

A Proposal

1.1 Introduction

In the domain of aspectual phenomena, we can observe two main types of systematic interactions between noun phrases and verbal predicates. The first type concerns the influence of quantificational properties of certain noun phrases on aspectual properties of verbal predicates. The primary focus is here on telic (event) and atelic (process) readings assigned to verbal predicates in English, some of which are treated as ‘aspect shift’ or ‘coercion’. In addition, case suffixes on certain nouns and prepositional phrases with a locative and/or partitive origin can contribute meanings to sentences that are comparable to the semantic contribution of aspectual markers (perfective, imperfective and progressive) directly applied to verbal predicates. Interactions of this type will be discussed in connection with German and Finnish.

The second main type of interactions between noun phrases and verbal predicates, which is less explored than the first one, concerns the influence of perfective and imperfective operators as well as of verbal affixes on the quantificational and (in)definite interpretations of noun phrases. Although the main emphasis is on Czech, the results are applicable to other Slavic languages, as well.

The use of the term ‘aspect’ here reflects its double life in current literature. It is used to refer to the perfective-imperfective distinction expressed by inflectional morphemes on the verb (as in Romance languages, for example) or by special function morphemes within a verbal complex (as in the English progressive construction, for example). Such formal devices are often covered by the term ‘grammatical aspect’ (de Swart, 1998, for example) and contrasted with semantic categories that belong to ‘(inherent) lexical aspect’ (Comrie, 1976; Van Valin, 1990), ‘aspectual class’ (Dowty, 1979) or ‘aspect’ (Tenny, 1987, 1994), all of which are used for the classification into states, activities, accomplishments and achievements (introduced by Vendler, 1957), and the superordinate telic-atelic distinction (introduced by Garey, 1957). The latter view of aspect originated in the classification of verb meanings in the philosophy of action (cf. Ryle, 1949; Kenny, 1963, Vendler, 1957/1967) and it was introduced into modern linguistics by Dowty (1972, 1979). Most recently, the term

'eventuality types', coined by Bach (1981, 1986), has become established for the agentivity-neutral event-process-state division, and occasionally the term 'Aktionsart' (Hinrichs, 1985; Van Valin, 1990; Zaenen, 1993) can also be found.

The 'grammatical aspect', perfective and imperfective, is often not clearly distinguished from the '(inherent) lexical aspect'. This is the case, for example, in approaches that define the semantic contribution of imperfective and perfective operators in terms of eventuality types, states (or processes) and events, respectively. Although these two domains are related and I propose that the basic semantic properties of both be defined within the theory of mereology, or the logic of part-whole relations, I also argue that we need to draw a clear line between them. Distinguishing between the semantic contribution of aspectual operators and the (lexical) semantic properties of verbal predicates to which aspectual operators are applied is necessary to account in an adequate way for their systematic interactions, as they are manifested in the 'imperfective paradox' (Dowty, 1977, 1979) or 'partitive puzzle' (Bach, 1986), for instance.

Three main theses are defended here. The first is that the thematic structure of verbs governs the seemingly disparate ways in which the interactions between verbal predicates and noun phrases are manifested. In the core cases they are restricted to episodic verbal predicates with Incremental Theme arguments. In this I follow some proposals made in Krifka (1986, 1992) and Dowty (1988, 1991). This presupposes that the denotations of verbal and nominal predicates have an algebraic structure of complete join semi-lattices (Link, 1983, 1987; Bach, 1986) with structure-preserving (homomorphic) mappings defined between them (Krifka (1986, 1992). I also argue that verbal morphology, certain prefixes in particular, in Czech (and other Slavic languages) have the semantic properties of quantifiers, with the variable (event or individual) they bind also determined by the thematic structure of verbs: most importantly, they invariably bind the individual variable introduced by the Incremental Theme noun phrase.

The second thesis is that we can provide a unified analysis for the various interactions between verbal predicates and noun phrases within a constraint-based (or unification-based) approach to natural language description. In constraint-based terms, a verb and an Incremental Theme noun phrase each specify partial information about a single linguistic object, a complex verbal predicate or a sentence. Constraints imposed by a given language require that information coming from these two sources be compatible. Languages may differ with respect to the encoding of the information that is shared between nominal and verbal

predicates in the surface syntax and morphology: on the Incremental Theme noun phrase in English, German and Finnish, and on the verb in Czech, for example.

The third thesis is that the homomorphic mappings are not only a part of the meaning of certain episodic predicates that take Incremental Theme arguments (as proposed in Krifka and Dowty), but they can be a part of the meaning of certain episodic constructions and/or be pragmatically determined. I propose that a subset of episodic constructions has meanings that involve a homomorphism between the Incremental (Path) Theme and event argument. This presupposes that simple sentence constructions have unsaturated denotations construed as functions just as verbs are standardly thought of as functions. Just as verbs are characterized by their syntactic and thematic argument structure, so grammatical constructions are. This account has the advantage that it allows us to calculate the telicity properties of verbal predicates and sentences following the same general principle of *aspectual composition* (see below in (2)), regardless whether the ‘incremental participant’ is a subcategorized and syntactically realized argument of the main lexical verb or not.

1.2 Telicity: From Nouns to Verbs

The influence of quantificational properties of noun phrases on the telicity of verbal predicates has been extensively discussed in connection with English data, such as (1), for example:

- (1) a. Mary ate a sandwich in an hour / ?for an hour.
 b. Mary ate soup / blueberries ??in an hour / for an hour.

When a verb like *eat* is combined with a count term it yields a telic (event-denoting) verbal predicate or a sentence. The same type of verb combined with a mass or a plural term yields an atelic (process-denoting) predicate. The telic and atelic status of verbal predicates is reflected in the distribution properties of temporal adverbials. The domain of application of time-span adverbials like *in an hour* is restricted to telic predicates, while that of durative adverbials like *for an hour* to atelic predicates.

The influence of noun phrases on the telicity of verbal predicates and sentences was noticed as early as in the 19th century with the inception of the research on ‘Aktionsart’ (German term meaning ‘type of action’). In contemporary linguistics it has been discussed since Verkuyl (1972) and Dowty (1972). There are two main reasons why this phenomenon

attracted so much attention. First, it points to the striking parallels between the semantics of noun phrases and verbal predicates. Moreover, it is directly related to general principles that govern the mapping between the semantic and syntactic structure.

To set the stage for the discussion of this topic, in chapter 2 *Eventuality Types*, I summarize some of the most important contributions to the development of the classification of verbal predicates and sentences into events, processes and states in philosophy and linguistics. While tense logical approaches base the classification primarily on abstract properties of time points and intervals, approaches within event semantics take eventualities to be basic entities in the universe of discourse, in addition to individuals and times. As proposed by Bach (1981, 1986), at least some of their properties can be modelled in terms of the mereological ‘part’ relation, specifically as a complete join semilattice (as defined in Link, 1983, 1987). The appeal of the lattice-theoretic approach is that it allows us to represent explicitly parallels between the denotations of verbal and nominal predicates, and to shed light on the relation between the syntactic noun-verb distinction and the ontology of individuals and eventualities. For example, Bach (1981), Link (1983, 1987) and Krifka (1986, and elsewhere) show that undetermined mass and plural nouns share with process (e.g., *run*) and state (e.g., *like*) predicates cumulative and divisive reference: For example, any sum of parts which are water is water, and any two sums of entities in the denotation of *apples* add up to a sum also in the denotation of *apples*. Parts of the interpretation of *water* and *apples* are describable by the same nouns *water* and *apples*. In contrast, count noun phrases like *an/the/one apple*, *five apples*, and measure phrases, like *a glass of wine*, are neither cumulative nor divisive. Following the same line of reasoning, “(...) events are antidisubdivisible and nonadditive; processes lack these properties” (Bach, 1981:70). The divisivity (or divisibility) and cumulativeness criterion also divides noun phrases and verbal predicates into *quantized* (singular count, measure, quantified noun phrases, and event predicates) and *cumulative* (mass nouns, plurals, process and state predicates), as Krifka (1986, and elsewhere) proposes.

In chapter 3 *Telicity* I turn to the influence of noun phrases on the telicity properties of verbal predicates, exemplified in (1). (1a), for example, is naturally understood as denoting an eating event during which the sandwich was gradually consumed, part by part, until all its parts were eaten, at which point the eating event *necessarily* ended. In this sense, the participant denoted by *a sandwich* is intrinsically tied to and delimits the temporal extent of the event denoted by *Mary ate a*

sandwich. There is a remarkable agreement that an adequate account of such data must make reference to the following ingredients: (i) the lexical semantics of the main verb, which is episodic; (ii) its relation to the nominal argument that determines the telicity of a predicate (or a sentence), here *a sandwich*; and (iii) the quantificational properties of the nominal argument. The main disagreement concerns the question whether these factors are adequately to be described in syntactic or semantic terms, and I will discuss two recent influential approaches that illustrate each strategy.

According to Tenny (1987, 1994), the telicity effect of noun phrases like *a sandwich* in (1a) is motivated by the properties of a particular syntactic position the noun phrases occupy in the d-structure: All and only internal direct object arguments in the d-structure of verbs of change or motion are associated with the argument in the Lexical Conceptual Structure that “measures out” an event. This is the essence of Tenny’s (1987, 1992, 1993) *Aspectual Interface Hypothesis*.

On Krifka’s (1986, 1992) and Dowty’s (1988, 1991) semantic account, the telicity effects are motivated by the properties of a certain thematic role, which may be associated with various syntactic positions. The established term for it is Dowty’s ‘Incremental Theme’, which corresponds to Krifka’s ‘Gradual’ or ‘Successive Patient’. Krifka and Dowty propose that a part of the meaning of episodic verbs, such as *eat*, is (modelled by means of) a homomorphism between the lattice structure associated with their Incremental Theme argument and the lattice structure associated with their event argument. The general rule for the influence of the Incremental Theme argument on a verbal predicate, following Krifka’s suggestions, is given in (2):

- (2) aspectual composition: An episodic verb (in sentences denoting single eventualities) combined with a quantized Incremental Theme argument yields a quantized complex verbal predicate, while with a cumulative Incremental Theme argument it yields a cumulative complex verbal predicate.

I will argue in favor of Krifka-Dowty’s semantic account, because it allows us to calculate the telicity of verbal predicates and sentences in a uniform, explicit and compositional way on the basis of independently motivated syntactic structures.

However, both the syntactic and semantic approaches face problems in those cases in which the telicity of verbal predicates and sentences cannot be directly motivated by the inherent lexical semantic properties of their head verbs, as in (3). Although the main verbs *jumped*, *rattled*,

walked on their own are atelic (process-denoting), they occur in sentences that are telic (event-denoting). The relevant delimitation is here provided by optional adjuncts together with the subject noun phrase:

- (3) a. The frogs jumped to the pond.
 b. The old car rattled down the road to the garage.
 c. John walked his feet sore.

Examples such as those in (3) are standardly treated in terms of aspect shifts. Two main strategies have been proposed to meaning shifts of this type: lexical and constructional. Lexical rule strategies have so far received the most attention. They rely on changing the syntactic and semantic structure of verbs, which may involve augmentation by means of adjuncts (Pollard and Sag, 1987; Levin and Rappaport Hovav, 1995), and/or by means of arguments (Dowty, 1979). They may also rely on changing the argument structure of the main element that induces aspect shift, here an adjunct (Pollard and Sag, 1994). I argue that a uniform treatment of aspect shifts in terms of lexical rules is not viable, given that they are not flexible enough to handle the whole range of the relevant phenomena (see Zaenen, 1993).

Another way to treat meaning shifts is to define (extralexical) phrasal patterns, including clause constructions, with their own syntax and semantics, into which classes of verbs are integrated. Suggestions along these lines can be found in Jackendoff (1990) and in constraint-based grammars currently developed within the Head-Driven Phrase Structure Grammar (e.g., Copestake et al., 1995; Sag, 1997, for example) and in Construction Grammar (Fillmore and Kay, 1991, and in press; Goldberg, 1992/1995). The approach I develop here is in the spirit of such proposals. It is motivated by the observation that in sentences like (3b), for example, the verb and the directional PP-adjunct are semantically mutually constraining and both contribute to the meaning of a directed-motion construction, which involves a homomorphic mapping between the Incremental Path Theme and the event argument. Given that in (3b) the Holistic Theme (*the old car*) is quantized and the implied Path has a definite extent, there is also a finite succession of positional changes of the referent of *the old car*, and hence the whole sentence is telic or quantized. Notice that once we determine the participant with respect to which a given complex predicate is a homomorphism, its telicity can be determined in a way analogous to that in the familiar examples like those in (1). Since the verb and the adjunct are here mutually constraining, it makes sense to state the

relevant constraints over both of them, rather than encoding the alternative syntactic structures in which a given verb may occur either in a verb's or an adjunct's lexical entry, as lexical approaches propose. This idea is implemented by assuming that the adjunct is introduced by a directed motion construction that also imposes constraints on its input predicates, it sanctions verbs of manner of motion and verbs of sound emission. Moreover, an Incremental (Path) Theme and an event argument are semantic arguments directly supplied by the thematic structure of the directed-motion construction, just as they can be introduced by the thematic argument structure of individual verbs (e.g., *cross the river*). (This proposal is consistent with Dowty's (1991:609) observations. See also Goldberg, 1992/1995, on the resultative construction.) When a verb like *rattle* is integrated into a directed motion construction, it retains its inherent lexical semantic properties and the meaning of a construction is superimposed over it. Notice that the telic sentence (3b) entails the atelic sentence *The old car rattled*. Hence, there is no 'shift' or 'overriding' of the verb's meaning, and it is not necessary for the lexical entry for *rattle* to specify a potential reading of a directed motion verb (as in Levin and Rappaport Hovav's 1995 approach, for example).

I also propose that unsaturated verbal predicates and grammatical constructions that take Incremental (Path) Theme arguments cannot be classified as either atelic or telic, but rather denote an eventuality type of their own: an 'incremental eventuality'. The reason is that they can be either telic (as (3b)) or atelic (as (1b)), depending on the quantization properties of the noun phrases that satisfy their Incremental (Path) Theme (and also, in some cases, Holistic Theme) requirement.

The advantage of this approach is that it avoids an unnecessary proliferation of lexical entries to account for the variability of verbs that can be used in phrasal patterns that do not fit their subcategorization requirements and that it restricts the use of the operation of 'aspect shift' only to clashes between argument requirements of constructions with aspectual operators and the eventuality type of their input predicates (as in *Mary played the sonata whole day long*).

1.3 From Verbs to Nouns

There are two independent, but compatible, ways in which verbs constrain the semantics of noun phrases. Certain constraints stem from the aspectual semantics encoded in verbal stems and roots, while others come from verbal affixes that serve to derive verbal stems. How exactly such interactions take place is discussed in Chapter 5,

Quantifiers and Verbal Morphology. Compelling examples can be found in sentences with undetermined mass and plural NPs, that is, NPs without any articles or quantifiers. Let us look at the pairs of Czech sentences in (4) and (5), which minimally differ only in verbal aspect. (The aspect of a verb is here indicated with a superscript “I” standing for ‘imperfective aspect’ and “P” for ‘perfective aspect’. “COMPL” stands for the semantic contribution of a prefix.)

- (4) a. Ivan vy-pil^P čaj.
 Ivan COMPL-drink.PAST tea.SG.ACC
 ‘Ivan drank (up) (all) the tea / the whole portion of tea.’
- b. Ivan pil^I čaj.
 Ivan drink.PAST tea.SG.ACC
 (i) ‘Ivan drank (some/the) tea’ (... and then went home)
 (ii) ‘Ivan was drinking (some/the) tea’ (... when I came)
- (5) a. Ivan s-nědl^P jablka.
 Ivan COMPL-eat.PAST apple.PL.ACC
 ‘Ivan ate (up) (all) the apples.’
- b. Ivan jedl^I jablka.
 Ivan eat.PAST apple.PL.ACC
 ‘Ivan ate / was eating (some/the) apples.’

Perfective sentences (4a) and (5a) entail that there was some specific quantity of tea and apples in the domain of discourse and all of it was consumed when the denoted event ended. That is, ‘tea’ and ‘apples’ are here interpreted as definite noun phrases, possibly in combination with the universal quantifier *all* or some totality expression like *whole*. In the corresponding imperfective sentences (4b) and (5b), ‘tea’ and ‘apples’ tend to be interpreted as existentially quantified. If (4b) and (5b) have an ‘on-going’ (‘progressive’) use, the existential quantification is over some unspecified *part* of the stuff and individuals that fall under the denotation of ‘tea’ and ‘apples’, respectively.

In (6) the prefix *na-* is directly attached to the verb, and yet it functions as a vague cardinality quantifier, meaning approximately ‘a lot of’, ‘many’, with respect to the variable introduced by ‘rolls’, which is also the *only* variable it can bind. (Hence, it is glossed with ‘ACM’ standing for the ‘accumulative’ meaning assigned to it in traditional Slavic accounts.) In addition to its quantificational content, the prefix *na-* also functions as a modifier, adding the meaning of ‘graduality’.

- (6) Pekaři NA-pekli^P housky.
 baker.PL.NOM ACM-bake.PAST roll.PL.ACC
 ‘The bakers baked a lot of/a large batch of/quite a few rolls.’

If we replaced the perfective verb *napekli* with the imperfective *pekli* ‘they baked’, ‘they were baking’ the whole sentence would assert that some baking of rolls took place without any specification about the quantity of rolls.

The Czech data in (4) - (6) is significant for two reasons. First, undetermined NPs with common noun heads are frequent, because Czech, like most Slavic languages, lacks the closed-class function category ‘article’. The second, and more exciting, reason is that we can express quantification over individual variables by means of quantifiers that function as morphological operators on verbs, in addition to using determiner quantifiers for this purpose. Similar verbal quantifiers can be found in other typologically unrelated languages. Among them are Hindi, Japanese, some of the aboriginal languages of Australia, and American Indian languages, such as Navajo, to name just a few.

The correlation of perfective aspect with definite noun phrases is well-documented in Slavic languages like Czech, Polish and Russian (cf. Wierzbicka, 1956; Forsyth, 1960; Rassudova, 1966; Chvany, 1983, among others). The first systematic account for it is given by Krifka (1985, 1989, 1992) who views it as the converse of the English case, exemplified by (1). According to Krifka, perfective operator enforces the quantized interpretation of a complex verbal predicate, which in turn enforces the quantized interpretation of the Incremental Theme argument. If it is realized as an undetermined noun phrase with a mass or a plural noun head, it will also be definite. The reason is that such undetermined noun phrases are taken to be ambiguous between (i) a cumulative and indefinite and (ii) a quantized and definite interpretation.

Like Krifka, I assume that it is Incremental Theme noun phrases whose (in)definite interpretation is constrained by verbal aspect in Slavic languages. My account differs from his in four main respects. First, undetermined noun phrases in languages without the function category ‘article’ are not ambiguous between a definite and an indefinite interpretation. Second, the indefinite vs. definite distinction is independent of the quantized (telic) vs. cumulative (atelic) distinction. Third, the quantized (telic) vs. cumulative (atelic) distinction is independent of the semantics of the grammatical perfective and imperfective aspect. One of the reasons has to do with the semantics of Slavic imperfective aspect and the range of readings assigned to

Incremental Theme noun phrases in imperfective sentences. Fourth, the affinities between (in)definite interpretations of noun phrases and verbal aspect are part of a general domain that concerns the influence of verbal predicates on noun phrases, including quantificational effects of morphological operators on verbs, such as the prefix *na-* in (6a).

The influence of verbal morphology on the interpretation of noun phrases has been recently studied in connection with a variety of quantifiers located outside of noun phrases, called A-quantifiers: verbal affixes, preverbs, adverbs, auxiliaries, etc. A-quantifiers constitute a large and heterogenous class of quantifiers that are distinct in formal and semantic properties from D-quantifiers, or determiner quantifiers which traditionally have been the focus of quantificational studies. The study of quantification from the point of view of the broad distinction into D-quantification and A-quantification originated in the work of Partee, Bach and Kratzer (1987) and some of the results can be found in Bach, Jelinek, Kratzer and Partee (1995). One of the questions that this research poses is ‘What are the constraints for associating a quantifier with the arguments of a verb?’ (Partee, Bach, Kratzer, 1987:21).

For Slavic languages I propose the following generalization concerning the linking of verb arguments to quantifiers that are incorporated in verbs (see also Filip, 1992):

- (7) Incremental Theme Hypothesis: aspectual operators and morphological V-operators function as quantifiers over episodic predicates and their arguments. They bind the variable introduced by the Incremental Theme argument. If there is no Incremental Theme argument, quantification is directed at the event variable alone; if there is neither, quantification is undefined.

The distribution of quantificational meanings in Czech verbs is as follows: *verbal roots* and *stems* encode semantic information associated with aspectual operators. Aspectual operators simultaneously quantify over (parts of) an individual (denoted by the Incremental Theme noun phrase) and (parts of) an event. In the scope of the perfective operator, the relevant noun phrase is interpreted as meaning approximately (*all*) *the x*, *the whole of x*, and in the scope of the imperfective operator it has an existential quantificational force, comparable to English noun phrases with the unstressed *some* (‘sm’) or to the partitive meaning of ‘some part not necessarily all’, provided there are no other quantificational elements present in a sentence. Such meanings are typically conveyed by determiner quantifiers that are insensitive to the count-mass distinction.

Verbal affixes combine adverbial meanings (temporal, spatial, directional, manner, etc.) with quantificational meanings (cardinality, measure, proportion and distributivity). Verbal affixes as quantifiers can bind an event variable or only a variable introduced by the Incremental Theme NP (e.g., the accumulative prefix *na-* in (7a)), or simultaneously both the event and Incremental Theme variable (e.g., the distributive prefix *po-*). The quantification that stems from the lexical properties of verbal affixes seems to have a weaker force than the quantification expressed by determiner quantifiers. For example, the Czech determiner *každý* ‘each’, ‘every’ is a strong quantifier, but the distributive prefix *po-* does not seem to be.

The claim that aspectual operators and verbal affixes have quantificational effects on Incremental Theme noun phrases is supported by constraints on the occurrence and interpretation of strong and weak quantifiers (Milsark, 1974) within Incremental Theme noun phrases in perfective and imperfective sentences.

The Incremental Theme Hypothesis has important consequences for the relation between quantification and lexicon. However, the study of verb morphology in connection with quantification raises a number of difficult issues for the organization of grammar. One of them regards the relation between the semantic and syntactic representations. Data like (4) - (6) pose problems for the hypothesis that the meaning of sentences can be derived in a systematic way by applying compositional semantic rules to independently motivated syntactic structures.

1.4 Perfective and Imperfective Aspect

The data in (4) - (6) and the Incremental Theme Hypothesis in (7) presuppose that we specify the semantics of aspectual operators and the role of morphological verb operators in the formation of perfective and imperfective verbs. This is the topic of chapter 4 *Aspect*. In it, I challenge the widespread view that nearly all Slavic verbs come in ‘aspectual pairs’ and that there is a fairly large number of prefixes that are semantically empty, serving merely to mark perfective aspect (see Binnick, 1991:137, for example). I argue that prefixes cannot be considered to be morphological markers of the perfective aspect, but rather they are derivational morphemes that typically function as eventuality type ‘shifters’.

Following Bach (1986) and Krifka (1986), I adopt an extensional and mereologically based semantics for the perfective and imperfective operators in Slavic languages:

- (8) [IMPERFECTIVE ϕ] relates eventualities denoted by ϕ to their parts, where the notion of ‘part’ is understood in the sense of the weak ordering relation ‘ \leq ’.
- (9) [PERFECTIVE ϕ] denotes events represented as integrated wholes (i.e. in their totality, as single indivisible wholes).

I also propose that the ‘part’ and ‘whole’ relations represent the semantic core of imperfective and perfective operators across languages. Perfective and imperfective operators in particular languages will differ with respect to additional semantic properties they entail (or conventionally implicate) and with respect to constraints on the domains of their application. The cross-linguistic differences are determined by the markedness relation between the members of an aspectual opposition and the relative verb-prominence or heavy loading of information in the verb in a particular language. For example, the English progressive operator is more restricted than the Slavic imperfective operator both in terms of its range of use and constraints on input predicates. It is the marked member in the aspectual opposition ‘progressive vs. non-progressive’. One of the reasons being that only progressive predicates, but not non-progressive ones, denote incomplete eventualities, that is, explicitly exclude the final part of the denoted event. Hence, the English progressive is characterized in terms of the proper part relation ‘ $<$ ’. Moreover, the English progressive requires that predicates and sentences in its scope be episodic, denote some ‘temporary’ or ‘contingent’ property (see Comrie, 1976; Carlson, 1977; Dowty, 1979; Bach, 1981; Timberlake, 1982; Smith, 1985). The Slavic imperfective operator can be freely applied to stative predicates. In addition, imperfective verbs that are episodic can be used to express incomplete eventualities or completed events. Therefore, in the ‘perfective-imperfective’ opposition, the perfective is semantically the marked member, while the imperfective unmarked, and the partitivity involved in the semantics of the imperfective operator is represented in terms of the part relation ‘ \leq ’.

If we assume that the mereological notions of ‘part’ and ‘whole’ constitute the core semantic contribution of perfective and imperfective operators in natural languages, we can describe in a straightforward way semantic parallels between various aspectual systems, regardless whether the main locus for the expression of the ‘part’ and ‘whole’ relation is verb-centered (as in English or Czech), as is typically the case, or noun-centered (as in German or Finnish), which is less often the case. The German and Finnish aspect are discussed in the last chapter, where also comparisons are drawn to the Czech verbal aspect within a constraint-based framework.