

# On the Temporal Values of Situation-Participant NP Referents Mapped from Bulgarian Perfects with Aorist and Imperfect Participles

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**Abstract.** This paper deals with Bulgarian *съм+л* ('be'+past active participle) perfect verb forms with aorist and imperfect participles, the distinction between these two participles being a phenomenon found only in Bulgarian among the Slavic languages and generally absent in other languages too. According to the majority of Bulgarianists today, imperfect participles are not used in perfect verb forms. However, this thesis is considered here a fully defective one for several reasons, among which: no argumentation has ever been provided to explain the thesis in essence – for example, in its possible connection to the aspectual values encoded in aorist and imperfect participles, or to the general characteristics of *съм+л* forms. These forms can effectuate many TAM meanings – not only of “a standard perfect” but also modal ones such as inferentiality, renarration, dubitativity. Following the author’s definition of aspect as an all-pervading and perpetual process of mapping temporal features between verbal and nominal referents, specific uses of imperfect and aorist participles in sentences with perfect verb forms are analyzed, and the impact the relevant participle (imperfect or aorist) exerts on the temporal values of situation-participant NP-referents is analyzed and identified. The major generalization is that the never-ending process of mapping temporal features from verbs to nominals (NPs) that occurs in verbal-aspect languages (Slavic, Greek, Georgian), and vice versa, from nominals (NPs) to verbs that occur in compositional-aspect languages (Dutch, English, Finnish) is a crucial psychophysiological mechanism ingrained in peoples’ heads and conditioning the development of grammatical structures of languages. Intriguingly, this process is linguistically fully identifiable at the speaker-hearer interaction level but remains entirely beyond the awareness of the ordinary native speaker.

**Keywords:** *Bulgarian perfect, aorist and imperfect participles, temporal values of situation-participant NPs, speakers’ unawareness of NP temporal values.*

**Кабакчиев Красимир. Про темпоралні значення ситуативних референтів іменної групи (NP), що відображують болгарські перфективи з аористом та дієприкметником недоконаного виду.**

**Анотація.** У цій статті розглядаються болгарські дієслівні форми доконаного виду на *съм+л* («бути» + активний дієприкметник минулого часу) з аористом і дієприкметниками недоконаного виду, причому відмінність між цими двома дієприкметниками є явищем, яке трапляється лише в болгарській мові серед слов'янських мов і загалом відсутнє в інших мовах. На думку більшості сучасних болгаристів, дієприкметники недоконаного виду не вживаються з дієсловами доконаного виду. Однак ця теза вважається тут цілком хибною з кількох причин, серед яких: жодного разу не було наведено аргументації для пояснення цієї

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тези по суті, наприклад, у її можливому зв'язку з аспектуальними значеннями, закодованими в аористах і дієприкметниках недоконаного виду, або із загальними характеристиками форм на *сьм+л*. Ці форми можуть реалізовувати багато значень у межах «час–аспект–спосіб» не лише «стандартного перфекта», а й модальних, як-от інференційність, ренарация, дубітативність. На основі авторського визначення аспектуальності як всеохоплюючого і безперервного процесу відображення темпоральних ознак між дієслівними та іменними референтами проаналізовано конкретні випадки вживання дієприкметників недоконаного виду та аориста в реченнях з дієсловами доконаного виду, а також проаналізовано та виявлено вплив відповідного дієприкметника (недоконаного виду або аориста) на темпоральні значення ситуативних іменних референтів, що беруть участь у реченні. Головне узагальнення полягає в тому, що нескінченний процес відображення темпоральних ознак від дієслова до іменника (іменної групи), який відбувається у дієслівних мовах (слов'янських, грецькій, грузинській), і навпаки, від іменника (іменної групи) до дієслова, який відбувається у мовах композитного типу (нідерландській, англійській, фінській), є важливим психофізіологічним механізмом у мовців, зумовлюючи розвиток граматичних структур мов. Цікаво, що цей процес загалом піддається лінгвістичній ідентифікації на рівні взаємодії між мовцем і слухачем, але залишається цілковито поза увагою пересічного носія мови.

*Ключові слова:* болгарський перфект, аорист і дієприкметники недоконаного виду, темпоральні значення ситуативних іменних груп, неусвідомленість мовців щодо темпоральних значень іменних груп.

## Introduction

This paper deals with Bulgarian perfect verb forms (perfects) with aorist and imperfect participles, which necessitates preliminary explanations of both aspect and the perfect. The two types of participles (aorist and imperfect) used in perfects have aspectual values, grammatically realized, that reciprocate the aspectual values of the aorist and the imperfect. The perfect is a grammatical entity present in Bulgarian and many other languages (Bybee et al., 1994; Comrie 1985; Dahl, 1985)<sup>1</sup> – but, notably, not in the other Slavic tongues. As for aspect, it is a universal phenomenon present in every language under various disguises and representing a perpetual interplay between verbal and nominal entities in the sentence, according to a model (Kabakčiev, 2000; 2019) in which the referents of situation-participant NPs in a sentence are temporal entities, something often greeted with surprise and/or even suspicion. For this reason the presentation of aspect below is larger than the one for the perfect.

### Aspect

After Verkuyl's (1972) discovery of compositional aspect, it became clear that verbal aspect as in the Slavic languages, Greek, Georgian and other languages is *not* what Jakobson (1957, p. 45) claimed it to be: a category that “characterizes the narrated event itself without involving its participants”. On the contrary, aspect, including verbal aspect, is inseparably linked to the participants in situations,<sup>2</sup> and is

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<sup>1</sup> Bulgarian features present perfects, past perfects, future perfects and future-in-the-past perfects, but the paper deals with present perfects only, called perfects.

<sup>2</sup> Situation participants are also known as verb arguments.

realized as a permanent interplay between temporal values of verbs and nominals in the sentence. By “situations”, Vendlerian ones (Vendler, 1957) are understood, while “aspect” is the perfective-imperfective contrast.<sup>3</sup> Today, the thesis that the perfective-imperfective contrast is the prototypical form of aspect across languages prevails in aspectology. Huge numbers of publications appeared in the last decades investigating aspectual data in hundreds of languages. Most of them expressly or tacitly follow the understanding that languages that do not have verbal aspect – of the Slavic type – feature compositional aspect. Unfortunately, the two extremely important phenomena of compositional aspect and the article-aspect interplay as its nucleus are heavily misconceptualized in aspectology (Kabakčiev, 2019). Furthermore, they are completely ignored in all of today’s comprehensive English grammars (Bulatović, 2020), on the one hand, and, on the other, in English language teaching worldwide, at all levels (Bulatović, 2022). These facts correlate with the reliance on a premise in many studies of English aspect and/or its acquisition (as a native, second or foreign language) that compositional aspect is realized at the VP-level (Kaku & Kazanina, 2007; Kaku-Macdonald et al., 2020; Martin et al., 2020; Kardos, 2022), the sentence-level remaining disregarded.

Why aspect is systematically and wrongly treated as a VP-phenomenon is a question difficult to answer. Kaku and Kazanina (2007) correctly argue that “L2 learners have access to a universal mechanism for calculating telicity that involves boundedness of nominal arguments”. But several key elements remain unspecified in this publication and the other three above: (i) whether this mechanism involves subject-NPs; (ii) whether subject-NPs represented by proper names of people and personal pronouns take part in aspect explication; (iii) whether *all* NPs in a sentence, of any syntactic type, are what the authors call “nominal arguments”; (iv) exactly what kind of nominal arguments participate in compositional aspect explication; (v) what exactly is (what the authors call) unboundedness. Regarding (i), a huge achievement, beyond any doubt, of Verkuyl’s theory is that it defines aspect as a sentence-level phenomenon. Regarding (ii), the publications mentioned provide scores of examples with proper names and personal pronouns, not specifying whether these take part in aspect explication – and if they do, how. Regarding (iii), it is common knowledge that not all NPs in a sentence are necessarily “nominal arguments” (explained below). Regarding (iv), the present paper follows the thesis (Kabakčiev, 2000) that NP-referents that participate in aspect explication are temporal entities. Vounchev (2007, p. 86–87) was the first linguist to subscribe to the idea of the temporality of NP referents – on Greek and Bulgarian data,<sup>4</sup> followed by Dimitrova (2021). Regarding (v), it is invariably maintained (see Kaku & Kazanina, 2007) that plural count nouns and mass nouns are unbounded due to the lack of precise boundaries – which means that nominals/NPs encode features that are physical, atemporal. The atemporal features then turn into temporal ones, a miraculous metamorphosis formulated by Padučeva (2004, p. 50) thus: “the

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<sup>3</sup> Ukrainian: “доконаного-недоконаного виду”.

<sup>4</sup> To the author’s knowledge.

boundedness of a situation in time arises on account of the boundedness of the incremental object in space”. See criticism of the idea of the miraculous metamorphosis in Kabakčiev (2019, p. 23–25). To sum up, a discrepancy arises: the treatment of English aspect as a VP-level phenomenon in the publications mentioned and in numerous similar ones counters the major tenet – that aspect is a sentence-level phenomenon – in three models of compositional aspect, including that of the finder of compositional aspect himself (Verkuyl, 1972; 1993; 2022; Kabakčiev, 2000; 2019; Bulatović, 2020; 2022).

Apart from the perfective-imperfective distinction, effectuated in Slavic and similar languages in mixed lexico-grammatical terms, there is a second major grammatical disguise under which aspect resides in languages. It is the aorist-imperfect contrast, conceptualized on the basis of two phenomena observed in the two historically most important languages: Ancient Greek and Latin. The two phenomena, similar but not identical, are the aorist-imperfect distinction in Ancient/Modern Greek and the perfect-imperfect distinction in Latin. Both are aspectual but they also carry a tense value, past. The Latin phenomenon does not coincide with the Greek one. While the imperfect is an exponent of imperfectivity in both Latin and Greek, and in Latin the perfect carries a perfective meaning, in Greek the aorist is not an exponent of perfectivity. The reason is the difference between perfectivity and the aorist. While perfectivity consists in temporal boundedness plus a reached telos, the aorist is incapable of effectuating a reached telos in Greek, also in Bulgarian. The Greek aorist effectuates temporal boundedness; indeed, it formally combines with perfective verbs only but it also allows the coercion of a perfective verb into an episode through the compositional mechanism (Dimitrova, 2021; Dimitrova & Kabakčiev, 2021). On the episode as a Vendlerian situation, see Kabakčiev (2000, p. 279-307). The difference between aorist and perfectivity can be explained on Greek and English data, but especially easily in Bulgarian, where the two contrasts, perfectivity-imperfectivity and aorist-imperfect, generate four separate forms, see the aspectual pair *изпя-пя* ‘sing’:

Table 1  
*Forms of Perfectivity-Imperfectivity and Aorist-Imperfect*

perfective aorist	<i>изпях</i> ‘I sang (to the end)’
imperfective aorist	<i>пях</i> ‘I sang (for X time)’
perfective imperfect	<i>изпеех</i> ‘I sang (each time once, habitually)’
imperfective imperfect	<i>пеех</i> ‘I was singing/I sang (habitually)’

As is clear from the table, aorist and imperfect participles (*пял-пеел*) are derived from imperfective aorists and imperfective imperfects, respectively. See examples in (5)-(6) below. It is important for an investigation of these participles to consider the fact that the aorist-imperfect distinction is widespread, found throughout Europe and

nearby regions: Romance languages/dialects, Albanian, Bulgarian, Greek, Armenian, Georgian. All these languages also have perfects. On the other hand, while besides Bulgarian no other Slavic language has perfects, Greek and Georgian have no separate aorist and imperfect participles but are verbal-aspect languages like Bulgarian, and unlike the rest. Thus, against the prevalence of aorists, imperfects and perfects in cross-language terms, the presence in Bulgarian perfects of aorist and imperfect participles is striking and may turn out to be a unique phenomenon, worth investigating. This paper is an attempt in that direction.

### **The Perfect: A Puzzle or a Structural Device?**

The perfect has often been regarded as a puzzle (Klein, 1992; Pancheva & von Stechow, 2004; Higginbotham, 2009, p. 160) and the definitions of its “meanings” in grammars and other traditional descriptions have been subjected to criticism. According to Moens (1987, p. 94), the accounts of the perfect are vague, “make unprincipled distinctions between different uses of the perfect” and do not explain why the perfect should fulfill such an arbitrary collection of functions. In one of the most detailed analyses of the English perfect, McCoard (1978) outlines several trends for explaining it, and recognizes neither of these as revealing. According to certain recent proposals, the perfect across languages is not necessary for communication as an exponent of some semantic value: native speakers of “perfect-less languages” understand each other perfectly without perfects. The *raison d’être* of the perfect is not the encoding of “current relevance” or similar unclear notions, the perfect serves structural functions related to cancellability and non-witnessing (Kabakčiev, 2020; 2022).

### **The Bulgarian Perfect**

Almost all Bulgarian grammars and other linguistic publications maintain that perfects cannot be formed from imperfect participles. There are only a few “dissident voices” – two old-time grammarians (Kostov, 1939; Popov, 1941) and four modern linguists (Lindstedt, 1985; Rå Hauge, 1999; Todorova, 2010; Kabakčiev, 2022), according to whom perfects *are* formed from imperfect participles. The opponents’ major argument is that when *сѣм+л* forms contain imperfect participles, these are not perfects but inferentials. The validity of the argument is checked below.

## **Methods**

The *main target* of the study, Bulgarian perfects with aorist and imperfect participles, is analyzed through the theory of compositional aspect in three major models, Verkuyl’s (1972; 1993; 2022), Bulatović’s (2020; 2022), Kabakčiev’s (2000; 2019); this section explains Verkuyl’s pioneering one. The *analytical method* is predominantly deductive, employing universal notions underlying language structure and identifying their realization in different languages (Dimitrova, 2021, p. 52). Technically, the *key approach* involves counterposing non-grammatical against

grammatical sentences, as per the Chomskyan framework – where non-grammaticality is decisive for revealing language structures and interdependencies.

Compositional aspect was discovered by Verkuyl (1972) but came to be understood – rather slowly – in the following decades as an extremely important phenomenon in both cross-language and universal terms. Unfortunately, it still remains generally misconceived and misunderstood (Kabakčiev, 2019). This paper follows the conceptualization of aspect as “*an all-pervading and perpetual process of mapping temporal features between elements of the sentence, especially between referents of verbs and of nominals that are participants in situations*” (Kabakčiev 2019, p. 212). It will be applied to situation-participant NP-referents of Bulgarian present perfects with aorist and imperfect participles, whereby the temporal values of the participles are identified through the boundedness/non-boundedness contrast and then mapped from the participles onto the situation-participant NP-referents.

In connection with the idea of the temporal values of situation-participant NP-referents, certain popular notions prevail in traditional grammars and similar linguistic publications that provide misleading conceptualizations of certain grammatical phenomena – although at first sight the notions appear well-constructed. One of the misleading conceptualizations is that when users of language in their capacity as speakers-hearers interpret what nominals/NPs stand for, they think of certain nominal entities as material/physical, and of other entities as abstract. Here are some obvious examples: *car, dog, street* are apprehended as material/physical things, while *love/hate, jump, smile, thunder* are non-material/non-physical entities, abstract things. At first sight the distinction makes sense. But when certain language mechanisms are to receive scientific explanation, it fails to offer justification and this hinders the understanding of the phenomena.

Consider the following two English sentences (discussed in Kabakčiev, 2020) portraying a real-world happening. A passenger in a moving car tells the driver what s/he saw seconds ago:

- (1) a. *There was a dog in the car in front.*  
 b. *The dog was barking.*

The use of a past tense form in (1a) is at first sight illogical, as – in our understanding of this world – the dog is still alive. It has not died or evaporated into thin air. As already established (Kabakčiev, 2020, p. 128-130), many or all European languages use past tense in the translation equivalents of (1a) – which means that “the illogical form” is not some specific trait of English. But why the use of *was* in (1a) and not *is*? This is because *a dog* reflects not the physical status of the NP-referent but the sensory experience of the speaker. *A dog* in (1a) is not “a material thing”. It is a temporal entity that existed in the speaker’s vision/mind for some seconds. Analogously, consider (2a)-(2b) – describing eventualities occurring this morning:

- (2) a. *The neighbor’s dog jumped in front of our car and crossed the street*  
 b. *There was a raised crosswalk on which the dog jumped*  
 c. *Last year there was a restaurant at this corner*

According to the fundamental rules of grammar – and not only English grammar, of course, the use of a verb like *was* in sentences like (2b) implicates the present *non-existence* of the situation participant referred to by the relevant NP (here *a raised crosswalk*). Compare (2c), a sentence clearly implicating the present non-existence of a restaurant at this corner. But the non-existence in (2b) of a raised crosswalk a couple of hours later today is unthinkable. Why the use of *was* in (2b)? It is because the sentence depicts not an object made of asphalt but the speaker’s visual experience, in which the crosswalk is not (so much) a material object as a temporal one. It may sound surprising, but the crosswalk here is *a kinetic entity* – moving not in space like *the dog* in (1a) and (2a, b) but *in time* (although the dog also moves in time).

Note now that the past indefinite in the sentences above serves to deploy the participants in the past – according to a thesis that tense does not locate in time situations only. It serves to deploy in time another two entities that constitute an important part of the general mechanism of language: the speaker and the participants in the Vendlerian situation (Kabakčiev, 2020, p. 128-129). Some of the sentences above and in (3) below nicely demonstrate the compositional aspect explication in English and similar non-verbal-aspect languages. Let us shorten sentence (2a) into (2a') and compare it to (3a, b, c):

(2) a'. *The dog crossed the street [perfective]*

(3) a. *The dog crossed streets<sub>SLEAK</sub> (in search of food) [imperfective]*

b. *Dogs<sub>SLEAK</sub> crossed the street (at this place, so we had to drive carefully) [imperfective]*

c. *The dog loved<sub>LEAK</sub> the street [imperfective]*

The sentences (3a) and (3b) are extended with adverbial or other complementation – so that they make sense and are felt to be natural. Sentence (2a') is perfective, falling into Verkuyl’s so-called perfective schema in which the three sentence components fulfill the requirement to have “plus-values” to be able to effectuate perfectivity. The plus-values are: (i) +SQA (specified quantity of A) in situation-participant NP-referents (*the dog* and *the street*); (ii) a telic verb (*crossed*). Imperfectivity is realized when at least one component has a “leak” (a minus-value). The leaks are: (i) -SQA (unspecified quantity of A) in a situation-participant NP-referent – *streets* in (3a), *dogs* in (3b); (ii) a non-telic/atelic verb. Hence, sentences such as (3a,b,c) are imperfective, because (3a) has a leak in the object, (3b) in the subject and (3c) in the verb (*loved*, an atelic verb). But the most essential thing is that all the NPs in (2) and (3) are temporal entities, kinetic images in the minds of speaker-hearer – bounded or non-bounded in time. For a larger summary of Verkuyl’s theory, see Kabakčiev (2019, p. 203-206); on Verkuyl’s schemata, leaks and the plus-principle, see Verkuyl (1993; 2022).

What are situation participants? Not every NP in a sentence is necessarily a situation participant. A situation-participant NP is one which takes part in aspectual interpretation. *The dog*, *the street*, *dogs/streets* above trigger perfectivity/imperfectivity through “quantificational information”: a bare NP is non-quantified; an NP with an article/determiner/quantifier, etc. is quantified. When the quantified NP *the street* in the perfective sentence (2a') is replaced by the non-quantified NP *streets*,

the resulting sentence (3a) is imperfective and *the street* is a situation participant. But the quantified NP *the café* in (4a) below does not trigger perfectivity. Hence, it is not a situation participant. If it is replaced by a non-quantified NP – *cafés* in (4b), the substitution does not trigger imperfectivity, (4b) remains perfective. Hence, in (4) *the dog* and *the street* are situation participants but *the café* and *cafés* are not.

- (4) a. *The dog crossed the street with the café.*  
 b. *The dog crossed the street with cafés.*

For more clarification on the notion of situation participant, important for conceptualizing compositional aspect correctly, see Kabakčiev (2019, p. 201-210).

## Results

Consider sentence (5a) below. It is from a publication by a musicologist describing the kind of performances different musicians used to give in the distant past when audio recording did not exist.<sup>5</sup> The author maintains that nowadays musicologists can *only imagine* how composers and musicians performed then. In (5a) below the NP *различните музиканти* ‘the different musicians’ explicates a generic/generic-like meaning. It refers to all musicians in the relevant period, not to a specific group of musicians. The two verb forms in (5a) are imperfect perfects (perfects with imperfect participles) and the situations portrayed are Vendlerian states, temporally non-bounded: *са свирели*<sub>IMPPFCT</sub> ‘have played [habitually]’, *са пели*<sub>IMPFCT</sub> ‘have sung [habitually]’. However, Bulgarian *съм+л* forms offer a choice between an imperfect and an aorist participle. To analyze the difference between an aorist perfect (a perfect with an aorist participle) and an imperfect perfect, sentence (5b) is constructed after the example of (5a). The following obtains. When *различните музиканти* has generic/generic-like meaning, (5a) with the imperfect perfects is correct, the NP *различните музиканти* is a temporally non-bounded entity (non-boundedness mapped onto it from the imperfect participle), and (5b) with the aorist perfects is non-grammatical:

- (5) a. *Ние не знаем как различните музиканти са свирели*<sub>IMPPFCT</sub> *тогава, нито как са пели*<sub>IMPFCT</sub>.  
 ‘We know neither how different musicians played their instruments then, nor how they sang’  
 b. \**Ние не знаем как различните музиканти са свирели*<sub>AORPFCT</sub> *тогава, нито как са пели*<sub>AORPFCT</sub>  
 ‘We know neither how (the) different musicians played their instruments then, nor how they sang’  
 c. *Ние не знаем как различните музиканти са свирели*<sub>AORPFCT</sub> *вчера, нито как са пели*<sub>AORPFCT</sub>  
 ‘We know neither how the different musicians played their instruments yesterday, nor how they sang’

<sup>5</sup> The sentence is authentic, slightly shortened.

In (5c) the NP *различните музиканти* is a temporally bounded entity – boundedness mapped onto it from the aorist participle.

The conjecture that Bulgarian perfects are not formed from imperfect participles and that imperfect perfects produce only inferentials is thus rejected by the analysis of (5). It is common knowledge that there is homonymy between perfects and inferentials, both are *съм+-л* forms (Aleksova, 2017, p. 144). Furthermore, *all* third-person *съм+-л* forms can be inferential (Todorova, 2010, p. 72-79). Note that sentence (5c) – with aorist perfects as in (5b) and with the same NP *различните музиканти* but with a different adverb, *вчера* – is correct. It refers to situations yesterday, so *различните музиканти* carries specific reference, not generic/generic-like. The situations are temporally bounded, comprising one or several occasions (a bounded number) of instrument-playing and singing; these occasions occur thanks to the participants in them, temporally bounded, boundedness generated by the aorist perfect. Nothing can support the idea that the use of a *съм+-л* phrase with an aorist participle leads to a “true perfect” reading, while the use of an imperfect participle leads to an inferential one. Both (5a) and (5c) can be read as sentences explicating inference; both can be read as explicating a standard perfect too.

Note also that the NP *различните музиканти* – with a definite article (*-те*), is *the only option* in the sentences in (5). If the article is dropped, the sentence becomes non-grammatical: \**Ние не знаем как различни музиканти са свирели тогава...*<sup>6</sup> Conversely, in the English correspondence of (5b) a zero article *must* be used for the sentence to be generic/generic-like: *different musicians* (not *the different musicians*). If a quantified/definite NP is used, the sentence explicates specificity/non-genericity, cf. the English correspondence to (5c). This is because, unlike in English, the Bulgarian definite article in plural nominals is associated with *either* genericity or specificity.

Let us now analyze the Bulgarian sentences (6), where an imperfect perfect (*е мислел*) is used in (6a), whereas (6b) and (6c) contain an aorist perfect (*е мислил*):

- (6) a. *Тесла е мислел*<sub>IMPRPERF</sub>, че преносът на електричество по въздуха е възможен.  
(lit.) ‘Tesla has thought that the transfer of electricity by air is possible’.  
b. \**Тесла е мислил*<sub>AORPERF</sub>, че преносът на електричество по въздуха е възможен..  
(lit.) ‘Tesla has thought that the transfer of electricity by air is possible’.  
c. *Целия ден днес Тесла е мислил*<sub>AORPERF</sub> за преноса на електричество по въздуха.  
‘All day today Tesla has thought about the transfer of electricity by air’.

In (6a), a grammatical sentence, *Tesla* has an extension in time that approximates the life of the scientist – say, excluding childhood. This is a consequence of the meaning of the imperfect perfect *е мислел* combined with the meaning of the relative clause. The situation “think that the transfer of electricity by air is possible” is definitely not an activity – it is a Vendlerian state, and states are non-bounded. Hence, it can be predicated of the scientist Tesla – and not of the human being Tesla thinking about something this morning. Thus *Tesla* in (6a) is a

<sup>6</sup> The reasons for this are complex, hence the issue is not discussed.

temporally non-bounded entity cherishing the idea that the transfer of electricity by air is possible. Conversely, in the non-grammatical (6b) *Tesla* cannot approximate the lifetime of the scientist. It stands for a short, bounded time segment of the entity *Tesla* – due to the temporal boundedness mapped onto *Tesla* by the aorist participle. There is incompatibility between the state *мисля, че преносът на електричество по въздуха е възможен* and the temporal boundedness of the aorist participle, effectuating an episode. In (6c) *Tesla* again stands for a bounded time segment, embracing today: the aorist perfect encodes boundedness: a time stretch with definite endpoints, in contrast to the imperfect perfect *е мислел* in (6a) whose start- and end-point are unknown. To sum up, *Tesla* is not what traditional grammar would have us believe – that *Tesla* is invariably a material/physical entity. *Tesla* here is **an entity in time**, processed so in the minds of speaker-hearer, a temporally non-bounded kinetic image in (6a), a temporally bounded one in (6c).

## Discussion

The analysis of sentences (5)-(6) confirms that: (i) mapping takes place between referents of verbs and of situation-participants NPs in Bulgarian sentences with aorist and imperfect perfects; (ii) situation-participant NP-referents are temporal entities in the minds of speaker-hearer. The boundedness value of the aorist perfect and the non-boundedness value of the imperfect perfect are transferred onto the relevant NP referents, making them kinetic objects. This particular V-NP transfer is just a peripheral instantiation of the never-ending process of mapping temporal features between nominals/NPs and verbs, an important psychophysiological mechanism ingrained in peoples' heads and conditioning the development of grammatical structures of languages, involving major language domains such as aspect, tense, nominal determination – see the inverse relationship across languages between markers of boundedness in verbs and nouns (Kabakčiev, 2000, p. 153-157).

The intriguing thing is that the process of V>NP mapping (or NP>V mapping in other cases) is permanent, yet it remains beyond the awareness of the ordinary native speaker (who has no special linguistic knowledge). Native speakers are unable to apprehend that the NPs *различните музиканти* in sentence (5a) is an entity consisting of musicians that are non-bounded in time, that *Tesla* in (6a) is also an entity non-bounded in time, and that these NPs encode, therefore, kinetic entities, temporal objects, not physical/material things. Conversely, *различните музиканти* in (5c) and *Tesla* in (6c) are again kinetic temporal entities, but now they are bounded – and their temporal parameters are again inaccessible for the ordinary native speaker. As for the temporal values of the participles themselves, when asked about the differences between (5a)-(5c)-(6a)-(6c), respondents are startled at first but soon intuit that imperfect perfects encode temporal non-boundedness, whereas aorist perfects encode temporal boundedness.

## Conclusions

Native speakers are generally capable of recognizing the temporal values of verb referents, including participles, but the mechanism of NP>V and V>NP mapping remains hidden for them. This covert mechanism can be said to have been ingeniously contrived by Mother Nature – and ultimately, in scientific terms (psychophysiological), by the collective human brain governing the development of natural language. The presence of this mechanism confirms the idea prevalent in psycholinguistics that constructing generalized concepts of human and other physical objects over a wide time-span instead of their short-time occurrences is a technique to free human memory of unimportant information. Furthermore, this technique underlies large-scale cross-languages regularities, such as the inverse relationship between markers of boundedness in verbs and nouns.

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