1 Introduction

As is well known, second position clitics in Serbian can be placed after the first word (1W) or after the first phrase (1P). It is less well known, however, that the acceptability of first word or first phrase placement depends on discourse, structural, and prosodic factors. In this paper we elucidate the interactions of these factors at the left edge relying on corpus, experimental and theoretical evidence.

Previous approaches have relied on solely syntactic (e.g. Franks and Progovac 1994) or prosodic (Halpern 1995) or even hybrid means (Bošković 2001). These earlier approaches had several clear limitations. First, they investigated only one of the two relevant cases of clitic placement, the case of argument clitic hosts, while ignoring the case of predicate hosts. That is, in free constituent order languages like Serbian (Predolac 2011) a distinction has to be made between sentences that are argument-initial and those which are predicate-initial.1 This distinction, as we show in this paper, is crucial for understanding the scope, as well as the typology of this phenomenon. Second, previous work has focused entirely on 1W/1P placement in branching phrases, as in (1) and (2).

(1) The argument case:

a. Taj je zadatak veoma važan. 1W
   this is-Cl task very important
   “This task is very important.”

b. Taj zadatak je veoma važan. 1P
   this task is-Cl very important
   “This task is very important.”

(2) The predicate case:

1 An anonymous reviewer points out that the question arises as to the relative markedness of the argument-initial and predicate-initial cases themselves. In our corpus studies we found the unmarked argument-initial sentences to be slightly more common than their predicate-initial counterparts, but the relative frequency depended on the context. That is, Pred 1W may be a bit less common than Arg 1P (41% vs. 57% in the daily press sample/ 45% vs. 53% in the fiction sample) but it can hardly be called a “marked” case. See Predolac (2011) for discussion of some common cases of Pred1W in spoken Serbian, along with their syntax.
This is not surprising, as the 1W/1P distinction is brought to relief in these cases. However, the circumstances of clitic placement in non-branching phrases, as in (3) and (4), are important for elucidating the discourse factors that govern the 1W/1P distinction.

(3) Zadatak je veoma važan.
    “The task is very important.”

(4) Važan je taj zadatak.
    “This task is important.”

Finally, earlier work does not adequately address the role of discourse and information structure in clitic placement.

Our approach departs in crucial ways from previous work on this topic. We have investigated the phenomenon of 1W/1P clitic placement in Serbian using a greatly expanded empirical grammar. Rather than relying on the standard procedure of data collection in generative grammar, using primarily the intuitions of a small number of speakers for collecting both acceptable and unacceptable sentences, we follow a procedure of systematic data collection from two major sources: corpora, and experimental techniques designed to investigate the roles of both context and intonation in clitic placement. We have found that a database collected only by consulting native speaker intuitions, while in many ways highly beneficial, can be unreliable, in part due to a potential bias that the researcher might be subject to, and more generally, due to the problems related to the role of introspection in scientific research. By broadening our methodology, we hope to avoid these potential pitfalls. This approach to data collection is in line with recent corpus based and experimental work such as Bresnan (2007) and Hofmeister et. al. (2007), with corpus based work on Slavic clitics by Pancheva (2005), Lenertová (2004), as well as with our own recent work on Serbian clitics, in Diesing, Filipović-Djurdjević and Zec (2009).

The use of corpus data also allows us to investigate the non-branching cases in detail, with a follow-up confirmation of the information structural properties of the various cases through experimental techniques.

We present in this paper a series of converging studies that strikingly confirm not only our proposed distinction between argument-initial and predicate-initial sentences, but also the role that information structure plays in clitic placement. In particular, the picture that emerges is that the neutral cases of clitic placement, (1b) in the argument case and (2a) in the predicate case, arise from different sources. The neutral positioning is largely syntactic in the argument case, while primarily prosodic in the predicate instances. In the marked cases of clitic placement for both sentence types, the clitic functions as a morphological marker of Contrast – marking either
Contrastive Focus or Contrastive Topic. A corollary of this result is that the non-branching cases, those in (3) and (4), will always show the “default” or unmarked intonational and/or discourse pattern, since the marked pattern only arises when there is a contrast to mark – in a branching phrase.

2 Delineating the problem

As mentioned above, crosslinguistically, second position clitics can be placed after either the first word or the first constituent, resulting in the following typology: 2

(5)

<table>
<thead>
<tr>
<th></th>
<th>1st Wd</th>
<th>1st Phr</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>√</td>
<td></td>
<td>Hittite, Old Bulgarian</td>
</tr>
<tr>
<td>Type 2</td>
<td></td>
<td>√</td>
<td>Czech, Slovenian, Malagasy</td>
</tr>
<tr>
<td>Type 3</td>
<td>√</td>
<td>√</td>
<td>Serbian, Ngiyambaa, Warlpiri</td>
</tr>
</tbody>
</table>

The existence of the third type, with two options, raises the question of the status of the two positions. The grammar could be exhibiting either optionality or two mutually exclusive choices. That is, to what extent are the two sentences below interchangeable?

(6)a. Taj zadatak je veoma važan.
    that task is-Cl very important
    ‘That task is very important.’

b. Taj je zadatak veoma važan
    that is-Cl task very important
    ‘That task is very important.’

Diesing, Filipović-Djurdjević and Zec (2009, henceforth DFZ) present a multi-modal study investigating this question, consisting of a corpus study and psycholinguistic experiments, which we summarize below. They begin with the hypothesis that a matrix declarative sentence containing second position clitics can be classified into four types based on whether the initial constituent is an argument or a predicate and whether the clitic in each case follows the first word or first phrase. They further claim that rather than being interchangeable, each of these four types has a distinctive intonation pattern. In subsequent sections, we present further results that provide additional evidence that clitic placement is dependent on syntactic, pragmatic and prosodic factors.

At first glance, the 4-way classification in DFZ (also seen in examples (1) and (2)) seems only valid for branching phrases (BP). The natural question to ask is what happens with non-

branching phrases (NBP)? Most previous work has either focused only on BPs, or didn’t differentiate between BPs and NBPs, as in the DFZ study. The only study that has taken this distinction into account is Pancheva (2005). For BPs, the distinction between 1P and 1W is of course clear. In (7), the clitic je either follows the entire branching phrase, as in (7a), or its first word, as in (7b).

(7) a. Ovaj čelista je veoma poznat. 1P
   this cellist is-CL very famous
   b. Ovaj je čelista veoma poznat. 1W
   this is-CL cellist very famous

For NBPs, the distinction between 1P and 1W is less clear. Should the non-branching NP in (8) that serves as clitic host be classified as a 1P or a 1W case?

(8) Čelista je veoma poznat. 1P or 1W?
   cellist is-CL very famous

This raises further questions. Is the 1W/1P distinction prosodic or syntactic? Our claim will be that a crucial factor in determining whether cases like (8) are of the 1P or 1W type is the information structure.

3 The Corpus Study

A first step in answering this question is determining the relative frequencies of the various sentence types. For this we relied on two corpora. The methodology was similar to that used in by Pereltsvaig (2008) in her corpus-based study of split phrases in Russian, and in Pancheva’s (2005) corpus-based study of clitics from a historical perspective. The study utilized two sources. The first is a corpus from the Serbian daily press compiled by Ebart Media Documentation (www.arhiv.rs), consisting of printed media, composed of more than 700,000 texts, approximately 70 million words. The second corpus consists of literary prose, the Corpus of Serbian Language (www.serbian-corpus.edu.rs). The full corpus consists of approximately 11 million words ranging from the 12th century to contemporary times; the contemporary literary prose component from which we drew our samples constitutes over 1 million words.

Excerpted sentences were limited to declarative sentences containing auxiliary and pronominal clitics. All declarative sentence types in which there is no 1W/1P alternation of clitic placement were excluded, such as various types of subordinate clauses: relative, temporal, conditional, comparative and consequential clauses. In these cases, the clitics only follow the complementizer, and there is thus no 1P placement option.

After following these principles of selection, a total of 2993 sentences remained: 1323 sentences from the daily press and 1670 sentences from the literary prose corpus. Each of these sentences was placed in one of the two categories: Argument-Initial or Predicate-Initial. Within each of these categories, clitic hosts were further classified into NBPs and BPs, and the latter were then divided into 1W and 1P cases. The overall structure is given in (9):

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While auxiliary and pronominal clitics are ordered differently within the clitic group, they do not behave differently with respect to the 1W/1P alternation investigated here.
(9) Corpus study: classification of clitic hosts

In the daily press corpus in (10), NBPs occur in large numbers in each category. 1W placement is far more common when the initial constituent is a predicative phrase, and 1P placement is more common when the initial constituent is an argument. In the literary prose corpus in (11), 1P placement is again more common when the initial constituent is an argument, and 1W placement is far more common when the initial constituent is a predicative phrase. NBPs predominate in the argument category, and are also common in the predicate category. Moreover, there are differences between the press and literary samples: 1W cases in the argument category are more likely to be found in literary prose, but 1P cases in the predicate category are slightly more frequent in daily press.

(10) Results of corpus study: Daily Press

(11) Results of corpus study: Literary Prose
To conclude the discussion of our corpus study, we found differences between the argument and predicate cases, as well as differences between the two corpora. Corpus data confirm our proposed typology but also show that the argument and the predicate differ in their preferred clitic placement. The question that remains, and needs to be addressed, is how to classify NBPs. That is, how do we map this six-way classification into the four-way division mentioned earlier. In other words, how are NBPs to be classified, as 1W or 1P? But before addressing this question, we turn to the results of the experimental component of our study.

4 Experimental studies

Our first set of experimental studies comes from DFZ (2009). DFZ conducted two sets of experiments, investigating both production and on-line processing. This was followed by a study conducted for the current paper, investigating contextual effects in production.

4.1 DFZ (2009)

In DFZ we tested the validity of the four-way sentence classification by conducting two psycholinguistic experiments. The first experiment was a paper and pencil questionnaire aimed at understanding the production of clitic placement, while the second experiment involved a computer based presentation of sentences, in a grammaticality judgment task aimed at exploring the on-line comprehension of these sentences.

We conducted both experiments using the same sentences. The sentences included two sets, 60 in each, one for the argument and the other for the predicate case. Within the set of argument sentences, there were three cases, each represented by 20 sentences, with the subject, object, and prepositional phrase arguments in preposed position (Serbian allows scrambling of constituents, see Predolac 2011). An orthogonal further division within the set of argument sentences was the presence of either a determiner or an adjective within the argument noun phrase. The set of predicate sentences was divided into three groups, with 20 sentences in each, representing three types of predicates, adjectival phrase (AP), noun phrase (NP) and verb phrase (VP). Thus, there were a total of 120 sentences; these were presented to 38 subject, all of whom were undergraduates at the University of Belgrade.

In the first experiment the subjects were presented sentences with blanks in potential clitic positions:

(12)

Argument sentence        Taj ___ zadatak ___ veoma važan.
/that ___task ___ very important/

Predicate sentence         Veoma ___ važan ___ taj zadatak.
/very ___ important ___ that task/

The dependent variable was participants’ placement of a clitic in one of the two possible positions for each of the two sentence categories. This first experiment revealed a dramatic

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4 The effects of scrambling on clitic placement in argument-initial sentences are limited. The initial constituent is usually construed as a topic. Serbian is a pro-drop language; in SVO sentences, with the subject overtly expressed, the subject is serving as a topic. The effects for predicate-initial sentences are a bit more complex, and are discussed in section 6.
difference between clitic positions across two sentence categories. While 92.98% of the responses placed a clitic after the first phrase in argument sentences (7.02% after the first word), only 2.41% placed a clitic after the first phrase in predicate sentences (97.59% after the first word).\(^5\) Logistic regression performed on participants’ responses revealed that the observed difference was significant: \(^2(1) = 1557.16, p<0.0001.\)

In the second experiment stimuli were presented to subjects via computer display. The participants were given instructions to judge whether the sentence appearing on the screen was acceptable in their language. Responses and reaction times were recorded. All analyses were conducted on the responses to target sentences. Analysis of reaction times was performed only on responses marking the acceptance of a sentence. Reaction times attached to a rejection of a sentence, as well as reaction times out of the range of \(-/+/2.5\) standard deviation units were excluded from the analysis.

Logistic regression of yes/no answers in the sentence acceptability task revealed a significant main effect of sentence type (\(^2(2) = 232.65, p < 0.0001\)). Argument sentences with a clitic positioned after the first phrase had higher acceptance probability than argument sentences with a clitic positioned after the first word, while predicate sentences with a clitic positioned after the first word had higher acceptance probability than predicate sentences with a clitic positioned after the first phrase (\(^2 (1) = 181.24, p < 0.0001.\)).

(13) Acceptance rate

Along the same lines, a mixed effect regression of reaction times with participants and sentences as random effects, and sentence type and clitic position as fixed effects, revealed a significant main effect of sentence type (F(1, 4477) = 5.543, p < 0.05). Argument sentences with a clitic positioned after the first phrase were processed faster than argument sentences with a clitic positioned after the first word, while predicate sentences with a clitic positioned after the first word were processed faster than predicate sentences with a clitic positioned after the first phrase (F(1, 4477) = 174.521, p < 0.0001). Thus, there is a significant difference between the 1W and 1P both within the Argument and the Predicate cases, for both for the reaction times and acceptance rates.

\(^5\) It should be noted that the verb phrase (VP), one the three types of predicate initial phrases, was categorically rejected as a 1P clitic host. Only the adjectival phrase (AP) and the noun phrase (NP) figure as 1P clitic hosts in the participants’ responses.
Experiment 1 clearly establishes that, in the argument case, the preferred position for clitics is after the first constituent, while in the predicate case, the preferred position is after the first word. The results of experiment 2 are more nuanced. Reaction times collected in Experiment 2 replicate the preferences found in experiment 1 (14). However, differences in acceptance probabilities between sentences with clitics after the first word and those after the first phrase are not very dramatic, and in the argument case, the difference is small (13). The relatively modest differences in high acceptance rates suggest that participants grant grammatical status to all four types of sentences.

A closer examination of the argument types in both experiments points to a correlation between clitic positioning after the first word and the presence of Contrastive Focus (or Topic) interpretation. Consider the sentences in (15) - (16) used in both experiments. Note that in (15) the sentence initial object argument consists of an adjective followed by a head noun, while in (16) the sentence initial object contains a demonstrative; (15)a and (16)a have clitics after the entire object argument, while in (15)b and (16)b the clitic appears after the first word.

(15) Object: adjective + noun
   a. Loše igrače ćemo izbaciti iz prve ekipе. 1P
      bad players will-Cl kick out from first team
      ‘Bad players will be kicked out from the first team.’

   b. Loše ćemo igrače izbaciti iz prve ekipе. 1W
      bad will-Cl players kick out from first team
      ‘BAD players will be kicked out from the first team.’

(16) Object: demonstrative + noun
   a. Ove igrače ćemo izbaciti iz prve ekipе. 1P
      these players will-Cl kick out from first team
      ‘These players will be kicked out from the first team.’

   b. Ove ćemo igrače izbaciti iz prve ekipе. 1W
      these will-Cl players kick out from first team
      ‘THESE players will be kicked out from the first team.’
What we found in experiment 1 is that argument sentences are more likely to be completed with the clitic after the first word if the first word is a demonstrative, as in (16)b, than if it is an adjective, as in (15)b, and this difference was statistically significant: $\chi^2(1) = 30.81$, $p<0.0001$

Similar results obtained in the grammaticality judgment task. This preferred status of the demonstrative in the 1st word case may be due to the pragmatics of the demonstrative - a demonstrative (as a deictic and/or specific determiner in a language that does not otherwise have determiners) is more likely to be a point of contrast than an adjective.\(^6\) A broader hypothesis based on this finding is that the argument cases with the clitic after the first word supply a point of contrast in pre-clitic position consistent with either contrastive focus or contrastive topic interpretations. Diesing (2009) surveyed the contextual conditions on clitic placement in the four sentence types and concluded that while the unmarked options (Argument/1P; Predicate/1W) were compatible with a variety of contexts, the marked options (Argument/1W; Predicate/1P) required rather specific contexts. We will discuss this in more detail in section 5.

4.2 Context based experiment (Experiment 3)

In order to refine our understanding of the results discussed above, we conducted a follow up experiment that utilizes the same materials and the same conditions as in Experiments 1 and 2 of the DFZ study. However, in the follow up experiment all sentences occur in two types of context: neutral and biased towards a focus interpretation of the material preceding the second position clitics. The goal of the experiments is to directly address the role of information structure in the selection of 1W vs. 1P clitic hosts in the argument and predicate cases.

Experiment 3 includes two tasks. The first one was a grammaticality judgment task, and served as a control for Experiments 1 and 2. The second task addressed the role of context in clitic placement. Sentence pairs were presented (with two options for clitic placement), preceded

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\(^6\) Interestingly, no corresponding difference among initial elements is found in the Pred1W case. That is, unmarked intonation and interpretation is the default regardless of what figures as the “first word”.

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by a short context. Two types of contexts were presented, neutral and biased, as in (18) and (19) respectively.

(18) Neutral: Kako je ko prošao na takmičenju?
    who aux-CL what did in the-competition
    ‘Who did what in the competition?’

  a. Moj brat je osvojio pet zlatnih medalja.     1P
  b. Moj je brat osvojio pet zlatnih medalja.     1W
    ‘My brother won five gold medals.’

    everyone saying that aux-CL Peter’s brother won five gold medals. But that not true.
    ‘Everyone is saying that Peter’s brother won five gold medals. That’s not true.’

  a. Moj brat je osvojio pet zlatnih medalja.     1P
  b. Moj je brat osvojio pet zlatnih medalja.     1W
    ‘My brother won five gold medals.’

The subjects were asked which sentence, a. or b., was perceived as most natural in the given context.

Because the task in the follow up experiment differs somewhat from the tasks in the DFZ experiments described in the previous section, we first ran a control experiment to check whether the results observed in the earlier experiments remain unchanged in this new task.

Seventy-two sentences were selected from the sentence list used in the DFZ experiments. We selected 60% of each sentence type, preserving the overall structure of stimulus material. Half of the sentences were of argument type, and half were of predicate type. For the first task, which served as control, each sentence was printed with a) the clitic positioned after the first word and b) the clitic positioned after the first phrase. Twenty filler sentences were included in a list to ensure that participants did not develop a strategy in completing the task. The sentences were printed in a four-page booklet, according to one of three random orders. The first page of a booklet contained detailed instructions. The task was to mark the sentence that sounded more natural in one's native language. Participants took approximately 20 minutes to complete the task.

A linear mixed effect regression to log odds of first-word or first-phrase clitic position (binomial distribution of participants’ answers), with both participants and items as random effects, showed a significant fixed effect of sentence type ($\beta=6.927$, $z(1, 1870)=17.19$, $p<0.0001$). Consistent with the DFZ results, in argument sentences, the preferred clitic position was after the first phrase, whereas in predicate sentences, the preferred clitic position was after the first word (20). In sum, the results of the first experiment demonstrated that the pattern of results observed in DFZ (2009) are obtained in a newly introduced experimental task.
In the second task, the sentence set, and counterbalancing of positions of sentences within sentence pairs was identical to that of the preceding, control task but, as already noted, in this task, sentence pairs were preceded by short contexts. Context type was counterbalanced across sentence lists. All of the sentences appeared in both contexts; at the same time, both contexts, as well as all of the sentences were present in each list without repetition of sentences within a list. The sentences were printed in a seven-page booklet, in one of three random orders. The first page contained detailed instructions. The task was to read the context and the two sentence forms carefully, and then to mark the sentence form that they perceived as more natural in the given context. It took participants around thirty minutes to finish the task.

A linear mixed effect regression to log odds of first word-to-first phrase clitic position (binomial distribution of participant's answers), with both participants and items as random effects, showed a significant effect of sentence type (β=4.191, z(1, 3452)=15.715, p<0.0001), context (β=-0.411, z(1, 3452)=-3.261, p<0.01), and their interaction (β=0.992, z(1, 3452)=4.14, p<0.0001). A more detailed analysis confirmed that the probability of preferring an argument sentence with a clitic positioned after the first word was significantly less in a neutral context (β=-0.437, z(1, 1726)=-3.369, p<0.0001). On the other hand, the probability of preferring a predicate sentence with a position after the first word was larger in a neutral context (β=0.627, z(1, 1726)=2.857, p<0.01).

Based on these results we conclude that the overall pattern of preferred clitic position did not reverse – even in the biasing context, argument sentences were preferred with a clitic.
positioned after the first phrase, whereas predicate sentences were preferred with a clitic positioned after the first word, as observed in DFZ. However, the context did affect the probability of preferring a given clitic position. In both argument and predicate sentences, presentation of a context increased the probability of preferring the less preferred clitic position, with the presence of a biasing context intensifying this effect. That is, there is a clear asymmetry of interpretation observed. The marked placements allow only the contrastive interpretations, and this is enhanced by the biasing contexts. The unmarked placements, allow for a variety of interpretations (influenced by factors such as context and intonation). The crucial aspect of this asymmetry is that neutral interpretation is compatible with unmarked clitic placements, but not with marked clitic placements.

5 The role of the context

In this section, we examine more closely the role of the context, both with regard to the placement of the clitics and the interpretation of the sentences. Several concepts come into play here. In the literature on focus, a number of distinctions have been made, in particular the contrast between given and new (see for example Selkirk 1995, Schwarzschild 1999), with some debate concerning the nature of Contrastiveness. At issue is not only the distinction between F-marking (marking new information prosodically by a pitch accent Selkirk 1995, Rooth 1992, among others) and givenness, but also contrastiveness (Féry and Samek-Lodovici 2006, Kratzer and Selkirk 2007) and newness (Kratzer and Selkirk 2010). Alternatively, there is the possibility of encoding focus and constrast within a single system, but encoding focus scope independently, as in Rooth (2011). Here we will simply assume some notion of “Contrastiveness” in the sense of narrow scope focus.

This can be seen quite straightforwardly in the prosody of the various examples. In what follows, we will consider the properties of branching phrases first. Consider the following case of an argument-initial sentence, in a neutral context:

(22) Neutral context: “You must be well-prepared…”

Taj zadatak je veoma važan.
this task is-Cl very important
“This task is very important.”

#Taj je zadatak veoma važan.
this is-Cl task very important
“This task is very important

The neutral context favors a wide focus reading, and is incompatible with the 1W placement of the clitic. In a situation with a biased context, on the other hand, the 1W placement is favored, and the neutral pronunciation of the 1P placement becomes pragmatically odd:

(23) Biased Context: “Let’s talk about the tasks assigned to you: xeroxing, making coffee, and lobbying the dean for more funding for research on clitics…”
Taj je zadatak veoma važan.
this is-CI task very important
“This task is very important.”

#Taj zadatak je veoma važan.
this task is-CI very important
“This task is very important.”

These differences are reflected in the prosody. In the case of the neutral-context 1P clitic placement of the argument initial sentence, the pitch maximum occurs sentence-finally:

(24)

While in the case of the marked 1W placement, there is a pitch maximum on first word, and then the pitch drops off afterwards – a pattern that is typical of contrastive focus:
Thus, summarizing the argument-initial cases, 1P placement has the pitch maximum sentence-finally, while 1W placement has the pitch maximum on the first word (right before the clitic).

Turning now to the predicate-initial examples, in the neutral contexts here, it is the 1W placement of the clitic that emerges as the “unmarked” case:

(26) Neutral Context: “You asked me what is important…”

Veoma je važan taj zadatak.
very is-Cl important this task
“This task is very important.”

#Veoma važan je taj zadatak.
very important is-Cl this task
“This task is very important.”

The neutral context (which has a topical interpretation, with a wide focus over the entire clause), allows only the 1W placement. Indeed, the 1P placement for predicate-initial sentences is licensed only by very specific contexts:

(27) Biased Context: “How can you minimize the importance of your job? Your lackadaisical attitude will destroy us!”

Veoma važan je taj zadatak.
very important is-Cl this task
“This task is very important.”
In a context such as this one, only a Contrastive Topic interpretation is possible (and only the 1P placement of the clitic), a topical or “scene setter” interpretation is not possible. As with the case of the argument-initial sentences, these contrasts are reflected by marked differences in prosody.

When the clitic is placed after the first word in a neutral context, there is typically a highest pitch prominence sentence-finally:

(28)

In the predicate-initial 1P sentences the highest pitch prominence occurs at the right edge of the initial phrase, right before the clitic:
In sum, for the branching phrases, in all cases (whether argument-initial or predicate-initial), in the “default” cases the intonational peak is on the final word of the sentence. On the other hand, in the marked cases the intonational peak occurs right before the clitic – either on the first word (Arg) or at the right edge of the first phrase (Pred), pitch drops off afterwards – typical of contrastive focus in Slavic (Zybatow and Mehlhorn 2000).

Another way of describing the situation is that the neutral contexts give rise to preferred placements. These sentences also allow other interpretations under different intonational contours. The biased contexts favor marked placements, and are more restricted. The marked clitic placements do not allow any alternative interpretations or intonational patterns.

These observations raise the question of what happens with non-branching phrases – that is, sentence-initial elements that consist of one word. These present a potential ambiguity. In terms of clitic placement, prosody, and the pragmatics of information structure, are they (by default) interpreted as a word, or a phrase?

(30) Zadatak je veoma važan.
    task is-Cl very important
    “(the) task is very important.”

Compatible with:
    “You must be well-prepared …”
    Not: “Let’s talk about the tasks assigned to you: xeroxing, making coffee, and lobbying the dean for more funding for research on clitics…”

In an unbiased context, a non-branching sentence-initial argument is interpreted with Wide Focus, not as a Contrastive Focus. It is thus more like the preferred 1P placement than the 1W

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7 As mentioned earlier, contrastive interpretations are possible for the unmarked cases of clitic placement. However, these involve both marked contexts and marked intonation patterns.
placement as far as the pragmatic properties go. Intonationally, the non-branching argument shows a highest pitch prominence on the final word of the sentence, with no prominence before the clitic. This also mirrors the properties of 1P placement in branching argument phrases.

(31)

![Pitch (Hz) graph]

Non-branching predicates, on the other hand, seem to be most compatible with the Topic interpretation associated with 1W placement, rather than the Contrastive Topic interpretation associated with the 1P placement:

(32)Važan je taj zadatak.
important is-Cl that task
“That task is important.”

Compatible with:
“You asked me what is important.”
Not: “How can you minimize the importance of your job? Your lackadaisical attitude will destroy us!”

In the non-branching predicate case the highest pitch prominence occurs on the final word of the sentence, and again there is no peak before the clitic.
Thus, the non-branching phrases in both the argument and predicate cases show the intonational and discourse patterns of the unmarked or default case. In each of the non-branching cases, the interpretation that emerges is that associated with the preferred or unmarked interpretation: wide focus for the argument case, topic for the predicate case.

This seems to raise something of a dilemma, in that the non-branching cases appear to behave differently with respect to clitic placement and intonational and information structure: the sentence-initial argument acts as a phrase, while the sentence-initial predicate behaves as a word. In argument sentences, clitics seem to be attaching as phrasal affixes, while in the predicate cases they attach at the word level. Our proposal for resolving this dilemma is to claim that the predicate and argument cases are not in fact entirely parallel. In brief (more specifics follow in the next section), the predicate 1W are derived by Prosodic Inversion (Halpern 1995), giving rise to a topic interpretation in neutral contexts. The argument 1P placement, on the other hand is derived in syntax. This gives a wide focus interpretation in neutral contexts. The non-branching phrases follow these “default” patterns for each sentence type.

6 Clitic placement in the grammar

Our experiments and the data from the pragmatic conditioning show that 1W/P placement of clitics in Serbian is not a case of simple optionality, but a linguistically significant contrast licensed by different discourse conditions (see also Diesing 2009). Furthermore, as mentioned above, while most studies of second position clitics have focused exclusively on argument-initial sentences (an interesting exception is Chung’s 2003 study of Chamorro, a V-initial language, in which predicate-initial placement predominates), we have regarded both argument and predicate sentence types as relevant. Indeed, in the context of second position clitic placement, the predicate and argument cases are not parallel. First word (1W) and first phrase (1P) are each unmarked placements in distinct structural contexts - 1W placement is the default for the predicate case, 1P is the default in the argument case (it is perhaps interesting to note that Legate
2008 reports semantic effects of second position clitics in Warlpiri, as well as a predicate/argument contrast with respect to 1W placement).

Considering the two cases of 1W placement in Serbian, Pred1W is not associated with any sort of contrastive interpretation. In other words, the ‘splitting of constituents” by the clitic is not linked to any special interpretation, and thus does not feed LF. Arg1W placement, on the other hand, is associated with a contrastive interpretation (as well as its associated intonational contour), and therefore does feed LF. We claim that the distinction between these two cases lies in their derivation. The predicate 1W case is derived by Prosodic Inversion (Halpern 1992), giving rise to an (unmarked) topic interpretation in neutral contexts. The argument 1W placement has its origins in the syntax. This overall picture resolves what might appear to be a paradox: in the argument sentences, 1W placement is associated with semantic/pragmatic effects not seen in 1W placement in predicate sentences. As Legate points out, such effects are inconsistent with the approach advocated by Bošković and others, in which phonology acts as a filter on syntactic representations – clitic placement here can influence LF interpretation. Yet in the predicate sentences 1W placement does show the behavior expected under Bošković’s analysis.

Turning now to the 1P cases, Arg1P and Pred1P differ in that the former is associated with a topic interpretation and the latter has a contrastive focus interpretation. We attribute this difference to different landing sites (see also Diesing 2011). The Arg1P cases are fronted to a TopP and the Pred1P cases are fronted to a FocusP (see Bošković 2002). For the argument 1P this yields a neutral interpretation in unmarked contexts, and the Pred1P placement has rather marked pragmatics.

Non-branching phrases (NBPs) follow the “default” patterns for each sentence type. In the marked cases clitics serve as morphological markers of contrast, and thus these cases only occur when there is a contrast to mark – in branching phrases.

This brings us to the particulars of how these default (and corresponding marked) options are to be represented in the grammar. As suggested above, the predicate/argument case types may represent different structures, "spelled out" at different points in the derivation. This is consistent with claims made by Bošković (2001) and others that there is no single position for second position clitics in Serbian. The 1W/1P contrast and its resultant differing interpretations thus follow from a feature contrast associated with different positions, as well as different derivations for argument-initial and predicate-initial sentences. More specifically, we assume at a bare minimum the following relevant heads in the “left periphery”: we also assume the “copy” theory of movement:

(34)   (Top-wh^*)(Top/Foc^*) TP

That is, there is a functional head above TP that can host Topics or Focused elements (see Bošković 2002, Stjepanović 1999). Clitics raise to the highest functional head. Argument/1P sentences are simply topics with no Contrastive feature. They raise to the Topic projection, and the clitic(s) attach to the phrase as a phrasal affix (Klavans 1985, Anderson 2005). In the case of Argument/1W placement, the initial word in the phrase is marked with the feature [Contrastive], and the entire phrase is either [Topic] or [Focus]. 8 Raising the phrase to the Topic/Focus head

8 Alternatively, the first word in the phrase could be F-marked with projecting scope, with the rest of the phrase non-projecting, as in Rooth (2011).
suffices to check the Topic/Focus feature of the phrase. Checking of the Contrastive feature requires raising another copy to the second Topic phrase. The clitic also raises:

(35) \[
\text{[TopP } \text{\textit{Taj je primer} [TopP } \text{\textit{taj primer je veoma važan } ] ] Arg/1W} \\
\text{this is-Cl example very important} \\
\text{‘This example is very important.’}
\]

Then “differential deletion” applies (see also Bošković 2001 and Fanselow and Ćavar 2002), in this case deleting the portions of NP not checked for features at each level, and the lower copies of the clitic; this yields 1W placement.

In the case of the predicate sentences, the marked 1P orders involve fronting of the predicate to the focus position. This requires a focus feature on the predicate, and a rather marked interpretation. The unmarked 1W orders result from prosodic adjustment at PF. That is, clitics are subcategorized as prosodic suffixes which attach to the phonological word (Zec 2005). If at PF the clitics are to the right of a prosodic word, attachment can proceed without adjustment. If they are on the left, then linearization at PF according to the subcategorization requirements of the clitic will produce the minimum reordering – 1W placement. Schematically, this results in the following overall derivational picture:

(36)

<table>
<thead>
<tr>
<th>Argument-Initial</th>
<th>1P – WideFocus</th>
<th>1W - Contrastive Focus Prosodic</th>
<th>← Morphologically marked Contrast, with intonational reflex</th>
<th>←</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicate-Initial</td>
<td>1W – Topic Prosodic derivation</td>
<td>1P - Contrastive Topic Syntactic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A closer examination reveals that the marked placements in both the argument and predicate cases share not only the property of being associated with a Contrastive interpretation, but also their relationship to focus projection rules (in the sense of Selkirk 1995) that define which patterns of focus markers in a sentence are permitted (see also Büring 2006 for an alternative view).\(^9\) The basic rules are formulated as follows:

(37) Basic Focus Rule (Selkirk 1995, p. 555)

An accented word is F-marked.

(38) Focus Projection

a. F-marking of the head of a phrase licenses F-marking of the phrase
b. F-marking of an internal argument of a head licenses the F-marking of the head

Looking first at the argument-initial sentences, the marked placement here concerns placement of the clitic after the first word of the phrase:

---

\(^9\) We use the notion of focus projection rules here for illustrative purposes only.
(39) a. Taj je primer veoma važan.
   that is-CL example very important
   “That example is very important.”

   b. Ovaj je čelista veoma poznat.
   this is-CL cellist very famous
   “This cellist is very famous.”

The first word here is neither a head of a phrase nor an internal argument. That is, the clitic follows a position from which focus projection is not possible. Recall that our claim is that this association represents the marked, or contrastive, interpretation. The 1W placement of the clitic is essentially a marker of contrastive focus and is thus incompatible with projected focus. Prosodically, this is indicated by an intonational peak just before the clitic, with pitch dropping off afterwards.

What makes this more than an interesting correlation is the fact that there are notorious examples of cases where 1W placement is not possible with initial arguments in Serbian. For example, a nominal head cannot serve as the first word:

(40) a. [Studenti lingvistike]_{DP} su već stigli.
   students of-linguistics are-CL already arrived

   b. *[Studenti]_{N} su lingvistike već stigli.
   students are-CL of-linguistics already arrived
   ”Students of linguistics already arrived.”

(41) a. [Udruženje za zaštitu životanja]_{DP} je u ovoj zgradi.
   society for protection of-animals is-CL in this building

   b. *?[Udruženje]_{N} je za zaštitu životanja u ovoj zgradi.
   society is-CL for protection of-animals in this building
   ”The society for the protection of animals is in this building.”

The marked clitic placement is not possible in these cases. Given the association outlined above, this is not unexpected. The head of the phrase does license focus projection. Our claim is that the marked clitic placement in the argument case is incompatible with the possibility of focus projection.¹⁰

Turning now to the predicate-initial cases, here the marked placement is that in which the clitic is placed after the first phrase. Recall that in this case also there is a pitch maximum just before the clitic, and a fall following.

¹⁰ The initial phrases such as in (40) can also of course be predicative, and in that case 1W placement is possible (see also (45)):

(i) Studenti su lingvistike a ne znaju fonetske simbole.
   students are-CL linguistics yet not know phonetic symbols
   “They are students of linguistics yet they do not know phonetic symbols.”

This is because 1W placement for sentence-initial predicates is prosodic, and therefore not sensitive to syntactic constraints.
(42) Veoma važan je taj primer.

very important is-Cl that example

“That example is very important.”

It is a well-known fact that 1P placement is not possible with a sentence initial VP in Serbian; only 1W placement is allowed (Browne 1974, confirmed also by DFZ 2009, see footnote 5):

(43) a. [I moj prijatelj Pavle]DP je potpisao peticiju.
also my friend Pavle is-CL signed petition

b. [Potpisao]V je peticiju i moj prijatelj Pavle.
signed is-CL petition also my friend Pavle

c. *[Potpisao peticiju]VP je i moj prijatelj Pavle.
signed petition is-CL also my friend Pavle

“My friend Pavle signed the petition as well.”

There are also cases in which 1P placement is ruled out for sentence initial predicates of other categories:

(44) a. [Svi podrumi u ovoj ulici]DP su puni vode.        AP predicate
all basements in this street are-CL full of-water

b. [Puni]Adj su vode svi podrumi u ovoj ulici
full are-CL of-water all basements in this street

c. *[Puni vode] AdjP su svi podrumi u ovoj ulici
full of-water are-CL all basements in this street

“All the basements in this street are full of water.”

(45) a. [Predsednik]N je debatnog kluba već godinu dana.  NP predicate
president is-CL debate club already year days

b. *[Predsednik debatnog kluba]DP je već godinu dana.
president debate club is-CL already year days

“(He) has been the president of the debate club for the whole year.”

In both of the examples given above (44c and 45b) placement of the clitic after the first phrase is marginal, even ungrammatical. This raises the question of what differentiates examples like these from the acceptable case with an AP predicate given above, repeated below:

(46) [Veoma važan]AP je taj primer.

very important is-Cl that example

“That example is very important.”
The internal structure of the predicates vary in the following way: In all the ungrammatical cases we have a head plus a complement, environments which allow focus projection, given the principles in (37-38):

      signed    petition            full      of-water

      b. ?[Predsednik [debatnog kluba]DP]DP
         president  debate club

F-marking of either the head or the internal argument will license F-marking of the entire phrase. In the examples which allow marked clitic placement, the branching structure consists of the head and a specifier:

(48)   [Veoma važanA]AP
       very    important

Here focus projection is not possible from the specifier. Thus, the marked, or non-default clitic placements in both the argument and predicate initial sentences bear the hallmarks of a narrow or contrastive interpretation. Indeed, they cannot occur in the syntactic contexts in which projected (or, as we suggest - non-contrastive) interpretations are possible.

7 Concluding remarks

The results from the corpus and experimental studies clearly demonstrate that there are preferred and dispreferred clitic placement options in argument-initial and predicate-initial sentences. The differences are reflected in higher occurrence rates in the corpora, higher percentages in subject placements, faster processing, and higher acceptance rates for the preferred options – 1P for argument-initial sentences, 1W for predicate-initial. Thus, the 1W/1P alternation is not a matter of mere optionality, whether syntactic or otherwise. Our experiments also show that contextual conditioning plays a crucial role in determining both clitic placement and sentence interpretation.

The results presented here demonstrate that clitic placement is an interface phenomenon, construing the term in its broadest sense. Characterizing clitic placement in terms of interfaces is not new, but previous analyses have been somewhat more limited in their scope. In earlier work syntax and phonology have had a central role in analyses of clitic placement. The extent of the syntactic component has been debated (Franks and Progovac 1994, Franks 2000, Bošković 2001, Predolac 2007). Arguments for syntactic placement of clitics largely focus on 1W placement in the argument case and the co-existence of syntactically derived “splits” such as left branch extraction (LBE). However, 1W and LBE are not fully co-extensive in Serbian (Predolac 2007). Furthermore, Chung (2003, 558) argues against a syntactic approach to 1W placement in Chamorro, essentially on the grounds that Chamorro does not allow left branch extraction in any other contexts. It is also well-established that in the case of first word placement, the initial word must be defined in prosodic terms (Halpern 1995, Zec and Inkelas 1990, Zec 2005). Furthermore, while the notion of intonational phrase plays a prominent role in a number of
theories of clitic placement (Radanović-Kocić 1996, Bošković 2001, Chung 2003), these claims have not been studied in prosodic terms or substantiated by acoustic evidence.

We also drew the connection between marked cases of clitic placement and the (lack of) focus projection. This correlation provided an explanation for the lack of 1P placement (the marked option) in predicate-initial sentences with fronted VPs. There is however another difference between VP and AP/NP/PP predicates: the latter all occur in copular sentences. This raises some issues for further research and speculation concerning the nature of specificational, predicative and equative sentences in Serbian (Higgins 1979). Specifically, the question that arises is whether specificational sentences like:

(49) The cellist in that trio is Xenia Janković

are to be given a syntactic structure that is derived from that of predicative clauses (Partee 1986, Moro 1997, Adger and Ramchand 2003). That is, are they parallel to:

(50) Xenia Janković is the cellist in that trio

Or, do they have a syntactic structure on par with that of equatives, as argued by Heycock and Kroch (1999), Rothstein (2001):

(51) She is Xenia Janković

The Serbian counterpart of (49) actually is interpreted as predicative or equative – depending on the placement of the clitic.

(52) a. Čelista u ovom triju je Ksenija Janković.
    cellist in that trio is-Cl Xenia Janković

b. Čelista je u ovom triju Ksenija Janković.
    cellist is-Cl in that trio Xenia Janković
    “The cellist in the trio is Xenia Janković”

When the clitic is placed after the first word, only the predicative interpretation is possible. With 1P placement, only the equative interpretation emerges. This can be seen clearly in contexts that disallow a predicative interpretation for the subject:

(53) a. *Čelista je u ovom triju često svirao falš note.
    cellist is-Cl in that trio often played false notes

b. Čelista u ovom triju je često svirao falš note.
    cellist in this trio is-Cl often played false notes.
    “The cellist in this trio often played false notes.”

Here, the 1W placement is ungrammatical, an indication that the NP cannot be functioning as a predicate. The 1W placement here would be the marked placement that is ruled out – where focus projection would be allowed. Thus, the data from clitic placement indicate that equatives
have a syntactic structure that is distinct from that of predicatives, and their clitic placement options differ as well. These observations at this point are suggestive, but they do support our earlier results and present an interesting line of inquiry for future research (Diesing 2011).

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