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HEARER'S REAL-TIME ASPECT RECOGNITION IN ENGLISH AS A COMPOSITIONAL-ASPECT LANGUAGE VIS-À-VIS ASPECT RECOGNITION IN VERBAL-ASPECT LANGUAGES

Abstract

This paper deals with the way the hearer recognizes in real-time speech the aspect of a sentence or clause in English as perfective or imperfective. Due to the compositional effectuation of aspect in English, the aspect (perfective/imperfective) of an English sentence is explicated through an elaborate interplay between referents of situation-participant NPs and the referent of the verb, plus a possible impact from adverbials. This interplay involves the need for the hearer to wait until the end of a sentence or clause in compositional-aspect languages to identify the aspect of the situation and forms a stark contrast with verbal-aspect languages, where the aspect value of the verb can be clear even from the very beginning of a sentence.

Key words: real-time recognition of aspect, compositional and verbal aspect, compositional-aspect languages and verbal-aspect languages, temporal values of situation-participant NPs, biaspectuality

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1. Introduction

1.1. On hearer's real-time aspect recognition

In today's age of automated text generation from real speech that seemed a dream not too long ago but is now a reality even in public official events, this paper deals with real-time recognition of aspect by the hearer in sentences – viewed as temporal sequences of phonemes, morphemes, words, phrases. However, as automated text generation from live speech for producing translations from the original language is performed in real time, and only in real time, this cannot guarantee the adequacy of the translation into the other language. The reason is the time difference in the appearance of the different grammatical and other markers, particularly in this case indicating aspect, and in the realization of the various semantic values, including aspectual ones.

There is a problem well-known in the community of interpreters with the German language. Due to the specificity of the word order in German, in oral translations from German the interpreter often has to wait until the end of the sentence – that may be a very long one, to be able to recognize the verb and perform the translation. This paper deals with a similar problem: ways of explicating (signaling) perfectivity and imperfectivity in English, a compositional-aspect language, viewed against verbal-aspect languages, mainly Greek and Bulgarian, and partly some other Slavic data – Serbian and Russian. In principle, there is encoding of perfectivity and imperfectivity when the data analyzed is from a verbal-aspect language and the aspect – either perfective or imperfective, is directly located in the relevant verb form. In contrast to *encoding* (i.e., directly signifying) aspect, as in the Slavic languages, Greek, Georgian, etc., the phenomenon of *signaling* (i.e., explicating) aspect is characteristic of compositional-aspect languages. It is a much more complex process because aspect is not located in a single verb form in the sentence but is calculated and identified each time by the hearer – subconsciously, and the calculation takes into account a large number of elements in the sentence/clause or the context. Furthermore, this number grows larger in longer sentences and larger texts.

The description and subsequent inventory of the possibilities for real-time recognition of aspect can be useful not only for the interpreter's profession. Apart from real-time automated generation of text from speech

and for the general theory of linguistics, it is relevant for many other areas, mainly in applied linguistics, for example, for studies of first and second language acquisition, for a better representation in grammars of the way aspect is realized in different languages, etc. But before returning to the issue of real-time recognition of aspect, let us first discuss what exactly aspect is.

1.2. What is aspect?

In purely semantic (not formal – morphological, periphrastic, etc.) terms, aspect is the well-known contrast between perfectivity and imperfectivity, and there is a general agreement in the literature that these two notions are best represented in Slavic linguistics, with its long tradition (e.g., Binnick 1991: 136). However, some experts in language typology, agreeing that the Slavic system is the most representative one, also point out that it has certain idiosyncrasies (Dahl 1985: 69).

What are imperfectivity and perfectivity? We understand imperfectivity as a non-bounded Vendlerian situation: state or activity. Conversely, perfectivity is a bounded Vendlerian situation: accomplishment or achievement (Vendler 1957).¹ While imperfectivity is, generally speaking, a non-bounded situation on the time axis, perfectivity is not solely and simply a bounded situation with an initial (starting) point and a final point (end-point). Perfectivity is a specifically bounded situation, with an achieved (reached) telos (Dimitrova and Kabakčiev 2021: 196–197).²

Aspect is instantiated in two ways both in and across languages: either as compositional aspect – in English, the other modern Germanic languages, Finnish, Albanian, etc. in Europe, or as verbal aspect – in the Slavic languages, Greek, Georgian, and many other around the world. The phenomenon of compositional aspect, discovered by Verkuyl in 1971 (see Verkuyl 1972), and the theory of compositional aspect, still being refined by the finder of the phenomenon (see Kabakčiev 2023, a large review of Verkuyl's discovery and his work through the decades), can be understood through Verkuyl's two aspectual schemata, a perfective and an imperfective one, whereby a major notion for understanding imperfectivity is the so-called aspectual leak in the imperfective schema (see below). Note meanwhile the important circumstance that compositional aspect can

be observed in verbal-aspect languages and that, vice versa, verbal aspect exists in many compositional-aspect languages (e.g., in the progressive forms). Another major tenet for the correct understanding of aspect as a universal and cross-language phenomenon is that compositional-aspect languages are exclusively characterized by the *absence of perfective verbs*. It sharply counters traditional aspectological descriptions of English and similar languages – which abound in myths related to perfectivity. Two major examples of myths are: (i) the English past indefinite (simple) verb form is an aspectual one, capable of “signifying” perfectivity; (ii) English phrasal verbs (*drink up, bring about, etc.*) are perfective markers (e.g., Brinton 1988: 4). It will be shown below, using numerous examples of perfective and imperfective sentences, that the English past indefinite is incapable of “signifying” perfectivity. It only *allows* the explication of perfectivity and the explication is a result of an extremely complex interplay of sentence components, especially NPs – that ought to have nothing to do with aspect. As for *drink up, bring about, etc.* as “perfective markers”, even the staunchest supporters of this idea are reluctant to state that phrasal verbs are “perfective markers”. They admit instead that the addition of a particle to a single verb is actually only *thought to lend* perfective meaning (Brinton 1988: 4).

In the theoretical framework employed here and best represented in Kabakčiev (1984, 2000, 2019, 2023), Dimitrova (2021), Dimitrova and Kabakčiev (2021), based on Verkuyl’s (1972, 1993, 2022) theory and similar to Bulatović’s (2013; 2019; 2020) model, the perfective-imperfective contrast in compositional-aspect languages arises as an extremely complex interplay in the sentence/clause between the referent of the verb and the referents of situation-participant NPs. Our model differs from the other two in one major respect. While in Verkuyl’s and Bulatović’s theoretical frameworks verb arguments are atemporal entities, in our model situation-participant NP referents (a.k.a. verb arguments) constitute temporal entities in the minds of speaker/hearer, no matter whether as lexical entries they stand for so-called abstract entities or for spatial (physical/material) objects. The crucial idea of the temporal nature in the minds of speaker/hearer of *all entities*, many of which are otherwise normally understood as spatial (physical/material), is explained in extensive detail elsewhere (Kabakčiev 1984, 2000, 2023), including BELLS (Kabakčiev 2021b), and is supported by at least

three aspectologists – Vounchev (2007: 86–87), Dimitrova (2021) and Shabashvili (in Shabashvili and Kabakčiev 2021).

2. On aspect recognition in verbal-aspect languages

The analysis of the data here is based on an approach which is essentially deductive and is well described in Dimitrova (2021). It *does not* strive to find and list formal grammatical devices in particular languages and then try to detail their semantic and other features. Instead, it first defines certain universal notions underlying language structure which possess and exercise certain functions. After that a decision is made on which and what formal grammatical and other (lexical, general semantic, pragmatic, etc.) devices realize the functions of the relevant universal notions in a particular language or particular languages (Dimitrova 2021: 52). In such an approach, a strict distinction is made between verbal and compositional aspect, whereby the latter is effectuated as a complex interplay in the sentence between situation-participant NP referents, the verb referent and certain types of adverbials (Kabakčiev 1984; 2000; 2019; 2021b; Dimitrova and Kabakčiev 2021). This understanding is not inconsistent with Verkuyl's and Bulatović's frameworks – which also take into account the various interactions between the verb and its arguments and the impact of adverbials, but in our model the major tenet is that *all* situation-participant NP referents are encoded in the minds of speaker/hearer as temporal entities.³ Conversely, in cases of verbal aspect, which means either in verbs as lexical entities or in their morpho-syntactic or periphrastic realization (as, for example, with imperfect and progressive verb forms in the Romance languages), *aspect is realized by the verb directly*, and not through NP referents. For this reason, and as we shall see below, aspect effectuation in verbal-aspect languages can take place from the very beginning of a sentence/clause, something impossible, or almost impossible, with aspectually ambivalent verb forms in compositional-aspect languages.

Aspect effectuation from the very beginning of a sentence/clause may not generally be typical, but it actually happens often in free-word-order languages like Bulgarian, other Slavic languages and Greek. Such effectuation is possible because, in contrast to English and other compositional-aspect languages, the verb in a sentence is allowed initial

position – systematically and not as some kind of a special exception. Consider an English sentence such as (1a) below translated into Bulgarian (1b), Greek (1c), Serbian (1d) and Russian (1e), with the verb for *wrote* placed in initial position in the latter four cases:

- (1) a. The woman wrote the letter but did not send it (English)
b. Napisa zhenata pismoto, no ne go izrprati
(Bulgarian)
Wrote woman-the letter-the but not it sent
c. Égrapse i gynaiika to gramma allá den to ésteile
(Greek)
Wrote the woman the letter but not it sent
d. Napisala je žena pismo, ali ga nije poslala
(Serbian)
Wrote is woman letter but it not sent
e. Napisala zhenschina pis'mo, no ne otpravila ego
(Russian)
Wrote woman letter but not sent it

Note that the sentences in (1) in all the four verbal-aspect languages represent a type of sentences with an initial position of the verb that are not only grammatical but also completely natural, though, of course, not necessarily frequent. Note also that one of the languages, Greek, is not Slavic and belongs to a different Indo-European group, the Hellenic one, and that if, conversely, any of the four sentences above is to be rendered back into English, this can by no means be done with a verb in initial position. Furthermore, other elements of the sentences in the verbal-aspect languages above also have predetermined positions that are different from a standard SVO order and are different for the separate languages – compare the syntactic object in the dependent clause and the negative particle. It also strikes the eye that while the word order in the dependent clause in the Serbian sentence does not coincide with the word order in Russian, both languages being Slavic, the word order in the Bulgarian and the Greek sentences *coincides fully* – despite the different genealogy of the two languages.⁴ All this suggests that word order exercises certain specific functions in the separate languages (to be identified in future studies) and that word-order patterns arise as a result

⁴ Most probably due to common Balkansprachbund features and mutual influence.

of requirements imposed by language structure that at first sight are not at all related to word order.

Nevertheless, some specificities in the sentences in the separate verbal-aspect languages related to word order will be disregarded here for the time being – for not being directly related to the issue investigated. But otherwise they are important because they represent a significant phenomenon known in the different linguistic schools and trends under different names: “functional sentence perspective”, “theme-rheme contrast”, “communicative dynamism”, “logical focus”, etc. All the sentences in the four languages (1b, c, d, e) ought to translate into English as (2a) – depending on whether the relevant language has a definite article or not. But if we take it that word order ought to have certain universal characteristics, their word order in English ought to be something like (2b). However, a sentence with such a word order is completely non-grammatical, hard to understand, even nonsensical.

- (2) a. The/a woman wrote a/the letter but did not send it
b. *Wrote a/the woman a/the letter but did not it send

When in compositional aspect explication the aspect value of a verb is mainly determined by the temporal values of situation-participant NPs (Kabakčiev 2019; 2021b), obviously the recognition of aspect by the hearer will, as a rule, take place as late as after clarifying the temporal status of *the last* situation-participant NP in a sentence/ clause. Compare some longer imperfective sentences such as (3a) or (3b) below (analyzed in Kabakčiev 2020; 2021b: 35–40), where the recognition of imperfectivity is impossible prior to the appearance of the adverbial element at the end of the sentence, namely, *from nearby rivers* in (3a) and *from wells* in (3b):

- (3) a. The mountaineers escorted the horse to drink from nearby rivers
b. The woman made the child drink from wells

To sum up, underlying the recognition of aspect in the explication of aspect in compositional-aspect terms are factors, some of which are to a certain degree surprising, such as word order – apart from the complex mechanisms incorporated in Verkuyl's two aspectual schemata.

3. On aspect recognition in compositional-aspect languages

Some recent publications (Kabakčiev 2019; 2023) describe the way aspect is explicated in English perfective sentences such as (4a) below, with two bounded situation-participant NPs (containing quantifiers and not representing a Verkuylian leak), versus imperfective sentences with a non-bounded situation-participant NP – which in (4b) is the syntactic object:

- (4) a. This greengrocer sold a melon
- b. This greengrocer sold melons
- c. Melons were sold by this greengrocer
- d. Melons were sold by this greengrocer yesterday to the school kitchen nearby

The preliminary assumption for English SVO sentences such as (4a) and (4b) ought to be that in a compositional-aspect language the hearer of an utterance does not know and can hardly predict what the aspect (perfective or imperfective) of the final constitution of the utterance will be until the (syntactic) object situation-participant NP appears – as the final constitution can trigger aspectually different values (perfective or imperfective). Sentence (4a) is perfective while (4b) is imperfective, and in both the aspect cannot become clear until the last element appears. If the NP after *This greengrocer sold* is *a melon*, the sentence is perfective, if *melons* appear, the sentence is imperfective. However, after a passive transformation, the sentence may be structured so as to begin with a bare NP, see (1c), and its presence will allow making a prediction with some probability that this sentence is imperfective – and hence indefinitely iterative in this particular case. But even if the presence of a bare NP here (one with a zero article, i.e., lack of quantification) predicts roughly that the sentence will be imperfective, this is not necessarily always the case, as seen in (4d). In (4d) the extension *yesterday to the school kitchen nearby* actually perfectivizes (4c), or at least perfectivity is fully possible. Note the important circumstance that this kind of perfectivization triggers an assumption that implicated here is a certain quantifier before *melons*, e.g.: *many, a batch of, some*, etc. About implicated quantifiers and in particular *some*, “the prototypical quantifier”, see Bulatović (2022: 500); Kabakčiev (2023: 262). The implicated quantifier *some* is sometimes called “silent *some*”.

Amplifying the assumption here is a major feature of English, viz., the rather fixed SVO word order – which requires the object-NP to take final position, a status quo that can be reversed by the passive voice, as in (5c, d), but a passive voice sentence such as (5d) for some reason or other (pragmatic) fails to clearly explicate the imperfectivity of (5b):

- (5) a. John drank the/a/some beer
b. John drank beer [habitually, e.g., when he was younger]
c. The/a/some beer was drunk by John
d. Beer was drunk by John

The compositional explication of aspect in a language such as English is an extremely complex mechanism, and this explains a very large number of strange and deplorable circumstances in theoretical and applied linguistics, among which: more than half a century after Verkyul's discovery of compositional aspect this epochally important phenomenon "is not described in grammars of English, not mentioned in English coursebooks, and not taught in schools and colleges" (Bulatović 2022: 500–501).

In a language such as English the last sentence component that determines the aspectual value of the sentence or clause is typically an indirect prepositional object or an adverbial in the role of a situation-participant NP, as in (3a, b) above, where the non-quantified NP renders the relevant sentence imperfective. However, with the use of bare subject-NPs, the recognition of aspect as imperfective can sometimes be at least partly predicted – if not exactly determined – from the very beginning of a sentence/clause, as already established. This is especially clearly manifested in sentences with three situation-participant NPs and an initial non-bounded NP referent such as (6a), analyzed in Kabakčiev (2021b: 37), or with direct objects turned into subjects in passive-voice sentences like (4c) with two situation-participant NPs, the first of which is non-bounded:

- (6) a. Women made the child drink from the well
(4) c. Melons were sold by this greengrocer

4. Aspect recognition in sentences with three situation-participant NPs – in both verbal- and compositional-aspect languages

As argued for the first time in Kabakčiev (2020: 119–120), compositional aspect can best be analyzed in terms of sentences containing three situation-participant NPs – in compositional-aspect languages and in some verbal-aspect languages (see below). These sentences are rare to find in real-world texts and difficult to construct. In Dimitrova and Kabakčiev (2021: 193), the following four English sentences were specially constructed and then analyzed:

- (7) a. The valet will park our car in the nearby parking lot [perfectivity]
- b. The valet will park cars_{LEAK} in the nearby parking lot [imperfectivity]
- c. The valet will park our car in nearby parking lots_{LEAK} [imperfectivity]
- d. Valets_{LEAK} will park our car in the nearby parking lot [imperfectivity]

Sentence (7a) falls into Verkuyl's perfective schema and explicates perfectivity. The other three sentences (7b, c, d) belong to Verkuyl's imperfective schema with at least one leak (see the two aspect schemata described exhaustively in Verkuyl 1993) – and explicate imperfectivity. On Verkuyl's leaks – in his imperfective schema, a leak being a major notion in the theory of compositional aspect, see also Kabakčiev (2019: 204–206).

But how and when (in real-time speech) is aspect explicated in (7), particularly imperfective aspect?⁵ Sentence (7b) is imperfective because the non-quantified *cars* (third sentence component) explicates a non-bounded series of cars on the time axis. Then the entity *cars* with its feature iterativity is mapped back onto the referent of the verb *will park* (second sentence component) and the verb is thus coerced into signalling imperfectivity in the form of non-bounded iterativity. Sentence (7c) is imperfective because, in a similar way, the non-quantified *parking lots* (fourth sentence component) explicates a non-bounded series of parking

⁵ How perfective aspect is explicated will not be discussed here because it is an extremely difficult issue. Those who want to know must read at least most of the major literature on compositional aspect, including Verkuyl's three major monographs (Verkuyl 1971; 1993; 2022).

lots on the time axis one after the other; these are then mapped back onto the referent of the verb catena *will park* (second sentence component), and the verb referent is again coerced into signalling imperfectivity in the form of non-bounded iterativity. Note specifically how *our car* in (7c) turns from a single temporal instance of *our car* in (7a) and a single car as a physical entity into a recurrent kinetic entity, a serial multitude of the thing called “our car”, which in (7c) can actually be *not the same car* physically but different cars every time, despite the grammatical singularity of *our car*. Similarly, (7d) is imperfective because the non-quantified *valets* explicates a non-bounded series of valets on the time axis, the valets, as recurring entities, are mapped onto the referent of *will park* and the verb is again coerced into signalling imperfectivity in the form of non-bounded iterativity. It is truly remarkable how a single non-quantified situation-participant NP in a sentence (7b, c, d) can coerce an initially perfective sentence (7a) into imperfective ones. For further detail on aspect in sentences with three situation-participant NPs, (see Kabakčiev 2020; 2021a; 2021b; 2023) and (Dimitrova and Kabakčiev 2021).

Note that the English examples (7) were intentionally constructed by us with a verb (*to park*) that is biaspectual in Greek and also in Bulgarian. They were then translated into Greek, and this yielded the following four sentences:

- (8) a. O valé tha parkárei_{BIASP} to aftokínitó mas
 ston kontinó chóro státhmefsis [perfectivity]
 The valet will park the car our
 in-the nearby parking lot
 ‘The valet will park our car in the nearby parking lot’
- b. O valé tha parkárei_{BIASP} aftokínita ston
 kontinó chóro státhmefsis [imperfectivity]
 The valet will park cars in-the
 nearby parking lot
 ‘The valet will park cars in the nearby parking lot’
- c. O valé tha parkárei_{BIASP} to aftokínitó
 mas se kontinoús chórous státhmefsis [imperfectivity]
 The valet will park the car
 our in nearby parking lots
 ‘The valet will park our car in nearby parking lots’

- d. Valédestha parkároun_{BIASP} to aftokínító mas
 ston kontinó chóro státhmefsis [imperfectivity]
 Valets will park the car our
 in-the nearby parking lot
 ‘Valets will park our car in the nearby parking lot’

These Greek sentences, each with three situation-participant NPs, show that in cases of aspectual verb ambivalence, here of the verb form *tha parkárei* ‘will park’ (such biaspectual verb forms in Greek are relatively rare), the aspect of the sentence is not encoded in the verb and directly shown by it, but is effectuated as in English (and in compositional-aspect languages in general) through an elaborate interplay of features of NP-referents and the verb referent in a sentence/clause. This phenomenon is observable in Bulgarian too, even more frequently. All the Greek examples (8), when translated into Bulgarian, yield sentences that are structurally exactly the same. See below in (12) similar Bulgarian examples with biaspectual verbs and three situation-participant NPs.

To illustrate clearly our understanding of aspect as “an all-pervading and perpetual process of mapping temporal features between different elements of the sentence” (see definition and explanation in Kabakčiev 2019: 212) and the regularity consisting in the explication of aspect in two different ways in both verbal-aspect and compositional-aspect languages, we recently (Kabakčiev and Dimitrova 2023) constructed a set of English sentences with one and the same verb that would be biaspectual in all or at least several Slavic languages, with all the sentences containing identical or near-identical three situation-participant NPs:

- (9) a. Businessmen_{LEAK} sponsored concerts_{LEAK} of young virtuosi_{LEAK}
 [imperfectivity]
 b. Businessmen_{LEAK} sponsored concerts_{LEAK} of the young
 virtuoso [imperfectivity]
 c. Two businessmen sponsored concerts_{LEAK} of young
 virtuosi_{LEAK} [imperfectivity]
 d. Two businessmen sponsored concerts_{LEAK} of the young
 virtuoso [imperfectivity]
 e. Businessmen_{LEAK} sponsored the concerts of the young
 virtuoso [imperfectivity]
 f. Two businessmen sponsored the concert of the young
 virtuoso [perfectivity]

All these English sentences clearly explicate aspect: (9a, b, c, d, e) are imperfective, and (9f) is perfective – for reasons that can be drawn from the analysis of the sentences in (7) above. Phrased in the shortest terms possible, a Verkuylian leak in one or more than one situation-participant NP in a sentence with a telic verb turns a perfective sentence – here (9f), into an imperfective one, cf. all the other sentences in (9).

Let us now make a direct comparison with Serbian. In Serbian the verb for *sponsor* is a true biaspectual. It does not tend to take a prefix in order to form a perfective correspondence. Hence, the following Serbian sentences – correspondences of the English sentences in (9) – are correct, fully grammatical:

- (10) a. Biznismeni su sponzorisali_{BIASP} koncerte mladih virtuoza
 b. Biznismeni su sponzorisali_{BIASP} koncerte mladog virtuoza
 c. Dva biznismena su sponzorisali_{BIASP} koncerte mladih virtuoza
 d. Dva biznismena su sponzorisali_{BIASP} koncerte mladog virtuoza
 e. Biznismeni su sponzorisali_{BIASP} koncerte mladog virtuoza
 f. Dva biznismena su sponzorisali_{BIASP} koncert mladog virtuoza

However, all these Serbian sentences, or at least most of them, are actually *unanalyzable* in terms of the aspectual value of the verb, viz., whether it signals perfectivity or imperfectivity. Thus sentence (10a) can be, and actually must be, interpreted as *either* perfective *or* imperfective, because apart from the biaspectuality of the verb, all the three situation-participant NPs fail to provide clarity as to their quantificational temporal status. Is it bounded? Is it non-bounded? For example, *biznismeni* ‘businessmen’ in (10a) can be interpreted in three *completely different* ways (in English as a metalanguage): (i) *businessmen* – equivalent to a bare NP, with a zero article; (ii) *some businessmen* – with an implicated/silent quantifier *some*; (iii) *the businessmen* – implicated definiteness, equivalent to a definite article in languages with articles. The same applies to *koncerte* ‘concerts’ and *mladih virtuoza* ‘of (the) young virtuos’. These can be interpreted as: (i) non-quantified NPs – bare NPs, with a zero article; or, (ii), as having an implicated/silent quantifier *some*, or; (iii), as implicating definiteness – as if with a definite article in a language like English. The first case triggers imperfectivity, the latter two perfectivity.

And here is the catch, the difficulty for the analysis of aspect explication with biaspectual verbs in languages such as Serbian or Russian. If implied/understood by *biznismeni*, *koncerte* and *mladih virtuoz* are *some businessmen*, *some concerts* and (of) *some virtuosi*, then the aspect of the sentence will be perfective, as per Verkuyl's perfective schema. It will also be perfective if implied/understood by *biznismeni*, *koncerte* and *mladih virtuoz* are *the businessmen*, *the concerts* and (of) *the young virtuosi*, again according to Verkuyl's perfective schema. But if implied/understood by *biznismeni*, *koncerte* and *mladih virtuoz* are *businessmen*, *concerts* and (of) *young virtuosi*, i.e., non-quantified situation-participant NPs, then the aspect value of *sponzorisali* will be imperfective, as per Verkuyl's imperfective schema, due to the leaks.

To further check these observations, let us turn to another verbal-aspect language, again Slavic, again with no articles, Russian. The Russian correspondence of the English verb *sponsor* is also a truly biaspectual one, *sponsirovat'*. It does not tend to take a prefix in order to form a perfective correspondence. Hence, the Russian sentences (11) display the same features as the Serbian ones (10):

- (11) a. Biznismeny sponsirovali_{BIASP} kontserty yunyh virtuozov
 b. Biznismeny sponsirovali_{BIASP} kontserty yunogo virtuoz
 c. Dva biznesmena sponsirovali_{BIASP} kontserty yunyh virtuozov
 d. Dva biznesmena sponsirovali_{BIASP} kontserty yunogo virtuoz
 e. Biznismeny sponsirovali_{BIASP} kontserty yunogo virtuoz
 f. Dva biznesmena sponsirovali_{BIASP} kontsert yunogo virtuoz

When *biznismeny* 'businessmen', *kontserty* 'concerts' and *yunyh virtuozov* 'of young virtuosi' are understood as "the/some businessmen", "the/some concerts" and "of some/of the young virtuosi", the aspectual value of the sentence is perfective. When these NPs are understood as bare NPs (with a zero article and with no other quantifier), the aspectual value of the sentence is imperfective.

Thus now it can be generalized that the use of a truly biaspectual verb in a Slavic language such as Serbian or Russian brings about confusion as to the aspectual meaning of sentences with three situation-participant NPs, a conclusion already reached in Kabakčiev (2020; 2021a). This circumstance is clearly demonstrated in the examples (10) and (11).

Although the speaker may have in mind a particular aspectual value for each of the verbs in these sentences, the hearer will certainly have difficulty in recognizing the aspect of most or even all of these sentences, given the ambivalence and ambiguity in the temporal values of the referents of the relevant NPs.

Note, however, that this is not the case for Bulgarian, although it is otherwise a verbal-aspect language just like Serbian and Russian. The presence of a definite article in Bulgarian (as in Greek) allows eliminating most of the aspectual ambiguities present in the Serbian and Russian examples above. Consider in (12) the Bulgarian correspondences (again with a truly biaspectual verb) of the sentences in English (9), Serbian (10), and Russian (11):

- (12) a. $\text{Biznesmeni}_{\text{LEAK}} \text{ sponsoriraha}_{\text{BIASP}} \text{ kontserti}_{\text{LEAK}} \text{ na}$
 $\text{mladi} \quad \text{virtuoz}_i_{\text{LEAK}} \text{ [imperfective]}$
 Businessmen sponsored concerts of
 young virtuosi
- b. $\text{Biznesmeni}_{\text{LEAK}} \text{ sponsoriraha}_{\text{BIASP}} \text{ kontserti}_{\text{LEAK}} \text{ na}$
 $\text{mladiya} \quad \text{virtuoz} \text{ [imperfective]}$
 Businessmen sponsored concerts of
 young-the virtuoso
- c. $\text{Dvama} \text{ biznesmeni} \quad \text{sponsoriraha}_{\text{BIASP}} \quad \text{konserti}_{\text{LEAK}}$
 $\text{na} \quad \text{mladi} \text{ virtuoz}_i_{\text{LEAK}} \text{ [imperfective]}$
 Two businessmen sponsored concerts
 of young virtuosi
- d. $\text{Dvama} \text{ biznesmeni} \quad \text{sponsoriraha}_{\text{BIASP}} \quad \text{konserti}_{\text{LEAK}}$
 $\text{na} \quad \text{mladiya} \quad \text{virtuoz} \text{ [imperfective]}$
 Two businessmen sponsored concerts
 of young-the virtuoso
- e. $\text{Biznesmeni}_{\text{LEAK}} \text{ sponsoriraha}_{\text{BIASP}} \quad \text{konsertite} \quad \text{na}$
 $\text{mladiya} \quad \text{virtuoz} \text{ [imperfective]}$
 Businessmen sponsored concerts-the of
 young-the virtuoso
- f. $\text{Dvama} \text{ biznesmeni} \text{ sponsoriraha}_{\text{BIASP}} \text{ konserta} \quad \text{na}$
 $\text{mladiya} \quad \text{virtuoz} \text{ [perfective]}$
 Two businessmen sponsored concert-the of
 young-the virtuoso

These Bulgarian sentences allow marking the relevant NPs as leaks, as per Verkuyl's imperfective schema, and hence identifying each sentence as either imperfective (12a-e) or perfective (12f). Marking certain NPs as leaks according to Verkuyl's imperfective schema is also possible in other cases in similar Bulgarian sentences with three situation-participant NPs and a biaspectual verb. But, as already demonstrated, this is generally not possible in Slavic languages such as Serbian and Russian – because of the non-availability of a definite article.⁶

5. Conclusions and implications for future research

On the basis of the analyses above, several assumptions, generalizations and conclusions can be drawn, and certain important questions can be asked – with a view to future research in the problem field.

The recognition of the aspect of a sentence or clause as perfective or imperfective by the hearer in real-time speech *in verbal-aspect languages* – when aspect is encoded by the verb in a sentence/clause, *presents no problem* in grammatical or semantic terms: simply, aspect is where the verb is. The verb directly expresses (i.e., it denotes, signifies, encodes) the aspect (perfective or imperfective), and the verb (verb catena) may be located in different places – at the beginning of a sentence, in the middle or at the end. However, the recognition of the aspect of a sentence or clause as perfective or imperfective by the hearer in real-time speech in English and similar compositional-aspect languages is *very different*. Generally, the hearer will identify – and this is done intuitively – the aspect of an utterance in real speech *only after the whole utterance is produced*.⁷

⁶ An anonymous reviewer argues that in languages like Serbian there are other ways to indicate definiteness in the absence of articles: use of demonstratives, quantifiers, specifying adjectival constructions, etc. This is true but our task here is to show what happens when such devices are *absent* in certain grammatically correct sentences or types of sentences in verbal-aspect languages without articles such as Serbian and Russian. We are also launching a conjecture – in need of future research, that word-order semantico-syntactic patterns and mechanisms may turn out to be key to understanding how definiteness and indefiniteness are explicated in languages with no articles.

⁷ It is common knowledge that native speakers of compositional-aspect languages without special linguistic knowledge have no idea what perfectivity-imperfectivity is. However, when given appropriate examples, they start to grasp why, for example, *John drank a beer* is a perfective situation, while *John drank beer* is an imperfective one. This means

Furthermore, the identification of the aspect of a sentence/clause with three situation-participant NPs in the use of biaspectual verbs in verbal-aspect languages turns out to be different in the different verbal-aspect languages. In Bulgarian and Greek the presence of a definite article provides the necessary conditions for classifying the relevant sentences as belonging to one of the two aspect schemata built by Verkuyl. In cases of a leak/leaks, its/their recognition by the hearer will deploy the relevant sentence in Verkuyl's imperfective schema; conversely, the absence of a leak/leaks will classify the relevant sentence as perfective.

It is worth asking what implications the two clear circumstances above can have for linguistic research. The circumstances are: (i) an easy and immediate identification of the aspect of a sentence/clause in verbal-aspect languages; (ii) a very complex identification of the aspect of a sentence/clause in compositional-aspect languages. The two circumstances have significant and far-reaching implications for both theoretical and applied linguistics. One of these implications for both fields is that more research is needed for a better understanding of how aspect is recognized in real speech in compositional-aspect languages – from a theoretical and a practical point of view. Another very important one is the necessity for research directed towards the mechanisms of explicating values such as indefiniteness and definiteness in verbal-aspect languages without a definite article. As has already been demonstrated, there are two modern European languages featuring simultaneously verbal aspect and a definite article: Bulgarian, Greek. As shown in this paper and in previous publications, the identification of aspect at the sentence/clause level in cases of verbal aspectual ambivalence (biaspectuality) in these two languages is radically different from those verbal-aspect languages that have no articles, such as Serbian or Russian. Among other things, this points to a necessity to distinguish between types of verbal-aspect languages in terms of other grammatical subdomains in them, in this case nominal determination.

And lastly, the analysis has demonstrated that word order must also be investigated in the following very important direction. It can hardly be treated as accidental that, on the one hand, verbal-aspect languages have a free word order that allows the identification of the aspect of a sentence to be effectuated from the very beginning of a sentence. On the other hand, free word order is obviously relevant to the explication of

that they *can intuit* and obviously *always intuit* the difference between perfectivity and imperfectivity when confronted with sentences like these two.

the values of definiteness and indefiniteness of NPs. When a language has verbal aspect (the Slavic languages, Georgian), it tends not to have articles or at least not to have a regular pattern of a definite and an indefinite article (it may have a definite article only – Greek, Bulgarian). Conversely, when a language has a regular pattern of a definite and an indefinite article (English, the other modern Germanic languages, etc.), it lacks verbal aspect. Thus, two questions begging answers and mutually dependent are the following.

First, why does English – along with many other languages, have a definite and an indefinite article, when numerous languages can do without grammatical entities of this kind – burdening the mind of the native speaker and the foreign learner alike? This question was given an answer a long time ago: because English lacks aspect in verbs and there exists an inverse relationship across languages of markers of boundedness in verbs and nouns (Kabakčiev 2000: Chapter 7). But the recognition of this significant cross-language interdependence is still rare in the literature – see it in, e.g., Abraham and Leiss (2012: 326). And as a result, in view of the large diversity of languages around the world, numbering thousands, it remains understudied typologically, hence not sufficiently representative, embracing mainly European languages.

Second, if we take it that definiteness and indefiniteness are important semantic and pragmatic values for *any* natural language, *exactly how* are these values explicated in languages such as Serbian, Russian, almost all the other Slavic languages and Georgian? And isn't the free word-order observed in them instrumental for revealing the way definiteness and indefiniteness are effectuated in such languages and in language in general? This question is entirely left for future research. But it is our belief as authors that studies of word order across languages can open up larger vistas for a future adequate description of the mechanisms for explicating definiteness and indefiniteness and similar values – specificity, genericity, etc., particularly in verbal-aspect languages with no articles.

Division of labor. Kabakčiev is responsible for the correct presentation of the Slavic data. Dimitrova is responsible for the correct presentation of the Greek data. The authors are equally responsible for the correct presentation of the overall theoretical model.

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