

Grammaticalizing the Size of Situations: The Case of Bulgarian

María Luisa Rivero, Ana Arregui, and Nikolay Slavkov

1. Proposal

Situation-semantics as developed by Kratzer (e.g. 1989, 2011) has proven an illuminating framework for a variety of linguistic puzzles. Semantic theories building on Kratzer-style situations have appealed to situation ‘size’ to explain phenomena such as adverbial quantification and presupposition projection (e.g. Berman 1987, Heim 1990, Elbourne 2005, among others).

In this paper, we propose a novel perspective on situation size in order to account for restrictions on the interpretation of aspectual morphology, in particular as associated with ‘viewpoint aspect’ (Smith 1991/1997). While situation size has been manipulated in situation-semantics, the focus so far has been on distinguishing ‘minimal’ situations with certain properties. We argue that ‘big’ situations are also worth examining. In particular, distinctions between ‘big’ vs. ‘small’ situations are argued to provide insights into aspectual oppositions resulting in habitual/generic vs. singular/episodic/ongoing interpretations. The empirical focus is on Bulgarian constructions that integrate a particularly rich array of aspectual morphology, bringing together features from Slavic and Romance and providing an ideal vantage point from which to study constraints on aspect.

2. The puzzle: Perfective Imperfects vs. Perfective Aorists

Bulgarian brings together aspectual derivational morphology familiar from Slavic languages and aspectual inflectional oppositions familiar from Romance languages, resulting in a complex system of semantic aspectual relations without exact parallels in either of those two families. Bulgarian shares with Slavic languages the opposition between imperfective (Impf) and perfective (Perf) verb stems, as well as perfectivizing prefixes (PR). Bulgarian shares with Romance languages a series of aspectually marked tenses. These include contrasting past imperfects (IMPF) and aorists (AOR) encoded by verb inflections, as well as a series of perfect tenses (present, past and future). (The reader is referred to Rivero and Slavkov 2014 for more details and references.). The focus of our paper will be on the interaction between the ‘Slavic style’ perfective/imperfective oppositions (i.e. verbal stems, prefixes) with the ‘Romance style’ imperfect/aorist distinction (i.e. verbal inflection).

Bulgarian imperfective (Impf) and perfective (Perf) verb stems can combine with imperfect inflection (IMPF), and in addition can be marked with perfectivizing prefixes (PR):

(1) a. pro.čete.še
PR.read.Perf.IMPF
'he (used to/repeatedly) read (to the end)'
b. pro.čita.še
PR.read.Impf.IMPF
'he was reading, he used to read (to the end)'

* María Luisa Rivero, Ana Arregui, and Nikolay Slavkov, University of Ottawa. Contact: mrivero@uottawa.ca. Research partially subsidized by the Social Sciences and Humanities Research Council of Canada (Grant 410-2009-0828 to M. L. Rivero). We are very grateful to Galia Dukova-Zheleva and to Vesela Simeonova for judgements and advice. We also thank for useful comments the anonymous referees for, and the audience at, WCCFL 33 (March 2015).

Such morphological combinations are the sources of important interpretive effects, as our translations suggest. In this paper, we focus on contrasts arising between perfective aorists and perfective imperfects in restrictor clauses to argue that aspectual morphology grammaticalizes constraints on situation size. Consider (2) vs. (3):

(2) Kogato majka mi **v.leze** v stajata,
 When mother my **PR.come.Perf.AOR** in room.the,
 az (*vse) **govorex** po telefona.
 I (*always) **talk.Impf.IMPF** on phone Episodic
 'When my mother entered the room, I was (*always) talking on the phone.'

(3) Kogato majka mi **v.leze.še** v stajata,
 When mother my **PR.come.Perf.IMPF** in room.the,
 az (vse) **govorex** po telefona.
 I (always) **talk.Impf.IMPF** on phone Habitual
 'When(ever) my mother used to/would enter the room, I used to (always) be talking on the phone.'

The sentences in (2) and (3) form a minimal pair whose only formal difference resides in an Aorist inflection in the prefixed adjunct verb in the first case vs. an Imperfect inflection in the similarly prefixed adjunct verb in the second case. More precisely, the adjunct clause in (2) contains the **Perfective Aorist (Perf.AOR)** verb **vleze** (with a prefix **v-**), triggering an unambiguous episodic/ongoing reading on the main clause imperfective verb **govorex** inflected for the Imperfect tense (**Impf.IMPF**). The morphological combination in sentence (2), then, results in a report about a particular episode: 'on that occasion, I was talking on the phone' (incompatible with *always*). By contrast, (3) contains a **Perfective Imperfect (Perf.IMPF)** verb in the adjunct clause: **vlezeše**, also with the prefix **v-**. In this second case, however, the construction receives a habitual reading, speaking of a generalization involving a series of repeated actions, each of them as complete. So, whereas the main clause imperfect **govorex** in (2) gives rise to an episodic '*was talking*' interpretation, in (3) it gives rise to a characterizing/habitual '*used to talk*' interpretation (with or without the adverb *vse* 'always'). The only difference is in the aspectual morphology encoded in the inflection of the adjunct clause, giving rise to the inescapable conclusion that the episodic or characterizing nature of these constructions is due to the (unambiguous) interpretive effect of the adjunct verb.

Perfective Imperfects and their habitual interpretation have not gone unnoticed in the literature on Bulgarian. They are noted by descriptive grammarians (Pašov 1999, a.o.), and linguists interested in aspect (Comrie 1976; Bertinetto and Delfito 2000, p. 215; Gvozdanovic 2012, p. 792; a.o.). Perfective Imperfects can be easily documented both in (recent) literary texts, and in informal reports on the Internet, as in example (4) adapted from (Rivero and Slavkov 2014).¹

(4) *Ako njakoj krivneše da bjaga prez deretata,*
 If somebody **swerve.Perf.IMPF** to run through ravines.the,
mu trošexa kokalite s točen dalečen udar
 cl.Dat **break.Impf.IMPF** bones with precise far blow
i pak "vsičko si idvaše na mjastoto."
 and again 'all Refl **come.Impf.IMPF** to place.the'
 'If somebody turned running through the ravines, they used to break his bones with a well-targeted blow from afar and then again 'everything used to come back to normal.'
 (Anti-government protest blog, Feb 3, 2013; retrieved from
http://izsofia.blogspot.ca/2013_02_01_archive.html on March 19, 2014).

¹ Examples and interpretations in this paper fit the intuitions of educated speakers of Bulgarian, representative of Sofia.

The aim of this paper is to provide a (preliminary) answer to the puzzle arising from the interpretive difference triggered by the **Perfective Aorist** in (2) in contrast with the **Perfective Imperfect** in (3) and (4), which we spell out as (5).

(5) The Puzzle: In constructions with Imperfect main clauses,

- Adjunct clauses with **Perfective Aorist** verbs only give rise to episodic (ongoing) readings.
- Adjunct clauses with **Perfective Imperfect** verbs only give rise to habitual/generic readings.

Advancing ideas, we argue that patterns of type (3-4) provide support for the hypothesis that **Perfective Imperfects** grammaticalize or lexicalize 'big' situations, as in (6). By contrast, patterns of type (2) indicate that the global effect of **Perfective Aorists** is episodic and not necessarily linked to 'big' situations.

(6) **The Grammaticalizing Size Hypothesis (GSH)**
Perfective Imperfect Verbs are marked as being true only in 'big' situations (giving rise exclusively to generic/habitual readings).

We capture the different effects of Perfective Imperfects and Perfective Aorists by developing an analysis based on the core ideas sketched in (7a-b). Both (7a) and (7b) make reference to a modal operator IMPF, which we propose is systematically hosted by all verbs that display an imperfect tense inflection in Bulgarian.

(7) a. **Perfective Imperfects** affect the quantification domain of the IMPF Operator.
b. **Perfective Aorists** modify the topic situation, but do not affect the quantification domain of the IMPF operator.

Whereas Imperfect adjuncts may serve as restrictors for (and thus be interpreted within the scope of) the IMPF operator, this is not possible for Aorists. Only adjuncts with Imperfect morphology can affect the domain of quantification of IMPF. Aorist adjuncts are not themselves in the scope of IMPF but instead serve as location for the situations that anchor the claims made by IMPF (this will be developed in §4). However, Bulgarian verbal morphology is more complex than usually envisaged in discussions of past imperfective verbs in most Slavic languages or imperfect verbs in Romance. As a consequence, Bulgarian imperfect verbs may host a series of additional morphologies, and those prove **not** to be semantically inert. In §3 we review the anatomy of various Bulgarian verbs that may carry an imperfect tense inflection for an overall understanding of their syntactic behavior and interpretations.

3. The anatomy of verbs with the Imperfect tense inflection in Bulgarian

In (8a) we exemplify a Perfective Aorist and in (8b-d) we exemplify the morphological anatomies that may be exhibited by verbs with imperfect inflection. All four forms represent Third Person Singular verbs that share the stem **-čet-** ‘read’. Those in (8a-c) contain the prefix **pro-**, which roughly speaking indicates completion, as in ‘read (something) to the end’, and (8d) lacks a prefix.

(8) a. pročete Morphology: **Perfective Aorist**
Reading: **Episodic (=PERF)**
b. pročete.še Morphology: **Perfective Imperfect**
Reading: **Habitual (=IMPF)**
c. pročita.še Morphology: **Secondary Imperfective Imperfect**
Readings: **Habitual or Ongoing/episodic (=IMPF)**
d. čete.še Morphology: **Primary Imperfective Imperfect**
Readings: **Habitual or Ongoing/episodic (=IMPF)**

Examples (8a) vs. (8b) illustrate the fundamental contrast at the core of our proposal on grammaticalized ‘small’ and ‘big’ situations. As (8a) serves to illustrate, readings in Perfective Aorists roughly correspond to episodic pasts in English: (*Yesterday*), *he/she read (something) to the end (once/on various occasions)*. As we have seen, these forms have unambiguous interpretations. In terms of Smith’s dichotomy relating to Viewpoint, morphological Perfective Aorists in Bulgarian have perfective (PERF), not imperfective (IMPF) readings.² Example (8b), on the other hand, is a morphological **Perfective Imperfect**. It consists of the prefix and the stem in (8a), but combines them with an imperfect tense inflection (i.e. -*še*). The form in (8b), then, is morphologically parallel to *v.leze.še* ‘used to enter’ in (3) also with a prefix and an imperfect inflection, and *kriv.n.eše* ‘turned’ in (4), with the -**n**- marker for perfectivity, and the imperfect inflection -*še*. As (3) and (4) show, Perfective Imperfects display an unambiguous habitual reading that roughly corresponds to English used to/would: (*In the past*) *he used to/would read (something) to the end (on an indefinite number of occasions)*. In addition, (3) and (4) also serve to illustrate that Perfective Imperfects are syntactically restricted to adjunct clauses (so they are {excluded from / ungrammatical in} main clauses).³

The example in (8b) does not exhaust the various anatomies available to imperfect verbs in Bulgarian, each with their own interpretative effect. Thus, to complete the (relevant) paradigm, we need to also consider the two forms with the **Imperfective Imperfect** label in (8c) and (8d). The verb in (8c) carries the same prefix as Aorist (8a) and Imperfect (8b). This is coupled to the imperfect inflection also found in (8b), and to a secondary imperfective morphology absent from both (8a) and (8b). More precisely, (8c) is a **Secondary Imperfective verb with an Imperfect tense inflection**. We illustrate in (9) and (10) that, depending on extra-linguistic or linguistic context, secondary imperfective imperfect verbs in Bulgarian may be ambiguous, displaying either an ongoing/processual reading or a habitual reading shared with Perfective Imperfects. The (second type) of Imperfective Imperfect in (8d) consists of the verb stem and an imperfect inflection, and may thus be called a **Primary Imperfective verb with an Imperfect tense inflection**. This verb is parallel in form to main clause *govorex* in (2) and (3), which also lacks a prefix. As (2) and (3) serve to illustrate, this type of form too can be considered ambiguous. That is, depending on either extra-linguistic or linguistic context as in (2-3), the same morphology may sustain either an ongoing/processual reading, as in (2), or a habitual reading, as in (3). This situation will appear familiar to readers interested in languages like Russian or languages like Spanish. In this paper, we abstract away from differences between Primary and Secondary **Imperfective Imperfects** in Bulgarian to concentrate on their similarities. In the next section we argue that all verbs with an imperfect tense inflection in Bulgarian can be unified by means of an operator IMPF whose interpretation they share.

4. IMPF in Bulgarian

4.1. Interpreting IMPF

Imperfect tense inflectional morphology in Bulgarian can give rise to both habitual/generic and ongoing interpretations, as the sentences in (9a-b) and (10a-b) respectively illustrate.⁴

² We omit **Imperfective Aorists** from our discussion. These are (a) verbs without a prefix, or (b) verbs with a prefix and a secondary imperfectivization marker, which in addition display (c) an aorist inflection.

³ Future-oriented counterfactual constructions in Bulgarian constitute a counterexample to our generalization, since they may contain Perfective Imperfect adjuncts with an episodic reading, as illustrated in (i).

(i) *Ako Ivan pro.čete.še tazi kniga utre,*
 If Ivan PR.read.Perf.IMPF this book tomorrow,
toj šteše da e mnogo dovolen.
 he Modal.IMPF to be.Pres very happy.
 ‘If Ivan (were to) read this book tomorrow, he would be very happy.’

These constructions, which find a parallel in Greek and Iatridou (2000) labels ‘less vivid future conditionals’, represent a syntactic and semantic type that should not be unified with the constructions topic of this paper. Counterfactuals remain for future research.

⁴ As stated in §3, **Perfective Imperfect** verbs are ungrammatical in main clauses. Thus, verbs in (9a-b) and (10a-b) belong to the morphological **Imperfective Imperfect** type. Those in (9a) and (10a) are primary imperfective imperfects, and those in (9b) and (10b) are secondary imperfective imperfects.

(9) a. *Predi 20 godini, detsata gledaxa po-malko televizija.* Habitual
 Before 20 years, children.Def **watch.Impf.IMPf** less television
 ‘20 years ago, children used to watch less TV.’

b. *V minaloto Ivan često izgarjaše mljakoto.*
 In past.Def Ivan often **PR.burn.Impf.IMPf** milk.Def
 ‘In the past Ivan used to often burn the milk.’ (Rivero and Slavkov 2014)

(10) a. *Včera Ivan stroeše pjasáčen zamák.* Ongoing
 Yesterday Ivan **build.Impf.IMPf** sand castle
 ‘Yesterday Ivan was building a sand castle.’

b. *Včera Ivan veče izgarjaše mljakoto.*
 Yesterday Ivan already **PR.burn.Impf.IMPf** milk.the
 ‘Yesterday, Ivan was already in the process of burning the milk.’

To account for readings as in (9a) and (10a), Arregui, Rivero and Salanova (2014), henceforth ARS, argue that in Bulgarian the imperfect inflection hosts an IMPF operator. This operator projects in the syntax within the functional layers of the clause that associate with Viewpoint aspect, as in (11). Tense encodes the topic situation (Kratzer 2011, ARS).

(11) Syntax of IMPF
 $[\text{TP} \text{ Tense}_i [\text{AspP} \text{ IMPF} [\text{VP} \dots \text{V} \dots]]]$

ARS follow a tradition that treats the IMPF operator as a universal quantifier (Bonomi 1997, Cipria and Roberts 2000, Deo 2009, a.o.), and characterize this operator as a quantifier over situations with the interpretation in (12).

(12) Interpretation of IMPF
 Given a context c and variable assignment g ,
 $[[\text{IMPF}]]^{c,g} = \lambda P_{\langle l, \langle s, \triangleright \rangle \rangle}. \lambda s. \forall s': \text{MB}_\alpha(s)(s') = 1, \exists e: P(e)(s') = 1$,
 defined only if there is a contextually or linguistically determined salient MB of type α .

On the sketched view, specific interpretations for IMPF arise through either the contextual or the linguistic specification of Kratzer-style Modal Bases (MBs) construed as accessibility relations for situations. Generic/habitual and ongoing readings are distinguished by means of different MBs, as discussed next.⁵

4.2. *Generic / habitual readings*

Building on (Cipria and Roberts 2000), ARS characterize generic/habitual Imperfects (which we do not distinguish) in terms of quantification over characteristic situations given the MB in (13):

(13) $\text{MB}_{\text{generic}} = \lambda s. \lambda s'. s' \text{ is a characteristic part of } s.$

Cipria and Roberts tell us that characteristic situations are those that are normal or usual, where both context and the utterance itself have a role in deciding what this is. Natural laws often play a role in identifying characteristic situations, resulting in quantification over situations that obey the laws of the evaluation world. On this view, the interpretation of (9a) is given in (14).

⁵ We refer interested readers to (Arregui, Rivero and Salanova 2014) for further details, discussion, and additional references, and to (Rivero and Slavkov 2014) for a more precise implementation of this program in Bulgarian, and relevant references on descriptive grammars and earlier work on this language.

(14) $[(9a)]^{c,g} = 1$ iff
 $\forall s': MB_{\text{generic}}(s_{\text{relevant 20-years-ago situation}})(s') = 1,$
 $\exists e: e \text{ is an event of the children watching less TV than now in } s'.$

According to (14), (9a) is true iff in all characteristic subsituations of the relevant topic situation twenty years ago, children watched a smaller amount of TV than they do now.

4.3. Ongoing readings

ARS distinguish between two interpretations for IMPF that can intuitively be termed ‘ongoing’ or ‘episodic’, and they relate each to a different MB. The first episodic-like interpretation relies on the Ongoing MB in (15), where all parts of the topic situation are quantified over, and matched with a certain eventuality. This gives rise to repetitive or stative interpretations.

(15) $MB_{\text{ongoing}} = \lambda s. \lambda s'. s' < s.$

On this view, the interpretation of (16a) is given in (16b).

(16) a. *Včera Ivan govorěše po telefona.*
 Yesterday Ivan **talk.IMPf.IMPf** on phone
 ‘Yesterday Ivan was talking on the phone.’
 b. $[(16a)]^{c,g} = 1$ iff
 $\forall s': MB_{\text{ongoing}}(s_{\text{topic (yesterday)}})(s') = 1,$
 $\exists e: e \text{ is an event of Ivan talking on the phone in } s'.$

The second reading relies on the Event-inertia MB in (17), which underlies ‘imperfective paradox’ examples (Dowty 1979).⁶

(17) $MB_{\text{Event-inertia}} = \lambda s. \lambda s'. s' \text{ is an Event-inertia situation for } s.$

Where for any two situations s and s' , s' is an Event-inertia situation for s iff all the events that have actually started in s continue in s' as they would if there were no interruptions.

The Event-inertia MB speaks of incomplete events at the past topic situation that are in progress in the actual world. That is, all continuations of the topic situation in which eventualities continue ‘without interruption’ include an eventuality of a certain type. On this view, the interpretation of (10a) is given in (18), predicting that the sentence will be true iff all inertia situations include an event of Ivan building a sandcastle.

(18) $[(10a)]^{c,g} = 1$ iff
 $\forall s': MB_{\text{Event Inertia}}(s_{\text{topic (yesterday)}})(s') = 1,$
 $\exists e: e \text{ is an event of Ivan building a sandcastle in } s'.$

In §2, we introduced the different interpretive effects on nuclear scope Imperfect verbs by Perfective Aorist and Perfective Imperfect adjuncts. In the next section, we develop a preliminary proposal to capture such semantic contrasts, with the characteristics of the IMPF operator introduced in this section playing a major role.

⁶ The proposal simplifies many issues, as inertia-style analyses of the imperfective paradox give rise to well-known problems. See, for example, Portner (1998).

5. The interpretative effects of clausal restrictors on IMPF

We propose that **Perfective Imperfect** adjuncts are classically interpreted in the scope of IMPF and affect its domain of quantification, as illustrated in (19a-b).

(19) Habitual

- a. *(V minaloto,) kogato Marija pro.čete.še tazi kniga, tja pláčeše.*
(In past.the) when Maria PR.read.Perf.IMPf this book, she cry.Impf.IMPf
'(In the past,) whenever Maria used to read this book from cover to cover, she cried.'
- b. *(V minaloto,) kogato zvánetsát zvánnéše, Ivan gledaše televizija.*
(In past.the) when bell.Def ring.Perf.IMPf, Ivan watch.Impf.IMPf TV
'(In the past,) whenever the bell rang, Ivan used to be watching TV.'

The restrictor clauses in (19a) and (19b) involve generalizations concerning complete actions that are repeated/instantiated an indefinite number of times in the evaluation/actual world (with optional adverbs of quantification either in the adjunct clause, or in the main clause).

Perfective Aorist adjuncts, on the other hand, do not restrict IMPF and we propose instead that they modify the topic situation, as illustrated in (20a-b).

(20) Episodic (Ongoing)

- a. *Kogato Marija (nakraja) pročete tazi kniga,*
When Maria (finally) PR.read.Perf.AOR this book,
tja (veče) pláčeše.
she (already) cry.Impf.IMPf
'When Maria (finally) read this book from cover to cover, she was
(already) crying.'
- b. *(*Vseki pát) kogato zvánetsát zvánná, Ivan gledaše televizija.*
(*Every time) when bell.Def ring.Perf.AOR, Ivan watch.Impf.IMPf TV
'When the bell rang, Ivan was watching TV.'

Sentences (19b) and (20b) constitute a minimal pair, with the only formal difference between the two residing in the Imperfect vs. Aorist inflection on the subordinate verb.

5.1. Restrictors with Perfective Imperfects

The relevant general schema for restrictors with Perfective Imperfect verbs is given in (21) for (19a). The interpretation is in (22).

(21) [s_{topic} [IMPF [when Maria read this book] [Maria cried]]]

(22) $[(21)] = 1 \text{ iff } \forall s': MB_\alpha(s_{topic})(s') = 1 \& \exists e: \text{Maria read this book } (e)(s') = 1, \exists e: \text{Maria cried } (e)(s') = 1.$

According to (22), (19a) (with the structure sketched in (21)) will be true iff in all situations accessible via the MB in which Maria read this book, Maria cried. The choice of MB will determine the domain of quantification and establish the 'flavour' of the interpretation of IMPF. Crucially, the adjunct in (19a) carries Perfective Imperfect morphology. We propose that such morphology carries constraints on the size of the situation at which the adjunct predicate may be evaluated (*Grammaticalizing Size Hypothesis*, GSH): perfective imperfects require 'big' situations. We now spell out GSH as follows, with the constraint on size characterized as a presupposition:

(23) **Grammaticalizing Size Hypothesis (GSH)**

Perfective Imperfect verbs are marked as being true only in 'big' situations:

Where $[\verb] = \lambda s. \verb(s) = 1, [\verb_{\text{Perf.IMPf}}] = \lambda s. \text{BIG}(s). \verb(s) = 1.$

The restriction of Perfective Imperfect adjuncts to habitual/generic interpretations of IMPF arises as a side-effect/corollary of GSH. Only habitual/generic MBs systematically make accessible situations that satisfy the size constraint imposed by Perfective Imperfects. Thus, only habitual/generic interpretations of IMPF guarantee the satisfaction of the size presupposition of Perfective Imperfects.⁷

5.2. *Clausal Adjuncts with Perfective Aorists*

While Imperfective Imperfects in adjunct clauses restrict the domain of IMPF, Perfective Aorist adjuncts do not, but instead contribute towards the identification of the topic situation. On this view, the sentence in (20b) is analyzed as in (24).

$$(24) \quad \llbracket \text{I}((20b)) \rrbracket^{\text{c}, \text{g}} = 1 \text{ iff } \forall s': \text{MB}_{\text{ongoing}}(\text{s}_\text{bell-rang})(s') = 1, \exists e: \text{watch TV}(e)(s') = 1$$

According to (24), all parts of the topic situation that is constituted by the contextually salient event of bell-ringing have subparts in which Ivan was watching TV. But crucially, the predicate of bell-ringing does not serve as restrictor, and there is no iteration and ‘matching’ of bell ringing events with TV-watching events.

The absence of quantificational readings for Perfective Aorist adjuncts should not be understood to follow from a general prohibition against iteration. Even though they cannot restrict IMPF, Perfective Aorists are compatible with frequency adverbs, such as *mnogokratno* ‘multiple times’ and *na dva puti* ‘twice,’ as illustrated in (25a) and (25b), respectively.

(25) Frequency adverbs

- a. *Kogato Marija pročete tazi kniga mnogokratno*
When Marija PR.read.Perf.AOR this book multiple-times
i ne moža da ja razbere, tja se razplaka.
and Neg could to it undersdand, she Refl PR.cry.Perf.AOR
‘When Mary read this book multiple times and could not understand it, she started crying.’
- b. *Kogato Ivan izgori mljakoto na dva puti včera predi zakuska,*
When Ivan PR.burn.Perf.AOR milk.def twice yesterday before breakfast,
majka mu veče se oplakavaše.
mother his already refl PR.complain.Impf.IMPf
‘When Ivan burned the milk twice yesterday before breakfast, his mother was already complaining.’

Interpretations in (25a) and (25b) are both episodic. Perfective Aorist adjuncts in these cases seem to be of the type that indicates an ‘accidental generalization’ in the sense of (Menendez Benito 2002). Sentence (25a) pairs a Perfective Aorist in the adjunct with a Perfective Aorist in the main clause. Sentence (25b) pairs a Perfective Aorist in the adjunct with a Secondary Imperfective Imperfect in the main clause whose reading is of the ongoing type. Namely, Ivan’s mother was in the process of complaining when Ivan misbehaved in two different episodes.

To summarize, Perfective Imperfect adjuncts restricting IMPF trigger an exclusively habitual/generic reading because Perfective Imperfect morphology encodes a constraint requiring ‘big’ situations, and this can only be guaranteed in a natural manner when IMPF is interpreted in relation to a characteristic MB (thus giving rise to the habitual/generic reading). By contrast, Perfective Aorist adjuncts do not put constrains on the domain of quantification of IMPF, but delimit the topic situation, which can be ‘small’, whether viewed in an iterative fashion or not.

⁷ The formula in (23) suggests that Bulgarian ‘lexicalizes’ ‘big’ situations, where verbs are atomic and not composed of complex morphemes. However, the internal anatomy of Perfective Imperfects suggests that the size constraint may be based on compositionality, with a formulation we leave to future research.

6. Viewpoint-level Operators vs. V-level Operators

Our proposal builds on the characterization of IMPF as a wide-scope aspectual operator or quantifier. As sketched in (11), IMPF projects in the clausal area associated with Viewpoint aspect, and scopes over Voice Phrase / VP (or vP), the projection that dominates both external arguments including Agents, and internal arguments.

In contrast with our proposals, we find views in the literature that approach habitual readings in terms of operators without wide scope that are placed much lower in the sentential structure, relating to frequentative aspect / pluractionality at the V-level (see van Geenhoven 2004, 2005, a.o.). Thus, before we conclude this paper, it seems important to motivate the hypothesis that Perfective Imperfects in Bulgarian involve ‘high’ level quantification (i.e. Viewpoint Aspect) as opposed to ‘low’ V-level ‘actional’ plurality (i.e. Situation Aspect) in particular.

To motivate our idea, the characteristics of classical donkey anaphora sentences with Perfective Imperfect adjuncts prove particularly useful.⁸ To see this effect, consider the examples in (26) and (27).

(26) *Ako/Kogato/Vednaga sled kato politsaj spreše šofor za previšena skorost,*
 If/When(ever)/As soon as policeman **stop.Perf.IMPf** driver for excessive speed,
šoforāt (vinagi) go psuvaše.
 driver.the (always) him **curse.Impf.IMPf**.
 ‘If/when(ever)/as soon as a police officer stopped/pulled over a driver for speeding, the
 driver (always) swore at him.’

(27) *Ako/Kogato/Vednaga sled kato učenik polučeše nagrada,*
 If/When(ever)/As soon as student **PR.Perf.IMPf** prize,
toj ja priemaše nezabavno.
 he it **accept.Impf.IMPf** immediately.
 ‘If/when(ever)/as soon as a **student** received a prize, he accepted it immediately.’

Both sentences contain adjunct clauses with Perfective Imperfects: *spreše* ‘stopped’ and *polučeše* ‘received’ respectively. They also contain bare singular NP subjects with an indefinite interpretation bearing a ‘coreferential’ relation with subject or object pronouns in the nuclear scope clause: *politsaj* ‘(a) policeman’, and *učenik* ‘(a) student’ respectively. The natural reading of both sentences is the one that alludes to an indefinite number/plurality of policemen in the first case, and an indefinite number/plurality of students in the second case, not one that involves just one policemen or one student that act repeatedly.

If we took inspiration in van Geenhoven’s proposal (2004, 2005) based on West Greenlandic, we could derive habituality from a type of aspect called frequentative, which associates with a V-level or Pluractional Operator (‘Actionality’ roughly corresponds to ‘Situation Aspect’). Taking such a view, we could assign the multiplication of events in (26) and (27) in Bulgarian to quantification at the V-level, in contrast with the higher Viewpoint level we propose for the IMPF Operator. On the V-level alternative, the natural reading should be ‘frequentative’ with one and the same policeman, and one and the same student both acting repeatedly in (26) and (27), and the interpretation with a plurality of policemen and students should be unnatural, deviant and in need of additional stipulations/analytical steps. Given that the described frequentative reading is not a good option in the case of the Bulgarian Perfective Imperfects illustrated in this paper, we conclude that plurality in (26) and (27) derives from a Viewpoint IMPF Operator, not from V-level plurality. In the syntactic structure assigned to IMPF in (11), subjects are contained in the equivalent of a Voice Phrase projection; so they appear under the scope of this quantificational operator.

⁸ The current proposal raises obvious questions for a ‘minimal situations’ type analysis of donkey-pronouns, which we are not able to address here.

7. Conclusions

The main aim of this paper is to support the view that constraints on syntax and morphology can target ‘situation size’ in semantics. Constraints on situation size are familiar in the semantic literature, but the focus has been on ‘small’ (minimal) situations. In this paper, we have argued for the necessity of constraints on ‘big’ situations, and for their grammaticalization. Based on Bulgarian, we have proposed that some complex aspectual interactions involving Perfective Imperfect verbs encoded in syntax and morphology trigger habitual interpretations, and result in propositions that can only be true in ‘big’ situations informally described as ‘non-accidental generalizations on repeated actions that are complete’. Our proposal, which is based on the morphological contrast between Perfective Imperfects and Perfective Aorists, accounts for restrictions on the modal interpretations of imperfective aspect and provides a grammaticalized basis for the distinction between ongoing readings and habitual readings.

References

Arregui, Ana, María Luisa Rivero and Andrés Pablo Salanova. 2014. Cross-linguistic variation in imperfectivity. *Natural Language and Linguistic Theory* 32, 307-362.

Berman, Stephen. 1987. Situation-Based Semantics for Adverbs of Quantification. *University of Massachusetts Occasional Papers* 12, 45-68.

Bertinetto, Pier Marco and Denis Delfitto. 2000. Aspect vs. actionality: why they should be kept apart. In Dahl, Östen (Ed.), *Tense and Aspect in the Languages of Europe*. Mouton de Gruyter, Berlin, 189-226.

Bonomi, Andrea. 1997. Aspect, quantification and when-clauses in Italian. *Linguistics and Philosophy* 20, 469-514.

Büring, Daniel. 2004. Crossover situations. *Natural Language Semantics* 12, 23-62.

Cipria, Alicia, and Craige Roberts. 2000. Spanish imperfecto and pretérito: truth conditions and aktionsart effects in a situation semantics. *Natural Language Semantics* 8, 297-347.

Comrie, Bernard. 1976. *Aspect*. Cambridge University Press, Cambridge.

Deo, Ashwini. 2009. Unifying the imperfective and the progressive: partitions as quantificational domains. *Linguistics and Philosophy* 32, 475-521.

Dowty, David. 1979. *Word Meaning and Montague Grammar*. Reidel, Dordrecht.

Elbourne, Paul. 2005. *Situations and individuals*. MIT Press, Cambridge, Mass.

Geenhoven, Veerle van. 2004. For-Adverbials, Frequentative Aspect, and Pluractionality. *Natural Language Semantics* 12, 135-190.

Geenhoven, Veerle van. 2005. Atelicity, Pluractionality, and Adverbial quantification. In Verkuyl, H., H. de Swart, & A. van Hout (Eds.), *Perspectives on Aspect*, Springer, the Netherlands, 107-124.

Gvozdanovic, Jadranka. 2012. Perfective and imperfective aspect. Chapter 27 in *The Oxford Handbook of Tense and Aspect*, Ed. by Robert I. Binnick, OUP Press, Oxford, 781-827.

Heim, Irene. 1990. E-type pronouns and donkey anaphora. *Linguistics and Philosophy* 13, 137-177.

Iatridou, Sabine. 2000. The Grammatical Ingredients of Counterfactuality. *Linguistic Inquiry* 31, 231-270.

Kratzer, Angelika. 1989. An investigation of the lumps of thought. *Linguistics and Philosophy* 12, 607-653.

Kratzer, Angelika 2011. *Situations Semantics*. Stanford Online Encyclopedia.

Menéndez-Benito, Paula. 2002. Aspect and adverbial quantification in Spanish. *North East Linguistics Society* 32, 365-382.

Pašov, Petăr. 1999. *Bălgarska Gramatika*. Hermes, Sofia.

Rivero, María Luisa and Nikolay Slavkov. 2014. Imperfect(ive) variation: the case of Bulgarian. *Lingua* 150, 232-277.

Smith, Carlota, S., 1991/1997. *The parameter of aspect*. Studies in Linguistics and Philosophy, vol. 43. Kluwer, Dordrecht.

Proceedings of the 33rd West Coast Conference on Formal Linguistics

edited by

Kyeong-min Kim, Pocholo Umbal,
Trevor Block, Queenie Chan,
Tanie Cheng, Kelli Finney, Mara Katz,
Sophie Nickel-Thompson, and Lisa Shorten

Cascadilla Proceedings Project Somerville, MA 2016

Copyright information

Proceedings of the 33rd West Coast Conference on Formal Linguistics
© 2016 Cascadilla Proceedings Project, Somerville, MA. All rights reserved

ISBN 978-1-57473-469-0 library binding

A copyright notice for each paper is located at the bottom of the first page of the paper.
Reprints for course packs can be authorized by Cascadilla Proceedings Project.

Ordering information

Orders for the library binding edition are handled by Cascadilla Press.
To place an order, go to www.lingref.com or contact:

Cascadilla Press, P.O. Box 440355, Somerville, MA 02144, USA
phone: 1-617-776-2370, fax: 1-617-776-2271, sales@cascadilla.com

Web access and citation information

This entire proceedings can also be viewed on the web at www.lingref.com. Each paper has a unique document # which can be added to citations to facilitate access. The document # should not replace the full citation.

This paper can be cited as:

Rivero, María Luisa, Ana Arregui, and Nikolay Slavkov. 2016. Grammaticalizing the Size of Situations: The Case of Bulgarian. In *Proceedings of the 33rd West Coast Conference on Formal Linguistics*, ed. Kyeong-min Kim et al., 329-338. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3252.