe (nicht) auf-gegessen.
he has his soup not up-eaten
'He {ate up / didn't eat up} his soup' (of which the first part had been eaten

some time before)

(German, Engelberg 2002:393)

I propose that Engelberg's (2002) analysis should be extended to empty prefixes in Polish and Russian. For example, the prefix *wy-* in *wy-pi(j)-* 'to drink' optionally presupposes that there exists a prior drinking subevent. The relevant denotation is formalised in (43b), with the presupposed part marked with the ∂ operator of Beaver (1992).[8]

(43) a. $[\![\text{wy-pi(j)-}_1]\!] = \lambda x \lambda e.[\mathbf{drink}(e) \wedge \mathit{theme}(e)(x)]$

Asserted: e *is an event of drinking the whole* x

b. $[\![\text{wy-pi(j)-}_2]\!] = \lambda x \lambda e.\exists x', x''[x = x' \oplus x'' \wedge \mathbf{drink}(e) \wedge \mathit{theme}(e)(x') \wedge$
$\partial \exists e'[\mathbf{drink}(e') \wedge \mathit{theme}(e)(x'') \wedge \tau(e') < \tau(e)]]$

Asserted: e *is an event of drinking the final part* x′ *of* x

Presupposed: there is a prior event e′ *of drinking the initial part* x″ *of* x

The two variants of (43) are not necessarily distinct. Instead, the more complex denotation of $[\![\text{wy-pi(j)-}_2]\!]$ should be viewed as basic, with the meaning of $[\![\text{wy-pi(j)-}_1]\!]$ as the special case in which x' is equal to x and x'' is equal to zero. Since the whole of x is consumed in one drinking event, there can be no separate subevent of drinking the initial part of x, and hence no presupposition. This allows us to characterise the relationship between (43a) and (43b) as underspecification rather than ambiguity, making the analysis less stipulative.

Now let us return to the interpretation-under-negation test. As is well known, presuppositions survive in the scope of negation. This means that (44) (repeated from (39c)) continues to optionally presuppose the existence of a prior event in which Mark began eating a sausage. This presupposition is virtually indistinguishable from the no-culmination reading, according to which Mark began but did not finish eating a sausage.

[8] In order to keep the denotations as simple as possible, *wy-pi(j)-* 'to drink up' is represented as a subeventually simple predicate in (43). However, this is not a necessary assumption. Nothing prevents empty prefixes from introducing *both* a result state *and* a presupposition of a prior subevent.

(44) Marek nie **z-jad-Ø-a(j)-ł^{I}** nigdy kiełbasy.
Mark NEG PFX-eat-SI-PST never sausage.GEN
'Mark has never eaten a (whole) sausage.' ✓No event ✓No culmination

In this way, we correctly capture the behaviour of S-imperfectives in aspectual triples. The main idea is that 'empty' prefixes need not be semantically empty, but that they may introduce the presupposition of a prior subevent, which is responsible for the emergence of the no-culmination reading under negation (i.e. some event took place, but it did not culminate). Why is this presupposition available with empty prefixes but not with lexical prefixes? We can speculate that this is precisely because empty prefixes do not introduce any other lexical content. Assuming a general principle *Avoid Synonymy* (e.g. Kiparsky 1982), we expect the S-imperfective *wy-pij-a(j)-ć*^{I} 'to drink up' to develop a stronger, more specialised meaning than the B-imperfective *pi-ć*^{I} 'to drink'. This expectation is borne out if *wy-pij-a(j)-ć*^{I} 'to drink up' denotes a set of *final* drinking subevents, with the initial subevent presupposed. In the terminology of Piñón (2008), empty prefixes derive *strong accomplishments*.

5.3.2 The scope of *prawie* 'almost'

Another event-structural diagnostic mentioned in Tatevosov (2022) relates to the scope of approximative adverbs, such as *almost* in English, *počti* in Russian and *prawie* in Polish. The classical account of this ambiguity goes back to McCawley (1971), who identifies three different readings of *almost*: counterfactual, scalar and resultative. Since Tatevosov (2022) assumes a less articulated system of predicate decomposition, he distinguishes only two possible attachment sites for approximative adverbs (45). When *almost* scopes over the event component, we obtain a counterfactual reading, according to which John almost initiated an action of killing Harry, but ultimately nothing happened (45a). This reading is similar to the no-event reading from the previous section. Conversely, when *almost* scopes over result state, we get the resultative reading, according to which John did something that resulted in Harry being almost dead (45b). This reading resembles the no-culmination

reading familiar from the interpretation-under-negation test.

(45) *John almost killed Harry*

a. ALMOST $\exists e, s[event(e) \wedge state(s)]$ counterfactual (no event)

b. $\exists e\ event(e) \wedge$ ALMOST $\exists s[state(s)]$ resultative (no culmination)

As for the semantics of *almost*, the traditional analysis is intensional: *almost P* entails that P is false in the world of evaluation w, but it is true in some possible world w' which is minimally different from w (Sadock, 1981; Rapp and von Stechow, 1999).

(46) $[\![\text{almost}]\!] = \lambda w \lambda P_{vt}.\neg P(w) \wedge \exists w' \ [P(w') \wedge w' \textit{ is not very different from } w]$

The predictions are the same as before. If B-imperfectives are subeventally simple, they should have only one reading, and namely the counterfactual one. If S-imperfectives are subeventally complex, they should be ambiguous between the counterfactual and the resultative reading. Tatevosov (2022) claims that this is the case, but his only example involves the aspectual triple *čitat' – pročitat' – pročityvat'* 'to read'. In the previous section, I argued that the behaviour of S-imperfectives in aspectual triples is not representative of S-imperfectives in general, since the former introduce an additional presupposition absent from the latter. For this reason, I will avoid aspectual triples in my own examples.

Unlike the interpretation-under-negation test, modification by *almost* turns out to be a genuine diagnostic for event complexity. We indeed find many cases of B-imperfectives being unambiguous in the scope of *almost* and S-imperfectives being ambiguous, as illustrated by the minimal pair in (47). These examples are formulated in the historical present to avoid any confounds associated with the progressive aspect. Unlike imperfectives on their progressive use, imperfectives in the historical present are compatible with event culmination. As such, they should also be compatible with the resultative reading of *almost*. This is confirmed by our data. The S-imperfective has a reading on which the outlaw was 'almost out of the forest' (47b), whereas the bare imperfective has no analogous interpretation (47a).

(47) *Context: After robbing a bank, an outlaw hides in a nearby forest. The sheriff arrives and spots him behind a tree. The outlaw scrambles to his feet and...*

a. **Prawie** bieg-ni-e^{I}, kiedy nagle łapie^{I} go szeryf.
almost run-*v*-3SG when catches him sheriff
'...he almost runs when the sheriff catches him.'

(i) ✓ The event almost began.

(ii) ✗ The event began and almost culminated.

b. **Prawie** wy-bieg-Ø-a(j)^{I} z lasu, kiedy łapie^{I} go szeryf.
almost out-run-SI-TH from forest.GEN when catches him sheriff
'...he almost runs out of the forest when the sheriff catches him.'

(i) ✓ The event almost began.

(ii) ✓ The event began and almost culminated.

So far, we have seen that *some* B-imperfectives are subeventally simple. This finding is not particularly interesting: Germanic and Romance languages also have many morphologically simple verbs which do not incorporate a result state (e.g. *to dance*, *to sleep*, *to work*). The prediction made by the event-structure-to-aspect mapping is much stronger, requiring that *all* B-imperfectives denote simple events. This prediction is falsified in Polish by the finding that some B-imperfectives do admit a resultative reading with *almost*.

Most of the data in this section are naturally-occurring examples found on the internet. The first two are formulated in the historical present tense. (48) comes from a synopsis of the novel *South of the Border, West of the Sun* by Haruki Murakami. As the context makes clear, the protagonist's marriage was damaged to the point of being 'almost destroyed' (i.e. the resultative reading) rather than not being damaged at all (i.e. the counterfactual reading). Similarly, (49) is taken from an online short story and entails that the protagonist slowed down her movements until she became 'almost motionless' (i.e. the resultative reading). The constructed example in (50) works in an analogous way: as soon as Mark becomes 'almost sober', regaining his clarity of mind, David pours him another drink.

(48) Dziwny, platoniczny romans **prawie niszcz-y**$^{\mathbf{I}}$ jego małżeństwo.
strange platonic affair almost destroys-*v* his marriage
'The strange platonic affair almost destroys his marriage.'

(49) Zaciskam$^{\mathrm{I}}$ usta [...] i **prawie nie-ruch-omi-ej-ę**$^{\mathbf{I}}$, próbując$^{\mathrm{I}}$ nie
clench.1SG lips.ACC and almost NEG-motion-*a*-*v*-1SG trying NEG
wydawać$^{\mathrm{I}}$ żadnych dźwięków.
emit any sounds.GEN
'I clench my mouth shut and become almost motionless, trying not to emit any sounds.'

(50) Na imprezie, gdy Marek już **prawie trzeźwi-ej-e**$^{\mathbf{I}}$ i przypomina$^{\mathrm{I}}$
at party.INST when Mark already almost sober-*v*-3SG and remembers
sobie, że opuściła$^{\mathrm{P}}$ go żona, Dawid znowu polewa$^{\mathrm{I}}$ mu wódki.
himself that left him wife.NOM David again pours him vodka
'At a party, when Mark almost sobers up and remembers that his wife has left him, David pours him another vodka.'

The next set of sentences describes generic or habitual events. (51) is an instruction to adjust the bike seat so that your leg is 'almost straight' (i.e. you need to straighten your leg a bit, but not all the way). (52) states that the rash heals to some extent (since it becomes invisible for a time) but that it does not heal completely (since it flares up again). The constructed example in (53) describes a similar scenario: the patient becomes 'almost healthy' (since he regains his strength) but then he succumbs to illness again. In each case, the context requires *almost* to function as a modifier of the result state rather than a modifier of the event.

(51) prawidłowe ustawienie siodełka [...], aby noga się **prawie**
correct setting.IMP seat such that leg REFL almost
prost-ow-a-ł-a$^{\mathbf{I}}$, gdy pedał jest na samym dole
straight-*v*-TH-PST-3SG.F when pedal is on very bottom
'setting the bike seat correctly so that your leg almost straightens when the pedal is at the very bottom'

(52) [Wysypka] raz już **prawie** sie **goi**$^{\mathbf{I}}$ i [jej] nie widać, po czym
rash once already almost REFL heals and her.DAT NEG see after which

znów się zaczerwienia^{I}
again REFL reddens
'At times, the rash almost heals and you cannot see it, then it reddens again.'

(53) Za każdym razem, gdy pacjent odzyskuje^{I} siły i już
for each time.INST when patient regains strengths.ACC and already
prawie zdrowi-ej-e^{I}, nagle z powrotem dopada^{I} go choroba.
almost healthy-v-1SG suddenly with return.INST gets him illness
'Every time the patient regains his strength and almost recovers, he suddenly falls ill again.'

These data constitute the first piece of evidence that resultative B-imperfectives exist in Polish. If modification by *almost* works as intended, then morphologically simple verbs such as *niszcz-y-ć*^{I} 'to destroy', *łącz-y-ć*^{I} 'to connect', *nie-ruch-omi-e(j)-ć*^{I} 'to become motionless', *prost-ow-a-ć*^{I} 'to straighten', *goi-ć*^{I} *się* 'heal' and *zdrowi-e(j)-ć*^{I} 'to get healthy' turn out to have a complex event structure, contrary to the predictions of the ESTAM approach.

5.3.3 The scope of *znów* 'again'

Perhaps the most well-known diagnostic for event structure involves the scope of the adverbial *again* (von Stechow, 1996; Rapp and von Stechow, 1999; Beck and Johnson, 2004; Beck, 2006). The basic reasoning is the same as before. At least with a subset of change-of-state predicates, the interpretation of *again* is ambiguous, as illustrated in (54). If the adverbial takes wide scope over the event, then the door is presupposed to have undergone a prior opening event. This is the *repetitive* reading. Conversely, if the adverbial takes narrow scope over the result state, then the door is presupposed to have been in a prior state of being *open*, without necessarily having been *opened* before. This is the *restitutive* reading.

(54) John opened the door again.

a. The door had (been) opened before

AGAIN $\exists e, s[event(e) \wedge state(s)]$ (repetitive)

b. The door had been open before

$\exists e\, event(e) \wedge \text{AGAIN}\ \exists s[state(s)]$ (restitutive)

The semantic denotation of *again* is given in (55), based on the definition in Beavers and Koontz-Garboden (2020:16). It can be combined with stative and eventive predicates alike.

(55) $[\![\text{again}]\!] = \lambda P_{vt} \lambda x \lambda i[P(i) \wedge arg(i)(x) \wedge \partial \exists i'[\tau(i') < \tau(i) \wedge P(i') \wedge arg(i')(x)]]$

Asserted: there is a P-*eventuality* i *(an event or a state) whose argument is* x.

Presupposed: there was a prior P-*eventuality* i′ *whose argument is also* x.

The Polish equivalents of *again* are the adverbials *znów* and *znowu*, which stand in free variation with each other. The following data feature the shorter form *znów*, but variants with *znowu* would be equally valid. Consider the naturally-occurring example in (56). This question appeared on an online forum, asking about the risk of thrombosis associated with the use of contraceptive patches: Does the risk go down again after you stop? The context makes it abundantly clear that the intended reading of *znów* is restitutive, presupposing that the risk of thrombosis was small in the past, and inquiring whether this risk will be small again in the future. Since the state of being *mał-y* 'small' is grammatically visible for modification by *znów*, the related verb *mal-e(j)-ć*$^{\text{I}}$ 'to shrink' must be subeventally complex.

(56) Czy po odstawieniu plastrów antykoncepcyjnych ryzyko
Q after setting.aside.NOM.LOC patches.GEN contraceptive risk.NOM
zakrzepicy **znów mal-ej-e**$^{\textbf{I}}$? Wraca do stanu sprzed
thrombosis.GEN again small-*v*-3SG returns to state.GEN from.before
stosowania plastrów?
using.NOM.GEN patches.GEN
'Does the risk of thrombosis decrease again after you stop using contraceptive patches? Does it return to the state from before using the patches?'[9]

The next two examples are artificially constructed, but they follow a similar pattern. In both cases, the information supplied by the context is incompatible with the repetitive reading of

[9] https://www.gdziepolek.pl/opinie-i-pytania/45228/evra-czy-po-odstawieniu-plastrow-antykoncepcyjnych-ryzyko-zakrzepicy-znow-malej

the adverbial. In (58), Robert's candle is brand new, so it cannot have been extinguished before. Instead, *znów* necessarily scopes over the result state of the candle being UNLIT, inherent in the denotation of the unprefixed change-of-state verb *gas-i-ć*$^{\text{I}}$ 'to extinguish'.

(57) Context for restitutive reading:

Robert buys a new candle, puts it on a table in his flat, and lights for the first time.

(58) Jego wspólokator, który boi$^{\text{I}}$ się pożaru, szybko **znów** ją
his flatmate.NOM who fears REFL.PRON fire.GEN quickly again PRON.F.ACC
gas-i$^{\textbf{I}}$.
extinguish-*v*
'His flatmate, worried about the fire hazard, quickly blows it out it again.'

Similarly, in (60), the price of the smartphone was high to begin with, but it had never increased before, only steadily decreased over time. In light of this, the decompositional adverbial must take scope over the result state BE EXPENSIVE rather than over the whole change-of-state event BECOME EXPENSIVE. The unaccusative verb *drież-e(j)-ć*$^{\text{I}}$ 'become expensive' is synchronically related to the adjective *drog-i* 'expensive', making it all the more plausible that this predicate should contain a stative component. I will say a few more words about the analysis of 'deadjectival' verbs in the next subsection, as well as in §5.4.

(59) Context for restitutive reading:

The new smartphone ProPhone Ultimate cost $1400 when it was released. This was widely considered to be very expensive. Over time, its price monotonically decreased to $700. This was considered to be cheap for a device of this kind. However, due to disruptions caused by a global pandemic, the manufacturer of ProPhone Ultimate is facing major supply issues at a time of increasing demand.

(60) Zwiększony popyt i problemy z podażą sprawiają$^{\text{I}}$, że
increased demand.NOM and problems.NOM with supply.INST cause that
ten smartfon **znów drież-ej-e**$^{\textbf{I}}$.
this smartphone.NOM again expensive-*v*-3SG
'Increasing demand and supply issues cause this smartphone to become expensive

again.'

In sum, modification by *znów* 'again' points to the same conclusion as modification by *almost* 'prawie': some B-imperfectives are subeventally complex, incorporating a result.

5.3.4 Stative presupposition with *też* 'also'

A more recently discovered diagnostic for event structure comes from the variable scope of additive operators, such as *also* and *too* in English, and *ke* 'also' in Greek (Spathas and Michelioudakis, 2021). These operators associate with the focus-bearing element in the sentence, and they give rise to an ambiguous interpretation with a subset of change-of-state verbs. For example, in (61a), the presupposition is that something other than the rug was flat. In turn, (61b) presupposes that John had flattened something other than the rug. The former presupposition is stative and corresponds to the narrow-scope reading of *too*. The latter is eventive and corresponds to the wide-scope reading of the additive operator.

(61) John flattened the RUG too.

a. Something else was flat. (stative presupposition)
$\exists e[event(e) \wedge \text{TOO}\ \exists s[\textbf{flat}(s)]$

b. Something else had been flattened. (eventive presupposition)
$\text{TOO}\ \ \exists e,s[event(e) \wedge \textbf{flat}(s)]$

The semantics of additive operators can be formalised as in (62). This is a slightly simplified version of the denotation assigned to the Greek *ke* in Spathas and Michelioudakis (2021:1257). This denotation asserts that P is true of some entity x, and it presupposes that P is also true of some alternative entity x'. Crucially, P can be either eventive or stative.

(62) $[\![\text{too}]\!] = \lambda P_{vt}\lambda x\lambda i[P(i) \wedge arg(i)(x) \wedge \partial\exists i',x'[P(i') \wedge arg(i')(x') \wedge x \neq x']]$
Asserted: there is a P-*eventuality* i *(an event or a state) whose argument is* x.
Presupposed: there is a P-*eventuality* i′ *whose argument is* x′ *distinct from* x.

Let us apply this event-structural diagnostic to B-imperfectives in Polish, using the additive operator *też* 'also'. The mini-discourse in (64) is modelled after a Greek example discussed in Spathas and Michelioudakis (2021:1267). The accompanying context is deliberately designed to favour the stative presupposition, whereby something other than the red shirt was dry (namely, the yellow shirt). The eventive presupposition, according to which Adam had dried something other than the red shirt, is ruled out for pragmatic reasons.[10]

(63) Context for stative presupposition:

Adam buys two new shirts, a yellow one and a red one, but drops them near some water right after he gets out of the store. The yellow shirts stays dry, but the red shirt gets wet.

(64) Żółta koszula jest sucha. Po powrocie do domu Adam
yellow shirt is dry after return.NOM.LOC to house.GEN Adam.NOM
susz-y^{I} też CZERWONĄ koszulę.
dry-*v* also red shirt.ACC
'The yellow shirt is dry. After returning home, Adam dries the RED shirt too.'

In (66), we see another example built on a similar pattern. The context provides us with the information that something else was straight (namely, the short rod), satisfying the stative presupposition of *prost-ow-a-ć*^{I} 'to straighten'. The sentence remains felicitous even if the worker had not straightened anything other than the long, defective rod.

(65) Context for stative presupposition:

A machine produces two iron rods, a short, straight one and a long, bent one. The latter is defective and so has to be manually adjusted.

(66) Po dokładnym obejrzeniu krótkiego pręta, który jest już
after careful examination.NOM.LOC short rod.GEN which is already
prosty, pracownik szybko **prost-uj-e^{I} też** DŁUGI pręt.
straight worker.NOM quickly straight-*v*-3SG also long rod.ACC

[10]Note that examples (64) and (66) are formulated in the historical present tense. This is done to avoid any confounds associated with progressive aspect. Since the progressive de-emphasises the attainment of the result state, it might make the stative presupposition of *też* more difficult to access, even if it is underlyingly there.

'After a careful examination of the short rod, which is already straight, the worker quickly straightens the long rod too.'

A final example is given in (66). The relevant presupposition is that something other than the chameleon's skin was red, not that something else had undergone a reddening event.

(67) Podłoga$_i$ w klatce kameleona$_j$ jest czerwona. Kiedy po niej$_i$
floor(F) in cage.LOC chameleon(M).GEN is red when on PRON.F.LOC
chodz-i$^{\mathrm{I}}$, jego$_j$ SKÓRA **też czerwieni-ej-e$^{\mathrm{I}}$**.
walk-*v* his skin.NOM also red-*v*-3SG
'The floor in the chameleon's cage is red. When he walks on it, his SKIN also reddens / turns red.'

As argued at length in Spathas and Michelioudakis (2021), the variable scope of additive operators provides strong empirical support for the event-structural decomposition of 'deadjectival' verbs. The Polish verb *susz-y-ć*$^{\mathrm{I}}$ 'to dry', *czerwieni-e(j)-ć*$^{\mathrm{I}}$ 'to redden' and *prost-ow-a-ć*$^{\mathrm{I}}$ 'to straighten' are synchronically related to the adjectives *such-y* 'dry', *czerwon-y* 'red' and *prost-y* 'straight'.[11] In order to account for the emergence of the stative presupposition with these predicates, we must assume that unprefixed 'deadjectival' verbs are subeventally complex, with a grammatically accessible result state targeted by *też* 'also'.

(68) a. $[\![\text{susz-y-}]\!] = \lambda e.\exists s[\mathit{cause}(e)(s) \wedge \mathbf{dry}(s)]$

b. $[\![\text{czerwieni-e(j)-}]\!] = \lambda e.\exists s[\mathit{cause}(e)(s) \wedge \mathbf{red}(s)]$

c. $[\![\text{prost-ow-}]\!] = \lambda e.\exists s[\mathit{cause}(e)(s) \wedge \mathbf{straight}(s)]$

[11] The word 'deadjectival' is in inverted commas because it is possible that these verbs merely share a root with an adjective, rather than being derived from a categorised adjectival structure. In the framework of DM, we have to admit the possibility that the relationship between *prost-ow-a-ć*$^{\mathrm{I}}$ 'to straighten' and *prost-y* 'straight' looks as in (i) rather than (ii). If this is case, then *prost-ow-a-ć* is not, strictly speaking, a deadjectival verb.

(i) a. [v_Δ [$\sqrt{}$PROST]
b. [*a* [$\sqrt{}$PROST]]

(ii) a. [v_Δ [*a* [$\sqrt{}$PROST]]
b. [*a* [$\sqrt{}$PROST]]

5.3.5 Result-oriented durative adverbials

Modification by durative adverbials has been identified as a test for event structure by Dowty (1979), Piñón (1999), Kratzer (2000) and Beavers and Koontz-Garboden (2020:18f.), among many others. In English, the durative adverbial *for X time* is ambiguous between an event-oriented reading, which measures the duration of the eventuality, and a result-oriented reading, which measures the duration of the result state (either actual or intended).

(69) Sally opened the window for an hour.

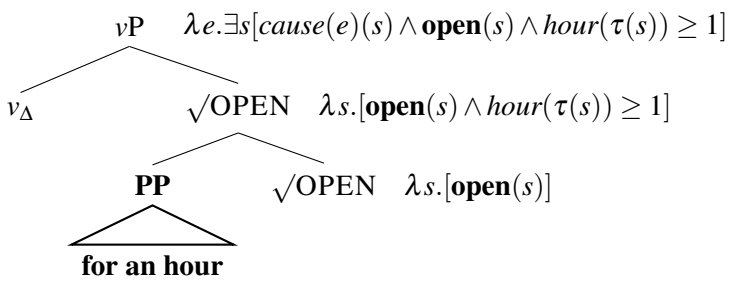
a. The window was in an open state for an hour. (result-oriented)

b. The event of opening the window went on for an hour. (event-oriented)

(70) $[\![\text{for an hour}]\!] = \lambda P \lambda i.[P(i) \wedge \mathit{hour}(\tau(i)) \geq 1]$

The derivation of the result-oriented reading is reproduced below from §2.2.1 in Chapter 2.

(71) *Result-oriented durative adverbial*



It is widely assumed that compatibility with result-oriented adverbials signals the presence of a result state in the denotation of the verbal predicate. It is this stative eventuality whose temporal extent is measured by the *for*-adverbial. The only condition is that the result state should be 'reversible', as noted in the following remark by Dowty (1979:255):

> Actually, not quite all accomplishments can felicitously take an internal [result-oriented] adverb but only those in which the result state is a reversible one; we find it very hard to interpret ?*John killed Bill for three weeks* with an in-

> ternal [result-oriented] reading because we ordinarily assume death to be an irreversible state.

Death may not be reversible in our world, but it may be reversible in a more fictional scenario, such as an online video game (where players die for a limited amount of time before being resurrected). In this context, the sentence *John killed Bill for five minutes* would be perfectly felicitous. Even setting aside the influence of world knowledge, there are reasons to think that 'reversibility' is not an inherent part of the meaning of result-oriented adverbials (see particularly Piñón 1999). Instead, it is the side-effect of a standard scalar implicature: the adverbial *for three weeks* implicates 'for no more than three weeks', after which time the result state should no longer hold. This implicature does not arise if we specify that the result state should hold *forever*, as in *John killed Bill forever*.

Although English *for*-adverbials are formally ambiguous between result-oriented and event-oriented readings, not all languages display this ambiguity. In Polish, result-oriented adverbials are headed by the preposition *na* 'on', while event-oriented adverbials take one of two forms: a PP headed by *przez* 'through' or a durative NP in the accusative case.

Modification by result-oriented *na*-adverbials is the most permissive of the four resultativity diagnostics discussed in this section. Given enough contextual support, virtually every change-of-state verb can pass this test. I present two examples formulated in the historical present in (72)-(75) and two further examples with a more generic flavour in (76)-(78).

In the first example, the adverbial *na pięć minut* 'for five minutes' measures the duration of the state in which Wanda's back was straight. The availability of the result-oriented reading converges with the result of the other diagnostics: the B-imperfective *prost-ow-a-ć*[I] 'straighten' includes a grammatically modifiable result state in its denotation.

(72) Context for result-oriented reading:

> Wanda sits down at her desk to do her homework. A few minutes later, her mum comes into the room and tells her not to slouch.

(73) Wanda **prost-uj-e**$^{\mathbf{I}}$ się **na pięć minut**, a potem znowu zaczyna$^{\mathrm{I}}$ się
Wanda straight-v-3SG REFL on five minutes but then again starts REFL
garbić$^{\mathrm{I}}$.
slouch
'Wanda straightens up for five minutes and then starts slouching again.'

The next example mentions the Earth Hour, an annual WWF campaign which encourages people to switch off non-essential lights for an hour to highlight environmental issues. We already saw in §5.3.3 that the verb *gas-i-ć*$^{\mathrm{I}}$ 'to extinguish' licenses the restitutive reading of *znów* 'again'. In (75), we see that it is also compatible with a result-oriented adverbial. Note also that unlike *prost-ow-a-ć*, *gas-i-ć* is not synchronically related to an adjective.

(74) Context for result-oriented reading:

Mary checks the news and remembers that the Earth Hour is about to start. At 8.30pm sharp, ...

(75) Maria **gas-i**$^{\mathbf{I}}$ w domu wszystkie światła **na godzinę**.
Mary extinguish-v in house.LOC all lights.ACC on hour.ACC
'Mary turns off all lights at home for an hour.'

The final set of examples follows a similar pattern. The verb *tani-e(j)-ć*$^{\mathrm{I}}$ 'to become cheap' is related to the adjective *tani* 'cheap', and it makes a result state available for modification by the durative adverbial in (76). The verb *trzeźwi-e(j)-ć*$^{\mathrm{I}}$ 'to sober up' is also related to an independently attested adjective (i.e. *trzeźwy* 'sober'), and it can also be modified by a result-oriented adverbial (77). Finally, the verb *niszcz-y-ć*$^{\mathrm{I}}$ 'to destroy' is not 'de-adjectival', but it still patterns as resultative (78). Since the states caused by destruction events are not typically reversible, this sentence sounds best with the adverbial *na zawsze* 'for ever'.

(76) Produkty objęte tą ofertą **tani-ej-ą**$^{\mathbf{I}}$ tylko **na jeden dzień**.
products covered this.INST offer.INST cheap-v-3PL only on one day
'The products covered by this offer become cheaper for only one day.'

(77) Marek **trzeźwi-ej-e**$^{\mathbf{I}}$ **na dwie godziny**, a potem znowu zaczyna$^{\mathrm{I}}$ pić$^{\mathrm{I}}$.
Mark sober-*v*-3SG on two hours and then again begins drink.INF

'Mark sobers up for two hours, and then he begins to drink again.'

(78) Depilacja laserowa **niszcz-y^{I}** mieszki włosowe **na zawsze**, zapobiegając
hair.removal laser.ADJ destroy-v follicles.ACC hair.ADJ for ever, preventing
ponownemu odrastaniu włosków.
renewed growing.back.DAT hairs.GEN
'Laser hair removal destroys hair follicles forever, preventing the hairs from growing back again.'

Although modification by durative result-oriented adverbials is the most permissive event-structural diagnostic in Polish, it is not indiscriminate. To see that it makes the right cut, distinguishing between subeventally complex COS predicates and subeventally simple activities, consider the data in (79)-(80). Verbs like *tańcz-y-ć* 'to dance' and *czyt-a(j)-ć* 'to read' are compatible with event-oriented durative adverbials, but not with result-oriented ones. This is consistent with the hypothesis that such verbs do not encode a result state, and that modification by *na*-adverbials is indeed sensitive to event structure.

(79) Piotrek tańcz-y-ł^{I} tango {(przez) pięć minut / *na pięć minut}.
Peter dance-*v*-PST tango for five minutes.ACC for five minutes.ACC.
'Peter danced tango for five minutes.' (event-oriented only)

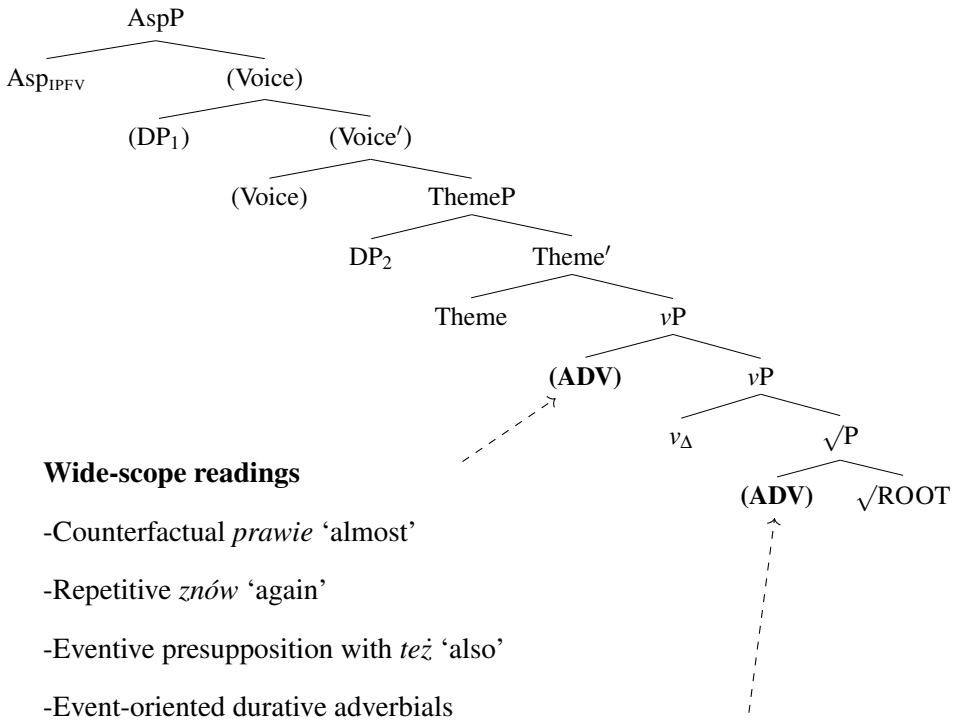
(80) Profesor czyt-a(j)-ł^{I} swoje notatki {(przez) godzinę / *na godzinę}.
professor read-TH-PST POSS.REFL notes.ACC for hour.ACC for hour.ACC.
'The professor read his notes for an hour.' (event-oriented only)

5.4 A closer look at resultative bare imperfectives

All diagnostics for event structure point in the same direction: morphologically simple verbs can be subeventally complex in Polish. Given the system of verbal decomposition adopted in this thesis, this means that B-imperfectives like *gas-i-ć*^{I} 'to extinguish', *trzeźwi-e(j)-ć*^{I} 'to sober up' and *prost-ow-a-ć*^{I} 'to straighten' have the syntactic structure in (81). As shown in this figure, the presence of the result projection inside these verbs is empirically motivated

by the availability of state-related, narrow-scope readings of decomposition adverbials.[12] The roots embedded in this structure are stative, describing the result of the event.

(81) *The structure of resultative B-imperfectives*



[12] In the structure in (81), low decomposition adverbials merge directly with the result root, which projects to the phrasal level √P (see also Beavers and Koontz-Garboden 2020 and Spathas and Michelioudakis 2021 for this approach). This naturally leads to the question of where to put low adverbials in LP-perfectives. Recall from Chapter 3 that the lexical prefix originates in the specifier of *v*P. A natural assumption is that low, narrow-scope adverbials merge directly with the prefix (a predicate of the result state). However, given that the prefix needs to undergo M-Merger, and that, by hypothesis, only non-branching, min/max constituents can do so, narrow-scope adverbials must subsequently evacuate to the edge of the *v*P. This would mean that narrow-scope adverbials are interpreted as sisters to LP but pronounced as sisters to *v*P. See also §6.2.2 in the next chapter, where I entertain the possibility that low superlexical prefixes adjoin to and modify lexical prefixes in multiply-prefixed verbs.

So far, we have provided a proof of existence of resultative B-imperfectives, arguing that: i) they are attested in Polish, and ii) this empirical finding militates against ESTAM approaches to Slavic aspect. The aim of this section is to describe this class of verbs in slightly more detail. I begin by presenting two lengthy lists of resultative bare imperfectives. The first one in (82) contains verbs that are synchronically related to adjectives. Most are derived by means of the verbalisers *-ej* and *-nąć* (unaccusative) or *-i* (transitive). There is only one example involving the verbaliser *-ow*, namely *prost-ow-a-ć*[I] 'to straighten'. The semantic categories used below are inspired by those in Beavers and Koontz-Garboden (2020:78f.).

(82) **Resultative bare imperfectives related to adjectives**

a. DIMENSION:

(i) *mał-y* 'small' - *mal-e(j)-ć* 'to shrink'

(ii) *ogrom-n-y* 'enormous' - *ogrom-ni-e(j)-ć* 'to become enormous'

b. AGE:

(i) *młod-y* 'young' - *młod-ni-e(j)-ć* 'to get young'

(ii) *star-y* 'old' - *starz-e(j)-ć się* 'to get old'

c. VALUE:

(i) *tan-i* 'cheap' - *tani-e(j)-ć* 'to get cheap'

(ii) *drog-i* 'expensive' - *drож-e(j)-ć* 'to get expensive'

d. COLOUR:

(i) *żółt-y* 'yellow' - *żółk-nąć* 'to yellow'

(ii) *blad-y* 'pale' - *bled-nąć* 'to pale'

(iii) *biał-y* 'white' - *biel-e(j)-ć* 'to whiten'

(iv) *czarn-y* 'black' - *czerni-e(j)-ć* 'to blacken'

(v) *zielon-y* 'green' - *zielen-i-ć* 'to make green'

(vi) *brąz-ow-y* 'brown' - *brąz-ow-i-ć* 'to make brown'

e. PHYSICAL PROPERTY:

(i) *such-y* ‘dry’ - *sch-nąć* ‘to dry’

(ii) *mokr-y* ‘wet’ - *mok-nąć* ‘to get wet’

(iii) *słab-y* ‘weak’ - *słab-nąć* ‘to weaken’

(iv) *miękk-i* ‘soft’ - *mięk-nąć* ‘to soften’

(v) *tward-y* ‘hard’ - *tward-ni-e(j)-ć* ‘to harden’

(vi) *ład-n-y* ‘pretty’ - *ład-ni-e(j)-ć* ‘to get pretty’

(vii) *jasn-y* ‘bright’ - *jaśni-e(j)-ć* ‘to brighten’

(viii) *łys-y* ‘bald’ - *łysi-e(j)-ć* ‘to get bald’

(ix) *ostr-y* ‘sharp’ - *ostrz-y-ć* ‘to sharpen’

(x) *słod-k-i* ‘sweet’ - *słodz-i-ć* ‘to sweeten’

(xi) *gład-k-i* ‘smooth’ - *gładz-i-ć* ‘to smoothen’

(xii) *czyst-y* ‘clean’ - *czyśc-i-ć* ‘to clean’

(xiii) *brud-n-y* ‘dirty’ - *brudz-i-ć* ‘to dirty’

(xiv) *cich-y* ‘quiet’ - *cich-nąć* ‘to become quiet’

(xv) *prost-y* ‘straight’ - *prost-ow-a-ć* ‘to straighten’

(xvi) *kruch-y* ‘brittle’ - *krusz-y-ć* ‘to shatter’

(xvii) *nie-ruch-om-y* ‘motionless’ - *nie-ruch-omi-e(j)-ć* ‘to become motionless’

(xviii) *drętwy* ‘stiff’ - *drętwi-e(j)-ć* ‘to stiffen’

(xix) *trzeźwy* ‘sober’ - *trzeźwi-e(j)-ć* ‘to sober up’

As discussed in Beavers and Koontz-Garboden (2020) and Spathas and Michelioudakis (2021), result verbs related to adjectives systematically pass a wide range of event-structural diagnostics, such as the restitutive reading with *again*, the stative presupposition with *also*, and compatibility with result-oriented durative adverbials. This demonstrates that these verbs can be associated with a complex event structure, embedding a grammatically-accessible result state. However, it should also be noted that the event decompositional

analysis of 'deadjectival' verbs is in competition with the degree-based scalar analysis popularised by Hay et al. (1999), Kennedy and Levin (2008) and Kennedy (2012). According to the event-decompositional approach, the root $\sqrt{}$SCH 'dry' in the verb *sch-nąć*$^{\text{I}}$ 'to dry' introduces a predicate of states (83a). In contrast, the scalar approach posits that $\sqrt{}$SCH 'dry' denotes a measure function, relating an individual x to its degree of dryness d (83b).

(83) a. $[\![\sqrt{\text{SCH}}]\!] = \lambda s.\mathbf{dry}(s)$

b. $[\![\sqrt{\text{SCH}}]\!] = \lambda x \lambda d.\mathbf{dry}(x)(d)$

Which representation is correct: the event-decompositional one or the degree-based one? Following Spathas and Michelioudakis (2021), I assume that both options are available in principle. To be more specific, I take the basic meaning of $\sqrt{}$SCH 'dry' to be a gradable predicate of states rather than individuals, as in (84a). This gradable predicate of states can then by converted to a simple predicate of states by means of Kennedy's (2007) POS operator, which locates the degree of dryness relative to some contextual standard (84b). We can think of the POS operator as being introduced by the verbalising head v_{Δ}. The main point is that the resultative, event-decompositional analysis of 'deadjectival' verbs can coexist with the scalar one, and that the verbs in (82) all have a telic, resultative use alongside the atelic, scalar one (as revealed by the familiar event-structural diagnostics).

(84) a. $[\![\sqrt{\text{SCH}}]\!] = \lambda d \lambda s.\mathbf{dry}(s)(d)$

b. $[\![\text{POS } \sqrt{\text{SCH}}]\!] = \lambda s.\exists d[\mathbf{dry}(s)(d) \wedge d \geq \mathit{standard}(\mathbf{dry})]$

The second list contains resultative B-imperfectives which are not synchronically related to adjectives (86). They can be derived using any verbalising suffix: *-il/-y*, *-ow* or Ø (usually in combination with one of the class markers *-a*, *-aj* or *-e*). Beavers and Koontz-Garboden (2020) and Spathas and Michelioudakis (2021) demonstrate that non-deadjectival verbs are less likely to license the restitutive reading with *again* and the stative presupposition with *also*. So how can we even tell that verbs like *topić*$^{\text{I}}$ 'to melt' and *łamać*$^{\text{I}}$ 'to break', which

are not deadjectival, are subeventally complex? I already hinted in §5.3.5 that compatibility with result-oriented *for*-adverbials is the most permissive test for event structure. In the right context and with a little bit of imagination, almost all change-of-state verbs can be combined with result-oriented *for*-adverbials, including 'breaking' verbs, as in (85b)-(85c).

(85) a. Słońce **topiło**$^{\text{I}}$ tę kostkę lodu **NA ZAWSZE**.
sun.NOM melted3SG.N this cube.ACC ice.GEN for ever
'The sun was melting this ice cube FOREVER.'[13]

b. W poniedziałki programista celowo **psuł**$^{\text{I}}$ swój
in Mondays programmer.NOM deliberately broke3SG.M his
komputer **na godzinę**, żeby nie musieć pracować.
computer.ACC on hour.ACC in.order.to NEG have.to work
'On Mondays, the programmer deliberately broke his computer for an hour to avoid working.'

c. Nagrałem, jak Adam **łamał**$^{\text{I}}$ sobie na deskorolce rękę
recorded.1SG as Adam broke.3SG.M REFL.DAT on skatebord.LOC arm.ACC
na dwa miesiące.
on two months
'I filmed Adam breaking his arm for two months on a skateboard.'

(86) **Resultative bare imperfectives not related to adjectives**

a. ENTITY-SPECIFIC CHANGE OF STATE:

(i)	*psu-ć się* 'to decay'	(vi)	*top-i-ć* 'to melt'
(ii)	*gni-ć* 'to rot'	(vii)	*ład-ow-a-ć* 'to charge'
(iii)	*kurcz-y-ć* 'to shrink'	(viii)	*kwit-nąć* 'to bloom'
(iv)	*gas-i-ć* 'to extinguish'	(ix)	*więd-nąć* 'to wilt'
(v)	*ros-nąć* 'to grow'	(x)	*studz-i-ć* 'to cool'

b. BREAKING VERBS:

(i)	*łam-a-ć* 'to break, to snap'	(iii)	*dziel-i-ć* 'to divide'
(ii)	*tłuc* 'smash'	(iv)	*drz-e-ć* 'to tear'

c. JOINING VERBS:

[13]The adverbial *forever* can be used when the result state is irreversible. Admittedly, forever does not sound entirely natural in this context, but it improves if we imagine this sentence spoken to a child in a playful way.

(i) *łącz-y-ć* ‘to connect’ (iv) *miesz-a(j)-ć* ‘to mix’

(ii) *wiąz-a-ć* ‘to tie’ (v) *krzyż-ow-a-ć* ‘to cross (sth. with sth.)’

(iii) *par-ow-a-ć* ‘to pair up’ (vi) *jednocz-y-ć* ‘to unify’

d. BENDING VERBS:

(i) *marszcz-y-ć* ‘to wrinkle’ (ii) *gnieś-ć* ‘to crumple’

e. VERBS OF KILLING AND DYING:

(i) *mord-ow-a-ć* ‘to murder’ (iii) *giną-ć* ‘to perish’

(ii) *kon-a-ć* ‘to die, to expire’ (iv) *mrz-e-ć* ‘to die’ (literary)

f. DESTROYING VERBS:

(i) *niszcz-y-ć* ‘to destroy’ (v) *rujn-ow-a-ć* ‘to ruin’

(ii) *burz-y-ć* ‘to demolish’ (vi) *pustosz-y-ć* ‘to ravage, to devastate’

(iii) *psu-ć* ‘to break’ (vii) *tłum-i-ć* ‘to stifle, to suppress (e.g. an uprising)’

(iv) *demol-ow-a-ć* ‘to demolish’ (viii) *równ-a(j)-ć (z ziemią)* ‘to raze (to the ground)’

g. DELETING VERBS:

(i) *kas-ow-a-ć* ‘to delete’ (iii) *niewel-ow-a-ć* ‘to neutralise’

(ii) *likwid-ow-a-ć* ‘to abolish’ (iv) *niewcz-y-ć* ‘to thwart’

h. VERBS OF HEALING AND WOUNDING:

(i) *lecz-y-ć* ‘to cure’ (iv) *kalecz-y-ć* ‘to wound’

(ii) *goi-ć* ‘to heal (e.g. a wound)’ (v) *krzywdz-i-ć* ‘to hurt’

(iii) *szczep-i-ć* ‘to vaccinate’ (vi) *ran-i-ć* ‘to wound’

i. CHANGE OF CONSCIOUSNESS VERBS:

(i) *budz-i-ć* ‘to wake up’ (ii) *cuc-i-ć* ‘to revive’

(iii) *mdl-e(j)-ć* ‘to faint’

j. CHANGE OF SOCIAL/RELIGIOUS/ECONOMIC STATUS:

(i) *żen-i-ć* ‘to marry’ (iv) *bankrut-ow-a-ć* ‘to go bankrupt’

(ii) *święc-i-ć* ‘to bless, to hallow’ (v) *sieroc-i-ć* ‘to orphan’

(iii) *chrzc-i-ć* ‘to christen’ (vi) *wdowi-e(j)-ć* ‘to become widowed’

k. (EVENTIVE) EXPERIENCER VERBS:

(i)	*fascyn-ow-a-ć* 'to fascinate'	(v)	*relaks-ow-a-ć* 'to relax'
(ii)	*doł-ow-a-ć* 'to depress'	(vi)	*płosz-y-ć* 'to startle'
(iii)	*pesz-y-ć* 'to make embarrassed'	(vii)	*męcz-y-ć* 'to tire'
(iv)	*koi-ć* 'to soothe'	(viii)	*wari-ow-a-ć* 'to go crazy'

The list is long but it is far from exhaustive. Hence, we can safely conclude that the class of resultative B-imperfectives is well-attested in Polish, with many examples related to adjectives, and many others not. All of these verbs license modification by durative result-oriented adverbials, which reveal the presence of a grammatically-accessible result state, in accordance with the generalisation in (87). This finding falsifies a key assumption of the ESTAM approach to Slavic aspect, according to which the presence of a result state in the event structure automatically leads to the emergence of a perfective interpretation.

(87) *Resultative B-imperfectives*

Some B-imperfectives denote subenventally complex predicates (resultative).

In the last part of this chapter, I would like to make a brief excursus into Talmy's typology (Chapter 3; see also Talmy 1975, 1985, 1991, 2000, Acedo-Matellán 2016, a.o.). Resultative B-imperfectives encode the result 'in the verb', which makes them verb-framed constructions. There is a previously unobserved link between semantic approaches to Slavic aspect and event structure, on the one hand, and recent work on VF and SF languages, on the other.

5.5 Resultative bare imperfectives and Talmy's typology

Recall from Chapter 3 that the difference between verb-framed and satellite-framed languages is asymmetric. As observed by Mateu (2012:270), '[w]hile it has proven difficult to find clear examples of conflation in verb-framed languages like Romance or Japanese, it is much easier to find examples of incorporation in satellite-framed languages like English or

Chinese'. In other words, VF constructions, in which the result incorporates into the verb, are cross-linguistically unmarked, possibly even universal. A particularly strong version of this claim is formulated in (10), where the VF pattern is a potential language universal.[14]

(88) *The universality of the VF pattern*

All languages have verb-framed constructions.

Whether this generalisation can be maintained in its strongest form is an open question which calls for much further research, extending far beyond Germanic, Romance and other language families most commonly studied in the context of Talmy's typology. Given the current state of our knowledge, however, this generalisation seems to be on the right track. In a previous chapter, we saw examples of VF constructions from English, a strong SF language, as well as Italian and Catalan, both VF languages. Some additional examples from Latin, a weak SF language, are given in (91). Both of these sentences feature simple, unprefixed verbs which encode the final result state of a change-of-state event.

(89) *VF constructions in English*

a. The lumberjack broke$_{Result}$ the axe.

b. The boat entered$_{Result}$ the cave.

c. John flattened$_{Result}$ the metal.

(90) *VF constructions in Catalan*

a. L'Elna entrà$_{Result}$ a l'habitació ballant.
the.Elna entered to the.room dancing
'Elna entered the room dancing.'

b. L'Elna obrí$_{Result}$ la porta.
Elna opened the door
'Elna opened the door.

[14]The universality of the VF pattern is explicitly predicted in Acedo-Matellán (2010, 2016). For this author, 'nothing in s-framed languages impedes the generation of non-complex events of change [≈VF constructions], both in strong s-framed languages and weak s-framed languages' (Acedo-Matellán 2010:236). My own analysis in Chapter 3 also has this property, since nothing can prevent the merger of v_{Δ} with result-denoting roots. See also Real Puigdollers (2013) for a proposal where VF constructions are the unmarked default option.

(Víctor Acedo-Matellán, p.c.)

(91) *VF constructions in Latin*

a. Cirtam=que oppidum [...] paucis diebus [...] capit$_{Result}$.
Cirta.ACC=and town.ACC few.ABL days.ABL take.PRF.3SG
'And he conquers the town of Cirta in a few days.' *Bell. Afr. 25, 2*

b. Gelatio [...] paucis diebus necat$_{Result}$.
frost.NOM few.ABL days.ABL kill.3SG
'The frost kills them [the trees] in a few days.' *Plin. Nat. 17, 233*

(Latin, Acedo-Matellán 2010:202f.)

There is at least one language which has been previously argued not to have VF constructions. According to the tradition defended by Tai and Chou (1975), Talmy (1991, 2000) and Chen (2017), morphologically simple verbs in Mandarin denote simple activities. Even those verbs whose meaning is close to English result verbs, such as *shāo* 'burn', *guān* 'close' and *shā* 'kill', are said to lack a result state in their denotation, with the more appropriate translation being *do burning*, *do closing* and *do killing*. The evidence for this position is that simple verbs like *shā* 'kill' do not necessarily entail the attainment of a result state:

(92) Lǎowáng shā le yì-zhī jī #(hǎojǐcì), jī hái huó zhe.
Laowang kill PFV one-CL chicken several.times chicken still live DUR
'Laowang killed a chicken several times, but it is still alive.'

(Mandarin Chinese, Martin et al. 2020:2)

More recently, however, Martin et al. (2020) have challenged the idea that 'Mandarin simple verbs [...] have a radically different meaning from their English counterparts'. For example, they demonstrate that a subset of simple verbs in Chinese give rise to the repetitive/restitutive ambiguity in the scope of *yòu* 'again'. The availability of a restitutive reading is a well-known diagnostic for resultativity (von Stechow 1996; see also §5.3.3).

(93) a. nèi-gēn làzhú tā yòu xī-le.
that-CL candle 3SG again extinguish-PFV
'He blew out the candle again.'

(i) The candle had been unlit before (e.g. it was brand new). (restitutive)

(ii) The candle had been blown out before. (repetitive)

b. Sally yòu kāi le mén.
Sally again open PFV door
'Sally opened the door again.'

(i) The door had been open before. (restitutive)

(ii) The door had been opened before. (repetitive)

(Mandarin Chinese, Martin et al. 2020:13f.)

In light of such evidence, Martin et al. (2020:3) 'take the null hypothesis to be that Mandarin simple verbs such as *shā* 'kill' have exactly the same semantics as their English causative counterparts', and they 'locate the source of the incompleteness effect for non-gradable causative simple verbs, not in the lexical semantics of the verb, but in outer aspect'. In other words, Mandarin does have VF constructions after all, but the result entailment may be suspended by a higher aspectual operator (see also Altshuler 2014 for Hindi).

What about Slavic languages? If the approach to Slavic aspect pursued by Klein, Tatevosov and Ramchand were on the right track, then virtually all morphologically simple verbs in Russian (/Slavic) would lack a result component. This is to say that Russian and Polish would have next to no VF constructions. This, in turn, entails that Slavic languages would be typologically peculiar: they would allow the result state to be expressed by a prefixal satellite, but not by a verbal root, falsifying the potential universal in (10).[15] Unlike Germanic, Romance and Mandarin roots, Slavic roots would have to be subject to some lexicalisation constraint, which would systematically prevent their association with a result state. How to implement this constraint, and what it tells us about the nature of roots and the division of labour between syntax and the lexicon, are important theoretical questions

[15]The only exception to this would come from B-perfectives, some of which could plausibly be analysed as VF constructions (e.g. *rzuc-i-ć*^{P} 'to throw', *da-ć*^{P} 'to give'). However, given the paucity of such examples in Russian and Polish, we would be forced to conclude that the VF pattern is fossilised and unproductive, and that only the weak SF pattern is available to generate resultative constructions from the synchronic standpoint. In short, the existence of a few exceptions does not undermine the typological considerations in the main text.

which have not received enough attention in the previous literature.

What is ultimately at stake here is the cross-linguistic distribution of the VF pattern: Is it universally available, or do some languages ban it? The ESTAM approach predicts that VF constructions are virtually unattested in Russian (/Slavic). Given that the VF schema appears to be available in so many other languages for which we have the relevant data, the finding that Slavic lacks the grammatical means of generating VF constructions would be as important as it would be surprising. In this chapter, I have defended the null hypothesis by showing that Polish, which is similar to Russian in all the relevant respects, does have the VF pattern at its disposal, and that morphologically simple verbs like *łam-a-ć*$^{\text{I}}$ 'to break', *niszcz-y-ć*$^{\text{I}}$ 'to destroy', *mdl-e(j)-ć*$^{\text{I}}$ 'to faint' and *trzeźwi-e(j)-ć*$^{\text{I}}$ 'to sober up' do encode a result. We can conclude that verbal roots in Polish are no different than those in Germanic and Romance: they can be either eventive, expressing the manner of an event, or stative, expressing its result. This means that result states can be introduced in one of two ways in Polish: by a verbal root (in VF constructions) or by a lexical prefix (in weak SF constructions). This is a welcome result from the point of view of minimising cross-linguistic variation, and it accords with the recent results of Martin et al. (2020) for Mandarin Chinese.

5.6 Conclusion

This chapter has sought to clarify the relationship between aspect and event structure in Slavic languages. According to one influential tradition, there is a semantic correspondence between event complexity and the value of aspect: simple activities are imperfective, while complex change-of-state predicates are perfective. I have shown that this class of proposals does not extend to Polish. A careful application of the standard diagnostics for event structure reveals that many B-imperfectives incorporate a grammatically-accessible result state. Hence, the middle entailment in (94) turns out to be false: the presence of a result does not always entail perfective aspect. The licensing of perfective aspect appears to be a

morphosyntactic property of lexical prefixes rather than a semantic property of result states.

(94) *The event-structure-to-aspect mapping (ESTAM)*

event structure		aspect
simple	→	imperfective
complex (resultative)	→	**perfective**
complex (resultative) + SI morphology	→	imperfective

Although we have focused on the existence of resultative B-imperfectives, this is not the only problem for ESTAM approaches. These approaches also need to account for the perfectivising effect of superlexical prefixes. For example, the low superlexicals *do*$_{\text{CMP}}$- and *pere*$_{\text{RPT}}$- have a similar distribution to lexical prefixes: they derive perfective stems (95a) and feed secondary imperfectivisation (95b). And yet, low SPs do not denote result states. This is because they co-occur with resultative LPs, and result states must be unique (95c). It is questionable whether the semantic proposals by Klein (1995), Tatevosov (2018, 2022) and Ramchand (2008a) can account for the aspectual properties and distribution of low SPs.

(95) *Low superlexical prefixes in Russian*

a. **do/pere-** pis -a -t'$^{\text{P}}$
CMP/RPT- write -TH -INF
'to complete writing / re-write'

b. **do/pere-** pis **-yv** -a -t'$^{\text{I}}$
CMP/RPT- write -SI -TH -INF
'to complete writing / re-write' (imperfective)

c. **do/pere- za-** pis -a -t'$^{\text{P}}$
CMP/RPT- behind- write -TH -INF
'to complete recording / re-record'

Thus, the main result of this chapter is negative: a semantic mapping from event structure to aspect is not a viable solution to the long-distance problem. Since we have previously discounted syntactic agreement (see §4.5.2), the only solution we are left with is movement. A novel movement-based account of Polish aspect is implemented in the next chapter.

However, we have also reported a positive result: VF constructions are widely attested in Polish. This confirms the null hypothesis that the lexical semantics of morphologically simple verbs like *łam-a(j)-ć*$^{\text{I}}$ 'break' and *mdl-e(j)-ć*$^{\text{I}}$ 'to faint' are not radically different from their English counterparts. Both incorporate a result state in their denotation.

Chapter 6

The Morphosyntax of Aspect: Prefix Movement and Secondary Imperfectives

6.1 Prefix movement

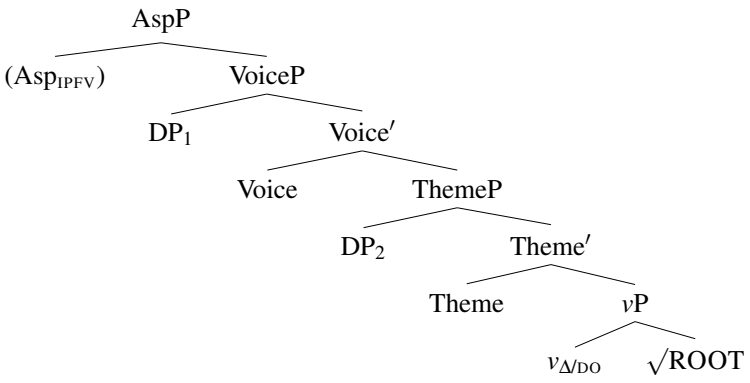
This chapter builds directly on the results of the previous one, where we saw that not all solutions to the long-distance problem are equally viable. Contrary to the predictions of the semantic approaches developed in Klein (1995), Tatevosov (2018, 2022) and Ramchand (2008a), there is no direct correspondence between aspect and event structure in Polish. Specifically, result states can be introduced either by verbal roots or by lexical prefixes, but only the latter give rise to perfective aspect. In light of these facts, a syntactic analysis based on prefix movement is more likely to succeed in capturing the long-distance relationship between prefixes and perfectivity in Slavic. In what follows, I present a detailed implementation of such an analysis in Polish, starting with the derivation of B-imperfectives, LP-perfectives and S-imperfectives. Crucially, I will argue that there is no such thing as a 'secondary imperfective operator' at the level of syntax and semantics, and that SI mor-

phology is essentially a PF phenomenon. After laying down the foundations of the analysis, the proposal will be extended to superlexical prefixes and the semelfactive suffix, concluding with some preliminary remarks about the structure of B-perfectives (§6.2). Finally, I will discuss the presence of SI morphology in deverbal formations, including agent and instrument *-acz/-arka* nominals and adjectival active *-ąc* participles (§6.4).

6.1.1 Bare imperfectives and lexical prefixes

The structure of B-imperfectives should be familiar by now, but it is repeated here for completeness. Those B-imperfectives that are subeventally complex are built on the change-of-state verbal head v_{Δ} (e.g. *prost-ow-a-ć* 'to straighten') while those that are subeventally simplex are built on v_{DO} (e.g. *tańcz-y-ć* 'to dance'). Imperfective aspect is represented by the Asp_{IPFV} head, which merges in the temporal zone of the clause, above the domain of event and argument structure. An alternative possibility, consistent with the current proposal, is to assume that imperfective aspect is not represented at all, and that there is simply no aspectual node in this structure. The non-existence of Asp_{IPFV} in the syntax would go hand in hand with the default, unmarked nature of imperfective aspect in the semantics (see §4.1.1). In order to allow for this possibility, I enclose Asp_{IPFV} in parentheses below.

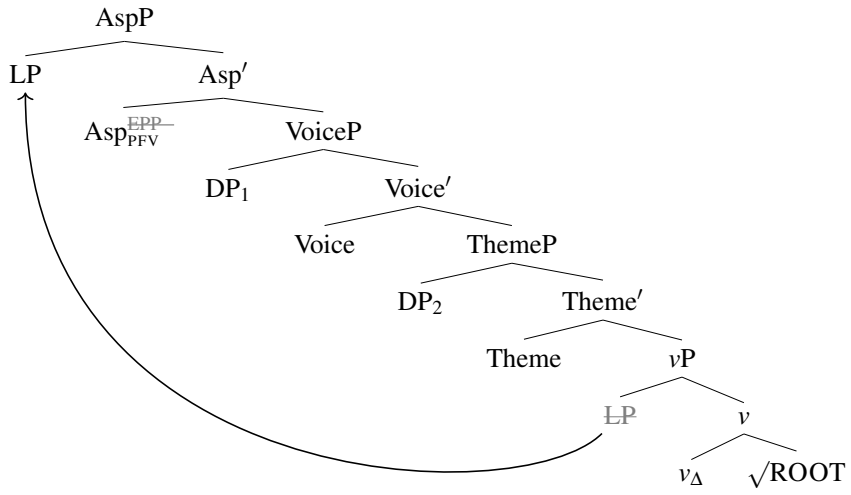
(1) *The syntax of B-imperfectives*



Now let us turn to the derivation of LP-perfectives. As argued in Chapter 3, lexical prefixes

are min/max resultative particles merged in the specifier of v_{Δ}. Perfective aspect is represented by the Asp_{PFV} head. By hypothesis, the projection of Asp_{PFV} must be structurally licensed by a prefix in Polish (/Slavic). I represent this 'licensing requirement' by associating PFV with an EPP feature. To be more precise, I regard EPP as a second-order feature in the sense of Adger and Svenonius (2011:35f.), that is, a feature of a feature, or equivalently 'a property a feature [...] can have in some instances but not in others'. Following Chomsky (2001) and the formulation in Adger and Svenonius (2011:37), the EPP property 'is entirely formal, simply requiring that some syntactic unit be Merged as the specifier of the category whose feature bears this property. It is more general than strength, as it does not specify any properties of the element to be Merged, and hence it is also less restrictive.' The proposal is that EPP is a second-order feature of the aspectual feature PFV in Polish (/Slavic), requiring the merger of some syntactic constituent in Spec-Asp. In the case of LP-perfectives, this requirement is met by simply moving the lexical prefix from Spec-*v* to Spec-Asp.

(2) *The syntax of LP-perfectives*



On this analysis, lexical prefixes are 'severed' from outer aspect (in the sense of Tatevosov 2011). They do not bear any aspectual features (*pace* Biskup 2019, 2021a,b, 2022), and they do not introduce any aspectual operators (*pace* Svenonius 2004b). Nevertheless, they

are necessary to satisfy the formal EPP requirement associated with the PFV feature.[1]

We still need to make sure that the EPP property cannot be satisfied by any other constituent. For example, what prevents the external argument, which is structurally closest, from raising to Spec-Asp? A natural solution is to extend the M-Merger requirement to the Asp head. Specifically, Asp could be subject to the same morphological constraint as the light verbal head *v* in weak SF languages (see Chapter 3). Conspiring together, the EPP feature and M-Merger require the presence of a min/max constituent in the specifier of AspP. This restriction filters out nominal arguments and any other branching phrases, ensuring that only (lexical and superlexical) prefixes can license the syntactic projection of Asp_{PFV}.

(3) *The M-Merger parameter*

Weak SF languages require the specifier of *v*P to undergo M-Merger.

(4) *The extended M-Merger parameter*

Polish (/Slavic) requires the specifiers of *v*P and AspP to undergo M-Merger.

An outstanding question is how exactly a syntactic feature (EPP) conspires with a PF requirement (M-Merger) to achieve the desired effect. There are two possibilities. Firstly, we could assume that EPP always triggers the movement of the closest specifier (i.e. the external argument, if present, otherwise the internal argument). When the derivation fails to converge at PF (since DPs are not min/max and cannot undergo M-Merger), it is repaired by backtracking and moving the element further away from Asp (i.e. the lexical prefix in *v*P). An alternative solution, which does not involve backtracking, is that movement is unconstrained and that the EPP feature on Asp can be satisfied by raising *any* element to Spec-Asp. At the point of transfer to PF, derivations in which Spec-Asp is occupied by the external or internal argument will be filtered out by the extended M-Merger parameter, and the only 'surviving' derivation will be the one in which EPP is checked by the lexical prefix.

[1] After movement, the lower copy of the LP is deleted at the point of transfer to PF, and only the higher copy undergoes M-Merger. However, since the application of M-Merger follows Generalised Head Movement, the resulting M-value looks exactly the same, with the lexical prefix at the periphery of the morphological word.

While the second option is conceptually more elegant, either one would work as intended.

Unlike the event-structural approaches reviewed in Chapter 5, the current one is purely formal, and it does not rely on the semantics of lexical prefixes and aspect. In principle, it would not be difficult to integrate prefix movement with the kind of aspectual semantics we saw previously. Consider what it would take to do so. Taking Tatevosov's denotations as our starting point, we would only need to make a minor tweak to the definition of perfective aspect: rather than combining with a single relation between events and states R (5a), the revised PFV operator would take two distinct arguments, an eventive predicate P and a stative predicate Q (6a). Everything else stays exactly the same: perfective aspect requires the assertion time t to overlap the runtime of the event e and the runtime of the state s.[2]

(5) *Tatevosov's denotations* (repeated from §5.1.2)

a. $[\![\text{PFV}]\!] = \lambda R_{v,vt} \lambda t . \exists e, s [R(e)(s) \wedge \tau(e) \otimes t \wedge \tau(s) \otimes t]$

b. $[\![\text{IPFV}]\!] = \lambda P_{vt} \lambda t . \exists e [P(e) \wedge \tau(e) \otimes t]$

(6) *Modified denotations*

a. $[\![\text{PFV}]\!] = \lambda P_{vt} \lambda Q_{vt} \lambda t . \exists e, s [P(e) \wedge \tau(e) \otimes t \wedge Q(s) \wedge \tau(s) \otimes t]$

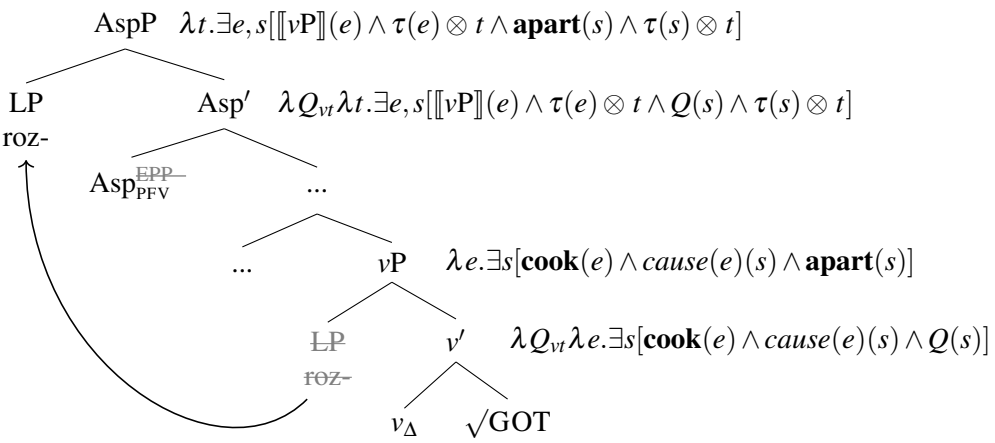
b. $[\![\text{IPFV}]\!] = \lambda P_{vt} \lambda t . \exists e [P(e) \wedge \tau(e) \otimes t]$

To see how this would work in action, take a look at (8). The lexical prefix would be interpreted in two positions. In its initial *v*P-internal position, the LP would contribute a result state to the event structure. In its derived position, the LP would saturate the stative argument of the PFV operator, ensuring that the assertion time overlaps the result state.

(7) Adam roz-got-ow-a-ł^{P} ziemniaki.
Adam apart-cook-*v*-TH-PST potatoes.ACC
'Adam overcooked the potatoes'.

[2]Note that, in both cases, the event e and the state s are unified by the *cause* relation at the level of event structure. For Tatevosov, the *cause* relation is implicit in the semantics of R. In the modified denotations, the *cause* relation is included P, and it is explicitly computed at the *v*P-level in the step-by-step derivation in (8).

(8)

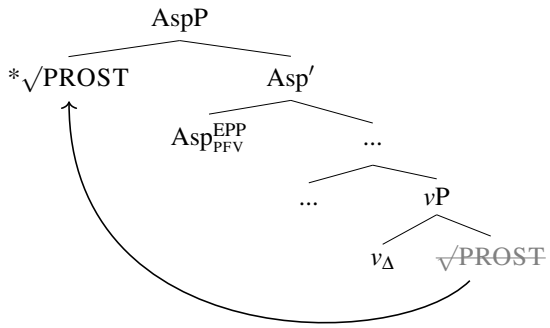


A potential advantage of this analysis is that it could allow us to dispense with the extended M-Merger parameter, and possibly even with the EPP property on PFV (since the movement of LPs would be motivated by semantic considerations). This said, while the perfectivising effect of LPs may be related to their resultative function, it probably cannot be reduced to it. After all, superlexical prefixes also license the projection of perfective aspect, even though they do not introduce result states. It is not clear how we could extend the analysis in (8) to accommodate (say) cumulative na_{CUM}- and distributive po_{DIST}-. For this reason, I will continue to speak of the EPP property and M-Merger as *formal* requirements of Asp_{PFV}.

Finally, unlike the predominantly semantic approaches of Klein (1995), Tatevosov (2018, 2022) and Ramchand (2008a), the present movement-based account is compatible with the existence of resultative B-imperfectives (e.g. *prostować*$^{\text{I}}$ 'to straighten', *mldeć*$^{\text{I}}$ 'to faint'). This is because resultativity does not automatically entail perfectivity in my system. Both LPs and result roots contribute a result state to the event structure, but only LPs can raise to AspP to license perfective aspect. Crucially, any attempt at extracting a result root from the complement of v_Δ would leave its higher copy uncategorised and/or morphologically ill-formed (10). This captures the generalisation that almost all bare stems are imperfective in Slavic, and that prefixation tends to be required for perfective aspect.

(9) Wanda prost-uj-e^{I} się na pięć minut.
Wanda straight-v-3SG REFL on five minutes
'Wanda straightens up for five minutes.'

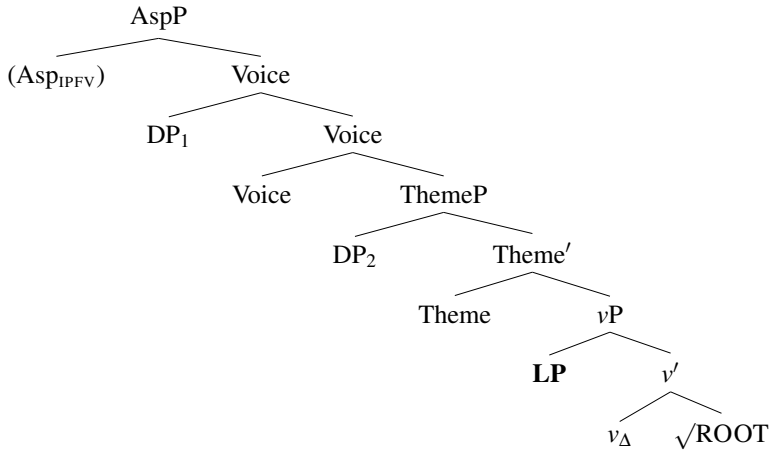
(10) *Roots cannot move to satisfy the EPP property*



6.1.2 Secondary imperfective as a dissociated morpheme

We are now in the position to address one of the most important questions posed in this chapter: How do secondary imperfectives fit into this picture? The solution I propose is relatively simple: S-imperfectives are created when the lexical prefix does not move to Spec-Asp, remaining in its *v*P-internal position. The relevant derivation is shown in (11).

(11) *The syntax of S-imperfectives*



This analysis has two conceptual advantages. Firstly, given our starting assumptions about the movement-triggering perfective head $\text{Asp}^{\text{EPP}}_{\text{PFV}}$ and the (possibly non-existent) imperfective head Asp_{IPFV}, the derivation without prefix movement is an automatic consequence of not merging $\text{Asp}^{\text{EPP}}_{\text{PFV}}$. In fact, we would need to introduce additional stipulations to rule it out. Secondly, the analysis makes use of a binary opposition between two aspectual values (or one privative value if Asp_{IPFV} is omitted). This is the minimal amount of structure needed to model the syntax and semantics of B-imperfectives, LP-perfectives and S-imperfectives.

What remains to be explained is the appearance of SI morphology in forms like *roz-got-ow-a-ć*$^{\text{P}}$ → *roz-got-ow-**yw**-a-ć*$^{\text{I}}$ 'to overcook' (suffixation with *-yw*) and *wy-top-i-**Ø**-ć*$^{\text{P}}$ → *wy-tap-i-**Ø-a(j)**-ć* 'to smelt' (defaulting to *-aj*). The problem is that although our derivation correctly generates prefixed imperfective verbs, it does not contain any node labelled as 'SI'. This is potentially puzzling. If there is no such thing as a 'SI operator' or a 'SI feature' at the level of syntax/semantics, then where does SI morphology come from?

The answer is that not all pronounceable subparts of words must correspond to syntactic terminals. Even syntax-based frameworks like DM acknowledge the existence of purely morphological elements, which do not figure in narrow syntax, and which are inserted only at PF. As such, these *dissociated morphemes* are not interpreted at LF and reflect syntactic structure only indirectly. Consider the following passage from Embick and Noyer (2001):

> In the terminology of Embick (1997), such inserted morphemes are called *dissociated*, since the information their signalization conveys is partly separated from the original locus of that information in the phrase marker. Typical dissociated morphemes include case and agreement morphemes in at least some languages (see, e.g., Marantz 1992): these morphemes reflect certain syntactic properties (or configurations) but do not in any sense contribute these properties to syntax. Dissociated morphemes are not interpreted at LF, since they are inserted only at Spell-Out. (Embick and Noyer 2001:558)

Crucially, the existence of dissociated morphemes does not require us to give up on semantic compositionality. The principle of compositionality asserts that 'the meaning of a complex expression is determined by the meanings of its parts and the way they are combined'. Since dissociated morphemes are absent from the LF interface, they are simply not amongst the 'parts' whose meanings make up a compositional expression. Put differently, compositionality applies not to morphological structures, but to the output of syntax (≈input to LF), whereas dissociated morphemes involve a mismatch between syntax and morphology.

I submit that the SI morpheme is a dissociated morpheme in this sense. It is inserted post-syntactically, and its distribution is governed by the morphological rule in (12). This rule adjoins the SI morpheme to the M-value of *v* whenever *v* has a lexical prefix in its specifier (13b). In this way, the insertion of SI indirectly reflects the properties of the syntactic derivation (namely, the absence of prefix movement), but it does not itself contribute to that derivation. Most importantly, it is not assigned any semantic interpretation at LF.[3]

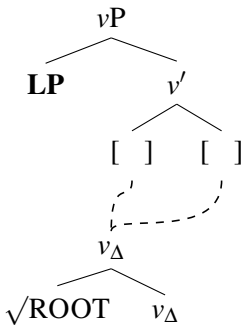
(12) *SI insertion* *(non-final version)*

$[\ v\ ] \ \rightarrow \ [\ v\ \text{SI}\ ] \ / \ [_{v\text{P}}\ \text{LP}\ [\ \_\_\ ]\ ]$

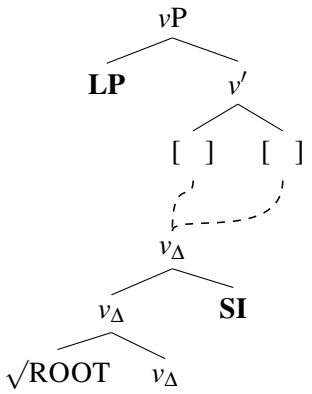
For concreteness, I assume that SI insertion is interleaved with the application of Generalised Head Movement at PF. In the first step, GenHM combines the M-values of v_Δ and the root (13a). In the second step, the SI morpheme is added to the resulting M-value (13b), which then serves as the input to successive rounds of GenHM (not shown here).

[3]Since the SI morpheme is missing from LF, it should have no effect on the lexical semantics of the verb. This prediction is correct. Unlike lexical prefixation, SI suffixation does not trigger any special meanings.

(13) a. *GenHM of v_Δ and the root*



b. *SI insertion*



The rule of SI insertion correctly predicts that the SI morpheme will be added to the representation of S-imperfectives, where the LP does not undergo movement and remains structurally adjacent to *v* (see (11) above). At the same time, the SI morpheme will not be inserted into structure of LP-perfectives, where the LP moves from Spec-*v* to Spec-Asp. Since the lower copy of the prefix is deleted at the point of transfer to PF, it does not trigger SI insertion (see (2) above). The fact that SI morphology does not attach to bare stems is explained in a similar way, whether it surfaces as suffixation with *-yw* (14b) or defaulting to *-aj* (15b). Unprefixed stems simply do not meet the structural conditions of SI insertion.[4]

(14) a. (roz-) got -ow -a -ć
apart cook -*v* -TH -INF

b. *(roz-) got -ow -yw -a -ć
apart- cook -*v* -SI -TH -INF
'to (over)cook'

(15) a. (prze-) top -i -Ø -ć
through- melt -*v* -TH -INF

b. *(prze-) tap -i -Ø -a(j) -ć
through- melt -*v* -SI -TH -INF
'to melt (over)'

The idea that SI is a dissociated, PF-only morpheme goes against the currently dominant analysis of SI as a semantically contentful operator. Most previous proposals treat SI morphology as the realisation of an imperfectivising aspect operator (e.g. Zucchi 1999, Sveno-

[4]Recall that unprefixed habitual verbs like *pis-yw-a-ć*[I] 'to write from time to time' do not count as secondary imperfectives. I assume that such examples involve a homonymous habitual suffix, whose distribution is currently restricted to only a handful of roots in Polish. See fn. 8 in Chapter 4 for additional comments.

nius 2004b, Arsenijević 2006:208-210, Borer 2005b:161, 172, Jabłońska 2007:129, Ramchand 2008a; see also §4.5.1). There are also some more recent proposals which challenge the view of SI as an exponent of outer aspect, but which continue to maintain that SI is some kind of semantic operator. For example, Łazorczyk (2010) argues at length that SI is an inner-aspectual operator which derives atelic predicates from telic ones. In a similar vein, Tatevosov (2015, 2018, 2022) proposes that SI is an event-structural operator which derives simple event predicates from complex ones (see §5.1.2 in the previous chapter).

Though not mainstream, the claim that there is no semantic SI operator is not completely new, either. The closest antecedent to the rule of SI insertion is probably Schoorlemmer (1995:309-310). Her seminal analysis recognises only one Asp head with two values [±pf]. The mapping from syntax to morphology is handled by a set of redundancy rules in a separate morphological module that runs parallel to syntax (Parallel Morphology, Borer 1993). Russian is said to have a morphological requirement for perfective stems to be prefixed (16a) and for prefixed imperfective stems to be suffixed with SI morphology (16c).

(16) a. [+pf] ⇒ prefix + stem

b. [−pf] ⇒ stem

c. *perečita-* + [−pf] ⇒ *perečityva-*

On this view, SI morphology is basically the realisation of imperfective aspect on prefixed stems. I go one step further here, dissociating SI suffixes from imperfective aspect altogether. This will allow me to provide an elegant account of the co-occurrence of SI morphology with perfective aspect in the case of superlexically-prefixed stems (see §6.2.1), as well as explaining the appearance of SI morphology inside agent and instrument *-acz/-arka* nominals and adjectival *-ąc* participles, which are arguably aspect-less (§6.4).

Finally, the proposal provides a solution to the Recursion Problem (see §4.5.1): 'Does a semi-recursive morphological derivation reflect the presence of multiple aspectual features and/or projections at the level of syntax/semantics?' The answer is that the semi-recursive

derivation of Slavic verbs is just an illusion, with only one aspectual head at the level of syntax/semantics. This allows us to reconcile secondary imperfectivisation with the Monotonicity Hypothesis (repeated below). It is not the case that some SI operator *causes* the contribution of perfective aspect to be 'cancelled', 'overridden' or 'removed'. In fact, there is no SI operator at LF at all. Instead, the appearance of SI morphology is a mere *effect* of a particular configuration, one in which a lexical prefix fails to license perfective aspect.

(17) *Monotonicity Hypothesis* (Koontz-Garboden, 2007)
Word formation operations do not remove operators from lexical semantic representations.

To sum up, the present analysis relies on the movement of the lexical prefix to the specifier of the perfective aspectual projection (similarly to Svenonius 2004b, but without assuming that lexical prefixes contain a perfectivising operator). If the prefix does not move, remaining in its base position in Spec-*v* instead, it triggers the insertion of SI morphology at PF. Apart from SI insertion, the movement of the LP is not directly observable. Whether the LP raises or not, it always undergoes M-Merger and surfaces as a verbal prefix. For this reason, children who acquire Polish have to infer this movement from indirect evidence, particularly from the fact that LPs tend to be necessary (though not sufficient) for licensing perfective aspect. Abstract movements for semantic or structural reasons are certainly not uncommon in natural language (e.g. the intermediate landing sites in successive-cyclic movement). In the next section, I present some preliminary evidence from Hungarian, which provides indirect support for the hypothesis that lexical prefixes move to AspP in Polish.

6.1.3 Comparison with Hungarian

Consider the Hungarian data in (18)-(19). The value of aspect depends on the hierarchical position of the resultative phrase in the clause, whether a particle (e.g. *le* 'down') or a full PP (e.g. *a tetőre* 'onto the roof'). If the particle/PP precedes the verb, the sentence is interpreted

as perfective; if the particle/PP follows the verb, the interpretation is imperfective:[5]

(18) a. János **le** ment a lépcsőn.
J.NOM down went the stair-on
'János went down the stairs.' (perfective)

b. János ment **le** a lépcsőn.
J.NOM went down the stair-on
'János was going down the stairs.' (imperfective)

(19) a. János **a tetőre** ment.
J.NOM the roof-onto went
'János went to the roof.' (perfective)

b. János ment **a tetőre**.
J.NOM went the roof-onto
'János was going to the roof.' (imperfective)

(Csirmaz 2008:118)

Csirmaz (2008) proposes that resultative phrases move to the specifier of AspP in perfective clauses (20a). In imperfective structures, the particle/PP remains in a low predicative position PredP (20b). Specifically, she argues that the movements in (20) are triggered by an EPP property on $Asp_{PFV/IPFV}$. The EPP requirement can be satisfied either by the phrasal movement of the closest constituent or, alternatively, by the Head Movement of the verb.[6]

(20) a. [$_{AspP}$ particle/PP [Asp^{EPP}_{PFV} [$_{PredP}$ ~~particle/PP~~ [v+Pred [$_{vP}$ ...]]]]]

b. [$_{AspP}$ v+Pred+Asp^{EPP}_{IPFV} [$_{PredP}$ particle/PP [~~v+Pred~~ [$_{vP}$ ...]]]]

While particle/PP movement is the default option, Csirmaz suggests that result XPs cannot move to Asp_{IPFV} for semantic reasons, thus triggering the movement of the verb instead. The reason resultative particles are excluded from Spec-Asp_{IPFV} is that the definition of im-

[5]This holds only in non-focused, non-negated contexts. Focus neutralises the contrast in (18)-(19) by triggering the linearisation of the verb in the CP domain, to the left of any elements in the specifier of AspP.

[6]This proposal is similar, but not identical, to my own analysis of Polish aspect, where only the perfective head Asp_{PFV} is associated with an EPP feature, and where EPP can only be checked by the merger of a min/max constituent (due to the extended M-Merger parameter). Furthermore, unlike Csirmaz (2008), I do not adopt syntactic Head Movement, and I do not assume the existence of a vP/VoiceP-external projection PredP.

perfective aspect requires that 'the endpoints of the event time cannot be contained in the reference time' (21). The idea is that (i) resultative particles merged in Spec-Asp delimit the reference/assertion time, just like they delimit the event time in the domain of event structure, and (ii) only perfective aspect is compatible with this type of temporal delimitation.

(21) *[$_{\text{AspP}}$ result XP [Asp$_{\text{IPFV}}$ [...]]]

The parallel between particle/PP movement in Hungarian and the movement of lexical prefixes in Polish is certainly intriguing. If this is on the right track, then the kind of movement we observe at the sentential level in Hungarian (a strong SF language) occurs word-internally in Polish (a weak SF language in which result/path particles are linearly inseparable from the verb). Since prefix movement is string-vacuous, Polish resorts to SI morphology to track the hierarchical position of the prefix inside the verbal complex: the SI morpheme is inserted if the prefix stays low, but not if it moves to Spec-Asp. However, this is just a matter of PF externalisation: the underlying pattern is similar in both languages.[7]

While the comparison with Hungarian is not conclusive by itself, the fact that we find a correlation between particle/PP movement and outer aspect in an unrelated language increases the plausibility that lexical prefixes undergo a similar movement in Slavic.

6.2 Superlexical prefixes

So far, we have derived only the core aspectual stem classes: B-imperfectives, LP-perfectives and S-imperfectives. The purpose of this section is to extend the prefix-movement analysis to superlexically-prefixed stems, including both high and low SPs.

[7] This is not to deny that there are important differences between Polish and Hungarian in this domain. For one thing, Hungarian verbs lacking resultative particles or PPs are ambiguous between perfective/imperfective readings, while unprefixed verbs in Slavic are almost always imperfective. Furthermore, the category of perfectivity in Hungarian is not necessarily co-extensive with perfective aspect in Polish. For example, habitual readings are described as perfective in Csirmaz (2008), but they pattern as imperfective in Polish. Although a detailed comparison is beyond the scope of this chapter, the observed similarities are promising enough to warrant further investigation. See also Kardos (2016) for some preliminary comparative remarks on this topic.

6.2.1 High superlexical prefixes

Recall from Chapter 4 that high SPs 'select' for morphologically imperfective stems, both prefixed (S-imperfectives) and unprefixed (B-imperfectives). Recall also that it is not possible to 'imperfectivise' a stem featuring a high SP by suffixing it with SI morphology. In order to account for both of these properties, I adopt the common assumption that high SPs originate in the specifier of AspP (e.g. Svenonius 2004b, 2008; Ramchand 2008a).

Consider first the case of the distributive prefix *po-* attaching to a bare stem. As shown in (23a), the analysis is relatively straightforward: po_{DIST}- simply undergoes external Merge with a projection of $\text{Asp}^{\text{EPP}}_{\text{PFV}}$, and in so doing satisfies the EPP property of this feature. The external Merge of a high SP structurally licenses the projection responsible for perfective aspect, just like the internal Merge of a lexical prefix did in the case of LP-perfectives.

(22) **po-** ład -ow -a -ć$^{\text{P}}$
DIST- load -*v* -TH -INF
'to load one by one'

(23) a. [$_{\text{Asp}}$ **SP$_{\textbf{high}}$** [$\text{Asp}^{\text{EPP}}_{\text{PFV}}$ [... [$v_{\Delta/\text{DO}}$ $\sqrt{}$ROOT] ...]]]

b. *[$_{\text{Asp}}$ **SP$_{\textbf{high}}$** [Asp_{IPFV} [... [$v_{\Delta/\text{DO}}$ $\sqrt{}$ROOT] ...]]]

Of course, in order to ensure that the output of superlexical prefixation is always perfective, we need to rule out the alternative derivation in (23b). What prevents high SPs from merging in the specifier of imperfective Asp_{IPFV}? One possibility is that the quantificational and/or delimiting function of high SPs is incompatible with imperfective aspect, and that structures like (23b) are ruled out for semantic reasons.[8] Another solution is to assert that Asp_{IPFV} does not exist, and that imperfective aspect is simply not represented in the syntax. If high SPs are obligatorily merged outside the *v*/Voice domain, then – in the absence of an imperfective phrase – $\text{Asp}^{\text{EPP}}_{\text{PFV}}$ is the only projection available to host them. Either way, we correctly capture the fact that high SPs correlate with perfectivity rather than imperfectivity.

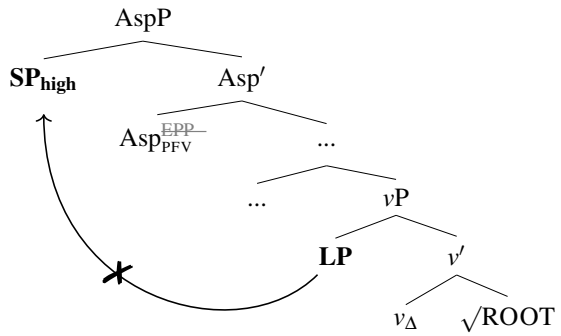
[8] This line of reasoning extends Csirmaz's (2008) argument about resultative particles/PP in Hungarian to high SPs in Slavic languages. See the discussion surrounding the illicit structure in (21) in the previous section.

Now let us consider the case in which a high SP is added to an S-imperfective stem. According to the analysis in (25), the high SP merges directly in the specifier of the perfective projection, checking the EPP feature on Asp_{PFV}. This removes the trigger for prefix movement, leaving the LP in its original *v*P-internal position. Since the LP stays in situ, structurally adjacent to *v*, it conditions the post-syntactic insertion of the SI morpheme (26).

(24) a. ***po-** **roz-** ład -ow -a -ć
DIST- apart- load -*v*-TH -INF

b. **po-** **roz-** ład -ow **-yw** -a -ć$^{\text{I}}$
DIST- apart- load -*v* -SI -TH -INF
'to unload one by one'

(25) *The syntax of high SP-perfectives*



(26) *SI insertion* *(non-final version, repeated)*

[*v*] → [*v* SI] / [$_{v\text{P}}$ LP [__]]

This derivation solves an important problem discussed briefly in Gehrke (2008:176f.). She observes that if Asp is occupied by an imperfectivising operator SI, and if the perfectivising prefix merges in Spec-Asp, then a single aspectual projection is specified for two conflicting values of aspect: perfective and imperfective. In other words, the structure in (27a) should be ungrammatical. She suggests that the way out of this conundrum is to posit multiple aspectual projections, with a perfective phrase merging on top of Asp_{SI} (27b).

(27) a. *[SP_{high} [Asp_{SI} [...]] b. [SP_{high} [Asp_{PFV} [Asp_{SI} [...]]]

The current proposal avoids the problem of conflicting values, while also keeping the number of aspectual projections to the bare minimum. This is achieved by severing SI morphology from imperfective aspect. Since SI does not receive an interpretation at LF, this dissociated morpheme can be inserted into perfective as well as imperfective structures, without giving rise to any semantic conflict or contradiction. All that matters is that the structural conditions for SI insertion are met, namely that the LP stays in Spec-*v*. To recapitulate, the semi-recursive derivation of aspect is only apparent, and the answer to the recursion problem is negative: there is only one aspectual head at the level of syntax/semantics.

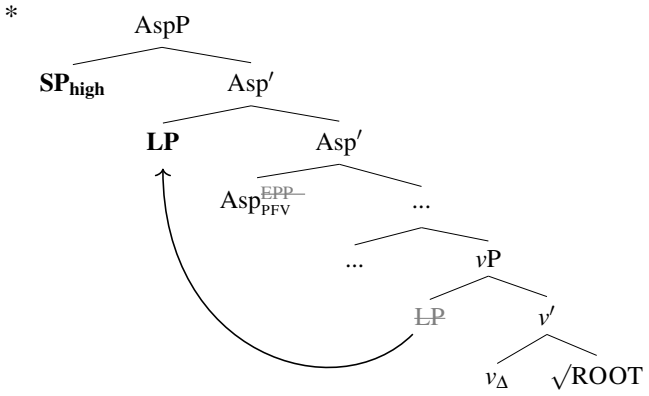
Another advantage of this proposal is that it can handle the stacking of multiple superlexical prefixes. While the presence of at least one prefix is necessary to satisfy the EPP requirement on Asp_{PFV}, nothing prevents the merger of additional SPs in outer specifier positions. This is illustrated in (29), where the asterisk on SP_{high} means 'one or more'.

(28) Studenci **po- na- za-** prasz **-Ø -a(j)** -l -i^{P} się tego nauczyciela.
students DIST- SAT- behind- ask -SI -TH -PST -3PL.M REFL this teacher.GEN
'The students each did a lot of inviting of this teacher.'

(29) [$_{AspP}$ SP^{*}_{high} [$Asp^{\overline{EPP}}_{PFV}$ [...]]

The possibility of multiple specifier positions brings us directly to our final point. As argued in (25) above, the external Merge of a superlexical prefix in Spec-Asp blocks the movement of a lexical prefix to the same position (by satisfying the EPP property and thus removing the original trigger for prefix movement). However, this derivation makes a crucial assumption about the timing of syntactic operations: external Merge must precede internal Merge. If this ordering were to be reversed, we would generate the structure in (30), with the lexical prefix moving to Spec-Asp. Without the trigger for SI insertion, the predicted output would be the ungrammatical ***po-roz**-ład-ow-a-ć* rather than ***po-roz**-ład-ow-**yw**-a-ć*^{P}.

(30)



The unavailability of this derivation is unsurprising from the Minimalist perspective. The principle that Merge (external Merge) precedes Move (internal Merge) is relatively well-established, with the most striking evidence coming from the raising constructions in (31) (originally discussed in Chomsky 1995, Chapter 4).[9] In principle, the EPP property of the embedded T head could be satisfied by the external Merge of the expletive *there* (31a) or by the internal Merge of *someone* from within the PP (31b). Empirically, only the first option is grammatical, indicating a preference for Merge over Move. If the derivation does not include an expletive subject, the movement of *someone* becomes the only option (31c).

(31) a. There seems [$_{TP}$ ~~there~~ to be [$_{PP}$ someone in the room]] (Merge *there*)

b. *There seems [$_{TP}$ someone to be [$_{PP}$ ~~someone~~ in the room]] (Move *someone*)

c. Someone seems [$_{TP}$ ~~someone~~ to be [$_{PP}$ ~~someone~~ in the room]]

I suggest that the same economy principles apply to the derivation of LP-perfectives and SP-perfectives. If both lexical and superlexical prefixes are present in the numeration, the EPP property of Asp$_{PFV}$ is satisfied by the external Merge of the SP (25)/(30). However, if there are no SPs in the numeration, EPP is checked by the internal Merge of the LP (2).

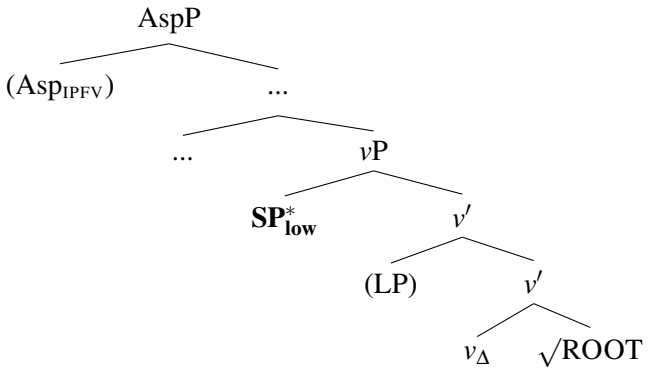
[9] See also Frampton and Gutmann 1999 for a formal definition of this economy principle. There is only one caveat. The original reasoning behind Merge-over-Move presupposes that Move is a more costly operation, consisting of Merge plus Copy (i.e. the Copy theory of movement). However, after the reduction of Move to internal Merge in Chomsky (2001), this explanation is no longer available. While the empirical data like (31) indicate a preference for Merge, the theoretical status of the Merge-over-Move principle is currently less clear.

6.2.2 Low superlexical prefixes

In Chapter 4, we established that the category of superlexical prefixes is not homogeneous, and that there is an important distinction between high and low SPs (Tatevosov, 2011; Biskup, 2021a, 2022). Although Polish does not have low SPs, other Slavic languages do, with examples including the completive do_{CMP}- and repetitive $pere_{\text{REP}}$- in Russian. In many ways, the distribution of low SPs is similar to that of lexical prefixes: they both feed secondary imperfectivisation. The difference is that LPs are unique while low SPs can stack.

We can accommodate low SPs in our system by analysing them as event modifiers in the semantics. As modifiers, low SPs can be iterated, and they occupy a higher syntactic position than LPs, which are semantic arguments of v_{Δ}. What LPs and low SPs have in common is that they both merge at the edge (or left periphery) of the *v*P phrase, with LPs as inner specifiers and low SPs as outer specifiers. This analysis is illustrated in (32) below.

(32) *The syntax of low superlexical prefixes*



In this structure, the low superlexical prefix is embedded under imperfective aspect (either in combination with a lexical prefix or not). The rule of SI insertion needs to be modified slightly to account for the appearance of the SI suffix in the morphology. The previous version of this rule made explicit reference to the category of lexical prefixes, which is at least partially defined in semantic terms (as resultative particles), and which might thus not be interpretable at PF. Since SI insertion applies at PF, it is expected to be oblivious to the

semantic distinction between lexical and superlexical prefixes. All it cares about is whether *v* is structurally adjacent to a prefix, defined as a non-branching, min/max specifier:[10]

(33) *SI insertion* *(final)*

$[\ v\ ] \rightarrow [\ v\ \text{SI}\ ]\ /\ [_{vP}\ \text{Spec}^{min/max}\ [\ \_\_\ ]\ ]$

As should be clear, (32)-(33) correctly derive the following S-imperfective verbs in Russian:

(34) a. **do/pere-** pis **-yv** -a -t'^{I}
CMP/RPT- write -SI -TH -INF
'to complete writing / re-write'

b. **do/pere- za-** pis **-yv** -a -t'^{I}
CMP/RPT- behind- write -SI -TH -INF
'to complete recording / re-record'

What about low superlexical prefixes in perfective contexts? A single low SP is sufficient to license perfective aspect (35a), but low SPs can also stack on top of each other (35b) as well as on top of lexical prefixes (35c). From the point of view of outer aspect, what matters is the presence/absence of at least one prefix, not their number or kind. A sequence of multiple low SPs and LPs counts as a single unit for the purposes of aspect marking.

(35) a. **do/pere-** pis -a -t'^{P}
CMP/RPT- write -TH -INF
'to complete writing / re-write'

b. **do- pere-** pis -a -t'^{P}
CMP- REP- write -TH -INF
'to complete re-writing'

c. **do/pere- za-** pis -a -t'^{P}
CMP/RPT- behind- write -TH -INF
'to complete recording / re-record'

How can we analyse these cases? The derivation is straightforward if there is only one prefix

[10]Formulated in this way, the context for SI insertion turns out to be almost identical to the context of the M-Merger parameter: both are sensitive to the presence of a min/max constituent in Spec-*v* (see §3.4 in Chapter 3). This opens up the possibility that the two rules are somehow related, and that the appearance of SI morphology simply heralds (or perhaps enables) the application of M-Merger at the *v*P level in Polish (/Slavic).

on the verb: the low SP moves to satisfy the EPP property of Asp_{PFV} (36a). Verbs involving multiple prefixation, such as *do-za-pis-a-t'*[P] and *do-pere-pis-a-t'*[P], are more interesting. They require us to assume that *all* prefixes at the edge of the *v*P phrase move to the edge of the AspP phrase, as shown in (36b). If only one prefix were to move, the remaining prefix would trigger the insertion of SI morphology after spell-out, contrary to fact (36c).

(36) a. $[_{\text{AspP}}$ **SP$_{\textbf{low}}$** $[\ \text{Asp}^{\overline{\text{EPP}}}_{\text{PFV}}[\ \ldots\ [_{v\text{P}}\ \overline{\text{SP}_{\text{low}}}\ [\ v\ \sqrt{\text{ROOT}}\ ]]]]]$

b. $[_{\text{AspP}}$ **SP$_{\textbf{low}}$** $[$ **LP** $[\ \text{Asp}^{\overline{\text{EPP}}}_{\text{PFV}}[\ \ldots\ [_{v\text{P}}\ \overline{\text{SP}_{\text{low}}}\ [\ \overline{\text{LP}}\ [\ v\ \sqrt{\text{ROOT}}\ ]]]]]]]$

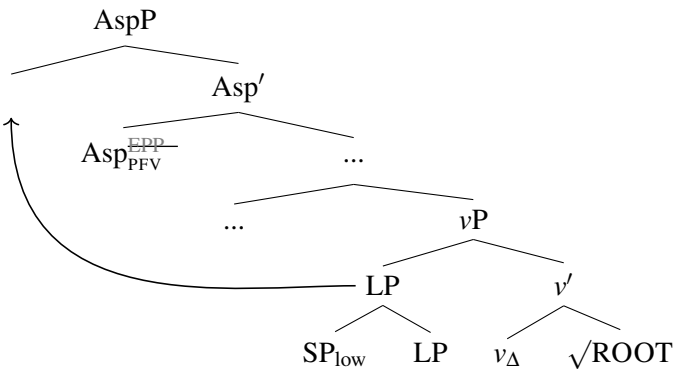
c. $*[_{\text{AspP}}$ **SP$_{\textbf{low}}$** $[\ \text{Asp}^{\overline{\text{EPP}}}_{\text{PFV}}[\ \ldots\ [_{v\text{P}}\ \overline{\text{SP}_{\text{low}}}\ [$ **LP** $[\ v\ \sqrt{\text{ROOT}}\ ]]]]]$

$\Rightarrow$ **SI insertion**

It is not easy to find a straightforward explanation for the contrast between (36b) and (36c). It is possible that low SPs and LPs move together because they are equidistant from the movement-triggering EPP feature (both occupy the edge of *v*P). Another consideration is that it could be wrong to think of these movements as occurring one after another, with the lexical prefix raising before the superlexical one or *vice versa*. Instead, these movements could be simultaneous, taking place in a single derivational step, both triggered by EPP.

Another possibility is that low SPs do not merge with *v*P, but that they merge with other prefixes (if present). This option is illustrated in (37). If multiple prefixes are 'packaged' into a single complex constituent, it is not surprising that they should move to Spec-Asp as a unit. Moreover, the idea that low SPs merge with LPs might also be plausible on semantic grounds. For example, Žaucer (2013) analyses excessive *pre-*, repetitive *pre-* and attenuative *pri-* in Slovenian as 'result-modyfing prefixes', which modify the result state introduced by the lexical prefix (rather than modifying the event as a whole). On this approach, low SPs would receive a similar analysis to durative result-oriented adverbials, the restitutive *znów* 'again', the resultative *prawie* 'almost', and so on (see especially fn. 12 in Chapter 5).

(37) *An alternative analysis of low superlexical prefixes*



A potential objection to this analysis is that the merger of LP and SP returns a complex, branching constituent, which should not be allowed to undergo M-Merger and prefix to the verb. One way to circumvent this objection might be to assume that the SP incorporates into the LP first, before the complex M-value associated with the LP incorporates into the inflected verb (so that at each point in the morphological derivation the incorporating constituent is min/max). Leaving this technical issue aside, a derivation along the lines of (37) seems to be most promising for deriving perfective stems with multiple *v*P-internal prefixes.

For completeness, the section concludes with a structure in which all three types of prefix are present: LP, low SP and high SP. Since the EPP property is satisfied by the high SP, the other prefixes stay in situ, triggering the insertion of SI morphology:

(38) **po-** **pere-** **za-** pis **-yv** -a -t$^{\text{P}}$
DELIM- RPT- behind- write -SI -TH -INF
'to spend some time re-recording CDs'

(39) [$_{\text{AspP}}$ **SP$_{\text{high}}$** [Asp$^{\overline{\text{EPP}}}_{\text{PFV}}$ [... [$_{v\text{P}}$ **SP$_{\text{low}}$** [**LP** [v_{Δ} √ROOT]]]]]]

6.2.3 The 'attenuative-frequentative' prefix *po-*

In Chapter 4, I argued that Polish does not have low SPs. However, there is at least one prefix which does not qualify as resultative, but which nevertheless triggers SI insertion. The prefix in question is the *attenuative-frequentative po-* (see also Jabłońska 2004:385ff.).

Po$_{\text{FREQ}}$- attaches productively to a subset of unergative verbs, deriving imperfective stems that are obligatorily marked with the SI suffix *-yw*. The overall meaning is that of iteration and low intensity of action. For example, *szczek-a(j)-ć*$^{\text{I}}$ translates as 'bark', while *po-szczek-iw-a-ć*$^{\text{I}}$ is best rendered as 'bark intermittently' or 'emit one barking sound after another'.

At first glance, we might expect the S-imperfective *po-szczek-iw-a-ć*$^{\text{I}}$ to be derived from the perfective verb *po-szczek-a(j)-ć*$^{\text{P}}$ 'to bark for a while', which features the delimitative superlexical prefix *po*$_{\text{DELIM}}$-. However, there are good reasons against identifying *po*$_{\text{FREQ}}$- with *po*$_{\text{DELIM}}$-. Firstly, the meaning of *po-szczek-iw-a-ć* is 'to bark intermittently' rather than 'repeatedly, to bark for a while'. In other words, the macro-event can be subdivided into atomic barking events scattered in time rather than repeated events of barking continuously for a short time. This semantic difference is informally sketched out in (40).

(40) a. bark once ———— bark once ———— bark once

b. bark for a while ——— bark for a while ——— bark for a while

Even more importantly, *po*$_{\text{DELIM}}$- does not place any lexical-semantic restrictions on the verb (41), while *po*$_{\text{FREQ}}$- attaches almost exclusively to verbs of punctual motion and sound and light emission (42). This demonstrates that S-imperfectives like *po-szczek-iw-a-ć*$^{\text{I}}$ are not related to any independently attested perfective verbs, a highly unusual situation in Slavic.[11]

[11] Though see Polančec (2018) for a small set of 'orphan secondary imperfectives' in Serbo-Croatian.

(41) *Delimitative po-*

a. po- szczek -a(j) -ć^{P}
DELIM- bark -TH -INF
'to bark for a while'

b. po- tup -a -ć^{P}
DELIM- stomp -TH -INF
'to stomp for a while'

c. po- kaszl -e -ć^{P}
DELIM- cough -TH -INF
'to cough for a while'

d. po- błyszcz -e -ć^{P}
DELIM- shine -TH -INF
'to shine for a while'

e. po- gad -a(j) -ć^{P}
DELIM- chat -TH -INF
'to chat for a while'

f. po- prac -ow -a -ć
DELIM- work -*v* -TH -INF
'to work for a while'

(42) *Attenuative-frequentative po-*

a. po- szczek -iw -a -ć^{I}
FREQ- bark -SI -TH -INF
'to bark intermittently'

b. po- tup -yw -a -ć^{I}
FREQ- stomp -SI -TH -INF
'to stomp intermittently'

c. po- kasł -yw -a -ć^{I}
FREQ- cough -SI -TH -INF
'to cough intermittently'

d. po- błyk -iw -a -ć^{I}
FREQ- shine -SI -TH -INF
'to flash intermittently'

e. *po- gad -yw -a -ć
FREQ- chat -SI -TH -INF
Intended: 'to chat intermittently'

f. *po- prac -ow -yw -a -ć
FREQ- work -*v* -SI -TH -INF
Intended: 'to work intermittently'

These data would be difficult to explain if the SI suffix was a semantic operator selecting for resultative stems (e.g. Ramchand 2008a, Tatevosov 2018, 2022). Predicates like *bark*, *stomp* and *cough* are canonical examples of unergative activities, with no result in their event structure. However, if SI is analysed as a dissociated morpheme at PF, then verbs like *po-szczek-iw-a-ć*^{I} do not pose any significant problems. All we need to assume is that *po*$_{\text{FREQ}}$- merges at the edge of v_{DO}, where it triggers the insertion of SI morphology (47).

(43) [$_{\text{AspP}}$ (Asp$_{\text{IPFV}}$) [... [$_{v\text{P}}$ **po$_{\text{FREQ}}$** [v_{DO} $\sqrt{}$ROOT]] ...]] ⇒ SI insertion

We should also consider the possibility that *po*$_{\text{FREQ}}$- is related to the distributive prefix *po*$_{\text{DIST}}$-. When used as a high SP, *po*$_{\text{DIST}}$- distributes the event over the denotation of some nominal argument (usually the internal argument, but distribution over the external argument or an oblique is also possible). For example, (44) asserts that each atomic truck in the

denotation of *ciężarówki* 'trucks' participates in a separate loading subevent.

(44) Ania **po-** ład -ow -a -ł -a^{P} ciężarówki / *ciężarówkę.
Anna DIST- load -*v* -TH -PST -3SG.F truck.PL.ACC truck.SG.ACC
'Anna loaded the trucks one after another / each truck in a separate subevent.'

(45) [$_{\text{AspP}}$ **po$_{\textbf{DIST}}$** [Asp$^{\text{EPP}}_{\text{PFV}}$ [... [$_{\text{ThemeP}}$ **ciężarówki** [Theme [$_{v\text{P}}$ v_{Δ} $\sqrt{}$ŁAD]]] ...]]]

I propose that attenuative-frequentative verbs are derived by merging the distributive prefix *po*$_{\text{DIST}}$- in a *v*P-internal position (i.e. below the level of nominal arguments). In this position, the only thing in the scope of the distributive operator is the verbal root. This means that the event is necessarily distributed over the denotation of this root, as illustrated in (46)-(47).

(46) Pies **po-** szczek -iw -a -ł^{I}.
dog FREQ/DIST- bark -SI -TH -PST
'The dog emitted one bark after another / each bark in a separate subevent.'

(47) [$_{\text{AspP}}$ (Asp$_{\text{IPFV}}$) [... [$_{v\text{P}}$ **po$_{\textbf{FREQ/DIST}}$** [v_{DO} $\sqrt{}$**SZCZEK**]] ...]] ⇒ SI insertion

The verb *po-szczek-iw-a-ć*^{I} 'to emit one bark after another' asserts that each atomic bark in the denotation of $\sqrt{}$SZCZEK 'bark' corresponds to a distinct subevent in a larger macro-event. The English translations are designed to emphasise the similarity between the attenuative-frequentative and the distributive uses of *po-*. The main difference is that attenuative-frequentative verbs like *po-szczek-iw-a-ć*^{I} are imperfective, and hence iterative, involving an indefinite number of atomic barking events, while canonical distributives are perfective. However, this contrast is largely reducible to the height of attachment of *po*$_{\text{DIST}}$-.

More importantly, distributivity over the denotation of a root is only possible if that root describes a set of naturally individuable events, such as $\sqrt{}$SZCZEK 'bark', $\sqrt{}$KASZL 'cough', $\sqrt{}$TUP 'stomp' and $\sqrt{}$BŁYSK 'flash'. It is certainly no coincidence that most of the roots featuring in the attenuative-frequentative construction are also attested in semelfactive verbs (e.g. *szczek-nąć* 'to give a bark', *kaszl-nąć* 'to cough once', *tup-nąć* 'to stomp once', *błys-nąć* 'to flash once'). Other roots, such as $\sqrt{}$PRAC 'work' and $\sqrt{}$GAD 'chat',

are correctly excluded because they have no identifiable atoms in their denotation.

Of course, the distributive analysis of *po*$_{\text{FREQ}}$- still needs to be implemented in a formal semantic framework, but I think that it is promising enough to warrant further investigation. For our purposes, the most important point is that the existence of S-imperfectives like *po-szczek-iw-a-ć*$^{\text{I}}$ provides further support for the analysis of SI as a dissociated morpheme, whose insertion is triggered by a *v*P-internal prefix (which does not need to be resultative).

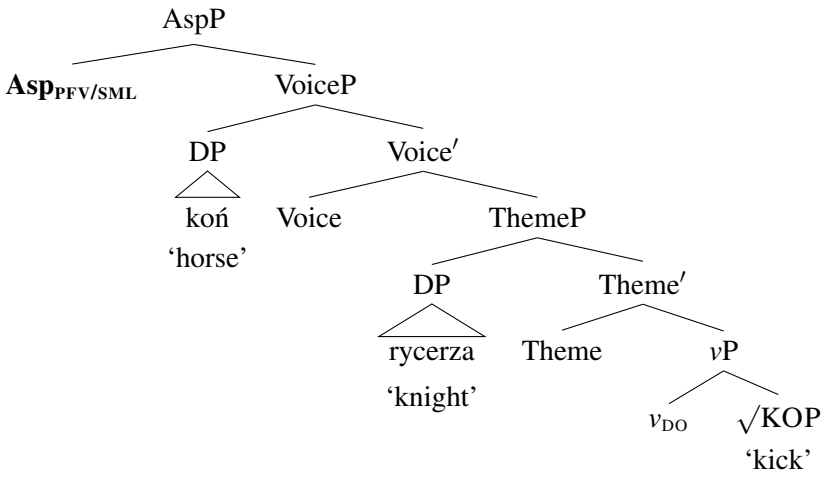
6.3 Semelfactives

The preceding discussion has focused on the properties of lexical and superlexical prefixes, which license the projection of Asp$_{\text{PFV}}$, and which trigger the insertion of SI morphology. However, any account of the morphosyntax of Slavic aspect would be incomplete without considering the special case of 'perfectivity without prefixation'. This section shows how to analyse the semelfactive suffix *-nąć* and sketches out a similar analysis for B-perfectives. The main question that we need to keep in mind is: What is *-nąć* an exponent of in (48)?

(48) Koń kop-ną-ł$^{\text{P}}$ rycerza.
horse.NOM kick-SML-PST knight.ACC
'The/a horse kicked the/a knight.'

I propose that the difference between 'perfectivity via prefixation' and 'perfectivity without prefixation' corresponds to the underlying difference between Asp$^{\text{EPP}}_{\text{PFV}}$ and Asp$_{\text{PFV/SML}}$. In other words, the inventory of functional items in Polish contains two perfective heads, which have similar semantics but slightly different morphosyntactic properties. In particular, Asp$^{\text{EPP}}_{\text{PFV}}$ (default) requires structural licensing by a prefix, while Asp$_{\text{PFV/SML}}$ (semelfactive) does not. This makes the structure of semelfactives relatively straightforward:

(49) *The syntax of semelfactives*



Should we analyse *-nq* as the exponent of $\text{Asp}_{\text{PFV/SML}}$? The answer is slightly more complex. The semelfactive *-nq* is in complementary distribution with the verbalising suffixes *-ow* and *-i*, as shown in (50a)-(50d).[12] If *-nq* was inserted only into $\text{Asp}_{\text{PFV/SML}}$, we would expect it to co-exist with exponents of *v*, yielding forms like **fund-ow-nq-ć* and **wal-i-nq-ć*.

(50) *Complementary distribution between verbalisers/themes and semelfactive* -ną

a. fund-ow-a-ć$^{\text{I}}$ – fund-ną-ć$^{\text{P}}$
fund-*v*-TH-INF fund-SML-INF

b. zoom-ow-a-ć$^{\text{I}}$ – zoom-ną-ć$^{\text{P}}$
zoom-*v*-TH-INF zoom-SML-INF

c. wal-i-ć$^{\text{I}}$ – wal-ną-ć$^{\text{P}}$
hit-*v*-INF hit-SML-INF

d. wy-pal-i-ć$^{\text{P}}$ – pal-ną-ć$^{\text{P}}$
out-shoot-*v*-INF shoot-SML-INF

e. kop-a(j)-ć$^{\text{I}}$ – kop-ną-ć$^{\text{P}}$
kick-*v*-TH-INF kick-SML-INF

f. krzycz-e-ć$^{\text{I}}$ – krzyk-ną-ć$^{\text{P}}$
shout-*v*-TH-INF shout-SML-INF

[12]Note that *zoom-nq-ć* 'to zoom' is a neologism cited in Taraldsen Medová and Wiland (2018).

In addition to these morphological considerations, the semelfactive suffix has certain event- and argument-structural properties, which cannot be reduced to perfective aspect (see e.g. Taraldsen Medová and Wiland 2018). First, semelfactives are either transitive or unergative, with the external argument merged in VoiceP. Second, they denote simple activities, which are built on v_{DO}. Both of these properties are captured by the Vocabulary Item in (51). This VI effectively states that *-nq̨* is a portmanteau morpheme which can only be inserted into configurations that are i) subeventally simplex, ii) transitive/unergative and iii) perfective.

(51) $[v_{\text{DO}}, \text{Voice}, \text{Asp}_{\text{PFV/SML}}] \leftrightarrow$ *nq̨*

In DM, exponents are inserted into terminal nodes, so the insertion of portmanteau morphs requires special machinery. In particular, we need an operation that combines the terminals v_{DO}, Voice and $\text{Asp}_{\text{PFV/SML}}$ into a single position of exponence. This operation is called *Fusion*, and it 'takes two terminal nodes that are sisters under a single category node and fuses them into a single terminal node' (Halle and Marantz 1993:116; see also Siddiqi 2009). Following the repeated application of Fusion, the complex terminal $[v_{\text{DO}}$, Theme, Voice, $\text{Asp}_{\text{PFV/SML}}]$ can be lexicalised by *-nq̨* in accordance with the Subset Principle.[13]

This accounts for the complementary distribution between *-nq̨* and the verbalising suffixes *-i* and *-ow*. Consider the examples below. In the B-imperfective *wal-i-ć*$^{\text{I}}$ 'to hit', the verbal head v_{DO} is lexicalised by *-i*, while the higher functional heads are null (52a). In the semelfactive *wal-nq̨-ć*$^{\text{P}}$ 'to hit once', the semelfactive suffix lexicalises the whole sequence of heads v_{DO}, Voice and $\text{Asp}_{\text{PFV/SML}}$ (52b). The alternative lexicalisation **wal-i-nq̨-ć* is ruled out by the Subset Principle: *-nq̨* is only insertable into a node that contains all its features, and $[v_{\text{DO}}$, Voice, $\text{Asp}_{\text{PFV/SML}}]$ is not contained in [TH, Voice, $\text{Asp}_{\text{PFV/SML}}$] (52c).[14]

[13] A more recent alternative to Fusion is *post-linearisation spanning* (Haugen and Siddiqi, 2016). This approach relaxes the assumption that exponents are inserted into terminal nodes, allowing insertion into *sequences of nodes*. For our purposes, it does not matter whether the insertion of portmanteau morphemes involves Fusion or spanning. What matters is that *-nq̨* is a portmanteau morpheme specified for (at least) *v* and $\text{Asp}_{\text{PFV/SML}}$.

[14] To save space, I omit the internal-argument-introducing Theme head from the representations. Recall also that the TH slot hosts the theme vowels *-a*, *-aj* and *-e* and that it is inserted post-syntactically (Gribanova, 2015).

(52) a. [$\sqrt{}$WAL]⌢[v_{DO}, *-i*]⌢[TH, Ø]⌢[Voice, Ø]⌢[Asp_{IPFV}, Ø]⌢[T_{INF}, *-ć*]

b. [$\sqrt{}$WAL]⌢[v_{DO}, TH, Voice, $Asp_{PFV/SML}$, ***-nąć***]⌢[T_{INF}, *-ć*]

c. [$\sqrt{}$WAL]⌢[v_{DO} *-i*]⌢[TH, Voice, $Asp_{PFV/SML}$, ****-nąć***]⌢[T_{INF}, *-ć*]

Can semelfactives tell us anything about the function of SI morphology? The crucial observation is that the semelfactive *-nąć* is in complementary distribution with SI morphology, including suffixation with *-yw* (53a)-(53b) as well as defaulting to *-aj* (53c)-(53d) (see also Markman 2008 for Russian). Crucially, this complementarity would be unexpected if SI was an imperfectivising operator selecting for perfective stems, a possibility explored and rejected at the end of Chapter 4 in the context of the recursion problem. The semi-recursive aspectual derivation in (54) does not appear to be available in Polish.

(53) *Complementary distribution between SI morphology and semelfactive* -nąć

a. *kop -n(ą) -yw -a -ć
kick -SML -SI -TH -INF

b. *kop -yw -n(ą) -ć
kick -SI -SML -INF

c. *kop -n(ą) -Ø -a(j) -ć
kick -SML -SI -TH -INF

d. *kop -Ø -a(j) -n(ą) -ć
kick -SI -TH -SML -INF

(54) *[$_{AspP}$ Asp_{SI} [$_{AspP}$ $Asp_{PFV/SML}$ [... [$_{vP}$ v_{DO} $\sqrt{}$ROOT]]]]

What explains the complementary distribution of *-nąć* and SI morphology? Since the unattested stems in (53) do not violate any known phonological constraints, we might be tempted to dismiss them on semantic grounds, hypothesising that the denotation of Asp_{SI} cannot combine with the output of $Asp_{PFV/SML}$ (see Jabłońska, 2007:133f. for a suggestion along these lines). In the absence of a fully-fledged analysis, however, this amounts to little more than a stipulation. Even worse, a purely semantic explanation for the ungrammaticality of (54) does not seem to be workable. While the progressive variant of Asp_{SI} might fail to

apply to semelfactives due to their punctual nature (as suggested by Jabłońska 2007), the pluractional use of Asp_{SI} should be fully compatible with semelfactive inputs. After all, Asp_{SI} regularly maps perfective verbs onto iteratives, habituals and generics. I conclude that the unavailability of (54) is not due to the semantics of the putative Asp_{SI} operator.

The hypothesis that SI is a dissociated morpheme fares much better in this respect. In the absence of a prefix, the structure of semelfactives simply does not meet the conditions for SI insertion. This explains why a SI suffix cannot be added to the verb in (53).

While this analysis works for bare semelfactives like *kop-nąć*$^{\text{P}}$, it requires us to say something special about prefixed semelfactives like *wy-kop-nąć*$^{\text{P}}$ 'to kick out' (see also §4.4.1 for more examples). While prefixed semelfactives are not overwhelmingly common, they do exist. In the present system, the structure of prefixed semelfactives should look like:

(55) $[_{\text{AspP}}\ \text{Asp}_{\text{PFV/SML}}\ [_{\text{VoiceP}}\ \text{DP}_1\ [\ \text{Voice}\ [_{\text{ThP}}\ \text{DP}_2\ [\ \text{Theme}\ [_{v\text{P}}\ \text{LP}\ [\ v_{\Delta}\ \sqrt{\text{ROOT}}\ ]]]]]]]$

This structure is problematic for two reasons. Firstly, lexically prefixed semelfactives are subeventally complex, derived via the change-of-state head v_{Δ} instead of v_{DO}. To account for the insertion of *-nąć* into change-of-state constructions, the Vocabulary Item in (51) must be replaced with (56), which is underspecified for the distinction between v_{Δ} and v_{DO}.

(56) $[v, \text{Voice}, \text{Asp}_{\text{PFV/SML}}] \leftrightarrow$ *nąć*

Secondly, and more seriously, the structure in (55) meets the conditions for the insertion of SI morphology. The presence of a *v*P-internal prefix is expected to trigger the appearance of the SI morpheme at PF. In reality, however, prefixation does not change the fact that the semelfactive *-nąć* is in complementary distribution with *-yw* and with defaulting to *-aj* (57).

(57) *Complementary distribution between SI morphology and semelfactive* -nąć

a. *wy- kop -n(ą) -yw -a -ć
out- kick -SML -SI -TH -INF

b. *wy- kop -yw -n(ą) -ć
out- kick -SI -SML -INF

c. *wy- kop -n(ą) -Ø -a(j) -ć
out- kick -SML -SI -TH -INF

d. *wy- kop -Ø -a(j) -n(ą) -ć
out- kick -SI -TH -SML -INF

I suggest two possible solutions to this problem. Firstly, we could assume that lexical prefixes move to Spec-Asp in semelfactive structures (58). This would explain why they fail to condition the insertion of SI morphology. However, it is unclear what could be the trigger for this movement, since $\text{Asp}_{\text{PFV/SML}}$ is not associated with an EPP property.

(58) $[_{\text{AspP}}$ LP [$\text{Asp}_{\text{PFV/SML}}$ [... $[_{v\text{P}}$ ~~LP~~ [v_{Δ} $\sqrt{}$ROOT]] ...]]]

The other solution is morphological. Suppose that there is no default Ø exponent for $\text{Asp}_{\text{PFV/SML}}$. Whenever $\text{Asp}_{\text{PFV/SML}}$ undergoes Vocabulary Insertion, it must be realised by *-nq*, or else the derivation fails at PF. Since *-nq* is also specified for *v*, this essentially requires the entire span of heads between *v* and $\text{Asp}_{\text{PFV/SML}}$ to be 'swallowed up' by the semelfactive suffix (a scenario which is fully consistent with the Subset Principle). The only valid output of Vocabulary Insertion is the one in (59a). Even if the SI morpheme is present in the structure, it cannot be realised by *-yw*, since *-yw* would intervene between *v* and $\text{Asp}_{\text{PFV/SML}}$ and prevent the insertion of *-nq* into *v* (59b). In effect, the complementary distribution between *-nq*, on the one hand, and verbalising suffixes, SI morphology and theme vowels, on the other, receives a unified explanation. The only way for *-nq* to realise *v* and $\text{Asp}_{\text{PFV/SML}}$ at the same time (whether via Fusion or post-linearisation spanning) is to also discharge all the in-between morphemes, including the secondary imperfective SI and the theme vowel TH.

(59) a. *wy-kop-nq-ć*

[LP,-*wy*]⌢[$\sqrt{}$KOP]⌢[v_{Δ}, SI, TH, Voice, $\text{Asp}_{\text{PFV/SML}}$, ***-nq***]⌢[$\text{T}_{\text{INF}}$, -*ć*]

b. **wy-kop-yw-nq-ć*

[LP, *wy*-]⌢[$\sqrt{}$KOP]⌢[v_{Δ}, Ø]⌢[SI, ***-yw***]⌢[TH,Voice,$\text{Asp}_{\text{PFV/SML}}$, ****-nq***]⌢[$\text{T}_{\text{INF}}$, -*ć*]

To recapitulate, the derivation of semelfactives involves a dedicated head $\text{Asp}_{\text{PFV/SML}}$, which

does not need to be structurally licensed by a prefix. The analysis of *-nq* as a portmanteu morpheme successfully captures the syntactic, semantic and morphological properties of bare semelfactive verbs. While lexically-prefixed semelfactives are more problematic, and while their properties need to be examined more carefully in future work, I have sketched out a preliminary account of their morphology which is consistent with the current proposal.

Although I do not discuss the class of bare perfectives separately in this chapter, I would like to make the tentative suggestion that verbs like *chwyc-i-ć*$^{\text{P}}$ 'to grab', *rzuc-i-ć*$^{\text{P}}$ 'to throw' and *strzel-i-ć*$^{\text{P}}$ 'to shoot' have the same underlying structure as semelfactives (see also the discussion in §4.4.2 in Chapter 4). In other words, their derivation may involve $\text{Asp}_{\text{PFV/SML}}$ (60). The exceptional status of B-perfectives is purely morphological: in the context of a small number of roots, the complex feature bundle [v_{Δ}, SI, TH, Voice, $\text{Asp}_{\text{PFV/SML}}$] is realised by *-i* or Ø rather than by *-nq*. This is illustrated for *chwyc-i-ć*$^{\text{P}}$ 'to grab' in (61).

(60) *The structure of B-perfectives*

$[_{\text{AspP}}\ \text{Asp}_{\text{PFV/SML}}\ [\ \ldots\ [_{v\text{P}}\ (\text{LP})\ [\ v_{\Delta/\text{DO}}\ \sqrt{\text{ROOT}}\ ]\ ]\ \ldots\ ]\ ]$

(61) $[\sqrt{\text{CHWYT}}]^\frown[v_{\Delta}, \text{SI, TH, Voice, Asp}_{\text{PFV/SML}}, \textbf{\textit{-i}}]^\frown[\text{T}_{\text{INF}}, \text{-}ć]$

6.4 Secondary imperfectives in deverbal derivation

So far, our analysis of aspectual affixes has been limited to fully formed verbs. However, if word formation is syntactic, then our system must also correctly generate deverbal adjectives and nominalisations. In the previous literature, the largest amount of attention has been paid to the aspectual properties of Polish *-nie/-cie* event nominals, which can be either perfective or imperfective (see e.g. Schoorlemmer 1995, Rozwadowska 1997, Rozwadowska 2000, Alexiadou 2001, Alexiadou et al. 2010, Borer 2013, Bloch-Trojnar 2017, Kwapiszewski 2020). These nominals are fully productive, embedding lexical and superlexical prefixes, the semelfactive suffix *-nq* and SI morphology. Most importantly,

they preserve the aspectual value of the base verb. As shown in (62), nominals derived from imperfective stems can be modified by durative and frequency adjectives such as *nieustanny* 'constant' and *częsty* 'frequent', while nominals derived from perfective stems cannot.

(62) a. nieustanne ład -ow -a -ni -e^{I} ciężarówek
constant load -*v* -TH -N/T -NOM.SG trucksGEN
'the constant loading of the trucks' (B-imperfective)

b. (*nieustanne) roz- ład -ow -a -ni -e^{P} ciężarówek
constant apart- load -*v* -TH -N/T -NOM.SG trucksGEN
'the unloading of the trucks' (LP-perfective)

c. nieustanne roz- ład -ow -yw -a -ni -e^{I} ciężarówek
constant apart- load -*v* -SI -TH -N/T -NOM.SG trucksGEN
'the constant unloading of the trucks' (S-imperfective)

d. (*nieustanne) po- roz- ład -ow -yw -a -ni -e^{P} ciężarówek
constant DIST- apart- load -*v* -SI -TH -N/T -NOM.SG trucksGEN
'the unloading of the trucks one by one' (SP-perfective)

In agreement with much previous work, I assume that event *-nie/-cie* nominals involve nominalisation of the verbal functional sequence above the level of AspP (63). In the absence of the structural nominative case, the external argument is realised by PRO, while the internal argument is assigned genitive rather than accusative case. Aspectual morphology inside *-nie/-cie* nominals works in exactly the same way as in verbal clauses, with *v*P-internal prefixes either moving to Spec-Asp or triggering the insertion of the SI morpheme at PF.

(63) -nie/-cie *event nominals*

$[_{nP}\ n\ [_{AspP}$ Asp $[_{VoiceP}$ PRO [Voice $[_{ThemeP}$ DP [Theme $[_{vP}$ LP [v_{Δ} $\sqrt{}$ROOT]]]]]]]]

There is much more to say about the properties of deverbal nominals in Polish and other Slavic languages, and I will return to the topic of *-nie/-cie* nominals briefly at the end of Chapter 7. However, the main focus of this section is on two less well-studied formations: (i) agent and instrument nominals ending in *-acz/-arka* and (ii) adjectival active participles suffixed with *-ąc*. Both of these constructions embed the SI morpheme, but neither contains outer aspect or licenses the projection of argument structure. I argue that these constructions

are derived by truncating the verbal extended projection directly above the *v*P phrase (64)-(65). In the absence of AspP, the lexical prefix has nowhere to move, so the appearance of the SI morpheme follows automatically from the post-syntactic rule of SI insertion.

(64) *Full verbal extended projection*

[C [T [Asp [DP_1 [Voice [DP_2 [Theme $\boxed{[_{vP}\ LP\ [\ v_{\Delta}\ \sqrt{ROOT}\ ]\ ]}$]]]]]]]

(65) *Truncated verbal extended projection*

a. $[_{nP}$ *-acz/-arka* $\boxed{[_{vP}\ LP\ [\ v_{\Delta}\ ]\ ]}$] ⇒ SI insertion (agent/instrument nominals)

b. $[_{aP}$ *-ąc* $\boxed{[_{vP}\ LP\ [\ v_{\Delta}\ ]\ ]}$] ⇒ SI insertion (adjectival active participles)

In this way, the evidence from deverbal formations provides strong support the dissociation of SI morphology from imperfective aspect and for its insertion at the interface with PF.

6.4.1 Agent and instrument *-acz/-arka* nominals

Polish has two semi-productive suffixes which derive agent/instrument nominals from verbs. The suffix *-acz* derives masculine nouns, while *-arka* is decomposable into *-ark* and the feminine singular nominative ending *-a*. The referents of *-acz* nominals can be agents or instruments, while the referents of *-arka* nominals tend to be instruments, with the term *instrument* understood in the broad sense including both tools and machines. Another way of thinking about this is that *-acz* nominals denote [±ANIMATE] Effectors, while *-arka* nominals denote [−ANIMATE] Effectors. This is illustrated by the following minimal pairs:

(66) a. pak-ow-acz
pack-*v*-*n*
'a packer' (animate)

b. pak-ow-ark-a
pack-*v*-*n*-F.NOM
'a packaging machine' (inanimate)

(67) a. za-mraż-acz
behind-freeze-*n*
'a freeze spray' (inanimate)

b. za-mraż-ark-a
behind-freeze-*n*-F.NOM
'a freezer' (inanimate)

Polish *-acz*/*-arka* nominals are less productive and less frequent than *-er* nominals in En-

glish. However, given sufficient contextual support, it is relatively easy to coin new *-acz*/*-arka* nominals, which is why I refer to these suffixes as 'semi-productive'. Native speakers judge *-acz* nominals to be most felicitous in contexts like (68), which explicitly refer to professions and occupations. Another supporting context is given in (69): both *-acz* and *-arka* nominals are used as names of new, potentially fictional inventions. In Polish, agent/instrument nominals may be optionally accompanied by a genitive noun phrase whose referent corresponds to the internal argument of the verbal base.

(68) Mój sąsiad pracuje jako...
My neighbour works as
'My neighbour works as...'

a. wy-woł-yw-acz (zdjęć)
out-call-*v*-SI-*n* photos.GEN
'a (photo) developer'

b. roz-ład-ow-yw-acz (towaru)
apart-load-*v*-SI-*n* cargo.GEN
'a (cargo) unloader'

c. roz-braj-Ø-acz (bomb)
apart-defend-*v*-SI-*n* bombs.GEN
'a (bomb) defuser'

d. wy-prowadz-Ø-acz (psów)
out-lead-SI-*n* dogs.GEN
'a (dog) walker'

e. po-szuk-iw-acz (skarbów)
after-search-SI-*n* treasures.GEN
'a (treasure) hunter'

(69) Polscy naukowcy zaprojektowali^{P}...
Polish scientists designed
'Polish scientists designed...'

a. wy-maz-yw-acz/-arkę (wspomnień)
out-scribble-SI-*n*.SG.ACC memories.GEN
'a (memory) eraser'

b. wy-równ-yw-acz/-arkę (terenu)
out-even-SI-*n*.SG.ACC terrain.GEN

‘a (terrain) leveller’

c. za-tap-i-Ø-acz/-arkę (statków)
behind-sink-*v*-SI-*n*.SG.ACC ships.GEN
‘a (ship) sinker’

d. wy-mien-i-Ø-acz/-arkę (opon)
out-change-*v*-SI-*n*.SG.ACC tires.GEN
‘a (tire) replacer’

e. po-równ-yw-arkę (cen)
after-straight-SI-*n*.SG.ACC prices.GEN
‘a (price) comparison website’

Polish *-acz*/*-arka* nominals have a complex morphological structure. They embed the verbalisers *-ow* and *-i*, as well as secondary imperfective morphology, whether in the form of the suffix *-yw* or a vocalic change in the root. The presence of *-ow* and *-yw* is easy to see:

(70) a. ład -ow -ark -a
load -*v* -*n* -F.NOM
‘a charger’

b. roz- ład -ow -yw -acz
apart- load -*v* -SI -*n*
‘an unloader’

The evidence for the verbalising suffix *-i* is less direct and requires a closer look at the phonology. Let us start with the adjective in (71a), which exhibits the default realisation of the root $\sqrt{}$CHŁOD /xwod/. The addition of *-i* in the corresponding verb triggers the palatalisation of the root-final plosive /d/ into the affricate [d͡z] (71b). In the S-imperfective stem, the suffix *-i* gets deleted before the theme marker *-aj*, but the palatalisation of the root-final [d͡z] suggests that *-i* remains present in the underlying representation. This conclusion carries over to the *-acz* nominal in (71d), which must also contain *-i* in its structure.

(71) a. chłod -n -y
cool -*a* -M.SG
‘cool’ (adjective)

b. chłodz -i -Ø -ć^{I}
cool -*v* -TH -INF
‘to cool’ (B-imperfective)

c. s- chł**a**dz -(i) -Ø -**a(j)** -ć^{I}
from- cool -*v* -SI -TH -INF

'to cool down' (S-imperfective)

d. s- chł**a**dz -(i) -Ø -acz
from- cool -*v* -SI -*n*
'a cooler' (instrument nominal)

What about defaulting to *-aj*? Consider once again the S-imperfective in (71c). It displays two markers of secondary imperfectivisation: the appearance of the default theme *-aj* and the lowering of the root vowel from /o/ to [a] (see §4.2.2). Surprisingly, theme markers are absent from *-acz*/*-arka* nominals, and forms like **s-chładz-aj-acz* are not attested (Nykiel-Herbert, 1986; Czaykowska-Higgins, 1998). This means that the lowering of /o/ to [a] is the only clue that *s-chładz-acz* 'cooler' is derived from a secondary imperfective stem.[15]

Whenever it is possible to determine the derivational source of an *-acz*/*-arka* nominal, we find that it is morphologically imperfective (bare or secondary). This distributional generalisation is illustrated below. The first set of examples shows nominals derived from B-imperfective stems, but not from the corresponding perfectives (72). The second set of examples is derived from S-imperfectives, but not from their perfective counterparts (73).

(72) *Nouns derived from bare stems*

a. (*wy)- susz -ark -a
out- dry -*n* -F.NOM
'a drier'

b. (*na)- ład -ow -ark -a
on- load -*v* -*n* -F.NOM
'a charger'

[15]The lowering rule which accompanies defaulting to *-aj* applies to all instances of root-final /o/ but not to other vowels (e.g. Rowicka and van de Weijer 1994). This means that there is a large class of *-acz*/*-arka* nominals whose derivational source is obscured. Is *pod-pal-acz* 'arsonist' derived from the perfective stem (ia) or from the imperfective one (ib)? It is impossible to say. The morphology is not informative in this case.

(i) a. pod- pal -i -Ø -ć^{P}
under- burn -*v* -TH -INF
'to set on fire' (LP-perfective)

b. pod- pal -SI -a(j) -ć^{I}
under- burn -Ø -TH -INF
'to set on fire' (S-imperfective)

c. pod- pal -acz
under- burn -*n*
'an arsonist' (agent nominal)

c. (*za)- miesz -acz
behind- mix -*n*
'a mixer'

d. (*wy)- sprząt -acz
out- clean -*n*
'a cleaner'

(73) *Nouns derived from S-imperfectives*

a. od- gruz -ow -*(yw) -ark -a
off- debris -*v* -SI -*a* -F.NOM
'a declutterer, a debris remover'

b. na- gr -*(yw) -ark -a
on- play -SI -*n* -F.NOM
'a recorder'

c. roz- syp -*(yw) -acz
apart- pour -SI -*n*
'a scatterer'

d. z- maz -*(yw) -acz
from- scribble -SI -*n*
'an eraser'

To recapitulate, *-acz*/*-arka* nominals contain the verbalisers *-ow* and *-i*, the SI suffix *-yw* and the lowering of /o/ to [a], but not the theme marker *-aj*. Whenever the relevant evidence is available, *-acz*/*-arka* always attach to stems that are morphologically imperfective.

Although the suffixes *-acz*/*-arka* attach to verb stems, they do not exhibit many verbal properties in the syntax. Unlike verbal clauses, they cannot be modified by adverbs (e.g. *nieuprzejmie* 'impolitely'), time-frame and durative adverbials (e.g. *przez godzinę* 'for an hour'), instrumental NPs (e.g. *wędką* 'with a fishing rod'), directional PPs (e.g. *do parku* 'to the park') or purpose clauses (e.g. *żeby trochę zarobić* 'in order to make some money'). This strongly suggests that agent/instrument nominals include very little verbal structure.

(74) a. po-ław-i-Ø-acz ryb {*umiejętnie / *przez godzinę / *wędką}
after-hunt-*v*-SI-*n* fish.PL.GEN skillful.ADV for hour.ACC rod.INST
'a fisherman / a fish catcher {*skillfully / *for an hour / *with a fishing rod}'

b. pod-ryw-Ø-acz kobiet {*nachalnie / *nieuprzejmie}
under-tear-SI-*n* women.GEN pushy.ADV impolite.ADV
'a seducer of women {*in a pushy manner / *impolitely}'

c. wy-prowadz-Ø-acz psów {*do parku / *żeby trochę zarobić^{P}}
out-lead-SI-*n* dogs.GEN to park.GEN in.order.to a.bit earn
'a dog walker {*to the park / *in order to earn some money}'

Agent/instrument nominals in other languages are similarly constrained. For example, Rappaport Hovav and Levin (1992) observe that event nominals (e.g. *induction*, *destruction*) accept a wider range of modifiers than *-er* nominals in English (e.g. *inducer*, *destroyer*). The latter cannot be modified by temporal, locative and instrumental PPs, are incompatible with durative and time-frame adverbials, and do not license control into purpose clauses.

(75) a. the **induction** of protein growth (in a test tube) (on Monday) (with a new technique) (for an hour) (by a researcher) (to save the organism)

b. the **inducer** of protein growth (*in a test tube) (*on Monday) (*with a new technique) (*for an hour) (*by a researcher) (*to save the organism)

(76) a. the **destruction** of the warehouse (with a wrecking ball) (in a week) (by the builders) (to build a park)

b. the **destroyer** of the warehouse (*with a wrecking ball) (*in a week) (*by the builders) (*to build a park)

There is some disagreement in the literature as to the amount of verbal structure embedded inside agent/instrument nominals in English and other languages. Some authors argue that all deverbal *-er* nominals project the Effector-introducing layer VoiceP and the outer aspect layer AspP (Alexiadou and Schäfer, 2010). However, this is a minority position, which does not provide an adequate explanation for the restricted syntactic properties of these nominals (see particularly the rebuttals in Borer 2013:607ff. and McIntyre 2014).

Other authors recognise different types of *-er* nominals, some more verbal than others (Rappaport Hovav and Levin, 1992; Roy and Soare, 2013, 2014, 2020). In their influential

proposal, Rappaport Hovav and Levin (1992) draw a line between eventive and non-eventive *-er* nominals. While eventive nominals inherit the complement structure of the underlying verb and give rise to event entailments, non-eventive nominals lack *of*-complements and do not presuppose the existence of any event. The basic contrast is illustrated in (77).

(77) a. a grinder of imported coffees (agent)
→ an event of grinding presupposed
b. a coffee grinder (agent or instrument)
→ no event of grinding presupposed

In the majority of cases, the interpretation of a non-eventive nominal can be paraphrased as 'something or someone intended for V-ing'. Thus, a *teacher* is someone whose occupation is to teach, but that person need not have done any teaching yet (they might have only received the relevant training). Similarly, a *coffee grinder* is a tool designated for grinding coffee, but it is not necessary for it to have ever been used in this way. Eventive *-er* nominals are different: one needs to have done some work to qualify as a *grinder of imported coffees*.

Another difference between eventive and non-eventive *-er* nominals is that the former can be modified by frequency adjectives such as *frequent* and *constant* (78). This test is supposed to confirm the one-to-one correlation between eventivity and the presence of an *of*-complement (but see McIntyre 2014 for a qualification and some counterexamples).

(78) a. frequent saver of lives / *frequent lifesaver
b. frequent figher of fires / *frequent firefighter

Polish *-acz*/*-arka* nominals pattern as non-eventive. Firstly, they have a purely functional interpretation, referring to people in professional or temporary functions, or to entities designed for the purpose of participating in the event described by the verbal predicate. As such, they do not require the existence of any events in the world. Secondly, they cannot be modified by frequency adjectives like *częsty* 'frequent' and *nieustanny* 'constant':

(79) a. (*częsty) po-ław-i-Ø-acz ryb.
frequent after-hunt-*v*-SI-*n* fish.PL.GEN
'a (*frequent) fish catcher'

b. (*nieustanny) po-szuk-iw-acz skarbów.
constant after-search-SI-*n* treasures.GEN
'a (*constant) treasure hunter'

It is not clear if the contrast between eventive and non-eventive *-er* nominals is syntactic or purely semantic. Several authors have argued for a single syntactic representation for all deverbal *-er* nominals. This representation includes the smallest possible amount of verbal structure: enough to account for the presence of verb morphology (e.g. the verbalising *-ify* in *humid-ifi-er*), but not enough to accommodate adverbs and other modifiers (see e.g. Baker and Vinokurova 2009, Borer 2013, McIntyre 2014). In the present system, the minimal verbal structure consists of the light *v* head, but no VoiceP and no aspectual layer AspP.

Why is the structure of *-er* nominals impoverished in this way? The most explanatory account is offered by Baker and Vinokurova (2009), who present a case study of the suffix *-er* in English and *-AAccY* in Sakha, a Turkic language spoken in Northern Siberia. They argue that derivations like (80), with *-er* merging above the level of Voice, are ruled out for semantic reasons, not only in English and Sakha, but universally across languages.

(80) *[$_{n\text{P}}$ *-er* [$_{\text{VoiceP}}$ PRO [Voice [... *v*/V ...]]]

The authors argue that *-er*/*-AAccY* are nominal versions of the Voice head, endowed with very similar semantic content but a different lexical category. This means that *-er*/*-AAccY* can take the same range of complements as Voice (e.g. *v*P or VP), but they cannot attach to more complex structures, which already contain Voice. This is because the semantic overlap between Voice and *-er*/*-AAccY* precludes their co-occurrence in the same structure. Compare the denotations assigned to the Voice head, on the one hand, and *-er* and *-AAccY* nominalisers, on the other. In the definition of *-er* and *-AAccY*, the symbol $^{\cap}$ stands for the nominalisation operator of Chierchia (1985), which converts properties to kinds, while

GEN is the generic quantifier. The formula in (81b) is thus paraphrasable as 'the x such that x is the kind of thing that is an agent in generically many P events'.[16]

(81) a. $[\![\text{Voice}]\!] = \lambda P_{vt} \lambda x \lambda e.[agent(e,x)]$

b. $[\![\text{-AAccY, -er}]\!] = \lambda P_{vt} \cap \lambda x.GEN\, e\, [P(e) \wedge agent(e,x)]$

The nominalising suffixes *-er* and *-AAccY* cannot combine with Voice for the simple reason that a single event participant role cannot be specified twice for the same event:

> Both Voice and *-AAccY* add agent(e, x) to the representation, and they discharge its non-event argument in different ways: Voice assigns it to an NP (overt or covert) in Spec, VoiceP, whereas *-AAccY* nominalizes it by way of kind formation. The representation [including both Voice and *-AAccY*] is thus either strangely redundant (it has two expressions of the same agent) or contradictory (it posits two distinct agents for the same event (Carlson, 1984)). Either way, we may assume that it is filtered out semantically. Therefore, *-AAccY* cannot be added to a structure that contains a Voice head, for the same reason (we assume) that one cannot have more than one Voice head in a single clause.
>
> (Baker and Vinokurova 2009:533)

If this is correct, then agent/instrument nominalisers in all languages must merge below the level of Voice. Since Voice is lower than Asp, this automatically entails that

[16] The semantic denotation in (81b) is tailored to the Sakha suffix *-AAccY*, which is unambiguously agentive, and which has a habitual or generic meaning. The contrast in acceptability between (ia) and (ib) is due to the fact that killing cows is a habitual event while killing Misha is not. The definition of *-er* needs to be adapted to cover the full range of eventive *-er* nominals in English, which are not necessarily habitual, and which may refer to causers, instruments and experiencers as well as agents.

(i) a. ynaq-y-ny ölör-ööccü
cow-ACC kill-AG.NOM
'a killer of cows, a butcher'

b. *Misha-ny ölör-ööccü
Misha-ACC kill-AG.NOM
Intended: 'the killer of Misha'

agent/instrument nominalisers must merge below the level of outer aspect. We thus conclude two things: i) *-acz/-arka* lack Asp, and ii) *-acz/-arka* nominals embed SI morphology. From these premises, it follows that SI morphology is dissociated from outer aspect in Polish. If the value of aspect is calculated above Voice, and if the attachment of *-acz/-arka* 'cuts off' the verbal extended projection below Voice, then SI morphology cannot be an exponent of Asp, as shown in (82)-(83). Instead, SI must be inserted below the level of Voice/Asp.[17]

(82) *Full verbal extended projection*

[C [T [Asp [DP_1 [Voice [DP_2 [Theme $\boxed{[_{vP}\ LP\ [\ v_{\Delta}\ \sqrt{ROOT}\ ]\ ]}$]]]]]]]

(83) *The structure of* -acz/-arka *nominals*

a. $[_{nP}$ *-acz/-arka* $\boxed{[_{vP}\ v_{\Delta/DO}\ \sqrt{ROOT}\ ]}$] (B-imperfective)

b. $[_{nP}$ *-acz/-arka* $\boxed{[_{vP}\ LP\ [\ v_{\Delta}\ \sqrt{ROOT}\ ]\ ]}$] $\Rightarrow$ **SI insertion** (S-imperfective)

The evidence from *-acz/-arka* nominals is fully consistent with the proposal developed in this chapter. In fact, we do not even need to stipulate that these suffixes 'select for imperfective stems'. In the absence of AspP, the lexical prefix has nowhere to move, so the appearance of SI morphology is an automatic reflex of the post-syntactic rule in (84).

(84) *SI insertion* *(repeated)*

[*v*] $\rightarrow$ [*v* SI] / $[_{vP}\ Spec^{min/max}\ [\ \_\_\ ]\ ]$

6.4.2 Adjectival active *-ąc* participles

A similar argument for the dissociation of SI morphology from aspect can be made on the basis of adjectival active participles. In Polish, present active participles are derived from imperfective stems (bare and secondary) by means of the suffix *-ąc*. Syntactically, verbal *-ąc* participles have the distribution of clausal (85a) and adnominal (85b) modifiers.

[17] I remain agnostic about the presence of ThemeP in *-acz/-arka* nominals. If the genitive noun phrases in (68)-(69) are genuine internal arguments, then the projection of ThemeP might be optional.

(85) *Verbal* -ąc *participles*

a. Adam wziął^{P} głęboki oddech, stopniowo się
Adam.NOM took deep breath.ACC gradually REFL.PRON
u-spokaj-Ø-aj-ąc.
at-calm-SI-TH-PTCP
'Adam took a deep breath, gradually calming down.'

b. U-spokaj-Ø-aj-ąc-y Adama mężczyzna jest lekarzem.
at-calm-SI-TH-PTCP-M.SG Adam.ACC man.NOM is doctor.INST
'The man calming Adam down is a doctor.'

A subset of *-ąc* participles have an adjectival use in addition to the verbal one. There are at least three properties which distinguish adjectival *-ąc* participles from their verbal counterparts. Firstly, adjectival participles can be used predicatively with the copula *być* 'to be'. Secondly, unlike verbal *-ąc* participles, adjectival ones do not take syntactic arguments. Thirdly, adjectival participles can be used as adverbs, in which case they are suffixed with *-ly* in English and *-o* in Polish. All of these properties are illustrated in (86)-(87).[18]

(86) *Adjectival* -ąc *participles: predicative use with* być *'to be'*

a. Ta muzyka jest bardzo u-spok**a**j-Ø-aj-ąc-a (*Adama)
This music.NOM is very at-calm-SI-TH-PTCP-F.SG Adam.ACC
'This music is very calming (*Adam).'

b. Jego rodzice są bardzo wy-mag-Ø-aj-ąc-y
his parents are very out-able-SI-TH-PTCP-3.M.PL.NOM
(*posłuszeństwa).
obedience.GEN
'His parents are very demanding (*obedience).'

(87) *Adjectival* -ąc *participles: adverbial use*

a. Maria poklepała^{P} Adama po plecach
Mary.NOM patted Adam.ACC on back.INST
po-ciesz-Ø-aj-ąc-o (*go).
on-rejoice-SI-TH-PTCP-ADV him
'Mary patted Adam on the back comfortingly (*him).'

[18] A well-known property of adjectival participles in English is compatibility with the degree modifier *very*. However, the Polish counterpart *bardzo* 'very (much)' is used to modify adjectives as well as verbs. As such, its presence does not reliably distinguish between adjectival and verbal participles.

b. za-dziw-i-Ø-a(j)-o (*wszystkich) wysoki mężczyzna
behind-wonder-*v*-SI-TH-ADV everyone.ACC tall man
'a surprisingly (*everyone) tall man'

While there has been much recent work on the morphosyntax of adjectival *passive* participles (e.g. Kratzer 2000, Embick 2004, Bruening 2014, Alexiadou et al. 2015, Biskup 2019), adjectival *active* participles have received somewhat less attention. One question which has been pursued in some depth is: How to characterise the class of verbs which derive adjectival active participles across languages? Working on English, Brekke (1988) argues that adjectival active participles are derived from object experiencer verbs like *frighten*, *astonish* and *surprise*. Working on English and Hebrew, Meltzer-Asscher (2010) presents several classes of exceptions to this generalisation (e.g. *very loving*, *very revealing*) and concludes that all adjectival active participles are derived from stative verbs (89).[19]

(88) *Experiencer Constraint* (Brekke, 1988)
Adjectival active participles are derived from object experiencer verbs.

(89) *Stativity Constraint* (Meltzer-Asscher, 2010)
All adjectival active participles are derived from stative verbs.

The reasoning behind the Stativity Constraint is relatively simple. The key assumption is that adjectives denote states. Thus, the operation of adjectivisation acts as a semantic filter, ruling in stative verbs and excluding eventive ones. This can be schematised as in (90).[20] The Stativity Constraint precludes the derivation of adjectival active participle from unambiguously eventive predicates (cf. **very jumping*, **very dancing*, **very coughing*).

(90) [a_{state} [stative / *eventive]]

By and large, adjectival *-ąc* participles conform to the generalisations in (88) and (89).

[19] See also Ramchand (2018) for recent work on the semantics of adjectival active participles.

[20] Adjectival active participles contrast with adjectival passives, which require the presence of a stativising operator in their structure. Adjectival passives like *filled* and *inflated* describe the result state of the base verb.

They can be derived from virtually all object experiencer verbs that are morphologically imperfective. Examples based on B-imperfective stems include *fascyn-uj-ąc-y* 'fascinating', *interes-uj-ąc-y* 'interesting', *impon-uj-ąc-y* 'impressive', *szok-uj-ąc-y* 'shocking', and many others. A larger set of examples derived from S-imperfective stems is given in (91). Since most object experiencer verbs belong to the class of *-i-* or Ø stems, they form their S-imperfectives via defaulting to *-aj*. Unlike in the case of *-acz/-arka* nominals, the theme marker *-aj* is present in *-ąc* participles, so there can be no doubt that these stems exhibit SI morphology. The adjectival participle *roz-czar-ow-uj-ąc-y* 'disappointing' stands out from the rest as the only *-ow-* stem, which is suffixed with *-yw* (realised as *-uj* in this context).

(91) *Adjectival -ąc participles derived from object experiencer verbs (S-imperfective)*

a. do-bij-aj-ąc-y 'depressing'
b. od-raż-aj-ąc-y 'repulsive'
c. o-szołam-i-aj-ąc-y 'stupefying'
d. po-ciesz-aj-ąc-y 'comforting'
e. po-niż-aj-ąc-y 'humiliating'
f. po-ryw-aj-ąc-y 'engrossing'
g. prze-raż-aj-ąc-y 'frightening'
h. prze-szyw-aj-ąc-y 'piercing'
i. przy-gnęb-i-aj-ąc-y 'depressing'
j. roz-braj-aj-ąc-y 'disarming'
k. roz-czar-ow-uj-ąc-y 'disappointing'
l. roz-prasz-aj-ąc-y 'distracting'
m. u-spokaj-aj-ąc-y 'calming'
n. ws-pier-aj-ąc-y 'supportive'
o. za-chęc-aj-ąc-y 'enticing'
p. za-chwyc-aj-ąc-y 'astonishing'
q. za-dziw-i-aj-ąc-y 'surprising'
r. za-stanaw-i-aj-ąc-y 'puzzling'

Interestingly, apart from object experiencer verbs, adjectival active participles can also be derived from change-of-state predicates. To my knowledge, this fact has not been reported before. Consider what I call the *Adverbial Effect Construction*, illustrated by a pair of naturally-occurring sentences in (92). This construction is headed by the verb *działać*$^{\text{I}}$ 'to work, to have an effect'. The cause of the change of state (e.g. the mint extract) surfaces as the subject, while the entity undergoing the change (e.g. the skin) is expressed in an

optional PP headed by *na* 'on'. The *-ąc* participle is used as an adverb which modifies the main verb and specifies the nature of the effect. Interestingly, English has an almost identical construction, which we can refer to as the *Adjectival Effect Construction*. The main difference is that the verb *działać* is replaced by the periphrastic expression *to have an effect*, which requires the *-ing* participle to surface as an adjective rather than an adverb.

(92) a. Wyciąg z mięty działa^{I} na skórę od-śwież-Ø-aj-ąc-o
extract.NOM from mint.GEN has.effect on skin.ACC off-fresh-SI-PTCP-ADV
i roz-jaśn-i-Ø-aj-ąc-o.
and apart-bright-*v*-SI-PTCP-ADV
'Mint extract has a refreshing and brightening effect on the skin.'

b. Woda z solą działa^{I} od-każ-Ø-aj-ąc-o na
water.NOM with salt.INST has.effect off-wreck-SI-PTCP-ADV on
błony śluzowe.
membranes.ACC mucous.ADJ
'Salt water has a disinfecting effect on the mucous membrane.'

The Adverbial Effect Construction is fully compositional and productive within certain semantic limits. It is largely restricted to adjectival *-ąc* participles derived from causative verbs built which are related to adjectivest . A number of examples derived from S-imperfective stems is given in (93). Most (but not all) are morphologically related to adjectives, such as *wilg-ot-n-y* 'moist' - *na-wilż-aj-ąc-y* 'moisturising', *grub-y* 'fat' - *po-grub-i-aj-ąc-y* 'fattening', *jasn-y* 'bright' - *roz-jaśn-i-aj-ąc-y* 'brightening', and so on.

(93) *Adjectival -ąc participles derived from change-of-state verbs (S-imperfective)*

a. na-wilż-aj-ąc-y 'moisturising'
b. od-każ-aj-ąc-y 'disinfecting'
c. po-grub-i-aj-ąc-y 'fattening'
d. po-mniejsz-aj-ąc-y 'minimising'
e. po-większ-aj-ąc-y 'enlarging'
f. roz-jaśn-i-aj-ąc-y 'brightening'
g. s-chładz-aj-ąc-y 'cooling'
h. u-jędrn-i-aj-ąc-y 'firming'
i. u-zdraw-i-aj-ąc-y 'healing'
j. wy-susz-aj-ąc-y 'dehydrating'
k. wy-szczupl-aj-ąc-y 'slimming'
l. wy-biel-aj-ąc-y 'whitening'

m. wy-dłuż-aj-ąc-y ‘lengthening’ o. wy-niszcz-aj-ąc-y ‘destroying’

n. wy-gładz-aj-ąc-y ‘smoothening’ p. z-miękcz-aj-ąc-y ‘softening’

Thus, the Experiencer Constraint is clearly too restrictive. What about the Stativity Constraint? At first glance, it might appear that COS predicates like *po-większ-a(j)-ć*$^{\text{I}}$ ‘to enlarge’ are eventive, and hence falsify the generalisation that adjectival active participles can only be derived from statives. On closer inspection, however, COS predicates turn out to have statives uses as well, as illustrated in (94) (see also Gawron 2009 for an influential discussion of stative change in the spatial domain). If the COS verbs embedded in adjectival *-ąc* participles are necessarily stative, then the Stativity Constraint might still be valid.[21]

(94) a. Ten sweter mnie {po-grub-i-Ø-a(j)$^{\text{I}}$ / wy-szczupl-Ø-a(j)$^{\text{I}}$}.
this sweater me after-fat-*v*-SI-TH out-thin-SI-TH
‘This sweater makes me look {fat / thin}.’

b. Te okulary wy-dłuż-Ø-a(j)-ą$^{\text{I}}$ mu nos.
these glasses out-long-SI-TH-NM.PL him nose.ACC
‘These glasses lengthen his nose.’

By now, I hope to have convinced the reader that the number of adjectival *-ąc* participles is large enough, and that their derivation is systematic enough, to warrant serious consideration. Just like *-acz*/*-arka* nominals, adjectival *-ąc* participles are morphologically complex, embedding lexical prefixes, verbalising suffixes *-i* and *-ow*, and the default theme marker *-aj* in S-imperfectives. Furthermore, just like *-acz*/*-arka* nominals, adjectival *-ąc* participles do not inherit any syntactic properties associated with verbal clauses. The fact that they cannot be modified by locative PPs or aspectual adverbials could perhaps be put down to their stativity. More seriously, however, adjectival *-ąc* participles do not take syntactic arguments,

[21] This conclusion is supported by the contrast in (i). When the change of state is dynamic, the use of the Adjectival Effect Construction is strongly dispreferred (ia). However, when the cause and the effect can be conceptualised as stative, the same construction becomes licit, as in (ib) (quoted from Ayres-Bennett 1996:63).

(i) a. ??The kick had an opening effect on the door.
b. Nasalization appears to have had an opening effect on the quality of the vowel.

whether those are assigned structural accusative (95a) or inherent genitive case (95b).[22]

(95) a. Ta muzyka jest bardzo u-spok**aj**-Ø-aj-ąc-a {*Adama)
This music.NOM is very at-calm-SI-TH-PTCP Adam.ACC
'This music is very calming (*Adam).'

b. Jego rodzice są bardzo wy-mag-Ø-aj-ąc-y
his parents are very out-able-SI-TH-PTCP-3.M.PL.NOM
(*posłuszeństwa).
obedience.GEN
'His parents are very demanding (*obedience).'

In addition to arguments, stative object experiencer verbs in Polish may also combine with an optional DP adjunct in the instrumental case (Biały 2005:73). The referent of this DP stands in a part-whole relation with the subject argument, specifying the aspect of the subject which acts as the stimulus for the experience. For example, in (96a), Mary's personality is a part of Mary, and it attracts Mark. The possessive reflexive pronoun *swoja* may be present but it is not required. For our purposes, the crucial observation is that this kind of adjunct cannot be added to an adjectival *-ąc* participle derived from the same verb (96b).[23]

(96) a. Maria$_i$ po-ciąg-Ø-a^I Marka (swoją$_i$) osobowością.
Mary.NOM on-pull-SI-3SG Mark.ACC POSS.REFL personality.INST
'Mary$_i$ attracts Mark with her$_i$ personality.'

b. Maria jest po-ciąg-Ø-aj-ąc-a {??swoją osobowością /
Mary.NOM is on-pull-SI-TH-PRT-F.SG POSS.REFL personality.INST
*osobowością}.
personality.INST

[22]The only exception to the generalisation that adjectival *-ąc* participles do not take arguments comes from idiomatic expressions. Participles derived from phrasal idioms like *mrozić*^{I} *krew w żyłach* 'to frighten [lit. to freeze the blood in one's bones]' and *zapierać*^{I} *dech w piersiach* 'to take one's breath away' can be used as adjectives (i). The grammaticality of the objects *krew* and *dech* could be due to these NPs being non-referential.

(i) a. Ten film jest mroż-ąc-y krew w żyłach.
this film is freez-PTCP-M.SG blood.ACC in veins
'This film is blood-chilling.'
b. Ten widok jest za-pier-Ø-aj-ąc-y dech w piersiach
This view is behind-push-SI-TH-PTCP-M.SG breath.ACC in breasts.LOC
'This view is breath-taking.'

[23]For some unknown reason, the presence of the possessive reflexive pronoun improves the judgement of (96b), but even the variant with the pronoun is degraded in comparison with the verbal clause in (96a).

'Mary is attractive (*with her personality)'

Since the DP adjunct in (96a) is referentially dependent on the external argument, I conclude that it is licensed by the projection of VoiceP. If this is correct, then the ungrammaticality of the adjunct in (96a) can be taken to signal the absence of VoiceP. Thus, I propose that adjectival *-ąc* participles have the structure in (97), with the suffix *-ąc* truncating the verbal extended projection directly above the *v*P phrase.[24] This structure is similar to the one assigned to agent/instrument nominals, except that the *v* head is stative rather than eventive.[25]

(97) *The structure of adjectival* -ąc *participles*

a. $[_{aP}$ *-ąc* $\boxed{[_{vP}\ v_{\text{BE}}\ \sqrt{\text{ROOT}}\ ]}\ ]$ (B-imperfective)

b. $[_{aP}$ *-ąc* $\boxed{[_{vP}\ \text{LP}\ [\ v_{\text{BE}}\ \sqrt{\text{ROOT}}\ ]\ ]}\ ] \Rightarrow$ **SI insertion** (S-imperfective)

The semantic denotation of an *-ąc* participle derived from an object experiencer verb is formalised in (98) on the example of *u-spokaj-aj-ąc-y* 'calming'. In words, the adjectival participle denotes a set of entities which predispose people in general to be in a calm state.

(98) $[\![\text{uspokajający}]\!] = \lambda x \lambda s.GEN\, y[\textbf{calm}(s) \wedge \mathit{stimulus}(s) = x \wedge \mathit{experiencer}(s) = y]$

A major advantage of the current approach is that we do not need to worry about the semantic contribution of the SI morpheme. In fact, it is difficult to think what kind of semantic function the SI morpheme could perform in adjectival active participles. It cannot be a progressiviser or Tatevosov's Eventiser since adjectival *-ąc* participles are stative. It also cannot be an imperfectiviser since adjectival *-ąc* participles do not include syntactic VoiceP or AspP layers. We avoid this problem entirely by arguing that the SI morpheme is inserted on the PF branch of the derivation. S-imperfective stems are simply the default form whenever a *v*P-internal prefix does not raise to license perfective aspect.

[24] For simplicity, I analyse *-ąc* as an exponent of the category-defining head *a*, but we should probably recognise a distinction between *a* and a participial head Ptcp, since not all *-ąc* participles are adjectival.

[25] The S-imperfective structure in (97b) raises the question of how to integrate the lexical prefix with the denotation of v_{BE} during semantic composition. Both the root and the lexical prefix are predicates of states in this case, so the most natural suggestion is that they jointly modify the state variable introduced by v_{BE}.

6.5 Conclusion

This chapter has explored a new, movement-based analysis of the relationship between Polish aspectual affixes and aspect. The main assumption is that the perfective head Asp_{PFV} requires structural licensing by a prefix. Formally, this licensing requirement is implemented by means of an EPP feature in combination with the extended M-Merger parameter in (99).

(99) *The extended M-Merger parameter*

Polish (/Slavic) requires the specifiers of *v*P and AspP to undergo M-Merger.

The proposal is that *v*P-internal prefixes raise to Spec-Asp to license perfective aspect (100). Although prefix movement is string-vacuous in Polish, a similar movement occurs overtly in Hungarian, a strong satellite-framed language with resultative particles (Csirmaz, 2008).

(100) $[_{\text{AspP}}\ \text{LP}\ [\ \text{Asp}^{\overline{\text{EPP}}}_{\text{PFV}}\ [\ \ldots\ [_{v\text{P}}\ \sout{\text{LP}}\ [\ v_{\Delta}\ \sqrt{\text{ROOT}}\ ]\ ]\ \ldots\ ]\ ]\ ]$ (LP-perfective)

While prefix movement has been entertained before (Svenonius, 2004b), I have also proposed a novel analysis of secondary imperfective morphology, arguing that it is structurally dissociated from imperfective aspect. In fact, there is no such thing as a 'secondary imperfective operator' at the level of syntax/semantics at all. Instead, SI is analysed as a dissociated morpheme in the sense of Embick (1997) and Embick and Noyer (2001): absent from the syntax and LF, SI is adjoined to the *v* head post-syntactically in the context of a structurally-adjacent prefix. As such, SI effectively signals the *absence* of prefix movement.

(101) *SI insertion*

$[\ v\ ] \rightarrow [\ v\ \text{SI}\ ]\ /\ [_{v\text{P}}\ \text{Spec}^{min/max}\ [\ \_\_\ ]\ ]$

There are three configurations in which a *v*P-internal prefix remains in situ, triggering the appearance of SI morphology. In the first one, Asp is imperfective, deriving run-of-the-mill S-imperfectives (102). In the second one, Asp is perfective, but its projection is licensed by a high superlexical prefix, such as the distributive po_{DIST}- or cumulative na_{CUM}- (103).

The external Merge of a high SP bleeds prefix movement in accordance with the Merge-over-Move principle (Chomsky, 1995). Finally, Asp might be missing from the structure. This occurs in some types of deverbal derivation, such as agent and instrumental *-acz/-arka* nominals and adjectival active *-ąc* participles (104). Of course, if imperfective aspect is not structurally represented, in accordance with its unmarked semantic and syntactic status, then the first configuration in (102) is also of this type, with Asp_{IPFV} being radically absent.

(102) $[_{\text{AspP}}\ (\text{Asp}_{\text{IPFV}})\ [\ \ldots\ [_{v\text{P}}\ \text{SP}_{\text{low}}/\text{LP}\ [\ v_{\Delta}\ \sqrt{\text{ROOT}}\ ]\ ]\ \ldots\ ]\ ]$ (S-imperfective)

(103) $[_{\text{AspP}}\ \text{SP}_{\text{high}}\ [\ \text{Asp}^{\cancel{\text{EPP}}}_{\text{PFV}}\ [\ \ldots\ [_{v\text{P}}\ \text{SP}_{\text{low}}/\text{LP}\ [\ v_{\Delta}\ \sqrt{\text{ROOT}}\ ]\ ]\ \ldots\ ]\ ]\ ]$ (SP-perfective)

(104) a. $[_{n\text{P}}$ *-acz/-arka* $[_{v\text{P}}\ \text{LP}\ [\ v_{\Delta}\ ]\ ]\ ]$ (agent/instrument nominals)

b. $[_{a\text{P}}$ *-ąc* $[_{v\text{P}}\ \text{LP}\ [\ v_{\Delta}\ ]\ ]\ ]$ (adjectival active participles)

Chapter 7

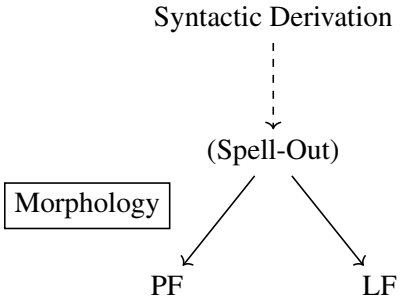
Conclusions and future prospects

This concluding chapter provides a high-level synthesis of the main findings and arguments presented throughout this thesis. I consider what these findings mean for the organisation of the grammar, the relationship between syntax and morphology (§7.1), and the locus of cross-linguistic variation (§7.2). Finally, I engage with arguments which challenge the idea that the category-defining head *v* always introduces an eventuality in the semantics (§7.3).

7.1 The syntax-morphology interface

The starting point for this study was the grammatical architecture in (1), where Merge operates on abstract morphemes, and where morphology interprets the output of narrow syntax.

(1)



(Embick and Noyer 2007:292)

What is the nature of the mapping from syntax to morphology? In the default case, this

mapping is transparent, with morphological structure mirroring syntactic structure. However, things are not always that simple, and syntax-morphology mismatches do arise. As noted by Embick and Noyer (2007:304), 'one of the primary tasks of morphological theory is to identify the set of PF operations that are responsible for these deviations from the default case' and to 'identify the conditions under which these processes apply'. This study has focused on two such operations: M-Merger and the insertion of dissociated morphemes.

I have shown that M-Merger can affect the output of syntax in one of two ways. Firstly, this operation may act as a filter on syntactic structures, admitting some inputs while ruling out others. This is the essence of the M-Merger parameter in (2), which was used to capture the properties of weak SF languages like Slavic, Latin and Classical Greek in Chapter 3. Even though weak SF languages can generate complex AP and PP resultatives at the level of syntax/semantics (e.g. *to drink the cup empty* or *to dance Mary into the room*), the relevant structures are filtered out at PF because branching phrases cannot undergo M-Merger. The use of PF filters is common in the morphosyntactic literature. Previous examples include the Stray Affix Filter and the Exhaustive Lexicalisation Principle of Fábregas (2007), which requires every syntactic feature to be matched to an exponent (see also Acedo-Matellán 2016 for the claim that derivations crash at PF if a node is not discharged by a Vocabulary Item). While the use of M-Merger as a PF filter is new to this thesis, both M-Merger and PF filters are relatively well-established, so it is only natural that they should be combined.

(2) *The M-Merger parameter*

Weak SF languages require the specifier of *v*P to undergo M-Merger.

The other way in which M-Merger can adjust the output of syntax is by generating affix orders which appear to violate the Mirror Principle (Baker, 1988). We have seen examples of this in Slavic, where prefixes are pronounced outside the domain of the inflected verb, as well as in Latin and Classical Greek, where (*v*P-internal) resultative prefixes are linearised further away from the root than (*v*P-external) tense and aspect markers. M-Merger generates

these mismatches by virtue of applying after Generalised Head Movement, with the relative timing of operations affecting the position of morphemes within the corresponding M-value. Crucially, this analysis presupposes that M-Merger is a distinct operation from Head Movement (following Arregi and Pietraszko 2021; *pace* Matushansky 2006, who reduces Head Movement to internal Merge followed by M-Merger). All in all, if the aim of morphological theory is to 'identify the set of PF operations that are responsible for these deviations from the default case' (Embick and Noyer, 2007)), this study provides overwhelming empirical evidence for the existence of M-Merger. As for the 'conditions under which these processes apply', we saw that M-Merger is restricted to min/max specifiers (*pace* Harizanov 2014), and that its application can be obligatory in some languages (Slavic, Latin, Classical Greek) and optional in others (e.g. the English particle shift). It can also be triggered by individual lexical items (as in the case of Germanic prefixes) or structurally across the board.

Apart from filtering and re-arranging the output of syntax, there is a third way in which morphological structures may diverge from syntactic ones. By assumption, since syntax provides the input to LF, the syntactic derivation can contain only 'interpretable' features at the point of transfer to the interfaces (since PF-only features would be illegible at LF). This means that, while all morphemes are transferred from syntax to PF (and LF), not all morphemes present at PF need to have originated in narrow syntax. In other words, morphemes can also be added on the PF branch of the derivation, in accordance with language-specific rules and well-formedness criteria. Such *dissociated* morphemes 'reflect certain syntactic properties (or configurations) but do not in any sense contribute these properties to syntax' (Embick and Noyer 2001:558), and they do not receive an interpretation at LF. Following Gribanova (2015), I argued in Chapter 4 that at least some post-verbal suffixes in Polish are dissociated in this sense, namely the theme vowels *-a*, *-aj* and *-e*. Even more importantly, I showed that the evidence does not support a semi-recursive aspectual derivation of Polish verbs, and that all syntactic and semantic diagnostics point to a strictly binary distinction between perfective and imperfective aspect. This led me to the conclusion in Chapter 6 that

there is no such thing as a secondary imperfective operator, and that SI morphology is simply the realisation of a dissociated morpheme, added in the context of a *v*P-internal prefix (i.e. a min/max specifier which subsequently incorporates into the verb via M-Merger):

(3) *SI insertion*

$[\ v\ ] \ \rightarrow \ [\ v\ \text{SI}\ ] \ \ / \ \ [_{vP}\ \text{Spec}^{min/max}\ [\ \_\_\ ]\ ]$

Although the SI morpheme does not have a direct semantic representation, it indirectly conveys information about the value of aspect by tracking the position of a prefix in the structure (4b)-(4c). While the movement of prefixes to AspP is string-vacuous in Polish, a similar movement of result XPs to AspP may be overt in other languages, like Hungarian.

(4) a. $[_{\text{AspP}}\ \ (\text{Asp}_{\text{IPFV}})\ [\ \ldots\ [_{vP}\ \ v_{\Delta/\text{DO}}\ \sqrt{\text{ROOT}}\ ]\ \ldots\ ]\ ]$ (B-imperfective)

b. $[_{\text{AspP}}\ \ (\text{Asp}_{\text{IPFV}})\ [\ \ldots\ [_{vP}\ \text{LP}\ [\ v_{\Delta}\ \sqrt{\text{ROOT}}\ ]\ ]\ \ldots\ ]\ ]$ (S-imperfective)

c. $[_{\text{AspP}}\ \text{LP}\ [\ \text{Asp}_{\text{PFV}}^{\cancel{\text{EPP}}}\ \ [\ \ldots\ [_{vP}\ \cancel{\text{LP}}\ [\ v_{\Delta}\ \sqrt{\text{ROOT}}\ ]\ ]\ \ldots\ ]\ ]\ ]$ (LP-perfective)

This leads us to the conclusion that secondary imperfectives constitute an example of syntax-morphology mismatch. While the morphological derivation seems to proceed as in (5), this is just an illusion. The underlying syntactic derivation is closer to (6), with LP-perfectives involving an additional movement step (i.e. the raising of the prefix to AspP).

(5) *Surface morphology*

B-imperfectives ⇒ LP-perfectives ⇒ S-imperfectives

(6) *Underlying syntax/semantics*

B-imperfectives ⇒ S-imperfectives ⇒ LP-perfectives

7.2 The locus of cross-linguistic variation

Overall, the results of this study strongly support a model of grammar in which the interface between syntax and morphology is less direct than that between syntax and semantics

(see most prominently Chomsky 1995, 2001, Hinzen 2006, Berwick and Chomsky 2016). While the output of narrow syntax may be modified by various PF operations, the grammatically relevant meaning of a verb can be read off its structure at LF in a direct and cross-linguistically uniform manner. In particular, the structural 'pieces' which make up Polish verbs appear also in other languages in the exact same order, as shown in (7).

(7) *The universal extended projection of the verb*

$\sqrt{}$ROOT < *v* < Theme < Voice < Asp < T < C

In line with standard Minimalist assumptions, most differences between individual languages emerge at the interface between syntax and PF. We have seen many examples of this logic in the preceding pages. Most importantly, we established in Chapter 3 that weak satellite-framed languages like Polish require the result satellite to surface as an affixal clitic, while strong satellite-framed languages like English allow it be realised as a free-standing word. At the level of syntax and semantics, weak SF constructions (e.g. *w-lecieć*^{P} 'in-fly') and strong SF constructions (e.g. *to fly in*) are virtually indistinguishable from each other. In both cases, the manner root originates in the complement of the change-of-state head v_{Δ} while the result XP merges in the specifier position (8). It is only after spell-out, at the interface with PF, that the parametric difference between weak SF and strong SF languages becomes apparent. By virtue of some morphological property of weak SF languages (i.e. the M-Merger parameter), the result X/XP is required to incorporate into the verbal word, effectively filtering out the derivation of complex AP and PP resultatives at PF.

(8) a. $[_{vP}$ **X/XP**$_{\textbf{(requires M-Merger)}}$ $[\ v_{\Delta}\ \sqrt{}\text{MANNER}\ ]\ ]$ (weak SF languages)

b. $[_{vP}$ **XP** $[\ v_{\Delta}\ \sqrt{}\text{MANNER}\ ]\ ]$ (strong SF languages)

In addition to the parallel between lexical prefixes and Germanic resultative particles, there are two other ways in which the syntax and semantics of Polish turns out to be less cross-linguistically idiosyncratic than we might have otherwise expected. Firstly, in Chapter 5, I

demonstrated that many bare imperfectives, including *prostować*$^{\text{I}}$ 'to straighten', *trzeźwieć*$^{\text{I}}$ 'to sober up' and *niszczyć*$^{\text{I}}$ 'to destroy', are resultative. This empirical finding shows that Polish allows the result to be encoded 'in the verb', just like virtually all other languages. Although Polish bare imperfectives do not entail that the result holds at the assertion time, this is only because the result entailment is suspended by imperfective aspect. In this particular case, the variation does not come from the morphology, but from the EPP property on the perfective head $\text{Asp}^{\text{EPP}}_{\text{PFV}}$, which can only be satisfied by merging a prefix in Spec-Asp.

(9) *Resultative bare imperfectives (VF constructions)*

$[_{\text{AspP}}\ \text{Asp}_{\text{IPFV}}$ / $*\text{Asp}^{\text{EPP}}_{\text{PFV}}\ [\ \ldots\ [_{v\text{P}}\ v_{\Delta}\ \sqrt{\text{RESULT}}\ ]\ ]$

Crucially, this means that Polish does not count as a counterexample to the candidate universal in (10), and that we can continue to treat VF constructions as cross-linguistically unmarked (in line with Mateu 2012, Real Puigdollers 2013, and others). In the present system, nothing can prevent the Merge of a result root with v_{Δ}, yielding the VF pattern.

(10) *The universality of the VF pattern*

All languages have verb-framed constructions.

The second way in which Polish turns out to be surprisingly similar to other languages concerns the computation of aspect. In Chapter 4, I contrasted two approaches to the derivation of aspect in Polish and other Slavic languages. According to the most common approach, the value of aspect is computed in a semi-recursive manner, with PFV overwritten by IPFV, and with IPFV overwritten by PFV again (11a). The alternative approach is to posit a unique structural locus of aspect in the clause (11b). Unlike the single-aspect representation, which is common across languages, the semi-recursive derivation of aspect would be exceptional from a cross-linguistic perspective. Hence, it is up to the proponents of this approach to present an explicit theory of the syntax-semantics interface such that it permits certain valued, interpretable features to be 'deactivated' or 'overwritten' by others without giving rise

to a semantic contradiction. Is this 'overwriting' mechanism specific to Slavic languages or is it part of Universal Grammar? Is there any evidence that other functional projections are similarly 'recursive', with T_{PST} overwriting T_{FUT}, or with Num_{SG} cancelling the semantic contribution of Num_{PL}? Unlike the semi-recursive structure, an analysis with a single aspectual head allows us to maintain a straightforward mapping from syntax to semantics.

(11) a. *Aspect computed at multiple points in the derivation*

[SP_{high}* [**Asp_{PFV}** [... [**Asp_{SI}** [... [SP_{low}* [**Asp_{PFV}** [... [$_{VP}$ ... LP ...] ...]

b. *A single structural locus of aspect*

[SP_{high}* [**Asp_{PFV}** [... [SI [... [SP_{low}* [... [$_{VP}$ ... LP ...]]]]]]]

The difference between *semi-recursive aspect* and *single aspect* is related to, albeit not identical with, the difference between *verb-internal* and *verb-external* aspectuality discussed in Tatevosov (2018). His remarks on cross-linguistic variation are worth quoting in full:

> This [verb-internal aspectuality] makes Russian radically different from Germanic, Romance, Turkic, most Uralic and thousands of other languages where semantic aspects only enter the derivation when relevant functional structure of a clause is projected [...]. This asymmetry in how aspect is construed in natural languages is a challenge for any theory that wants to minimize ineliminable assumptions about linguistic diversity that have to be stipulated.

I share Tatevosov's view that, all other things being equal, a theory which minimises cross-linguistic variation should be preferred to one that does not. However, Tatevosov still situates variation at the level of semantics, while I reduce it to EPP and M-Merger. He also makes the prediction that resultative bare imperfectives should not exist, contrary to fact.

7.3 Does *v* always introduce an eventuality?

The little *v* head has played a central role in this thesis. It not only encodes the core semantic distinction between COS and non-COS predicates and hosts result XPs in its specifier, but also serves as the target of insertion for verbalising suffixes like *-ise* and *-ify* in English and *-ow* and *-i* in Polish. For the purposes of the following discussion, I will draw a binary distinction between the eventuality-introducing and the categorising function of the *v* head:

(12) *The functions of little* v

a. introduces an eventuality in the semantics

b. assigns a category to the root

Prima facie, we would expect these two functions to be always associated, with all verbalising suffixes introducing an eventuality. In reality, things turn out to be a little bit more complicated. Specifically, the *v* head may discharge its categorising function without introducing an eventuality in the semantics. This becomes apparent when we look at nouns derived from verbs. Morphologically complex nominals like *organisation* and *gratification*, which embed *-ise* and *-ify*, are ambiguous between eventive and non-eventive uses. In her seminal study, Grimshaw (1990) famously distinguished between Complex Event Nominals (CENs; which are eventive and support argument structure) and Result Nominals (RNs; which do not refer to events and do not support argument structure).[1] Some examples of Complex Event Nominals and Result Nominals are given in (13)-(16). In each pair, one and the same morphological form varies between a more verbal, eventive use (a) and a more nominal, referential use (b), denoting a result or a product of the corresponding event.

(13) a. the **organ-is-ation** of this trip by John in a day (CEN)

b. a non-profit **organ-is-ation** (RN)

[1] On a terminological note, Complex Event Nominals need not have a complex event structure – the two terms are unrelated. More recently, Borer (2013) has made a similar distinction between Argument-Supporting Nominals (which correspond to CENs) and Referential Nominals (which roughly correspond to RNs).

(14) a. the gradual **speci-al-is-ation** of labour in capitalism (CEN)

b. a linguist whose **speci-al-is-ation** was Bantu syntax (RN)

(15) a. the **cert-ifi-cation** of John as an accountant in a week (CEN)

b. a candidate with three fake **cert-ifi-cation-s** (RN)

(16) a. John's constant **grat-ifi-cation** of his own desires (CEN)

b. an employee who gets a lot of **grat-ifi-cation** from focused work (RN)

If the presence of *-ise* or *-ify* in the morphology indicates the presence of the *v* head in the syntax, then RNs such as *a non-profit organisation* must include *v* in their structure. Despite this fact, RNs fail to introduce a grammatically-accessible eventuality. This is shown by the fact that they cannot be accompanied by temporal, spatial or manner modifiers:[2]

(17) a (*frequent) **organ-is-ation** (*in two days) (*in alphabetical order) (*indoors)

Some additional diagnostics that distinguish between RNs and CENs are listed in Table 7.1. The grammatical mechanism underpinning nominalisation is a complex and controversial issue which continues to be the subject of much debate.[3] This said, since the present study emphasises the syntactic nature of word formation, I will adopt a structural approach to the ambiguity between CENs and RNs (see Borer 2013 for an in-depth discussion and defence of this approach formalised in her *Exoskeletal Model*; cf. also Kwapiszewski 2020 for an application to Polish). On this approach, the internal structure of the noun *organisation* always includes the root ($\sqrt{}$ORGAN), a verbaliser (i.e. *-ise*) and a nominaliser (i.e. *-ation*). In turn, the CEN/RN contrast derives from the presence/absence of verbal functional structure 'sandwiched' between *v* and *n*. While CENs embed the projections responsible for

[2]Recall that agent and instrument nominals also resist modification by such adverbials, even though they plausibly embed an event variable in the semantics (e.g. a *driver* is 'the kind of thing that is an agent in generically many driving events'). The fact that this event variable is generically bound, and that the event predicate is in the scope of the nominalisation operator $\cap$, could go some way towards explaining these restrictions (see §6.4.1). See also Roy and Soare (2013) and McIntyre (2014) for recent approaches to this problem.

[3]The reader is referred to Alexiadou and Borer (2020) for an excellent overview of the history of this work from Chomsky's (1970) *Remarks on Nominalisation* to the present, together with a long list of open questions.

	RNs	CENs
a.	No obligatory arguments	Obligatory arguments (where relevant)
b.	No necessary event reading	Event reading
c.	No agent-oriented modifiers	Agent-oriented modifiers
d.	Subjects are possessives	Subjects are arguments
e.	*by*-phrases are non-arguments; in Spanish, selects *de*	*by*-phrases are arguments; in Spanish, selects *por* (where typically licit)
f.	No event control (implicit argument control)	Event control (implicit argument control)
g.	No aspectual modifiers	Aspectual modifiers such as *for three hours*; *in three hours*
h.	Modifiers like *constant* and *frequent* only with plural	Modifiers like *frequent* may occur without plural
i.	Post-nominal genitives possible	Post-nominal genitives impossible
j.	Pluralise, allow *one*, *a*, *that* determiners	Do not pluralise, do not allow *one*, *a*, *that* determiners
k.	May be predicates	May not be predicates

Table 7.1: The properties of RNs and CENs (from Alexiadou and Borer 2020)

argument structure, such as Voice and Theme (18), RNs lack those projections (19).

(18) *The structure of CENs*

$[_{nP}\ n\ [\ ...\ [_{VoiceP}\ \text{PRO}\ [\ \text{Voice}\ [_{ThemeP}\ \text{DP}\ [\ \text{Theme}\ [_{vP}\ v\ \sqrt{\text{ROOT}}\ ]\ ]\ ]\ ]\ ]\ ...\ ]$

(19) *The structure of RNs*

$[_{n}\ n\ [_{vP}\ v\ \sqrt{\text{ROOT}}\ ]\ ]$

Since verbalising suffixes like *-ise* and *-ify* are attested in both CENs and RNs, the *v* head clearly fails to introduce an eventuality in at least some cases. This leaves us with two logical options. Firstly, we could propose that verbalising morphology never introduces an eventuality, and that grammatical events are licensed by higher functional layers, which are absent from RNs. This is the approach taken in Borer (2013), who claims that the event is licensed by E(vent)P. This projection hosts the external argument and roughly corresponds to VoiceP in the present system (see also Voice-Event in van Hout and Roeper 1998).

Alternatively, we can maintain that *v* does introduce an eventuality in most cases, but

it can be semantically null in some well-defined contexts. This solution is suggested by Marantz (2013a), who discusses two kinds of data: i) nominal constructions which embed verbal morphology, but which nonetheless 'behave as if the key semantics of little v − the introduction of an event variable, with a value of causative or inchoative − has been ignored in the meaning of the nouns' (Marantz 2013a:108); ii) adjectival participles in English and Greek which do not display 'the semantics (and associated syntax) of an embedded little v', and which 'sometimes show special or unique meanings for their roots, meanings not associated with the verb outside the [participle] construction' (Marantz 2013a:110). Faced with the evidence of verbal morphology in the absence of verbal semantics, he hypothesises that v has a semantically null *alloseme*. Allosemes are semantic analogues of allomorphs, which can be selected by adjacent nominalising and adjectivising heads (see also Wood 2021 for a book-length treatment of this idea in the domain of Icelandic nominalisations). Marantz assumes that the allosemes of little v are 'contextually determined at the LF interface, rather than being featurally specified in the syntax'. In what follows, I will pursue an alternative implementation in terms of 'flavours' of v, treating the semantically null verbal head as yet another featural flavour $v_{\emptyset}$. To be more explicit, using the three privative features [eventuality], [dynamic] and [change of state], we can define the following four flavours:

(20) a. v_{Δ} [eventuality], [dynamic], [change of state]

b. v_{DO} [eventuality], [dynamic]

c. v_{BE} [eventuality]

d. $v_{\emptyset}$

By hypothesis, RNs which do not introduce an eventuality involve the null 'flavour' $v_{\emptyset}$ (21). Conversely, Voice and Theme can only compose with a semantically contentful v head. This has the desired effect of excluding the presence of $v_{\emptyset}$ from the structure of CENs (22).

(21) *The structure of RNs with expletive* $\text{v}_{\emptyset}$

$[_{n}\ n\ [_{v\text{P}}\ v_{\emptyset}\ \sqrt{\text{ROOT}}\ ]\ ]$

(22) *The structure of CENs precludes the presence of* $v_{\emptyset}$

*[$_{nP}$ *n* [... [$_{VoiceP}$ PRO [Voice [$_{ThemeP}$ DP [Theme [$_{vP}$ $v_{\emptyset}$ $\sqrt{}$ROOT]]]]]] ...]

All of these considerations turn out to be relevant for the analysis of SI morphology in Polish. As mentioned briefly in Chapter 6, Polish has a productive way of deriving nouns from verbs by means of the N/T participle suffix (realised as *-nie/cie* in the nominative singular). When used as CENs, *-nie/-cie* nominals have the same aspectual value as their verbal base (23). This demonstrates that the structure of these nominals includes AspP (24).

(23) a. nieustanne ład -ow -a -ni -e^{I} ciężarówek
constant load -*v* -TH -N/T -NOM.SG trucks$_{GEN}$
'the constant loading of the trucks' (B-imperfective)

b. (*nieustanne) roz- ład -ow -a -ni -e^{P} ciężarówek
constant apart- load -*v* -TH -N/T -NOM.SG trucks$_{GEN}$
'the unloading of the trucks' (LP-perfective)

c. nieustanne roz- ład -ow -yw -a -ni -e^{I} ciężarówek
constant apart- load -*v* -SI -TH -N/T -NOM.SG trucks$_{GEN}$
'the constant unloading of the trucks' (S-imperfective)

d. (*nieustanne) po- roz- ład -ow -yw -a -ni -e^{P} ciężarówek
constant DIST- apart- load -*v* -SI -TH -N/T -NOM.SG trucks$_{GEN}$
'the unloading of the trucks one by one' (SP-perfective)

(24) *The structure of Polish CENs*

[$_{nP}$ *n* [$_{AspP}$ Asp [$_{VoiceP}$ PRO [Voice [$_{ThemeP}$ DP [Theme [$_{vP}$ LP [v_{Δ} $\sqrt{}$ROOT]]]]]]]]

What was not mentioned before is that some *-nie/-cie* nominals are ambiguous between CEN and RN readings, just like *-ation*, *-al* and *-ment* nominals in English. The first pair of examples features a nominal related to the B-imperfective verb *siedzi-e-ć*^{I} 'to sit' (25). The second pair is adapted from Kwapiszewski (2020:85) and involves a nominal built on an LP-perfective stem. Depending on its grammatical context, *roz-wiąz-a-ni-e* 'solution' may refer to an event of finding a solution to some problem (26a) or to an entity arising as a result of this event, the solution itself (26b). The final nominal *na-gr-a-ni-e* 'recording' is also derived from an LP-perfective stem, exhibiting a similar ambiguity: it may denote an

event of recording something (27a) or an entity created in the course of such an event (27b).

(25) a. **siedz -e -ni -e^{I}** przed telewizorem cały dzień
sit -TH -N/T -NOM.SG before television.INST all day
'sitting in front of the TV all day' (CEN)

b. To drewniane **siedz -e -ni -e** jest bardzo twarde.
this.N wooden seat -TH -N/T -NOM.SG is very hard
This wooden seat is very hard.' (RN)

(26) a. **roz- wiąz -a -ni -e^{P}** tej sprawy przez detektywa
apart- tie -TH -N/T -NOM.SG this.GEN case.GEN by detective.GEN
'the solving of this case by the detective' (CEN)

b. Ta zagadka ma dwa **roz- wiąz -a -nia**.
this.F puzzle has two apart- tie -TH -N/T -ACC.PL
'This puzzle has two solutions.' (RN)

(27) a. **na- gr -a -ni -e^{P}** tej płyty przez muzyków
on- play -TH -N/T -NOM.SG this album.GEN by musicians.GEN
'the recording of this album by the musicians' (CEN)

b. To **na- gr -a -ni -e** ma miliony wyświetleń.
this.N on- play -TH -N/T -NOM.SG has millions views.GEN
'This recording has millions of views.' (RN)

Below, I list many more examples of *-nie*/*-cie* nominals which have an RN reading, and which are morphologically derived from B-imperfective (28) and LP-perfective stems (29).

(28) *Nominals with an RN reading derived from B-imperfective stems*

a. bad-a-ni-e 'testing; a test'
b. ciąż-e-ni-e 'weighing; gravity'
c. koch-a-ni-e 'loving; darling'
d. pi-ci-e 'drinking; beverage'
e. pra-ni-e 'washing; laundry'
f. pyt-a-ni-e 'asking; a question'
g. tłumacz-e-ni-e '(a) translation'
h. szczep-i-e-ni-e '(a) vaccination'
i. widz-e-ni-e 'seeing; a vision'
j. wierz-e-ni-e 'believing; a belief'
k. żar-ci-e 'gobbling up; grub'
l. ży-ci-e 'living; a life'

(29) *Nominals with an RN reading derived from LP-perfective stems*

a. do-zn-a-ni-e '(a) sensation'	h. u-zn-a-ni-e 'approval'
b. od-bi-ci-e '(a) reflection'	i. wy-prac-ow-a-ni-e 'working; an essay'
c. prze-br-a-ni-e 'a disguise'	j. wy-zn-a-ni-e '(a) confession'
d. prze-dłuż-e-ni-e '(an) extension'	k. wy-żyw-i-e-ni-e 'nourishment'
e. przy-ję-ci-e 'admittance; a party'	l. za-da-ni-e 'inflicting; a task'
f. s-prost-ow-a-ni-e '(a) correction'	m. za-uf-a-ni-e 'trusting; trust'
g. u-przedz-e-ni-e 'a prejudice'	n. z-lec-e-ni-e 'an order'

RN nominals derived from B-imperfective stems are no more problematic than the English examples above. We can analyse them as in (30) with a semantically expletive $v_{\emptyset}$.

(30) *The structure of Polish RNs (no lexical prefix)*

$[_{n}\ n\ [_{vP}\ v_{\emptyset}\ \sqrt{\text{ROOT}}\ ]\ ]$

The finding that many RNs embed lexical prefixes is more puzzling. In the absence of the AspP layer, the LP should remain in the specifier of *v*P, triggering the insertion of SI morphology at PF, as shown in (31). Note that this structure is very similar to that proposed for agent/instrument *-acz/-arka* nominals and adjectival active *-ąc* participles in Chapter 6, which consisted of a *v*P phrase embedded under category-defining *n* or *a* heads, and which did feature SI morphology. However, we do not find any evidence of SI insertion in RN nominals: all *-nie/-cie* nominals derived from S-imperfective stems pattern as Complex Event Nominals. For example, the S-imperfective counterparts of *roz-wiąz-a-ni-e*$^{\text{P}}$ 'solution' and *na-gr-a-ni-e*$^{\text{P}}$ 'recording' are *roz-wiąz-**yw**-a-ni-e*$^{\text{I}}$ and *na-gr-**yw**-a-ni-e*$^{\text{I}}$, and they are unambiguously eventive, denoting an ongoing or habitual event of solving or recording.

(31) *The structure of Polish RNs (with a lexical prefix)*

$[_{n}\ n\ [_{vP}\ \text{LP}\ [\ v_{\emptyset}\ \sqrt{\text{ROOT}}\ ]\ ]\ ]$ ⇒ **no SI insertion?**

One way out of this problem is to modify the rule of SI insertion so that it affects only those instances of *v* which are semantically contentful (32). If the featurally impoverished variant of *v* cannot support the insertion of SI, then the availability of an RN reading for *roz-wiąz-a-ni-e* and the unambiguous CEN reading of *roz-wiąz-**yw**-a-ni-e* would both be captured correctly. Since RNs are built on the expletive $v_{\emptyset}$, they cannot embed SI morphology.[4]

(32) *SI insertion restricted to non-expletive* v

$$[\ v_{[\text{eventuality}]}\ ] \ \rightarrow \ [\ v\ \text{SI}\ ] \ / \ [_{v\text{P}}\ \text{Spec}^{min/max}\ [\ \_\_\ ]\ ]$$

The proposals presented in this section are only preliminary, requiring much further research into the structure of deverbal nominals, the contrast between CENs and RNs, the relationship between event and agent/instrument nominals, and the source of eventivity in the grammar. Clearly, the morphological evidence from Polish can inform these theoretical debates in a non-trivial manner: in contrast with lexical prefixes and verbalising suffixes *-ow* and *-i*, SI morphology entails the presence of an eventuality in the semantics. How should we capture this generalisation? Does it hold in other Slavic languages? Ultimately, it would be desirable to conduct a cross-Slavic survey comparing the distribution of SI morphology in different types of deverbal nominal and adjectival constructions. On the one hand, the mechanisms of prefix movement and SI insertion formulated in this thesis are expected to hold in closely related Slavic languages like Russian, and Czech. On the other, if my claim that SI insertion is a morphological rule is correct, it would not be surprising to see some (minor) variation in the distribution of this morpheme from one Slavic language to another.

[4]This reformulation of SI insertion opens up an intriguing possibility. Instead of analysing SI as a dissociated morpheme, we could analyse it as the realisation of the [eventuality] feature, which splits off from *v* in the context of a min/max specifier. In Distributed Morphology, the operation which divides a feature bundle into two separate terminal nodes is called *Fission*. Halle (1997:132) describes it as follows: 'Simultaneously with insertion of the phonological exponent, a subsidiary terminal morpheme is generated into which are copied the features − if any such remain − that have not been required for (or matched in) the first step. This subsidiary morpheme is then itself subject to Vocabulary Insertion in the usual manner.' After undergoing Fission, $v_{[\text{eventuality}]}$ would be split into a *v* node and an [eventuality] node, with the latter realised by SI morphology. The idea that SI realises the [eventuality] feature is promising, but I leave its full exploration for future work.

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