CLITICS AND PHRASAL AFFIXATION IN CONSTRUCTIVE MORPHOLOGY[*]

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Abstract

To date LFG approaches to clitics have viewed them as independent c-structure entities, hence representing them as separate terminal nodes. However, the literature on clitics also includes work like that of Anderson (1992, 2000) and Legendre (2000), among others, in which clitics are treated as phrasal affixes. In this paper I apply the idea of clitics as phrasal affixes to Serbian auxiliary and pronominal clitics and adapt the phrasal affix approach to LFG through the use of Constructive Morphology (Nordlinger 1998). In this way grammatical function and other information associated with clitics is contributed to the clause at the right level of c-structure while avoiding the need to represent clitics (phrasal affixes) as separate c-structure nodes.

1. Introduction

Within LFG clitics have, on the whole, been represented as syntactically transparent entities, that is as independent terminal nodes. There have been two versions of this approach which differ only in the c-structure labelling of the node dominating the clitic. Firstly, Grimshaw (1982) and some more recent LFG representations of clitics such as Bresnan (2001) and Schwarze (2001) treat Romance pronominal clitics as daughters of a CL node, as in (1b).[1]

(1) (a) Jean **le**   voit.
          Jean DO.3.M.SG see
          'Jean sees him.'

  (b)

$$
\begin{array}{c}
\text{S} \\
\text{NP} \quad \text{VP} \\
(\uparrow\text{SUBJ}) = \downarrow \\
\text{N} \quad \text{V'} \\
\text{CL} \quad \text{V} \\
(\uparrow\text{OBJ}) = \downarrow \\
\text{Jean} \quad \textbf{\underline{le}} \quad \text{voit}
\end{array}
$$

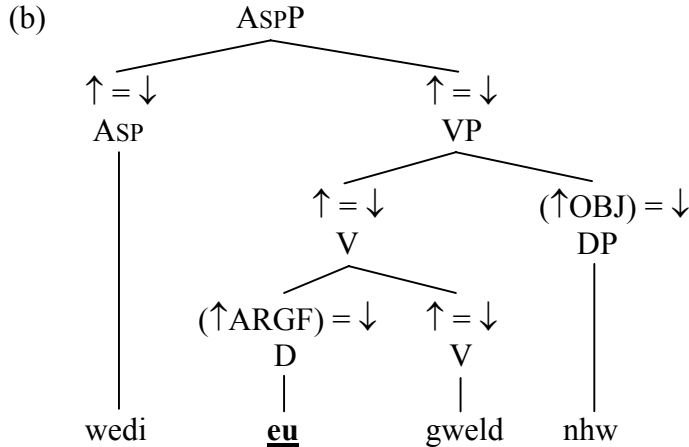   (Grimshaw 1982: 93)

A CL node implies that all clitics can be grouped together within a single syntactic category. However, since clitics include, in addition to pronominals, elements as disparate as auxiliaries, discourse particles and grammatical particles, it is impossible to sustain a unified syntactic category corresponding to such a CL node.

In the second version of this approach clitics are dominated by nodes representing categories that reflect their varied grammatical functions. For instance, in King (1995) the Russian *yes/no* question clitic, *li*, is treated as category C, while in Sadler (1997) Welsh pronominal clitics are treated as category D, as in (2b).

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[1] Throughout this paper clitics in the examples are in boldface and are underlined. The following abbreviations are used in the interlinear glosses in the examples: 1/2/3 – first/second/third person; ACC – accusative case; AOR – aorist; ASP – aspect; AUX – auxiliary; CL – clitic; DO – direct object; F – feminine; INF – infinitive; IO – indirect object; M – masculine; N – neuter; NOM – nominative case; PL – plural; PPT – participle; PRES – present; PRN – pronominal; SG – singular.

(2) (a) ...wedi **eu** gweld nhw.
ASP   CL.3.PL see.PPT PRN.3.PL
'...has seen them.'

(b)   AspP
        ┌───────────────┴───────────────┐
      ↑=↓   ↑=↓
      ASP   VP
       │   ┌─────────────┴─────────────┐
       │   ↑=↓   (↑OBJ)=↓
       │   V   DP
       │   ┌───────┴───────┐   │
       │   (↑ARGF)=↓   ↑=↓   │
       │   D   V   │
       │   │   │   │
      wedi   **eu**   gweld   nhw

(Sadler 1997: 9)

King (1995) and Sadler (1997) argue for the syntactic transparency of these clitics. The establishment of such transparency supports their representations of clitics as c-structure nodes.

However, in the case of Serbian auxiliary and pronominal clitics, there is evidence to suggest that these are not syntactically transparent elements, and hence should not be represented as syntactic terminals, whether as daughters of CL, or daughters of a node like D corresponding to a specific syntactic category. An alternative approach is to treat Serbian clitics as examples of phrasal affixation (e.g. Anderson 1992).[2] Under this view cliticisation is regarded as the morphology of phrases and is analogous to word-level affixation.[3] The aim of this paper then is to outline how such an approach to clitics can be accommodated to LFG.

This paper is organised as follows: in section 2 I provide some background including arguments in favour of treating Serbian clitics as phrasal affixes; in section 3 I turn to Constructive Morphology (Nordlinger 1998) as a means of accommodating the phrasal affixation approach to cliticisation into LFG; section 4 contains some concluding remarks.

2. Background

In this section I present an overview of Serbian auxiliary and pronominal clitics (section 2.1); briefly discuss Serbian phrase structure (section 2.2) and set out some arguments in favour of a phrasal affix approach, focussing on morphological idiosyncratic behaviour of some clitics as well as the lack of a syntactic relationship between clitics and the elements adjacent to them (section 2.3).

2.1 Serbian Auxiliary and Pronominal Clitics

Serbian clitics occupy the second position in their clause and encliticise prosodically to the element that precedes them. The syntactic and/or prosodic nature of the host element and the mechanisms by which the clitics come to be in second position are not the focus of the present paper. These aspects of Serbian clitics have been widely discussed elsewhere in the literature – see, for example, Progovac

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[2] See also Luis, A., Sadler, L. & Spencer, A. (this volume) for a paradigm function approach to Portuguese clitics.
[3] This paper considers only morphological aspects of Serbian clitics but their placement is also influenced by prosodic factors. See O'Connor (2002) for a discussion of these factors.

(1996), Radanović-Kocić (1996), Anderson (2000), Bošković (2000), Franks & King (2000) and O'Connor (2002), among many others.

Auxiliary clitics, given in (3), are used in the formation of the past, conditional and future. The past is formed from the present tense clitic forms of *biti*, 'to be', plus past participle, as in example (4a); the conditional is formed from the aorist clitic forms of *biti* plus past participle, as in example (4b); and the future is formed from the present clitic forms of *hteti*, 'to want', plus infinitive, as in example (4c).

(3)

		biti, present tense	*biti*, past tense	*hteti*, present tense
Singular	1	sam	bih	ću
	2	si	bi	ćeš
	3	je	bi	će
Plural	1	smo	bi/bismo	ćemo
	2	ste	bi/biste	ćete
	3	su	bi	će

(4) (a) Devojk-a **je**   oborila   drv-o.
          girl-NOM AUX.3.SG.PRES chop.PPT.F.SG tree-ACC
          'The girl chopped the tree.'
     (b) Devojk-a **bi**   oborila   drv-o.
          girl-NOM AUX.3.SG.AOR   chop.PPT.F.SG tree-ACC
          'The girl would chop the tree.'
     (c) Devojk-a **ću**   oboriti   drv-o.
          girl-NOM AUX.3.SG.PRES chop.INF   tree-ACC
          'The girl will chop the tree.'

Serbian pronominal clitics, given in (5), include direct object clitics, as in example (6a), and indirect object clitics, as in (6b). There is also a reflexive clitic with the form *se* for all numbers and persons.

(5)

			direct object clitics	indirect object clitics
Singular	1		me	mi
	2		te	ti
	3	masc./neut.	ga	mu
		fem.	je/ju	joj
Plural	1		nas	nam
	2		vas	vam
	3		ih	im

(6) (a) Devojk-a **ga**   obori.
          girl-NOM DO.3.SG.N   chop.3.SG.PRES
          'The girl is chopping it.'
     (b) Devojk-a **mi**   **je**   dala   knjig-u.
          girl-NOM IO.1.SG   AUX.3.SG.PRES give.PPT.F.SG book-ACC
          'The girl gave me the book.'

2.2 Serbian C-Structure

For the purposes of the discussion in this paper I assume the c-structure in (7) for Serbian (which is based on that discussed in King 1995 and Bresnan 2001 for Russian).

(7)

```
                        IP
              ┌─────────┴─────────┐
        (↑GF) = ↓              ↑ = ↓
           NP                   IP
           |             ┌───────┴───────┐
        SUBJ/     (↑GF) = ↓           ↑ = ↓
        TOPIC/      NP                 I'
        ADJUNCT      |          ┌───────┴───────┐
                  SUBJ/      ↑ = ↓            ↑ = ↓
                  TOPIC        I               VP
                               |               |
                            FINITE           ↑ = ↓
                             VERB             V'
                                      ┌────────┴────────┐
                                    ↑ = ↓          (↑GF) = ↓
                                      V                NP
                                      |                |
                                 NON-FINITE          OBJECT
                                   VERB
```
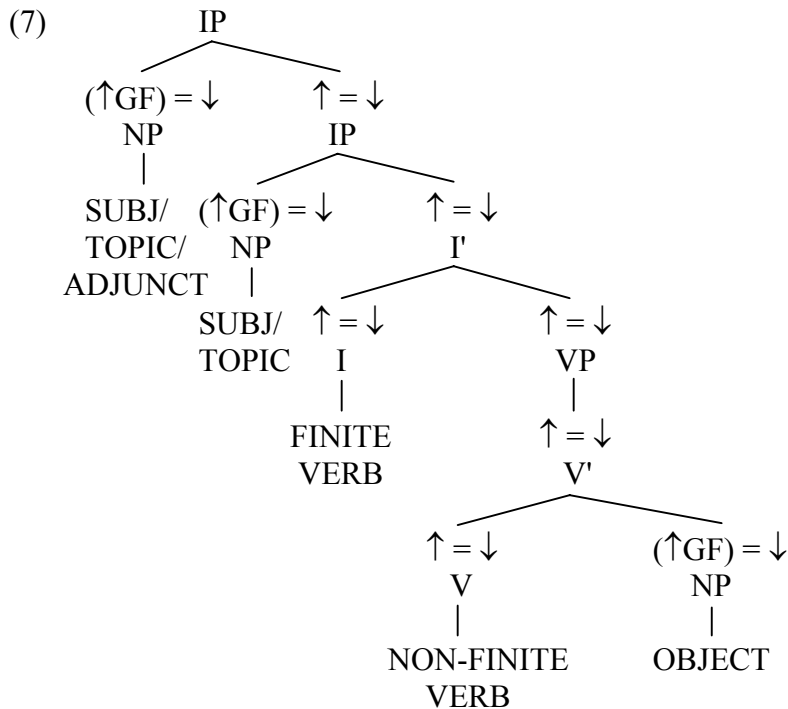
In (7), any element in specifier position of IP is a discourse function – e.g. subject or topic. Although SVO is the usual Serbian word order, this is not fixed and fronting of other elements according to topic-comment considerations is very common, as illustrated by examples (9b, c) and (11) below. Such fronting is allowed for by the adjunction structure in (7). I take inflected verbs to be in I^0. In Serbian, while most instances of the past, conditional or future feature a clitic auxiliary, the occurrence of a phonologically strong form of the auxiliary is also possible in special circumstances. I take these strong auxiliaries to be in I^0 and hence the non-finite verb form, whether accompanied by a clitic or full form auxiliary, to be in V^0.

2.3 Serbian Clitics as Phrasal Affixes

Evidence for the phrasal affix status of clitics consists of both morphological and syntactic arguments. Morphologically, three aspects of Serbian clitics bear a close resemblance to the behaviour of word level affixes.

Firstly, clitic clusters in Serbian exhibit a rigid internal ordering which is somewhat at odds with the free word order found elsewhere in the language. This rigidity is shown in (8) and exemplified in (9) and (10).[4]

(8)   *li* – AUX (except *je*) – IO – DO – *je*, *se*

(9)   (a)   Marija   **mu**   **je**   da.
              Marija   IO.3.SG.M   DO.3.SG.F   give.3.SG.PRES
              'Marija is giving it to him.'
       (b)   *Marija **je mu** da.

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[4] The Serbian *yes*/*no* question particle, *li*, is also a second position enclitic like the auxiliary and pronominal clitics. In the present paper considers neither the syntactic/phrasal affixal status of *li* nor the means by which its associated information is contributed at the level of the clause.

(10) (a) Jovan **mi** **ih** **je** dao.
　　　 Jovan IO.1.SG DO.3.PL AUX.3.SG.PRES give.PASTP.M.SG
　　　 'Jovan gave them to me.'
　　(b) *Jovan **je** **mi** **ih** dao.
　　(c) *Jovan **mi** **je** **ih** dao.
　　(d) *Jovan **ih** **mi** **je** dao.

　　Secondly, as indicated in (8), when auxiliary *je* occurs in a clitic cluster, it is constrained to follow the pronominal clitics. By contast all other auxiliary clitics have to precede the pronominals. Example (11) demonstrates this idiosyncratic behaviour of auxiliary *je*.

(11) (a) Dala **mu** **je** knjigu.
　　　 give.PPT.F.SG IO.3.SG.M AUX.3.SG.PRES book
　　　 'She gave him a book.'
　　(b) Dala **sam**/**si** **mu** knjigu.
　　　 give.PPT.F.SG AUX.1.SG/2.SG.PRES IO.3.SG.M book
　　　 'I/you.SG/we/you.PL/they gave him a book.'

　　Thirdly, the feminine singular direct object clitic, *je*, has a morphophonological alternation, appearing as *ju*, when followed by auxiliary *je*, as shown in (12).

(12) U Beogradu **ju**/***je** **je** Marija kupila
　　 In Beograd DO.3.SG.F AUX.3.SG.PRES Marija buy. PPT.F.SG
　　 'Marija bought it in *Beograd*.'

　　Such behaviour – rigid ordering of elements; idiosyncratic ordering of a specific element; morphophonological alternation of a specific element when juxtaposed with some other element – is more reminiscent of affixal morphology than of syntactically independent elements. This suggests that treating Serbian clitics as phrasal affixes may be more appropriate than treating them as syntactic terminals.
　　In syntactic terms Serbian clitics precede and follow such a variety of elements that no syntactically consistent pattern of placement is apparent. The clitics must occur in a fixed order in second position in the clause, as in (13a) (alternatively, attached to an initial prosodic element of some kind – O'Connor (2002) discusses attachment to both an initial prosodic word and an initial phonological phrase). It is impossible for the clitics to occur in any other position (13b, c).

(13) (a) Marija **mu** **je** da.
　　　 Marija IO.3.SG.M DO.3.SG.F give.3.SG.PRES
　　　 'Marija is giving it to him.'
　　(b) ***Mu** **je** Marija da.
　　(c) *Marija da **mu** **je**.

While clitics are subject to strict placement and ordering, non-clitic elements can be relatively freely ordered resulting in various discourse effects. In (14a), with 'neutral' word order, the clitic follows the subject and precedes the verb. In (14b), a word order which places some degree of emphasis on *knjigu*, the clitic is no longer adjacent to the verb. This is also true in (14c), with even greater emphasis on *knjigu* while, in addition, the clitic precedes the subject.

(14) (a)   Jovan **je**   čitao   knjigu.
            Jovan   AUX.3.SG.PRES   read.PPT.M.SG   book
            'Jovan read the book.'
      (b)   Jovan **je** knjigu čitao
      (c)   Knjigu **je** Jovan čitao.

Whether a clause is CP or IP, clitics are nevertheless restricted to second position. Example (15a) follows the same pattern as (14a), but in (15b) the clitic is again separated from the verb by the subject, and precedes that subject.

(15) (a)   Marija **je**   kupila   knjigu.
            Marija   AUX.3.SG.PRES   buy. PPT.F.SG   book
            'Marija bought a book.'
      (b)   Šta   **je**   Marija   kupila?
            what   AUX.3.SG.PRES   Marija   buy. PPT.F.SG
            'What did Marija buy?'

Clitics also follow fronted adverbial material, as in (12), repeated as (16), and which resembles the pattern in (14c).

(16) U Beogradu   **ju**   **je**   Marija   kupila
      In Beograd   DO.3.SG.F   AUX.3.SG.PRES   Marija   buy. PPT.F.SG
      'Marija bought it in *Beograd*.'

There is also an alternation in clitic placement when the initial syntactic constituent is an NP with adjectival premodification. The clitic either follows the whole NP, as in (17a), or the first modifier, as in (17b).

(17) (a)   Mladi   čovek   **je**   čitao   knjigu.
            young   man   AUX.3.SG.PRES   read.PPT.M.SG   book
      (b)   Mladi   **je**   čovek   čitao   knjigu.
            young   AUX.3.SG.PRES   man   read.PPT.M.SG   book
            'The young man read a book.'

Examples (13)-(17) indicate that, if Serbian clitics are to be considered syntactically transparent, then they can occupy a great variety of positions which, in terms of the c-structure in (7), can be summarised as in (18). However, there is no consistent characteristic linking either the varied positions supposedly occupied by the clitics or the adjacent constituents with which they supposedly form some syntactic relationship.

(18)

Position	Follows	Precedes	Examples
Between SPECIP and V^0	Subject	Main verb	(14a), (15a), (17a)
Between SPECIP and I^0	Subject	Main verb	(13a)
Between upper and lower SPECIP	Subject	Object	(14b)
Between upper and lower SPECIP	Fronted object/ adverbial	Subject	(14c)/(16)
Between CP and SPECIP	WH-element	Subject	(15b)
Between AP/DP and N^0 (in SPECIP)	Premodifier	N^0 head	(17b)

The strict association of Serbian clitics with second position, no matter where that is in phrase structure terms, and their lack of an apparent syntactic relationship with any element such as the main verb, together point to the conclusion that they are syntactically opaque. Hence, in the remainder of this paper, I consider phrasal affixation, as described in Anderson (1992) and outlined in (19) and (20), to be a more appropriate representation for Serbian clitics.

(19) (a) The clitic is located within some syntactic constituent (S vs. VP vs. NP, etc.) which constitutes its domain.
     (b) The clitic is located by reference to the {first vs. last vs. head} element of a specified sort within the constituent in which it appears.
     (c) The clitic {precedes vs. follows} this reference point.

(20) (a) The affix is located in the scope of some constituent which constitutes its domain. This may be either a morphological constituent (the word-structural head vs. entire word) or a prosodic one (prosodic word).
     (b) The affix is located by reference to the {first vs. last vs. main stressed} element of a given type within the constituent in which it appears.
     (c) The affix {precedes vs. follows} the reference point.

Given syntactic opacity and phrasal affixation, I treat Serbian clitics, not as syntactic terminals, but as affixes and hence the sequence prosodic host + clitic as a single syntactic entity. In the next section I propose how this approach can be implemented within LFG.

3. A Constructive Morphology Approach

Constructive Morphology (Nordlinger 1998), a sub-theory of LFG, represents how case morphemes can contribute grammatical function information to f-structure. It has been especially successfully applied to non-configurational dependent marking languages such as Wambaya and a number of other Australian languages. Constructive Morphology works through two mechanisms: 'inside out' function application and morphological composition. These are dealt with in turn.

The designator (SUBJ↑) in the lexical entry for the Serbian feminine singular nominative suffix in (21) is an example of an inside out designator. The assignment of such designators to a case morpheme associates the element to which that morpheme is affixed with the relevant grammatical relation, in this case subject.

(21) -*a*:   (SUBJ↑)
            (↑CASE) = NOM
            (↑NUM) = SG

(SUBJ↑) denotes the higher f-structure containing the SUBJ attribute, i.e. f' in (22).

(22) $_{f'}$[SUBJ $_{f}$[   ]]

In other words, the inside out designator allows the affix to build the f-structure in (22). This, in effect, is a type of shorthand encompassing the fact that the affix -*a* carries the information that there is an f-structure, f' in this case, and that f-structure contains a subject attribute.

The Principle of Morphological Composition in (23) (Nordlinger 1998: 102) allows for the sequential contribution of affixal information. The affix may contain an inside out designator as is the case in some of Nordlinger's work on Australian languages.   The Serbian case morphemes to be dealt with in this section are followed by clitics or phrasal affixes (AFF$_{XP}$) which, for present purposes, can be considered not to contain inside out designators.[5]

(23) Stem   AFF $\Rightarrow$ Stem   AFF
        (GF^n$\uparrow$) ($\uparrow$x)   (GF^n$\uparrow$) ((GF^n$\uparrow$) x)

        (where *x* represents a sequence of attributes)

Applied to Serbian host-clitic sequences, the host/stem's inside out designator, (SUBJ$\uparrow$) in (24), is inserted for $\uparrow$ in the clitic's lexical entry

(24) X-*a*   AFF$_{XP}$ $\Rightarrow$ Stem   AFF$_{XP}$
        (SUBJ$\uparrow$)   ($\uparrow$PRED)   (SUBJ$\uparrow$)   ((SUBJ$\uparrow$)PRED)
                          ($\uparrow$…)   ((SUBJ$\uparrow$)…)

This has the consequence that the f-structure containing the SUBJ attribute also has the PRED feature and other features associated with AFF$_{XP}$. In the remainder of this section morphological composition is applied to sequences in Serbian which contain a subject NP hosting a pronominal clitic (section 3.1), an auxiliary clitic (section 3.2), and a clitic cluster (section 3.3). Other patterns are dealt with in sections 3.4 and 3.5.

3.1 Serbian Auxiliary Clitics

Consider example (4a), repeated as (25) below.

(25) Devojk-a **je**   oborila   drv-o.
        girl-NOM   AUX.3.SG.PRES   chop.PPT.F.SG   tree-ACC
        'The girl chopped the tree.'

In the following I illustrate how Constructive Morphology works for the host-clitic sequence *devojk-a je*. As stated at the end of section 2 I treat this sequence as a single syntactic entity which is associated with the lexical information in (26).

(26) (a)   *devojk-*: N   ($\uparrow$PRED) = 'girl'
                                    ($\uparrow$GEND) = F
                                    ($\uparrow$PERS) = 3
        (b)   -*a*:   AFF$_N$ (SUBJ$\uparrow$)
                                    ($\uparrow$CASE) = NOM
                                    ($\uparrow$NUM) = SG
        (c)   *je*:   AFF$_{XP}$ ($\uparrow$TENSE) = PAST
                                    ($\uparrow$SUBJ PERS) = 3
                                    ($\uparrow$SUBJ NUM) = SG

---

[5] See section 3.4 for a modification whereby clitics have an associated optional inside out designator.

Example (25) has the c-structure in (27) which, by means of the functional equations in (28), is mapped to the f-structure in (29).

(27)

```
                        IP: f₁
              ┌───────────┴───────────┐
        (↑GF) = ↓                    ↑ = ↓
          NP: f₂                       I'
            │                          │
          ↑ = ↓                      ↑ = ↓
          N: f₃                        VP
            │                          │
            │                        ↑ = ↓
            │                          V'
            │                 ┌─────────┴─────────┐
            │               ↑ = ↓            (↑GF) = ↓
            │                 V                   NP
            │                 │                   │
            │                 │                 ↑ = ↓
            │                 │                   N
            │                 │                   │
      devojk-a je       oborila               drv-o
```
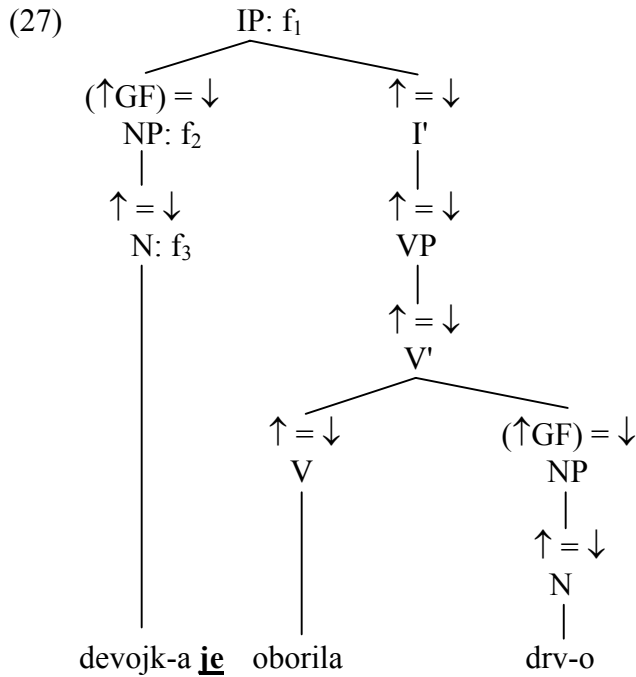
(28) (a) $(f_1\ GF) = f_2$
      (b) $f_2 = f_3$
      (c) $(f_3\ PRED) = \text{'girl'}$
            $(f_3\ GEND) = F$
            $(f_3\ PERS) = 3$
      (d) $(SUBJ\ f_3)$
      (e) $(f_3\ CASE) = NOM$
            $(f_3\ NUM) = SG$
      (f) $((SUBJ\ f_3)\ TENSE) = PAST$
            $((SUBJ\ f_3)\ SUBJ\ PERS) = 3$
            $((SUBJ\ f_3)\ SUBJ\ NUM) = SG$

(29)

$$
f_1\begin{bmatrix} TENSE & PAST \\ SUBJ & f_2, f_3\begin{bmatrix} PRED & \text{'girl'} \\ GEND & F \\ PERS & 3 \\ CASE & NOM \\ NUM & SG \end{bmatrix} \end{bmatrix}
$$
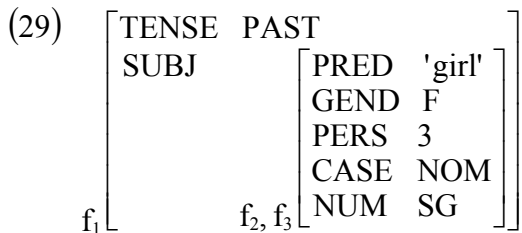
In particular, the inside out designator in the first functional equation in (28f) – i.e. $((SUBJ\ f_3)\ TENSE)$ = PAST – allows the TENSE feature contributed by the auxiliary clitic, *je*, to be associated with the outer f-structure, f_1 (i.e. the f-structure that contains the SUBJ attribute and its value, the f-structure f_3). This f-structure corresponds to the whole clause, which is the level at which the TENSE attribute is relevant. This is despite the fact that *je* itself is treated as affixed to the subject rather than as an independent syntactic terminal.

3.2 Serbian Pronominal Clitics

A sequence containing a pronominal clitic like (6a), repeated as (30), is treated in a similar fashion.

(30) Devojk-a **ga** obori.
    girl-NOM DO.3.SG.N chop.3.SG.PRES
    'The girl is chopping it.'

Devojk-a ga has the lexical information in (31).[6]

(31) (a) *devojk-*: N (↑PRED) = 'girl'
            (↑GEND) = F
            (↑PERS) = 3
    (b) *-a*: AFF$_N$ (SUBJ ↑)
            (↑CASE) = NOM
            (↑NUM) = SG
    (c) *ga*: AFF$_{XP}$ (↑OBJ PRED) = 'PRO'
            (↑OBJ PERS) = 3
            (↑OBJ NUM) = SG
            (↑OBJ GEND) = N

Example (30) has the c-structure in (32) which is mapped via (33) to the f-structure in (34).

(32)   IP: f_1

    (↑GF) = ↓   ↑ = ↓
      NP: f_2 I'
       | |
      ↑ = ↓   ↑ = ↓
      N: f_3 I
       | |
    devojk-a **ga**   obori
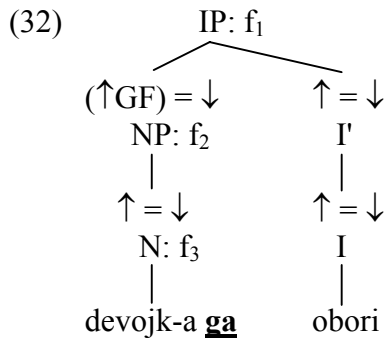
(33) (a) $(f_1$ GF$) = f_2$
    (b) $f_2 = f_3$
    (c) $(f_3$ PRED$)$ = 'girl'
        $(f_3$ GEND$)$ = F
        $(f_3$ PERS$)$ = 3
    (d) (SUBJ f_3)
    (e) $(f_3$ CASE$)$ = NOM
        $(f_3$ NUM$)$ = SG
    (f) $(($SUBJ $f_3)$ OBJ PRED$)$ = 'PRO'
        $(($SUBJ $f_3)$ OBJ PERS$)$ = 3
        $(($SUBJ $f_3)$ OBJ NUM$)$ = SG
        $(($SUBJ $f_3)$ OBJ GEND$)$ = N

---

[6] For an indirect object clitic the associated lexical information would take the form (↑OBJ$_\Theta$ PRED) = 'PRO', and so on.

(34)

$$
f_1 \left[\begin{array}{ll}
\text{SUBJ} & f_2, f_3 \left[\begin{array}{ll}
\text{PRED} & \text{'girl'} \\
\text{GEND} & \text{F} \\
\text{PERS} & 3 \\
\text{CASE} & \text{NOM} \\
\text{NUM} & \text{SG}
\end{array} \right] \\
\\
\text{OBJ} & \left[\begin{array}{ll}
\text{PRED} & \text{'PRO'} \\
\text{PERS} & 3 \\
\text{CASE} & \text{NOM} \\
\text{GEND} & \text{N}
\end{array} \right]
\end{array} \right]
$$
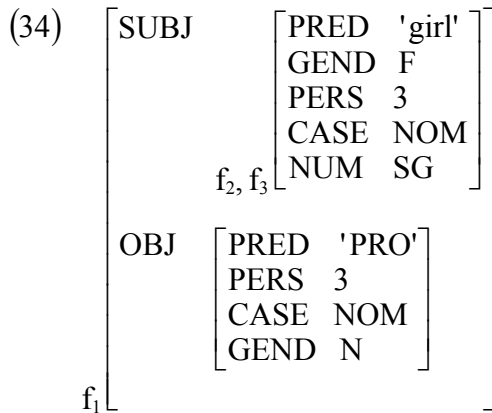
In this case the effect of the inside out designator is to ensure that the information associated with the clitic *ga* ends up in the correct part of the f-structure for the whole clause. Without the inside out designator the OBJ attribute and its f-structure value would have ended up inside the f-structure f_2/f_3 just like the information associated with the case affix *-a*.

3.3 Clitic Clusters

Clitic clusters such as the auxiliary-pronominal sequence *ga je* in (35) can also be handled by this approach.[7] As in the previous cases involving a single clitic, the sequence of host plus clitic cluster, *devojk-a ga je*, is to be treated as a single syntactic entity.

(35) Devojk-a **ga**   **je**   oborila.
     girl-NOM   DO.3.SG.N   AUX.3.SG.PRES   chop.PPT.F.SG
     'The girl chopped it.'

Devojk-a ga je has the associated lexical information in (36).

(36) (a) *devojk-*: N   ($\uparrow$PRED) = 'girl'
                             ($\uparrow$GEND) = F
                             ($\uparrow$PERS) = 3
     (b) *-a*:   AFF$_N$ (SUBJ $\uparrow$)
                             ($\uparrow$CASE) = NOM
                             ($\uparrow$NUM) = SG
     (c) *ga*:   AFF$_{XP}$ ($\uparrow$OBJ PRED) = 'PRO'
                             ($\uparrow$OBJ PERS) = 3
                             ($\uparrow$OBJ NUM) = SG
                             ($\uparrow$OBJ GEND) = N
     (d) *je*:   AFF$_{XP}$ ($\uparrow$TENSE) = PAST
                             ($\uparrow$SUBJ PERS) = 3
                             ($\uparrow$SUBJ NUM) = SG

---

[7] For a sequence of affixes morphological composition as originally put forward in Nordlinger (1998) – see (23) and (24) above – operates on each affix in turn. See Nordlinger & Sadler (this volume) for a reinterpretation of morphological composition in terms of paradigm function morphology whereby a complete affix sequence is generated before affixation to a stem. This could also be applied to a sequence of clitics/phrasal affixes.

Example (35) has the c-structure in (37) which is mapped via the equations in (38) to the f-structure in (39).

(37)

$$\text{IP: } f_1$$

```
        IP: f₁
       /        \
 (↑GF) = ↓       ↑ = ↓
   NP: f₂          I'
    |              |
  ↑ = ↓          ↑ = ↓
   N: f₃           VP
    |              |
    |            ↑ = ↓
    |              V
    |              |
 devojk-a ga je  oborila
```
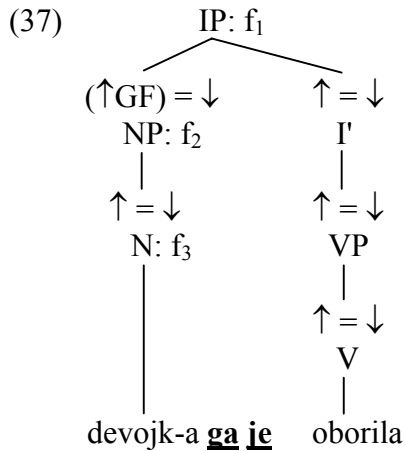
(38) (a) $(f_1 \text{ GF}) = f_2$
    (b) $f_2 = f_3$
    (c) $(f_3 \text{ PRED}) = \text{'girl'}$
        $(f_3 \text{ GEND}) = \text{F}$
        $(f_3 \text{ PERS}) = 3$
    (d) $(\text{SUBJ } f_3)$
    (e) $(f_3 \text{ CASE}) = \text{NOM}$
        $(f_3 \text{ NUM}) = \text{SG}$
    (f) $((\text{SUBJ } f_3) \text{ OBJ PRED}) = \text{'PRO'}$
        $((\text{SUBJ } f_3) \text{ OBJ PERS}) = 3$
        $((\text{SUBJ } f_3) \text{ OBJ NUM}) = \text{SG}$
        $((\text{SUBJ } f_3) \text{ OBJ GEND} = \text{N}$
    (g) $((\text{SUBJ } f_3) \text{ TENSE}) = \text{PAST}$
        $((\text{SUBJ } f_3) \text{ SUBJ PERS}) = 3$
        $((\text{SUBJ } f_3) \text{ SUBJ NUM}) = \text{SG}$

(39)

$$f_1 \begin{bmatrix} \text{TENSE} & \text{PAST} \\ \text{SUBJ} & f_2, f_3 \begin{bmatrix} \text{PRED} & \text{'girl'} \\ \text{GEND} & \text{F} \\ \text{PERS} & 3 \\ \text{CASE} & \text{NOM} \\ \text{NUM} & \text{SG} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'PRO'} \\ \text{PERS} & 3 \\ \text{NUM} & \text{SG} \\ \text{GEND} & \text{N} \end{bmatrix} \end{bmatrix}$$

As was the case previously in (29) and (34) the information associated with each clitic appears in the appropriate place in the f-structure corresponding to the whole sequence *devojk-a ga je*.

3.4 Other Hosts

So far I have considered only instances where the clitic host is a subject NP. However, it is not always the case in Serbian that the host element is the subject since pro-drop and free word order effects mean that elements other than subject NPs are frequently in first position and therefore fulfill the role of clitic host.

   The most straightforward situation is that in which the host element is an NP marked for a case other than nominative. Such case markers carry an alternative inside out designator – e.g. $(OBJ\uparrow)$ for accusative, $(OBJ_\theta\uparrow)$ or $(OBL_\theta\uparrow)$ for dative, $(OBL_\theta\uparrow)$ for locative and instrumental, $(POSS\uparrow)$ for genitive. As before, these allow the information carried by the clitic to be contributed at the correct level of f-structure.

   Less straightforward are situations in which the host is a premodifier within the noun phrase, as in (17b), repeated as (40) below.

(40) Mladi **je**   čovek   čitao   knjigu.
      young AUX.3.SG.PRES   man   read.PPT.M.SG   book
      'The young man read a book.'

Serbian adjectives, like nouns, are marked for case and thus adjectival affixes can be regarded as carrying the same inside out designators as their nominal counterparts. However, this in itself does not produce the desired result, as the following demonstrates. The c-structure corresponding to example (40) is given in (41).

(41)

```
                        IP: f₁
                 ┌────────────┴────────┐
           (↑GF) = ↓                  ↑ = ↓
            NP: f₂                      I'
          ┌─────┴─────┐                 │
    (↑ADJ) = ↓    ↑ = ↓               ↑ = ↓
       AP: f₃      N': f₅              VP
        │           │           ┌──────┴──────┐
      ↑ = ↓       ↑ = ↓      ↑ = ↓        (↑OBJ) = ↓
       A: f₄      N: f₆        V              NP
        │           │          │           ╱──╲
     mladi je     čovek      čitao         knjigu
```

The lexical information associated with *mladi je* and *čovek* is contained in (42) and (43) respectively. The result of unifying this information is given in the f-structure in (44) which is ungrammatical in a number of respects.

(42) (a)   *mlad-*:   A $(\uparrow PRED) = $ 'young'
      (b)   *-i*:   AFF$_A$ $(SUBJ \uparrow)$
                                  $(\uparrow CASE) = NOM$
                                  $(\uparrow NUM) = SG$
      (c)   *je*:   AFF$_{XP}$ $(\uparrow TENSE) = PAST$
                                  $(\uparrow SUBJ\ PERS) = 3$
                                  $(\uparrow SUBJ\ NUM) = SG$

(43) (a) *čovek-*: N ($\uparrow$PRED) = 'man'
 ($\uparrow$GEND) = M
 ($\uparrow$PERS) = 3
 (b) $\varnothing$: AFF$_N$ (SUBJ $\uparrow$)
 ($\uparrow$CASE) = NOM
 ($\uparrow$NUM) = SG

(44) * $f_1\left[\begin{array}{ll} \text{SUBJ} & f_2, f_5, f_6\left[\begin{array}{ll} \text{ADJ/SUBJ} & \left\{f_3, f_4\left[\begin{array}{ll}\text{PRED} & \text{'young'}\\ \text{NUM} & \text{SG}\\ \text{CASE} & \text{NOM}\\ \text{PERS} & 3\end{array}\right]\right\}\\[3em] \begin{array}{ll}\text{PRED} & \text{'man'}\\ \text{GEND} & \text{M}\\ \text{PERS} & 3\\ \text{NUM} & \text{SG}\\ \text{CASE} & \text{NOM}\\ \text{TENSE} & \text{PAST}\end{array} \end{array}\right]\end{array}\right]$

The main problems with this structure is that SUBJ information occurs in both of the inner f-structures, $f_2/f_5/f_6$ and f_3/f_4, and that the f-structure f_3/f_4 is the value of both an ADJ attribute (from the annotation ($\uparrow$ADJ) = $\downarrow$ on the AP node in (41)) and a SUBJ attribute (from the (SUBJ $\uparrow$) designator in the lexical entry for the adjectival affix *-i* in (42b)). The remedy adopted by Nordlinger (1998: 99), and which I will follow in this paper, is to assume that modifiers such as adjectives have an (ADJ $\uparrow$) designator in their lexical entries. Thus (42a) above becomes (45).

(45) *mlad-*: A (ADJ $\uparrow$)
 ($\uparrow$PRED) = 'young'

The effect of this is to allow the adjectival suffix *-i* with its associated (SUBJ $\uparrow$) designator to build f-structure outside of that built by the adjectival root *mlad-*, as illustrated below. The annotations on the c-structure in (41) together with the lexical information in (42b, c), (43) and (45) produce the functional equations in (46), associated with *mladi je*, and (47), associated with *čovek*. These equations provide the mapping from (41) to the correct f-structure in (48).

(46) (a) $(f_1\ \text{GF}) = f_2$
 (b) $(f_2\ \text{ADJ}) = f_3$
 (c) $f_3 = f_4$
 (d) (ADJ f_4)
 $(f_4\ \text{PRED}) = $ 'young'
 (e) (SUBJ (ADJ f_4))
 ((ADJ f_4) CASE) = NOM
 ((ADJ f_4) NUM) = SG
 (f) ((SUBJ (ADJ f_4)) TENSE) = PAST
 ((SUBJ (ADJ f_4)) SUBJ PERS) = 3
 ((SUBJ (ADJ f_4)) SUBJ NUM) = SG

(47) (a) $(f_1\ GF) = f_2$ (as above)
   (b) $f_2 = f_5 = f_6$
   (c) $(f_6\ PRED) =$ 'man'
       $(f_6\ GEND) = M$
       $(f_6\ PERS) = 3$
   (d) $(SUBJ\ f_6)$
       $(f_6\ CASE) = NOM$
       $(f_6\ NUM) = SG$

(48)
$$f_1\begin{bmatrix} SUBJ & f_2,f_5,f_6\begin{bmatrix} PRED & \text{'man'} \\ CASE & NOM \\ NUM & SG \\ PERS & 3 \\ GEND & M \\ ADJ & \{f_3,f_4\begin{bmatrix} PRED & \text{'young'} \end{bmatrix}\} \end{bmatrix} \\ TENSE & PAST \end{bmatrix}$$

Finally there are cases in which the element which hosts the clitics has no case marking. For instance, in (49) the host is a verbal participle while in (50) it is an adverb.

(49) Oborila   **ga**   **je**.
    chop.PPT.F.SG   DO.3.SG.N   AUX.3.SG.PRES
    'She chopped it.'

(50) Jučer   **ga**   **je**   oborila.
    Yesterday DO.3.SG.N   AUX.3.SG.PRES   chop.PPT.F.SG
    'Yesterday she chopped it.'

In example (49) the host does not require an inside out designator since, as a verbal participle, it contributes information directly to the topmost or clause-level f-structure, in contrast with previous examples in which the hosts contribute information to a lower f-structure (such as the f-structure value for the SUBJ attribute) embedded within the main f-structure.

   In example (50), however, the host is an adjunct and is therefore an embedded f-structure within the main f-structure representing the whole clause. As for *mlad-* above, *jučer* is a modifier and can therefore be regarded as carrying its own (ADJ ↑) designator. Thus from the c-structure in (51) and the lexical information in (52) the f-structure in (54) can be built via the equations in (53).

(51)   IP: f_1
            _____
        $(\uparrow ADJ) = \downarrow$ $\uparrow = \downarrow$
         ADvP: f_2 IP
             | |
        $\uparrow = \downarrow$ $\uparrow = \downarrow$
         ADV: f_3 VP
             | |
             | $\uparrow = \downarrow$
             | V
             | |
        Jučer **ga je**   oborila

330
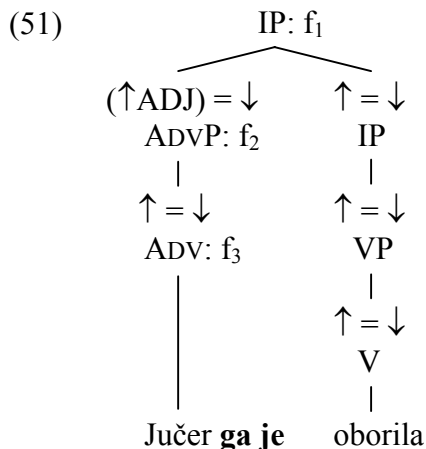
(52) (a) *jučer*: N   (ADJ↑)
                              (↑PRED) = 'yesterday'
      (b) *ga*:   AFF$_{XP}$ (↑OBJ PRED) = 'PRO'
                              (↑OBJ PERS) = 3
                              (↑OBJ NUM) = SG
                              (↑OBJ GEND) = N
      (c) *je*:   AFF$_{XP}$ (↑TENSE) = PAST
                              (↑SUBJ PERS) = 3
                              (↑SUBJ NUM) = SG

(53) (a) (f_1 ADJ) = f_2
      (b) $f_2 = f_3$
      (c) (ADJ f_3)
           (f_3 PRED) = 'yesterday'
      (d) ((ADJ f_3) OBJ PRED) = 'PRO'
           ((ADJ f_3) OBJ PERS) = 3
           ((ADJ f_3) OBJ NUM) = SG
           ((ADJ f_3) OBJ GEND) = N
      (e) ((ADJ f_3) TENSE) = PAST
           ((ADJ f_3) SUBJ PERS) = 3
           ((ADJ f_3) SUBJ NUM) = SG

(54)
$$f_1\begin{bmatrix} \text{SUBJ} & \begin{bmatrix} \text{PERS} & 3 \\ \text{NUM} & \text{SG} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'PRO'} \\ \text{PERS} & 3 \\ \text{NUM} & \text{SG} \\ \text{GEND} & \text{N} \end{bmatrix} \\ \text{TENSE} & \text{PAST} \\ \text{ADJ} & \{f_2, f_3 [\text{PRED} \quad \text{'yesterday'}]\} \end{bmatrix}$$

4. Conclusion

In this paper I have shown that a treatment of Serbian auxiliary and pronominal clitics as phrasal affixes, along the lines proposed by Anderson (1992), is compatible with an LFG approach to phrase structure. These clitics/phrasal affixes are not represented as independent syntactic terminal elements in Serbian phrase structure. Nevertheless, the information that they carry can still be contributed to well formed f-structures in spite of the variety of grammatical functions associated with the elements to which these clitics are attached. The means by which this can be achieved is Constructive Morphology as advocated in Nordlinger (1998). In particular, inside out function assignment and the principle of morphological composition allow clitic information to be associated not with the embedded f-structure belonging to the host element, but with the immediately containing f-structure belonging to the clause itself.

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