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## Bulgarian Vocative in HPSG

PETYA N. OSENOVA AND KIRIL IV. SIMOV

### 12.1 Introduction

Crosslinguistically vocatives are an underexplored linguistic phenomenon and in different languages they can be highly idiosyncratic and complex (Levinson, 1987, p.71). Therefore, the problem, which is discussed in this paper, is not a language-specific one, in spite of the fact that most of the languages have their own repositories for marking the role of the addressee in the communicative utterances.

In our opinion this linguistic phenomenon needs its adequate treatment in HPSG because of three main reasons:

1. The vocative is supposed to be present on two levels: syntax and pragmatics. Therefore it needs more elaborate interpretation on the interface side, which, in HPSG, is more developed for morphology/syntax and syntax/semantics than syntax/pragmatics. Note that a challenge for the theory is the semantic weight of the vocatives with respect to the head sentence.
2. It will be useful for HPSG-oriented implementations, especially treebanks and dialogue systems.
3. On prosodic grounds the vocatives are often viewed as being 'side or extended parts' of the sentence and therefore - very close to the parenthetical constructions. From our point of view, both phenomena are pragmatic and hence, the treatment of vocative, presented here, could be generalized to cover other phenomena of pragmatic nature.

In our work the vocatives are viewed through the possibility of the integration/separation of their pragmatic, syntactic and semantic properties.

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The paper is structured as follows: in the next section the status of the vocative in Bulgarian is discussed. In section 12.3 we propose our ideas on a unified treatment of vocatives. In section 12.4 the HPSG model is given. Section 12.5 outlines the conclusions and future work.

## 12.2 The Status of the Vocative in Bulgarian

Vocatives are assumed to be restricted to the second person usage only. Generally they subsume the following two subtypes: calls (*hey you*) and addresses (*Madam*) (Levinson, 1987, p. 71). Bulgarian vocative role is usually treated within the opposition: vocative form (a remnant of the case paradigm) vs. base nominative form, i.e. with respect to the presence or loss of the special vocative inflections. Hence, functionally it includes not only the structural vocative case of the paradigm of some nominals (the singular masculine and feminine nouns and the long forms of some adjectives). As a matter of fact, it can be expressed by: vocative forms, nominal groups in nominative and different particles. The vocatives can be classified with respect to different properties. For example, the classification, presented in (Ivanova and Nitsolova, 1995, pp. 24-29) is based on the possibility of the vocatives to nominate the addressee or just to refer to him/her:

1. vocative particles, which do not nominate the addressee, but only refer to him/her (hej,be)
2. vocatives, which nominate the addressee
  - (a) they function as contact establishers only
  - (b) they qualify the addressee.

In the last case it is assumed (Nitsolova, 1984, p. 44) that there is a hidden proposition with the performative verb ‘consider somebody to be of some property’.

Another classification, described in (Georgieva, 1987, pp. 75-83 ) discusses the word order typicalities of the vocative depending on its *standard* or *nonstandard* usage. In its standard usage the role of the vocative is to attract hearer’s attention. In its nonstandard usage it is to express a certain attitude or subjective modality towards the hearer. The tendencies for the vocative position with respect to the mentioned usages can be summarized as follows:

1. standard usage
  - (a) in introductory function - tends to be in the first position
  - (b) in second and further usages - tends to change the first position

- (c) in interrogatives, imperatives or greetings - tends to be in the final position
- 2. nonstandard usage
  - (a) in emphatic function and protocol - tends to be free
  - (b) when accompanied by an interjection or a particle - the vocative follows them
  - (c) when accompanied by vocative particles - tends to be free

Note that all the presented possibilities for the vocative orderings are relative, not absolute, because they are sensitive preferably to non-linguistic criteria. Hence, they can be considered tentative, with certain degree of reliability.

Traditionally vocatives are assigned three interpretations concerning their syntactic position in the sentence:

1. Non-arguments, such as parenthetical elements, which do not participate in syntactic relations (Popov, 1983, p. 130) and (Brezinski, 2000, p. 94).
  - (1) Gospodine, dnes ste vali  
     sir[sg,voc] today it-will-rain[fut,3p,sg]  
     Sir, it will rain today
2. Subjects, when they are used in imperative, exclamative and optative sentences, agreeing with the verb and obeying the additional requirement not to be duplicated by a pronoun (Popov, 1983, p. 129) and (Brezinski, 2000, p. 94), (Acad.Gram., 1983, p. 120).
  - (2) Gospodine, elate nasam  
     sir[sg,voc] come[imper,pl] here[adv]  
     Sir, come here
3. Appositions, when they appear together with a pronoun (Nitsolova, 1984, p. 43) and (Popov, 1983, p. 130).
  - (3) Vie, gospodine, elate nasam  
     You[pl,2p] sir[sg,voc] come[imper,pl] here  
     You, Sir, come here

We argue that assigning the vocative three distinct syntactic and pragmatic roles is misleading and irrelevant on linguistic grounds. One reason for these contradictory interpretations could be the prosodic one. The intonational independency of the vocative combined with its optional syntactic connection with the intrasentential elements (Georgieva, 1987, p. 74) causes misinterpretations. Our contra arguments are as follows:

1. If vocatives are pure discourse markers and do not contribute to the sentence, how we could explain reasonably the structure-sharing between the vocative form and some parts of the sentence (subject, object, possessives etc).
2. If we assume that in Bulgarian only nominatives can be assigned a subject role, then it is strange to select a context, in which the vocative is assigned such a role. The agreement relations between the subject and the verb is not a pretty strong argument, because there are cases, where:
  - (a) between the explicit subject and the verb there is no agreement relation
    - (4) Vsichki izljazohme na razhodka  
All[3p,pl] went[1p,pl] for walk[sg,f]  
All of us went for a walk
  - (b) the verb can agree with either of the parts of the subject
    - (5) Chast ot studentite vleze/vljazoha  
Part[sg,f] of students-the[pl] came[3p,sg]/[3p,pl]  
Part of the students came
  - (c) the agreement relation depends on the lexical semantics of the conjuncts in a coordination
    - (6) Radost i taga ima v ochite mu  
Joy[sg,f] and sadness[sg,f] there-is[3p,sg] in eyes his  
There is joy and sadness in his eyes

For HPSG-oriented discussion of the first two types of subject-verb agreement in Bulgarian see Osenova (2001).

3. Vocatives can combine in the same way with all types of illocutionary force, including declaratives and interrogatives:
  - (7) Gospodine, kakvo tarsite?  
sir[sg,voc] what[interrogative] search[pres,2p,pl]  
Sir, what are you searching for?
4. Bulgarian is a pro-drop language, in which the subject is always realized on the verb and has the characteristics of the nominative personal pronouns. In the cases, where *hey you* vocative type is triggered, we can assume that the second person pronoun has two syncretic forms: one for nominative and one for vocative.
5. Vocative is outside the scope of the Left Dislocation or Left Periphery phenomena, which in Bulgarian are usually connected with object doubling (Penchev, 1993, p. 120), subject doubling (Boyadjiev et al., 1999, p. 565) or with complementizers Krapova and Karastaneva (1999). These phenomena usually treat the redundant expressing of one and the same category, while the voca-

tive cannot be interpreted as a doubling category because of its different structural case (see 2 above).

Needless to say, vocative's contribution to the Information structure of the utterance needs more elaborate research.

### 12.3 Towards a Unified View of the Vocative in Bulgarian

Vocatives play a pragmatic role with respect to the addressee of an utterance. But it is still not explained what the interaction between the syntactic and pragmatic behavior of the vocative is. Here we are not concerned with encoding of the speaker's intentions in BACKGROUND feature Green (2000) or with metapragmatic phenomena like honorifics. Rather, we concentrate on C-INDICES and their contribution to the adequate formalization of the vocative-sentence relation.

It is interesting to compare how this problem has been dealt with for more practical purposes. We suggest as an example the Verbmobil treebank. In the English HPSG-oriented part the NP, vocatives are treated as adjuncts and therefore attached to the highest sentential level, and the particles are treated as discourse markers (Kordoni, 2000, p. 21 and p. 40). In the German part all of them are treated as discourse markers and therefore they stay unattached (Stegmann et al., 2000, p. 40). We propose to combine the two views in one, i.e. to interpret the vocatives as adjuncts and discourse markers at the same time. We need the first, because vocatives very often share syntactic properties with the elements within the sentence and we need the second, because the interaction is done on the super-sentential level.

Another fact that supports our idea is the free word order of the NP vocatives. One could argue that the ostensive particles, the pronouns or complex vocative groups are more restricted in their vocative distribution, but it does not make a contradiction. All of them perfectly fit into the adjunct interpretation, because adjuncts can be recursive and of different nature as well. As a result of our modular view on this phenomenon, we propose the following types of interrelation between syntactic and pragmatic specificity of the vocatives:

1. the vocative and the expressed/unexpressed subject or object in the sentence refer to the same entity in the world.

(8) Gospodine, vie            ste            pokanen  
 sir[sg,voc] you[2p,pl] are[2p,pl] invited[m,sg]  
 Sir, you have been invited

- (9) Gospodine, izpusnahte vlaka  
 sir[sg,voc] missed[2p,pl] train-the[m,sg]  
 Sir, you missed the train
- (10) Gospodine, tarsiat Vi  
 sir[sg,voc] look for[2p,pl] you[acc,pl]  
 Sir, they are looking for you
- (11) Shte Vi kazhe, gospodine!  
 will[3p,sg] you[dat,pl] tell[3p,sg] sir[sg,voc]  
 She/he/it will tell you, Sir!
2. the vocative can bind some possessive, possessive-reflexive or personal reflexive pronoun in the sentence
- (12) Zena Vi, gospodine, se obazhda  
 wife[f,sg] your[poss] sir[sg,voc] call[3p,sg]  
 Sir, your wife is calling
- (13) Gospodine, sprete zena si  
 sir[sg,voc] stop[imper] wife your[refl]  
 Sir, stop your wife
- (14) Gospodine, poglednete se  
 sir[sg,voc] look[imper] yourself[pers,refl]  
 Sir, look at yourself
3. the vocative is simultaneously coreferent with the subject or the object of the sentence and binds a possessive:
- (15) Gospodine, zena Vi Vi chaka  
 sir[sg,voc] wife your[poss,pl] you[acc,pl] wait[sg]  
 Sir, your wife is waiting for you.
- (16) Gospodine, Vie izpuskate vlaka si  
 sir[sg,voc] you[pl] miss train yours[ref]  
 Sir, you are missing your train
4. the vocative just serves as an ostensive stimulus for the hearer regarding some fact
- (17) Gospodine, navan vali  
 sir[sg,voc] outside[adverb] rain[3p,sg]  
 Sir, it is raining outside
- (18) Gospodine, kolko e chasa?  
 sir[sg,voc] what[adverb] is[3p,sg] time-the[m,sg]  
 Sir, what is the time?

Note that all the presented types, except the last one, express both functions: the syntactic and the pragmatic one. In the last type, however, the syntactic one is suppressed and only the pragmatic one is active.

## 12.4 Modelling Bulgarian Vocatives in HPSG

In this section we present a formal model of Bulgarian vocative along the lines of Pollard and Sag (1994) with the necessary modifications and refinements to it. In the latest developments in HPSG some of our proposals have already been accepted - like the status of the semantic head with respect to the semantic impact of the adjuncts as reported in Kiss (2001) and assumed in Minimal Recursive Semantics (see Copestake et al. (1997)). We will point to these papers at the relevant places in the text below. On the syntactic level we treat vocatives as a special kind of adjuncts that contribute to the highest sentence node via their MOD feature. The main reason for choosing such an approach is that the proposition becomes visible for the vocative expression. This is needed, when the vocative shares some properties with inner-sentence elements. The information, specified for the vocative, is added to the value of the ADDRESSEE feature within CONTEXT value of the proposition, ensuring that the vocative coincides with the hearer of the proposition. Hence, in sentences, which explicitly refer to the hearer, the vocative expression is co-indexed with the appropriate syntactic elements within the proposition.

One problem when treating the vocative as an adjunct is the Semantics principle in HPSG. It requires the CONTENT of the mother to be structure-shared with the CONTENT of the semantic head. In head-adjunct phrases the adjuncts are assumed to be semantic heads. In our account of the vocative we change this by stating that vocative cannot be a semantic head.

In order to have our idea working, we need principles. HPSG94 does not introduce any principles, which operate on the c-indices of the daughters of a phrase (Pollard and Sag, 1994, p. 337). At the same time, we are aware of the relevant exploitation of the CONTEXT feature for resolving dialogue fragments within HPSG Ginzburg et al. (2001a). Two new attributes within the context feature structure are introduced: Maximal Question Under Discussion (max-qud), whose value is of sort question; and Salient Utterance (sal utt), whose value is a set of elements of type sign. For our present purpose, we do not use such a detailed hierarchy of features. To model the vocative-sentence relation first, we propose the following principle:

Vocative Principle:

In a head-adjunct structure, in which the adjunct is of case vocative, the ADDRESSEE value of the adjunct is token-identical with the ADDRESSEE value of the mother.

Additionally, we change the definition of the semantic head. This

change can be regarded as a consequence of the pragmatic nature of the vocative and as shifting its information contribution to CONTEXT:

Vocative Semantic Head:

In a head-adjunct structure, in which the adjunct is of case vocative, the head daughter is the semantic head.

The change of the semantic head has already been proposed by Copestake et al. (1997) and Kiss (2001) in accordance with the reclassification of the semantic modifications. This step was enforced by the nonhomogeneous semantic nature of adjuncts. In the case of intersective modification the syntactic head remains a semantic head, as it was proposed above. In the case when the semantic contribution of the adjunct is a modifying functor which takes as an argument the semantic contribution of the head, the semantic head is the adjunct. The semantic contribution of the vocative could be considered as intersective and thus our proposal is in accordance with the proposal of Copestake et al. (1997) and Kiss (2001).

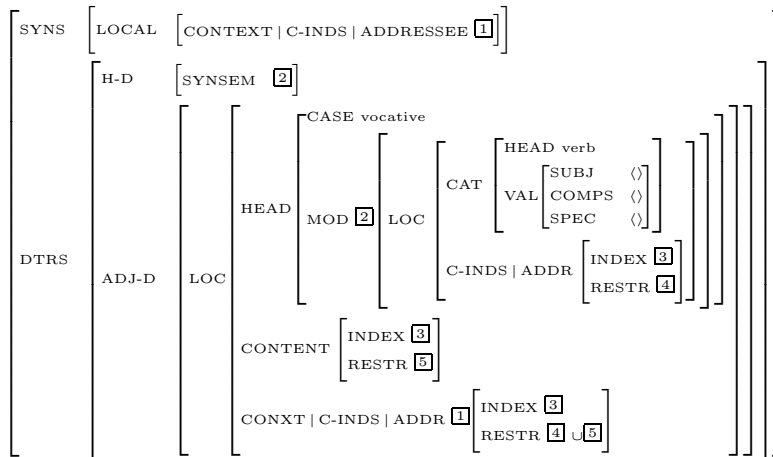
From the pragmatic point of view, the Vocative principle, given above, becomes a necessity, because sometimes the vocative phrase does not have any contribution to the semantics of the sentence but its pragmatic one is permanent.

The mechanism, which interprets the vocative, is structured as follows (see the schematic feature structure given on page 241):

1. The whole sentence has a DTRS value of sort headed-adjunct-structure, where the head daughter is a saturated verb phrase and the adjunct daughter is the vocative phrase.
2. The appropriate selection mechanism is encoded within the vocative phrase. Thus, the MOD value of the adjunct (the vocative phrase) requires as a head daughter a saturated verb phrase (equal to a sentence).
3. The MOD value of the adjunct is token identical with the SYNSEM value of the head daughter and thus the ADDRESSEE value of the head daughter is available within the structure of the adjunct.

We define that the INDEX value of the ADDRESSEE (ADDR) feature of the adjunct is co-indexed with the INDEX value of the CONTENT feature of the vocative phrase and also with the INDEX within the ADDRESSEE value of the head daughter (see co-reference 3 in the feature structure given on page 241). The restriction (RESTR) of the ADDRESSEE of the vocative phrase is union of the restriction of the CONTENT of the vocative phrase





and the restriction of the ADDRESSEE of the head daughter (see co-references 4 and 5 in the feature structure).

4. Via the Vocative Principle, defined above, the ADDRESSEE value of the adjunct is token-identical with the ADDRESSEE value of the mother (see co-reference 1 in the picture).

Below we present the formal mechanisms, which ensure the interrelation between syntactic and pragmatic specificity within the vocative types, discussed at the end of the previous section.

1. The vocative and the expressed/unexpressed subject or object in the sentence refer to the same entity in the world. Within the head daughter the subject's CONTENT (or the object's CONTENT) value is structure-shared in appropriate way with the ADDRESSEE in the CONTEXT value.
2. The vocative binds some possessive or reflexive pronoun in the sentence. This binding first takes place within the head sentence where the possessive or reflexive pronoun is bound by the subject of the sentence and the subject's CONTENT is co-indexed in appropriate way to the ADDRESSEE value of the sentence. From there it gets co-indexed with the vocative.
3. When the vocative is simultaneously coreferent with the subject or the object of the sentence and binds a possessive, then the mechanisms presented in points 1 and 2 are combined.
4. The vocative just serves as an ostensive stimulus for the hearer regarding some fact. In this case again we have an appropriate co-indexed value of the ADDRESSEE and vocative CONTENT,

but the INDEX of the ADDRESSEE is not structure-shared with any other INDEX in the CONTENT of the sentence.

However, one technical problem remains: how to encode entries of the nominative nominals, which could serve as vocatives as well. In our view this can be stated in two ways: (1) as a disjunct with the MOD feature for all appropriate lexical signs, or (2) via a lexical rule. In our opinion the second mechanism is more appropriate, because practically all nominals can be used in a vocative role, but the first can ensure better treatment of the exceptions.

## 12.5 Conclusion

In this paper we presented an HPSG-based unified analysis of Bulgarian vocative phrases. At the same time, in our view, the general interaction between the adjunct vocative phrase and the selected sentence tends to be universal. Note the vocative role in other languages like Spanish, Czech, Russian, English, German, Polish etc. Language specific remains the typology of vocatives and the domains of their structure-sharing with different sentential elements.

As a natural future direction of this work we consider extending our idea with respect to the illocutionary force of the selected by the vocative sentence. It is to be done within the more recent two-dimensional reclassification of phrases Sag (1997) and the proposed structuring of the conversational move types (Ginzburg et al., 2001b, p. 6).

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