

## 26. Verbal Aspect<sup>1</sup>

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### 1. The Role of Verbs and Arguments in the Grammar of Aspect

Semantic studies are often hard to carry out, for the distinctions are subtle, and intuitions not always easy to grasp. In the study of aspect, this problem is compounded by the complexity and abstract nature of the theoretical concepts, which often have a long history in language-specific grammars and in the linguistic literature (see Binnick, 1991, and Filip, to appear, for historical overviews). This first section offers some observations about English, which will set the scene for the exploration of aspect in a cross-linguistic perspective in the remainder of this chapter.

Verbal tense, which Comrie (1985, p. 1) defines as the “grammaticalization of location in time,” commonly serves in natural language to anchor the situation described by the sentence to the time axis (cf. Hewson, this volume). Thus the distinction between (1a), (b) and (c) is temporal in nature:

- (1) a. Bill was in love with Susan.
- b. Bill is in love with Susan.
- c. Bill will be in love with Susan.

Tense is deictic and requires reference to the speech situation. The tenses in (1) locate the situation of Bill’s love respectively before, at (or around), and after the speech time. In contrast, the distinction between (2a) and (b) is aspectual in nature:

- (2) a. Sarah wrote a dissertation in 2009.

It was completed in September.

#I think she is still working on it.

#She never finished it, for she died in September of that year.

- b. Sara was writing a dissertation in 2009.

It was completed in September.

I think she is still working on it.

She never finished it, for she died in September of that year.

Both sentences relate to the past, but in (2a) the writing of the dissertation is presented as a completed event: no writing is going on at the speech time anymore, and the dissertation is finished. (2a) cannot be followed by sentences that deny completion of the event in the past. (2b) presents the writing process as ongoing: the dissertation is under way at some point in the past, but is not finished yet. The possible follow-up of (2b) allows completion of the dissertation before now, or a continuation of the writing into the present, or a termination of the process without completion. The difference between (2a) and (2b) is due to the presence of the Progressive form in (2b), and its absence in (2a). According to Comrie (1976, p. 3) “aspects are different ways of viewing the internal temporal constituency of a situation.” Grammatical aspect is therefore also called “viewpoint aspect” (Smith, 1991/1997). Aspect is not inherently deictic, and it does not anchor the situation to the time axis. Aspect may however affect temporal structure, as is clear from the sentences in (3):

- (3) a. When Bill came into the office, Sara left through the back door.  
b. When Bill came into the office, Sara was leaving through the back door.

We normally perceive (3a) as reporting two events that follow each other in time: Sara left just after Bill came in, perhaps as a reaction to his arrival. (3b) describes the two situations as

overlapping in time, perhaps as an explanation of why Bill missed seeing Sara at the office. The close connections between aspectual and temporal structure motivate the study of tense and aspect in conjunction.

The progressive construction in (2b) and (3b) is a grammatical aspect marker, as it is part of the verbal inflection system of English. Grammatical aspect is distinct from lexical aspect, also called *Aktionsart*, *actionality*, *aspectual class* or *situation aspect* (see Filip, this volume). Lexical aspect bears on inherent features of the verb, as we see in (4). All three sentences are in the simple past, and they contain no overt aspectual markers. Yet, they describe situations with rather different internal temporal constituencies:

- (4)
- a. Bill was in love with Susan.
  - b. Sarah wrote a dissertation.
  - c. Carl reached the top of the mountain.

Sentence (4a) (=1a) describes Bill as being in a certain state of mind. This state protracts over time, but nothing is occurring. (4b) (=2a) describes a completed event. Writing a dissertation is a process that requires a certain amount of time, but it has an inherent endpoint: the event is completed when the dissertation is finished. Reaching the top requires a long preparatory stage of working one's way up, but the event of reaching the top itself is a momentaneous transition from the stage of working one's way up to the resultant state of being at the top. The aspectual differences between (4a-c) are due to the choice of the verb. This is what opposes lexical aspect to grammatical aspect.

Verkuyl (1972) labels the term *lexical aspect* a misnomer, as the verb is not solely responsible for the aspectual character of the sentence. The pair of sentences in (5) illustrates this:

- (5) a. Susan ate an apple.  
 b. Susan ate apples.

Sentence (5a) describes a completed event (the apple is finished), whereas (5b) describes an unbounded process. Some apples must have been consumed to make (5b) true, but the unspecified number of apples does not define an inherent endpoint. Verkuyl argues that the semantics of the noun phrase contributes to the aspectual character of the sentence as a whole, and aspect needs to be defined at the level of the predicate-argument structure (VP and S). This insight leads him to prefer the term *aspectual class* or *situation aspect*. Verkuyl's intuition that subjects and objects play a role in creating temporal structure and imposing boundaries on the situation is worked out in various analyses (Dowty, 1979; Krifka, 1989, 1992; Verkuyl, 1993; Jackendoff, 1996).

Garey (1957) characterizes examples like (5a) as telic, and examples like (5b) as atelic. Telic and atelic verb phrases give rise to different inference patterns, as illustrated in (6a, b):

- (6) a. Susan was drinking wine → Susan drank wine.  
 b. Susan was drinking a glass of wine ↗ Susan drank a glass of wine.

English has a small set of verbs that are inherently telic and necessarily require a delimitating argument, such as *eat up*, *drink up*. They are therefore incompatible with a bare plural or bare mass noun:

- (7) a. Susan ate up \*cake/the cake/\*apples/the apples.

- b. Susan drank up \*wine/the wine/\*glasses of wine/two glasses of wine.

The contrast between (5) and (7) shows that the thematic relation between the verb and its arguments is relevant to the aspectual characterization of the sentence (Krifka, 1989, 1992).

Aspectual class and grammatical aspect are independent theoretical notions, but there are clear interactions between them. For instance, the English Progressive does not easily apply to stative verbs (8a), or creates special meaning effects when it does, as in McDonalds' slogan (8b):

- (8) a. ??Bill was being in love with Susan.  
b. I'm lovin' it!

In section 2, we briefly discuss the main terminological distinctions that are drawn in the literature on aspectual class (section 2). There is more to grammatical aspect than the English Progressive, so the debate on aspect has to be situated in a broader cross-linguistic perspective (section 3). Sections 4 and 5 are concerned with the compositional interpretation of aspect.

## **2. Aspectual Classifications: Basic Distinctions and Challenges**

For non-stative verbs, argument structure drives the telic/atelic distinction (cf. example 5). Krifka (1989, 1992) analyzes *for*-adverbials as expressions that measure the duration of a situation without clearly established beginning- and endpoints (9a). *In*-adverbials measure the time it takes to complete an event with an inherent endpoint, as illustrated in (9b). *For*-adverbials felicitously combine with atelic verb phrases, but disprefer telic verb phrases (9c).

Conversely, *in*-adverbials combine with telic verb phrases, but disprefer atelic verb phrases (9d):

- (9)
- a. Susan wrote letters/drank wine for half an hour.
  - b. Bill wrote a dissertation in six months/ drank a glass of wine in five minutes.
  - c. ??Bill wrote a letter for an hour/ drank a glass of wine for an hour.
  - d. ??Susan wrote letters/drank wine in half an hour.

A process of aspectual coercion (see section 4.4 below) often renders it possible to make sense of such dispreferred combinations. For instance, (9c) can be read as ‘working on writing a letter for an hour’, or ‘drinking from a glass of wine for an hour’.

The *for/in*-criterion shows that a broader class of verb phrases can be classified as telic or atelic than those in (5) and (7). Stative verbs like *be in love* and activities like *waltz* qualify as atelic according to (10a) and (b), whereas verb phrases describing instantaneous events like *reach the top* are telic (10c):

- (10)
- a. Bill was in love with Susan for/\*in many years.
  - b. At the wedding, Bill waltzed for/\*in several hours.
  - c. Bill reached the top of the mountain in/\*for two days.

The common feature of states (like *be in love*, 10a) and activities (like *eat apples*, but also *swim*, *waltz*, *push a cart*, 10b) is that they describe unbounded situations without an inherent endpoint. In terms of their interpretation on the time axis, states are true at moments, because nothing happens, whereas activities require intervals in their interpretation, because they necessarily imply a development over time (Vendler, 1957; Bennett & Partee, 1972;

Dowty, 1979). *Eat an apple* in (5a) is an accomplishment in Vendler's classification, because it describes a culminating process the truth of which can only be evaluated at the entire interval. In contrast, Vendler qualifies verb phrases like *reach the top* (10c) as achievements, because they describe instantaneous transitions that are verified at instants. Other classifications besides Vendler's have been proposed in the literature; they are discussed by Filip (this volume).

### 3. Grammatical Aspect from a Cross-Linguistic Perspective

#### 5.1. Perfective/Imperfective Aspect: Observations from Russian

English is not necessarily a good starting point for a broad perspective on grammatical aspect, so this section places the issue in a cross-linguistic perspective. As evidenced by typological research (Comrie, 1976; Dahl, 1985), the distinction most commonly found in languages is that between perfective and imperfective aspect (cf. Gvozdanovic, this volume). This distinction is central to Slavic languages (section 3.1) and Romance languages (section 3.2), but also many others, cf. Dahl and Velupillai (2008). Section 3.3 returns to the English Perfect and Progressive. Languages which lack the category of verbal tense, such as Sino-Tibetan languages, often have highly complex aspectual systems (section 3.4).

The perf(ective)/imp(erfective) contrast has been extensively investigated for Slavic languages. In a Slavic language like Russian, every verb in the lexicon is labeled as perfective or imperfective. Affixation or stem alternations create perfective verbs out of imperfective roots (11a) and vice versa (11b):

- (11) a. *pisat'* 'to write' (imp), *na-pisat'* 'to write (something)' (perf), *pod-pisat'* 'to sign' (perf). [Russian]  
b. *dat'* 'to give' (perf), *da-va-t'* 'to give' (imp).

c. *pod-pis-yva-t* ‘to sign’ (imp).

When different prefixes combine with the same verbs, they give rise to a range of meanings. Verbs that only differ in aspectual value such as *pisat* ‘write’ (imp) and *na-pisat* ‘write’ (perf) are called aspectual pairs. In contrast, the verb *pod-pisat* not only differs in aspectual value from *pisat*, but also takes up a different lexical meaning, meaning ‘sign’. Verbs that contain such lexical prefixes may take the same suffix that an inherently perfective verb takes (cf. 11b) to create a secondary imperfective: (11c) is the imperfective counterpart of the perfective verb *pod-pisat* ‘to sign’.

Inflected verbs are always marked as perfective or imperfective in Slavic languages, so the role of grammatical aspect in these languages is pervasive. According to Comrie (1976, p. 16), perfectivity “indicates the view of the situation as a single whole, without distinction of the various separate phases that make up that situation.” Smith (1991/1997) takes the Russian perfective to include initial and final endpoints. For (12a), both characterizations imply that the opening of the window is completed:

- (12) a. On ot-kryl<sup>perf</sup> okno. [Russian]  
 he open.PAST.PERF window.ACC  
 ‘He opened (the/a) window.’
- b. On ot-kryl<sup>perf</sup> okno \*(za) dva časa.  
 he open.PAST.PERF window.ACC \*(in) two hours  
 ‘He opened the window in two hours/\*two hours (long)
- c. Ja pro-čital<sup>perf</sup> knigu. entails Ja (bol’še) ne čitajui<sup>imp</sup> knigu.  
 I THROUGH-read.PAST.PERF book.ACC I (anymore) not read.PRES book  
 ‘I read the book’ entails ‘I am not reading the book anymore’

Perfective verb phrases combine with *in*-adverbials rather than *for*-adverbials (12b), and give rise to the entailment that completed events in the past are incompatible with the same situation ongoing at the speech time (12c).

The imperfective aspect “pays essential attention to the internal structure of the situation” (Comrie, 1976, p. 16) and abstracts away from initial and final points (Smith 1991/1997). Prominent interpretations of the imperfective are the plain stative reading (13a, from Smith, 1991, p. 318), the ongoing process reading (13b, from Borik, 2002, p. 48) and the habitual reading ((13c), from Berit Gehrke, p.c.):

(13) a. Vanja golodalimp

Vanya was starving.IMP.

b. Petja persekal<sup>imp</sup> etot kanal kogda načalsja šstorm

Peter cross.IMP.PAST.SG.MASC. this channel when PERF-begin-PST.SG.MASC storm

‘Peter was crossing this channel when the storm began.’

c. On odin iz šesti detej, i ego otec byl imp takim sil’nym, čto, kogda synov’ja

klali imp na stol orech, on – raz pal’cem! – raskalyval imp ego lučše, čem ščipcy

dlja orechov. (Hrabal, The Mermaid)

‘He is one of six children, and his father was so strong that, whenever the sons put

a nut on the table, he – once with a finger – cracked it better than a nutcracker.’

With the ongoing process reading, there is no entailment that the event was completed, as we see in (14) (compare with 6 above):

(14) Anja ubiral imp kvartiru. → Anja ubrala perf kvartiru.

Anja tidied.imp flat.  $\nrightarrow$  Anja tidied.perf flat.

‘Anja was tidying the flat.’ does not entail ‘Anja tidied the flat.’

Aspect affects temporal structure, as in (15, from Smith, 1991, pp. 301, 303). Perfective sentences in the context of a *when*-clause have a sequential interpretation (15a), whereas the imperfective describes the situation as underway at the time of the adverbial clause situation (15b):

(15) a. Kogda on vyšel iz komnaty, on posidelperf v parke

When he went out of the room, he sat-PERF for a while in the park.

b. Vanja pel<sup>imp</sup> v parke, kogda Nina pojavilas<sup>perf</sup>.

Vanja sang-IMP in the park when Nina appeared-PERF.

Besides the range of meanings illustrated in (13), the Russian imperfective can also have a general factual meaning, as in (16a) or report an annulled result, as in (16b) (examples from Grønn, 2003, p. 25):

(16) a. Ja vaši očerki o Sibiri čitalimp, mne oni očen’ nra vjatsjaimp.

I have read your essays on Siberia, I like them a lot.

b. A: Iskaliimp menja?

Have they been looking for me?

B: Milicioner nedavno priezžalimp. ... S otcom razgovarivalimp.

A police officer arrived recently. ... He talked to your father.

The imperfective verb *čital<sup>imp</sup>* in (16a) refers to a complete single, telic event in the past. Under the factive interpretation, the kind of entailment in (14) does go through (cf. Borik, 2002). From the use of the imperfective *priezžal<sup>imp</sup>* in (16b) we can infer that the police officer has left at the time of the conversation. The use of *priechal<sup>perf</sup>* in the context of (16b) would imply that the police were still present.

The perfective/imperfective is a morphological distinction also found in the present tense. However, perfective interpretations are incompatible with present time reference, and in many languages, including Russian, the perfective non-past tense has future reference (17, Dahl, 1985, p. 80):

- (17) Ja napišuperf                      pis'mo.  
 I perf.write.non-past    letter  
 'I will write a/the letter.'

The special meanings of the Russian imperfective in (16) are not necessarily shared by all languages with a perfective/imperfective distinction, but we find counterparts to the observations in (12)-(15) as well as (17) across a wide range of languages.

## 5.2. Perfective/Imperfective Contrast: Observations from French

In Romance languages, the perfective/imperfective contrast is confined to the past tense, where tense and aspect are morphologically fused. Thus, the Italian Passato Remoto *feci* 'I did' (perfective past) is aspectually opposed to the Imperfetto *facevo* 'I was doing/used to do' (imperfective past) (cf. Bertinetto & Delfitto, 2000). Similar observations can be made for the Spanish Präterito *escribió* 'He wrote' (perfective past) vs. the Imperfecto *escribía* 'he was writing/used to write' (imperfective past) (cf. Cipria & Roberts, 2000) or the French Passé

Simple *il écrivit* ‘he wrote’ (perfective past) vs. the Imparfait *il écrivait* ‘he wrote’ (imperfective past).

The aspectual contrast between the French Passé Simple (PS) in (18a) and the Imparfait (Imp) in (18b) resembles that between the Simple Past and the Progressive in (2a) and (b):

(18) a. Il écrivit sa thèse en 2009. [French]

He wrote.PS his thesis in 2009.

‘He wrote his thesis in 2009.’

Il l’a fini en Septembre.

He finished in September.

#Je pense qu’il est en train d’écrire la conclusion maintenant.

#I think he is writing the conclusion now.

#Il n’a jamais fini, car il est mort en Septembre.

#He never finished, for he died in September.

b. Il écrivait sa thèse en 2009.

He wrote.IMP his thesis in 2009

‘He was writing his thesis in 2009.’

Il a fini en Septembre.

He finished in September.

Je pense qu’il est en train d’écrire la conclusion maintenant.

I think he is writing the conclusion now.

Il n’a jamais fini, car il est mort en Septembre.

He never finished, for he died in September.

With the ongoing process reading, there is no entailment that the event culminates, that is, (18b) does not entail (18a) (cf. also 6b and 14 above). However, the Imparfait is not incompatible with a statement affirming completion (cf. 2b). The Passé Simple does not allow the process to continue at the speech time, whereas the Imparfait does.

The Passé Simple and Imparfait affect temporal structure in a similar way as we observed in (2) and (15). (19a) illustrates temporal overlap with the Imparfait, and (19b) succession in time with the Passé Simple (examples from Molendijk, 1990):

- (19) a. Quand l'ennemi attaqua son armée, le général se retirait.  
When the enemy attacked his army, the general withdrew.imp  
'When the enemy attacked his army, the general was withdrawing.'
- b. Quand l'ennemi attaquait son armée, le général se retira.  
When the enemy attacked his army, the general withdrew.ps  
'When the enemy attacked his army, the general withdrew.'

The Slavic and Romance imperfective are often compared to the English Progressive. Note though that Romance languages have special periphrastic constructions for progressive means, illustrated in (20):

- (20) a. Yo estaba hablando con mi madre [Spanish]  
'I was talking with my mother.'
- b. Nous sommes en train de chercher un nouvel appartement. [French]  
'We are looking for a new apartment.'

Just like the Slavic imperfective (cf. 13a), the Romance imperfective is compatible with stative verbs (21a), and allows a habitual interpretation (21b) besides the ongoing process reading in (19a), compare (13c):

- (21) a. Julie était           amoureuse    de Marc  
           Julie was.imp    in.love       of Marc  
           ‘Julie was in love with Marc.’
- b. Le samedi, Julie jouait       au tennis.  
           The Saturday, Julie played.imp at tennis  
           ‘On Saturdays, Julie played tennis.’

Just like the Russian imperfective (cf. 16a), the French Imparfait can refer to a completed event, as pointed out by Brunot and Bruneau (1949) who cite examples like (22) (translation by Binnick, 1991, p. 374):

- (22) Lorsque le notaire *arriva* avec M. Geoffrin ... elle les *reçut* elle-même et les *invita* à tout visiter en détail. Un mois plus tard, elle *signait* le contrat de vente et *achetait* en même temps une petite maison bourgeoise.           (Maupassant, *Une vie*, p. 292)
- ‘When the notary *arrived*.PS with M. Geoffrin ... she *received*.PS them herself, and *invited*.PS them to examine everything in detail. A month later, she *signed*.IMP the contract of sale and *bought*.IMP [at the same time] a little bourgeois house.’

The three events of arriving, receiving and inviting are reported as complete events in the Passé Simple. Signing the contract and buying a house are related in the Imparfait, but clearly refer to completed events in the past. This use of the Imparfait depends on adverbials

such as *un mois plus tard* ‘a month later’ in (22) moving the story time, which has given rise to the term “Imparfait de rupture” (Tasmowski, 1985), and emphasizes the discourse function of aspect (cf. Brès, 2005, and references therein; and Carruthers, this volume).

The range of meanings found for the Romance perfective/imperfective past resembles the Slavic situation. Yet, there are differences, relating to the interaction between grammatical aspect and situation class (in Slavic) and the interaction between grammatical aspect and tense (in Romance). These compositionality issues are addressed in section 4.

### **5.3. Progressive and Perfect: Observations from English**

The perfective/imperfective contrast is often viewed as the typologically most prominent aspectual distinction, but not all languages fit this binary approach. English doesn’t, for instance, for it has a Progressive, which only grammaticalizes a subpart of the meaning of the imperfective. The focus of the Progressive on ongoing processes typically restricts its application to non-stative verbs (cf. 8 above). Unlike the Slavic and Romance Imperfective, the English Progressive does not have a habitual interpretation. Unlike the Simple Past in (2a), the Past Progressive in (2b) does not commit the speaker to the claim that the culmination point (completion of the dissertation) is ever reached, a reading referred to as the “imperfective paradox.” Accordingly, the Progressive is generally assigned a modal semantics, following Dowty (1979). Under the modal analysis, a Progressive sentence requires part of the process to be realized in the actual world, but leaves open the remaining part including its culmination point, or situates this part of the process in some possible world, with strict requirements on accessibility from the actual world (compare Vlach, 1981; Parsons, 1990; Landman, 1992; Portner, 1998; and Zucchi, 1999, for a range of proposals, and Mair, this volume, for an overview).

The Simple Past in (2a) is sometimes described as perfective (e.g. Smith, 1991/1997), because it presents the writing of the dissertation as a completed event. Alternatively, we can view the Simple Past as an aspectually neutral tense, which just locates the state or event introduced by the predicate-argument structure in the past (Kamp & Reyle, 1993; de Swart, 1998). Given that ‘write a dissertation’ is an accomplishment, both approaches imply that the event in (2a) culminates before the speech time. The neutral interpretation accounts more easily for stative descriptions (1), or the habitual interpretation of the Simple Past (23):

(23) Julia played tennis on Saturdays.

Besides the Progressive, English also has a perfect/non-perfect distinction, which is viewed as a temporal operator by Reichenbach (1947) and Verkuyl (1999), but included in the category of aspect by Comrie (1976); see Ritz, this volume. Across languages, the perfect/non-perfect contrast is generally expressed periphrastically (Dahl and Velupillai, 2008).

The Perfect is not to be confused with the Perfective. Slavic languages grammaticalize the perfective/non-perfective contrast, but do not have a perfect. Romance languages on the other hand grammaticalize both a perfective/imperfective contrast in the past tense (French Passé Simple *donna* ‘gave.PERF’ vs, Imparfait *donnait* ‘gave.IMP’) and a perfect/non-perfect contrast in all tenses (French Passé Composé *a donné* ‘has given’, Plus-que-Parfait *avait donné* ‘had given’).

Reichenbach (1947) used the contrast between (24a) and (b) to motivate a representation that relies on three points, namely S (for speech time), E (for event time) and R (for reference time):

- (24) a. Julia left the party. E,R – S  
 b. Julia has left the party. E – R,S

In both (24a) and (b), the event of Julia leaving the party is situated before the speech time, so two points do not suffice to distinguish the temporal structure of the two. The structure E,R – S for the Simple Past indicates that the event in (24a) is viewed from a reference point coinciding with the event, whereas the reference point for the event in (24b) coincides with the speech time (E – R,S). The deictic character of the Present Perfect in (24b) blocks the use of time adverbials locating the event at a particular point in time:

- (25) a. Julia left the party at 10pm.  
 b. #Julia has left the party at 10pm.

However, the observations in (25) hold for the Present Perfect in standard British English, but not necessarily in other varieties of the language (cf. Ritz, in press, and this volume), and they do not hold for counterparts of the Present Perfect in languages like Dutch, German or French (cf. de Swart, 2007).

Comrie (1976), Moens and Steedman (1988), Kamp and Reyle (1993), and others offer aspectual analyses of the perfect in terms of mapping of the event into a post-state of the event (result state or otherwise). As Comrie (1976, p. 60) points out, perfects vary across languages in whether they do (e.g. English) or do not (e.g. Dutch) allow a so-called continuative interpretation. The continuative interpretation of (26a) locates the initial boundary of the state of living in the past, and focuses on the result of starting the state, which extends into the present (interpretation 26ai):

- (26) a. Mary has lived in London for five years.  
       (i) Mary moved to London five years ago, and still lives there.  
       (ii) Mary lived in London during a five year period in the past.
- b. Maria heeft vijf jaar in Londen gewoond. [Dutch]  
       Maria has five years in London lived.

The continuative perfect reading is available in English (26ai), but not in its Dutch counterpart (26b), which only allows the reading in (26aii).

De Swart (2007) and Ritz (in press) emphasize that we should combine temporal and aspectual features of the perfect in order to explain its discourse behaviour. The Reichenbachian analysis suggests that perfects do not have a narrative use, for their reference point coincides with the speech time. The (British) English present perfect (PP) is indeed blocked in narrative *when*-clauses (27a), where we have to use the Simple Past (SP), but its French counterpart the Passé Composé (PC) is perfectly felicitous in this environment (27b):

- (27) a. \*When John has seen (PP) me, he has got (PP)/got (SP) frightened.  
       b. Quand Jean m'a vu (PC), il a eu peur (PC). [French]

Portner (2003) provides a recent overview of proposals, and a distinction between semantic and pragmatic features of the interpretation of the perfect, where the primary semantic contribution of the perfect is described as temporal in nature. See also Ritz, this volume.

Compare Schmitt (2001) and Schaden (2009) for more observations on the perfect in a cross-linguistic perspective.

The Perfect and Progressive can be combined in sentences like (28):

- (28) a. Professor P. is the head of the writing department, where he has been writing and performing since 2002.
- b. [the dwarves in the story of Snow White and the seven dwarves:]  
 Who has been sitting in my chair? Who has been eating from my plate?  
 Who has been drinking from my cup?

These combinations allow both continuative (28a) and non-continuative (28b) interpretations. Their interpretation requires a handle on the compositional semantics of tense and aspect markers, which will be addressed in section 4.

#### **5.4. Multiple Aspectual Distinctions: Observations from Mandarin Chinese**

Besides English, many other languages display rich aspectual systems that are difficult to relate to the perfective/imperfective or the perfect/non-perfect distinction. Here I offer some observations from Mandarin Chinese to illustrate. Sino-Tibetan languages are well known for lacking the category of verbal tense (cf. Lin, this volume). They make up for it by a rich aspectual system. Mandarin Chinese is strongly isolating, so these aspectual distinctions are not rendered by inflection on the verb, but by separate markers in the sentence. Sentences without aspect markers can often be used with different temporal interpretations, as illustrated in (29a) and (b) (from Lin, 2003b):

- (29) a. Lisi hen jushang.  
 Lisi very depressed  
 ‘Lisi is very depressed.’
- b. Zhangsan dapuo yi-ge huaping

Zhangsan break one-cl vase

‘Zhangsan broke a vase.’

Lin (2003b) and Smith and Erbaugh (2005) point out that in isolation, sentences without time adverbials or aspect markers, describing atelic situations, tend to get a present tense interpretation (29a), but those describing telic situation get past time reference (29b), along the lines of Bohnemeyer and Swift’s analysis of default aspect (2004).

Mandarin has a range of aspectual particles that may affect location in time, and corpus studies indicate that such markers are widely used (Xiao & McEnery, 2004). Example (30a) (from Smith, 1991, p. 349) illustrates that sentences marked with the perfective particle *le* often describe completed events in the past. However, as (30b, from Smith, 1991, p. 349) illustrates, *le* merely requires boundedness of the event, not necessarily completion, which is conveyed by the resultative suffix *-wan* ‘finish’ (compare also Soh & Kuo, 2005).

- (30) a. Wo shuiaduan le tui  
I break ASP leg  
‘I broke my leg (it’s still in a cast).’
- b. Wo zuotian xie le gei Zhangsan de xin, keshi mei xie - wan.  
I yesterday write asp to Zhangsan de letter, but not write-finish  
‘I wrote a letter to Zhangsan yesterday, but I didn’t finish it.’
- c. \*Liming ai-le Xiaojuan.  
Liming love-ASP Xiaojuan  
‘Liming loved Xiaojuan.’
- d. Liming ai-le Xiaojuan san-nian.  
Liming love-ASP Xiaojuan three-year

‘Liming loved Xiaojuan for three years.’

e. Tamen daoda shand-ding le.

They reach mountain-top asp

‘They reached the top of the mountain.’

*Le* is incompatible with stative verbs (30c), unless they are bounded by a *for*-adverbial (30d) (Xiao & McEnergy, 2004). There is a difference between verbal *-le*, as illustrated in (30a-d) and sentence-final *-le* (30e, from Soh, 2009). Verbal *-le* is generally treated as a perfective marker, whereas the sentence-final *-le* presupposes a transition and is closer to a perfect.

Other aspectual markers include the experiential particle *guo* in (31a from Smith, 1991, p. 349), which can be combined with *-le*, as illustrated in (31b) (from Lin, 2003b):

(31) a. Wo shuaiduan guo tui

I break asp leg

‘I broke my leg (it has healed since).’

b. Wo chi guo le.

I eat ASP ASP

‘I have eaten.’

c. Lisi zai xi-zao

Lisi ASP take-bath

‘Lisi is taking a bath.’

d. Ta zui li jiao-zhe koxiangtang

he mouth inside chew-Asp chewing-gum

‘He is chewing a chewing gum in his mouth.’

The experiential particle *guo* in (31a) requires a discontinuity with the speech time that *le* in (30a) (and the English Perfect) lack. *Zai* and *zhe* in (31c,d, from Lin, 2003b) focus on the internal development of the situation. Just like the English Progressive, *zai* (31c) is restricted to dynamic (non-stative) verbs. *Zhe* (31d) only combines with atelic verb phrases. The examples in (30) and (31) give a mere indication of the complexity of verbal aspect in Mandarin Chinese.

The data provided here for Russian, French, English and Mandarin Chinese only scratch the surface of the complexity of verbal aspect in these languages. However, the various ways of establishing aspectual distinctions in the grammar can be compared in terms of the readings they have, the entailments and continuations they permit, the effects they have on temporal structure, and the distribution of labour between the members of the temporal-aspectual system of the language. A full-fledged theory of grammatical aspect is very complex, because it needs to take into account the cross-linguistic variations and the interactions of aspectual markers with aspectual class and with the rest of the grammar.

## **4. The Compositional Structure of Aspect**

### **5.1. A Layered Representation**

The distinctions established between aspectual class, grammatical aspect and tense raise the question how these notions interact. In this section, I assume a layered structure of aspect, and discuss a range of challenges for the compositional interpretation of aspect. Section 4.1 introduces the basic ideas, section 4.2 focuses on the relation between perfectivity and telicity, and section 4.3 on the amalgamation of tense and grammatical aspect.

Many current theories adopt some version of a layered representation in which tense syntactically and/or semantically dominates grammatical aspect, which in turn dominates aspectual class.

(32) [Tense [Aspect\* [aspectual class]]]

The Kleene star \* is well known from mathematical logic and indicates that aspectual markers can occur 0, 1, 2 ...n times in the structure. (33) spells out the layered structure of (1a), (2a) and (2b):

- (33) a. Bill was in love with Susan.  
[PAST [ Bill in love with Susan ]]
- b. Sarah wrote a dissertation.  
[ PAST [ Sarah write a dissertation ]]
- c. Sarah was writing a dissertation.  
[ PAST [ PROG [ Sarah write a dissertation ]]]

The difference in aspectual nature is located in the presence of a grammatical marker PROG in (33c), versus its absence in (33a) and (33b).

There is substantial disagreement in the literature about the way such a layered aspectual structure should be set up and interpreted. Maybe tense is not projected in tenseless languages such as Mandarin Chinese. Some languages are argued to have ‘lower’ or ‘higher’ aspectual projections than others, giving rise to a range of possible functional structures within the verb phrase (cf. Verkuyl, 1999; Travis, 2000, 2010; Ritter & Rosen, 2005; Ramchand, 2008). (For example, the progressive can be viewed as a VP operator, and the

tense as an operator at the sentential level, as in (39b) below, for instance. This chapter will not be concerned with the difference between VP and S-level, which becomes relevant, however, in sentences that contain scope-bearing operators in subject position.)

Some researchers defend a two-component theory in which grammatical aspect and aspectual class are interpreted by means of different sets of tools (Smith, 1991/1997; Depraetere, 1995; Filip, 1999; Bertinetto & Delfitto, 2000), others use the same semantic machinery for both, whichever that may be (Moens & Steedman, 1988; Parsons, 1990; Kamp & Reyle, 1993; de Swart, 1998; Verkuyl, 1999; Cipria & Roberts, 2000). What both lines of analysis agree on is that grammatical aspect determines the aspectual nature of the sentence as a whole, and may overrule certain semantic features of its internal aspectual make-up.

The interactions between aspectual class and grammatical aspect complicate the debate. For English, we have already seen that the Progressive is normally restricted to non-stative verbs (2b vs. 8a). This strongly suggests that the interpretation of the Progressive is closely intertwined with the semantics of the verb it applies to, instead of being fully independent from it. Similar observations can be made for Mandarin Chinese, where the progressive marker *zai* is restricted to non-stative verbs (cf. section 3.4 above). Whether such dependency relations are better modeled as constraints on transitions in an aspectual network (Moens & Steedman, 1988) or as marked aspectual choices in a two-component theory (Smith, 1991, p. 226) remains an open issue.

The layered structure in (32) helps us analyze sentences such as (34a) and (b), which contain multiple aspect markers in terms of the recursive application of aspectual operators:

(34) a. Who has been sitting on my chair?

?x [PRES [ PERF [ PROG [ x sitting on speaker's chair]]]]

b. Ta he-le san-wan tang le. [Mandarin Chinese]

‘He drank three bowls of soup.’

[ LE [ LE [he drink three-bowl soup]]]

c. pod-pis-yva-t’ ‘to sign’ (imp) [Russian]

[IMP [ PERF [write]]]

The Perfect in (34a) takes wide scope over the Progressive, and the inverse scope reading is not available. Soh and Gao (2006) argue that in double *-le* sentences in Mandarin, sentence-final *-le* necessarily takes wide scope over verbal *-le*. Similarly, the imperfective suffix *-(y)va-* takes wide scope over the lexical perfective prefix *pod-* in the Russian secondary imperfective construction in (34c). So the iteration of aspectual markers is subject to ordering constraints in the semantics. Koenig and Muansuwan (2005) carry out an extensive study of recursive applications of aspect markers in Thai.

Although there are interactions between aspectual class and grammatical aspect in languages like English, we can still tease the two apart in a representation like (33). This is much more difficult in languages in which the boundaries between the two aspectual categories are not strict, such as Russian and Mandarin Chinese (section 4.2). Once we realize that grammatical markers can impose structure on a category they dominate, we can also address such effects in the relation between tense and grammatical aspect (4.3), as well as grammatical aspect and other aspectually sensitive expressions (section 5).

## 5.2. Perfectivity and Telicity in Russian and Mandarin Chinese

Given that most Slavic languages do not have articles, the contrast between atelic verb phrases like *read articles* and telic verb phrases like *read the articles* is not made overtly. Russian bare plurals and bare mass nouns are interpreted as definite or ‘specific’ in the context of a perfective verb form (35b), whereas they can be definite or indefinite in the



contrast, externally prefixed predicates are not necessarily telic, as illustrated in (36b) (cf. also Filip, 2000):

- (36) a. Ja na-pisal<sup>perf</sup> pis'mo \*(za) dve minuty.  
I perf.wrote letter.acc \*(in) two minutes  
'I wrote a/the letter in/\*for two minutes.'
- b. On po-spal<sup>perf</sup> (\*za) dve minuty.  
He perf.slept (\*in) two minutes  
'He slept \*in/for two minutes.'

Under the approach advocated by Gehrke and others, internal prefixes contribute to aspectual class, whereas external prefixes contribute to grammatical aspect. The distinction cannot be drawn on morphological grounds, because both markers are part of the inflectional system of the verb. Note that verbs can take two perfective prefixes, but their order is constrained: *kopit'* 'to save-IMP', *na-kopit'* 'PERF-to save up' and *pod-na-kopit'* 'PERF-PERF-to save up some', but *\*na-pod-kopit'* (Borik, 2002). According to Gehrke (2007, p. 170), external prefixes can be stacked on top of internal prefixes, but not the other way around.

The close connection between aspectual class and grammatical class in Russian is reason for caution in the compositional analysis of aspect in a cross-linguistic perspective. We also find this phenomenon in Mandarin Chinese. Mandarin Chinese does not have articles, and also lacks the category of number, so there is no formal distinction between singular and plural nouns. As a result, a bare nominal such as N could mean 'a N', 'the N', 'N's' or 'the Ns'. This has similar consequences for aspectual distinctions grounded in predicate-argument structure as what we saw for Russian. Sybesma (1999) notes that bare nominals get a definite

or specific interpretation with a range of predicates that are bounded for reasons independent of the object, as in (37):

- (37) a. Wo he-guan le tang. [Mandarin Chinese]  
I drink-up ASP soup  
'I finished the/\*some soup.'
- b. Wo mai-zhao le shu.  
I buy-get asp book  
'I managed to buy the/\*some books.'

In section 1.1, we observed that English has inherently telic verbs (*eat up*, *drink up*), but in Mandarin we construct such verbs. Sybesma defines the predicates in (37a, b) as perfective predicates, which have a built-in moment of completion.

In both Russian and Mandarin Chinese we observe that perfectivity imposes telicity in the absence of articles. Other aspectual markers (imperfective in Russian, *guo* etc. in Mandarin) do not have such effects, so grammatical aspect and aspectual class are easier to tease apart in those constructions. However, in a language like Finnish, partitive case may obliterate the distinction between imperfectivity and atelicity (cf. Kiparsky, 1998, and Richardson, this volume).

### 5.3. Amalgamating Tense and Grammatical Aspect in French

Further complexities arise in Romance languages, in which the past tense and perfective/imperfective aspect are morphologically fused (cf. section 3.2). For examples like (18a), repeated here as (38a), a separation of temporal and aspectual information in the layered structure would seemingly lead to the representation in (38b).

(38) a. Il écrivit sa thèse en 2009. [French]

He wrote.ps his thesis in 2009.

‘He wrote his thesis in 2009.’

b. [ past [ perf [ he write his thesis ]]]

c. [ past [ he write his thesis ]]

The problem with (38b) is that the morphology of the *Passé Simple* does not compositionally map onto this structure: the verb form *écrivit* cannot be split up into a part that leads to the past tense operator, and a part that introduces the perfective operator. As an alternative, de Swart (1998) adopts the structure in (38c). The *Passé Simple* introduces just a past tense operator, but requires the predicate-argument structure to introduce an event. Given that ‘he write his thesis’ qualifies as an accomplishment (cf. section 1.2), (38c) locates a bounded event in the past just like the English (2a) does, which does not carry overt perfective morphology.

Under de Swart’s (1998) analysis, the *Imparfait* gets the same semantics as the *Passé Simple*: it introduces a past tense operator. However, whereas the *Passé Simple* locates an event in the past, the *Imparfait* requires the predicate-argument description to contribute a state or an unbounded process. An example like (21a), repeated here as (39a), can then be analyzed as in (39b):

(39) a. Julie était amoureuse de Marc.

Julie was.IMP in.love of Marc

‘Julie was in love with Marc.’

b. [PAST[Julie is in love with Marc]]

The Imparfait sentence in (39a) locates the state of Julie being in love with Marc in the period preceding the speech time. The semantics of (39a) is then similar to that of the English example (33a) above, which does not carry overt imperfective morphology.

#### 5.4. Aspectual Coercion

In line with this analysis, corpus research indicates that the Romance perfective past tense is found predominantly with event predicates, and the imperfective past is found mostly with state and activity predicates (cf. de Jonge, 2000 for Spanish). But of course, both past tense forms are grammatically possible with any type of eventuality. Under de Swart's (1998) analysis, the combination of the Passé Simple with a state/activity verb, or the combination of the Imparfait with an event predicate requires a process of aspectual coercion. Coercion is the process by means of which an argument adapts to the requirement of the functor with which it combines (cf. Pustejovsky, 1995). Aspectual coercion then requires the eventuality description to shift its meaning to satisfy the aspectual selection requirements of the Passé Simple or Imparfait. For an Imparfait sentence like (18b), repeated here as (40a), this leads to the representation in (40b), where  $C_{eh}$  indicates the coercion of an event predicate into a homogeneous description.

(40) a. Il écrivait sa thèse en 2009.

He wrote.IMP his thesis in 2009

'He was writing his thesis in 2009.'

b. [ PAST [ $C_{eh}$  [[ he write his thesis ]]]

The coercion operator  $C_{eh}$  is located in the grammatical aspect slot of the layered representation, but is not overt. In this case, the ongoing process reading is the most likely interpretation of  $C_{eh}$ , but for an example like (21b) above,  $C_{eh}$  leads to a habitual interpretation. Although the coercion operator allows for a range of interpretations, it cannot be semantically empty: there must be an aspectual shift in meaning associated with it. The interpretation of  $C_{eh}$  is always associated with a shift from events to states or unbounded processes. The coercion operator  $C_{he}$ , which comes into play when the Passé Simple combines with a state or an event, often triggers an inchoative reading as in (41a) (from Molendijk, 1990, p. 93):

- (41) a. Jean inventa une machine à traduire. Il connut la gloire.  
 Jean invented.PS a machine to translate. He knew.PS the glory.  
 ‘Jean invented a translation machine. He received praise.’
- b. [ PAST [  $C_{he}$  [ he knew the glory ] ]

The analysis in terms of aspectual coercion is not uncontroversial. Bonami (2002) and Caudal (2005) propose implicit operators for the Imparfait, which are lexically licensed, and thus emphasize the role of aspectual class. Cipria and Roberts (2000) argue for Spanish that the different readings of the Imperfecto are inherent to the truth-conditional semantics of this tense form. Bonomi (1997) adopts a comparable approach to Italian, cf. also Bertinetto and Delfitto (2000). One way of settling the debate on aspectual coercion vs. underspecificity or ambiguity is to rely on evidence from processing. However, these experimental data remain difficult to interpret (cf. de Swart, to appear).

Cross-linguistically, we find similar effects of aspectual reinterpretation in Russian and Mandarin. According to Smith (1991/1997), stative verbs do not take perfective prefixes in Russian. The rare instances of perfective states give rise to inchoative readings as in *ponjat*, the perfective of *ponimat* ‘understand’ in (42a, from Comrie, 1976, p. 19). Soh (2009) provides similar examples for Mandarin Chinese (42b):

- (42) a. Nakonec on ponjal, v čem delo. [Russian]  
‘At last he grasped what was up.’
- b. Ta zhidaole zhejian shi. [Mandarin]  
he know-asp this-cl matter  
‘He came to know this matter.’

States are normally not compatible with the aspectual particle *-le* (cf. section 3.4 above), so Soh (2009) takes (42b) to describe an achievement, suggesting a reinterpretation of the stative verb.

Effects of aspectual coercion also arise with English *for-* and *in-*adverbials that are sensitive to the telic/atelic nature of the predicate-argument structure they apply to. As pointed out in section 2.1 above, sentences containing an event predicate are not always infelicitous with a *for-* adverbial, but give rise to a special interpretation:

- (43) a. Jim hit a golf ball into the lake for an hour.  
[ PAST [ for an hour [ C<sub>eh</sub> [ Jim hit a golf ball into the lake ]]]]
- b. The baby was asleep in ten minutes.  
[ past [ in ten minutes [ Che [the baby be asleep]]]]]

(43a) gives rise to an iterative interpretation such that the same golf ball repeatedly ends up in the lake (Van Geenhoven, 2005). The aspectual reinterpretation of the predicate-argument structure is located in the coercion operator  $C_{eh}$ , mapping the event onto an atelic (iterative) situation that can be measured out by the *for*-adverbial. The inchoative interpretation of *was* in (43b) implies that the initial point of the baby being asleep was ten minutes after the moment where the time measurement started (e.g. the moment she was put to bed). Given that the *in*-adverbial requires an event predicate, the atelic predicate *be* is reinterpreted as a transition between two states by the coercion operator  $C_{he}$ .

The analysis spelled out in (43) broadens the scope of the layered structure in (32) to include other aspectually sensitive expressions besides grammatical aspect markers. We further investigate these in section 5.

## 5. Grammatical Aspect and Other Aspect-Sensitive Expressions

Section 4 ended by extending the layered structure in (40) to account for the interaction of grammatical aspect with aspectual adverbials like *for an hour/in an hour*. In this section, we broaden the approach to a cross-linguistic investigation of the aspectual requirements of measurement adverbials (5.1), and to the interaction of aspect with the marker of sentential negation *not* and frequency adverbs like *always, often* (5.2).

### 5.1. Interaction of Grammatical Aspect with Measurement Adverbials

As we saw in Section 4.2, the amalgamation between grammatical aspect and aspectual class makes it difficult to determine whether Russian *in*- and *for*-adverbials are sensitive to perfectivity or telicity. The examples in (36), repeated here as (44) have been used to argue in favor of a distinction between internal and external affixes. Under the layered structure of aspect, they can be handled in terms of scope:

- (44) a. Ja na-pisalperf pis'mo \*(za) dve minuty.  
 I PERF.wrote letter.ACC \*(in) two minutes  
 'I wrote a/the letter in/\*for two minutes.'  
 [ PAST [ in two minutes [ PERF [ I write a letter ]]]]
- b. On po-spal<sup>perf</sup> (\*za) dve minuty.  
 He perf.slept (\*in) two minutes  
 'He slept \*in/for two minutes.'  
 [ past [ perf [ for two minutes [ he sleep ]]]]

Under the assumption that the internal affix in (44a) is located in a 'low' aspectual position, it takes scope under the measurement adverbial, leading to an interpretation in which the letter took two minutes to complete. The *for*-adverbial is not felicitous here, because the aspectual adverbial applies to a perfective verb, which is not the right input. If the external affix in (44b) is located in a 'high' aspectual position, it scopes over the duration adverbial. Perfective aspect here marks the boundedness of the situation of sleeping for two minutes. The *in*-adverbial is not felicitous here, because *sleep* is an activity verb. The interpretation of measurement expressions is thus in line with the distinction between internal and external prefixes.

As de Swart (1998) points out, both *for*- and *in*-adverbials require the Passé Simple in French, which suggests that the adverbial scopes below the aspectually sensitive tense marker:

- (45) a. La rebellion fit rage pendant six ans.  
 The revolt made.PS rage for six years  
 'The revolt raged for six years.'

[ PAST [ for six years [ the revolt rage ]]]

b. On finit le débat en trente minutes.

One finished.ps the debate in thirty minutes.

‘The debate was finished in thirty minutes.’

[ past [ in thirty minutes [ finish the debate ]]]

The French Passé Simple amalgamates past time reference and perfective aspect (cf. section 4.3 above). Given that the tense marker always takes widest scope in the layered structure in (32), and both *in-* and *for-*adverbials lead to a bounded situation with well-defined initial and final points, both structures in (45a) and (b) satisfy the aspectual selections of the Passé Simple rather than the Imparfait.

More complex situations arise when the measurement phrase interacts with multiple aspectual markers, as in the Spanish example (46) (from de Swart, 1998):

(46) Toda la tarde estuvieron entrando visitas. [Spanish]

all the afternoon were.PRET coming visitors

[ PAST<sub>perf</sub> [ all afternoon [ PROG [ visitors come ]]]]

The situation in (46) is presented as a single complete whole (hence the Prétérito, PRET), but consists of an ongoing action (hence the Progressive). As an aspectually sensitive tense, we expect the Spanish Prétérito to take wide scope over the Progressive as well as the *for-*adverbial. Given that *toda la tarde* measures the duration of the ongoing situation, the adverbial scopes over the Progressive.

The observations made with respect to (44)-(46) suggest that the high or low position of aspect in the language determines the interaction of grammatical aspect with aspectually



As Smith explains, the perfective (48b) denies that the speaker has completed reading the article, whereas the imperfective (48a) denies that the action was initiated at all.

No such effect is found in Romance languages, where negated sentences generally combine with the Imperfective past tense form. Compare the French examples in (49a) (from de Swart & Molendijk, 1999) and (49b):

(49) a. Jean courait après Pauline. Il ne l'attrapait pas.

Jean ran.IMP after Pauline. He NEG her caught.IMP NEG.

'Jean ran after Pauline. He didn't catch her.'

[ PAST [ NEG [ Jean catch Pauline ] ] ]

b. Les jeunes gens ne vinrent pas chez le vieil homme pendant

The young people NEG came.PS NEG by the old man for

quelque temps.

some time

'The young people didn't visit the old man for a while.'

[ past [ for some time [ neg [ the young people visited the old man ] ] ] ]

De Swart and Molendijk attribute the preference of negation for combining with the Imparfait to the fact that the aspectual distinction between perfective and imperfective is fused with the past tense, which takes wide scope over negation, locating the absence of action in the past. Given that absence of action normally counts as a state, the aspectual restrictions of the Imparfait are satisfied in (49a). As illustrated in (49b), the Passé Simple is possible when

the negative situation is bounded by a *for*-adverbial, which we expect under the analysis developed in section 5.1.

Similarly, the negation marker *bu* in Mandarin Chinese is incompatible with the perfective marker *-le*, as illustrated in (50a) and (b) (from Ernst, 1995):

- (50) a. Wo bu chi mugua [Mandarin Chinese]  
I not eat papaya  
'I do not eat papaya.'
- b. \*Wo bu chi-le papaya.
- c. Wo mei-you chi mugua.  
I not-perf eat papaya  
'I didn't eat papaya.'

But here the explanation is somewhat different. According to Ernst (1995), *bu* requires unbounded aspectual situations, and Lin (2003a) maintains that *bu* selects states. According to Soh and Gao (2006), the negator *bu* scopes higher than verbal *-le*. Instead, negative perfective sentences are formed with the negator *mei* and the auxiliary *you* (50c, Ernst, 1995).

Frequency adverbials cross-linguistically favour imperfective over perfective aspect. French past tense sentences that contain adverbials like *souvent* 'often' typically use the *Imparfait* (51a):

- (51) a. Saint Louis visitait souvent les pauvres. [French]  
Saint Louis visited.imp often the poor  
'Saint Louis often visited the poor.'
- b. Dans les semaines qui suivirent on parla souvent et on écrivit beaucoup autour

de ce nouveau compagnon.

‘In the weeks that followed.ps we spoke.ps often en wrote.ps a lot around this novel companion.’

However, examples in which frequency adverbials combine with the Passé Simple are also found, as illustrated in (51b). They are typically interpreted in relation to a bounded period of time, as suggested here by *dans les semaines qui suivirent*. Here the duration adverbial delimits the frequency situation. Lenci and Bertinetto (2000) offer similar examples from Italian.

Frequency expressions in Russian generally require the imperfective, as illustrated in (52a) (from Klimek-Jankowska, 2010). However, within the family of Slavic languages, there is cross-linguistic variation, for Czech allows perfective aspect in these contexts, as observed by Eckert (1985, p. 179). Klimek-Kankowska (2010) illustrates this with example (52b):

- (52) a. Každý raz kogda on padal, on vstavaj. [Russian]  
Every time when he fell.imp, he stood.imp up.  
‘Every time he fell, he stood up.’
- b. Každé když spadl, tak vstal. [Czech]  
always when perf.fell then perf.stood up  
‘Whenever he fell, he stood up.’

According to Fortuin (2008), the choice of imperfective aspect in combination with frequency adverbials reflects the unbounded nature of the sentence containing a non-specific number of situations. Klimek-Jankowska (2010) takes the choice of imperfective aspect in (52a) to mark habituality, whereas the perfective aspect in (52b) reflects the sequential

relation between the events. These analyses suggest that the frequency adverbial takes narrow scope with respect to imperfective aspect in (52a), but wide scope with respect to perfective aspect in (52b). In languages in which aspect scopes high, only the first option is available (cf. 49 and the discussion in de Swart, 2010).

Further interesting issues arise when we combine aspect-sensitive operators which make conflicting demands on grammatical aspect. We have already seen in examples (49b) and (51b) that the French Passé Simple and Imparfait are only sensitive to the highest aspectual operator in the structure. Given the amalgamation of tense and grammatical aspect in this language, that outcome is unsurprising. But what about recursive applications of aspectual operators in Russian and Mandarin? Although measurement phrases may be compatible with perfective aspect in Russian sentences like (44b), this possibility disappears when the adverbial measures the duration of a habitual or frequentative situation, so the imperfective aspect is required in (53).

- (53) Poslednie 10 let ja kuril ot 20 do 25 sigaret v den'. [Russian]  
 Last 10 years I smoke.IMP from 20 to 25 cigarettes in day.  
 'For ten years, I smoked between 20 and 25 cigarettes a day.'

As for Mandarin, *bu* is not only incompatible with the perfective marker *le*, but also with a duration adverbial, as in (54a). As Ernst (1995) points out, the measurement phrase imposes boundaries upon the process of sleeping, but *bu* requires an unbounded situation, so the infelicity of (54a) indicates that *bu* takes scope over the time adverbial:

- (54) a. \*Jinrong bu shui ba-ge xiaoshi [Mandarin]  
 Jinrong neg sleep eight-cl hour

b. Jinrong yiban bu shui ba-ge xiaoshi

Jinrong in-general neg sleep eight-cl hour

c. Ta bu-shi qu le Beijing

he neg-be go asp Beijing

‘It is not the case that he went to Beijing.’

Interestingly, the sentence is fine if we add an adverbial phrase indicating frequency or habituality (54b). Here *bu* takes scope over the adverbial *yiban*, and indicates that Jinrong was not in the habit of sleeping eight hours a day. These data suggest a very high position for negation in the aspectual structure of Mandarin. In contrast, Soh and Gao (2006) argue that verbal *-le* takes scope below *bu-shi* ‘not-be’ in examples like (54c).

The examples treated in this section indicate that the layered aspectual structure introduced in section 4 above opens up new ways of investigating the interaction of grammatical aspect and other aspect sensitive expressions such as measurement phrases, negation and frequency adverbials in a wide range of languages.

## 6. Conclusion

The domain of verbal aspect is complex, because various factors come into play: lexical features of the verb, the semantics of predicate-argument structure, aspectual operators like the Progressive and perfective/imperfective aspect, and aspect-sensitive expressions such as measurement adverbials, negation and frequency adverbs. A layered structure in which tense scopes over grammatical aspect, which in turn scopes over aspectual class, allows us to study the interactions between these expressions in a cross-linguistic perspective. The basic distinction between aspectual class and grammatical aspect is not always easy to establish, because perfectivity and telicity may interact, as we saw in Russian and Mandarin Chinese. Similarly, tense and aspect are amalgamated in French, which correlates with differences in

the way the perfective/imperfective contrast works out in Slavic and Romance languages.  
Clearly, a full-fledged theory of aspect requires a cross-linguistic perspective.

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