Conflicting prosodic and syntactic constraints on special clitics

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In this paper I elucidate the properties of clausal-scope, special clitics (as defined in Zwicky (1977)) upon which syntax and prosody impose conflicting requirements. The syntax requires these clitics to be clause-initial, while the prosody requires them to be suffixes, hence a conflict. A third, ALIGNment constraint restricts against extra-clausal suffixation.

I begin with a classic Wackernagel's Law, or second-position, clitic. I then show that other clitics which appear to behave drastically differently can be accounted for using the same constraints ranked in a different order. The data come primarily from Russian, Tagalog and Warlpiri.

1. The constraints.

(1a) ALIGN (Clause | L, PrPhrase | L) [McCarthy & Prince (1993); Prince & Smolensky (1993)]

(1b) PARSESCOPE: An element must precede (and c-command) the constituent over which it has scope. [≈ Legendre *et al* (1995); cf. also "EDGEMOST" in Anderson (1995)]

(1c) SUFFIX: Requires lexical or functional items marked as suffixes to be adjoined prosodically to the trailing (= right) edge of some prosodic word (PrWd). [Mine/LAB]

The SUFFIX constraint in (1c) may actually be a constraint requiring that the default directionality in a particular language—encliticization—be adhered to. That is, some constraint keeps such clitics from being markedly prefixal. (I return to this issue below in §4.) It is impossible to adhere to all three of these constraints simultaneously.

2. The Wackernagel (1892) strategy: violate PARSESCOPE.

It is possible, however, to adhere to any two of these constraints, as the Russian example in (2) shows. For clarity I show each PrWd in braces and each clause in square brackets; I also indicate word stress with acute accents (one per PrWd):

(2) Strategy I: Violate ALIGN; satisfy the remaining two constraints:

Result: a. *Já ne znáju, =li bylá oná tám.
[{I} {not know [Y/N} {was} {she} {there}]]

Strategy II: Violate SUFFIX; satisfy the remaining two constraints:

Result: b. *Já ne znáju, li= bylá oná tám.
[{I} {not know} [{Y/N was} {she} {there}]]

Strategy III: Violate PARSESCOPE; satisfy the remaining two constraints:

Results: c. Já ne znáju, bylá =li oná tám.
[{I} {not know} [{was Y/N} {she} {there}]]

d. *Já ne znáju, bylá oná =li tám.
[{I} {not know} [{was} {she Y/N} {there}]]

e. *Já ne znáju, bylá oná tám =li.
[{I} {not know} [{was} {she} {there Y/N}]]

'I don't know **whether** she was there.' [Russian]

* Thanks to the following people for suggestions and other assistance: S. Anderson, L. Babby, J. Beckman, C. Bethin, R. Channon, J. Dingley, G. Fowler, S. Franks, J. Grimshaw, F. Heinsberg, A. Israeli, J. Kornfilt, A. Munn, L. Parrott, S. Peperkamp, A. Prince, C. Rudin, V. Samek-Lodovici, S. Soudakoff, S. Urbanczyk, C. Wilder, O. Yokoyama, and V. Zaitseva. An earlier version of this paper was presented at the discourse-particles panel, American Association of Teachers of Slavic and East European Languages conference, San Diego, 1994 (travel assistance to which was provided by National Science Foundation grant No. SBR–9223725 to Brandeis University (Joan Maling, primary investigator; L. Billings, research assistant)). Finally, I wish to thank ZAS—in particular, Tracy Hall—for providing a visiting fellowship in Berlin during the summer of 1996.

Tableau (3) formalizes the grammaticality of (2c) to the exclusion of the other four candidates.

(3) Russian

		ALIGN	SUFFIX	PARSE SCOPE
a.	[PrWd PrWd [**=cl** PrWd PrWd PrWd]]	*!		
b.	[PrWd PrWd [**cl=** PrWd PrWd PrWd]]		*!	
c. $	[PrWd PrWd [PrWd**=cl** PrWd PrWd]]			*
d.	[PrWd PrWd [PrWd PrWd**=cl** PrWd]]			* *!
e.	[PrWd PrWd [PrWd PrWd PrWd**=cl**]]			* *! *

I should further specify that PARSESCOPE is a gradient constraint. This means that while each of (2a-c) violate this constraint, (2c) incurs the least violations; *=li* is closer to the clause boundary than (2d), which is in turn closer than (2e) is to the beginning of that clause. Hence the increasing number of asterisks in the PARSESCOPE column of candidates (3a-c).

3. Another strategy: violate ALIGN

Strategy I is employed by two languages to my knowledge: Tagalog and Warlpiri. The Tagalog data are clearly within Strategy I, while those of Warlpiri represent a mixed strategy.

3.1 Tagalog's strict, clause-initial enclitic *=ng*

Tagalog (Austronesian, spoken in the Philippines) has a clitic, which Dell (1981) refers to as a "ligature", that consists of the velar nasal consonant, which I will spell here using the "Pilipino" orthography as *ng* (adding "=" to show that this element is a special clitic).[1]

(4) {Umuwi} {ang bata [***=ng***} {umipon} {nang mangga}]
went-home the child who collected mangoes

'The child [who collected mangoes] went home.' [Tagalog]

Tableau (5), using the same constraints, but ranking ALIGN below the other two, formalizes the Tagalog constituent order:

(5) Tagalog

		PARSESCOPE	SUFFIX	ALIGN
a. $	[PrWd PrWd [**=cl** PrWd PrWd]]			*
b.	[PrWd PrWd [**cl=** PrWd PrWd]]		*!	
c.	[PrWd PrWd [PrWd**=cl** PrWd]]	*!		
d.	[PrWd PrWd [PrWd PrWd**=cl**]]	*! *		

Incidentally, the choice of (5a) is not due to a restriction against syllable- or word-initial velar nasals, as is the case in Germanic languages (cf., for example, the following word: *.ngu.mi.ngi.ti.* 'is/are smiling').

I should also add that *=ng* has an allomorph, *na=*, which is prosodically a **pre**fix that appears either when there is no connected-speech PrWd before the clause or "when the preceding [prosodic] word ends in a non-syllabic segment which is neither /n/ nor a glottal

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[1] As in (1), in example (2) the square brackets represent the embedded-clause boundary, while the curly braces demarcate each PrWd. I assume a conventional, generative phrase structure for relative clauses. Note that at least one recent work, Kayne (1994), challenges this structure, placing the relative pronoun in the matrix clause.

stop" [Dell (1981:23)]. I have specifically selected PrWds in (4) that begin and end in these segments to abstract away from this allomorphy.[2]

3.2 Alternating monosyllabic special clitics in Warlpiri

Another language which employs Strategy I is the Australian language Warlpiri. My data for this language are incomplete, but the description of them in the literature is clear. Additionally, unlike Tagalog *=ng*, the special clitics of this language appear to alternate between the Wackernagel strategy of Russian (i.e., Strategy III) *=li* and that of Tagalog *=ng* (= Strategy I).

Anderson (1993:82) reports the Warlpiri data in (6). I've added braces around each PrWd (and tabulated the special clitics).

(6) { njuntu =ka =rna =ngku } { kuyu-ku } { yilya-mi }.
you PRES 1.SUBJ 2.OBJ meat-JUSSIVE send-NONPAST

'I am sending you for meat.' [Warlpiri; ≈ ex. 15a in Anderson (1993:82)]

The special clitics in (6) pattern exactly like the grammatical Russian datum in (2c); cf. Tableau (3) above. In any event, the reason I mention Warlpiri is not the data in (6), but a slightly different environment, for which no actual examples appear in either Anderson (1993) or his source, Simpson (1991:69): "in connected speech, monosyllabic AUX bases [such as *=ka*, *=rna*, and *=ngku* in (6)] are found sentence initially, because the last element of the previous sentence provides a phonological host for the clitics."[3]

Thus, Warlpiri appears to follow Strategy I—that of Tagalog—when there is a preceding, extra-clausal potential prosodic host. (Presumably there is no pause separating the clitic from that preceding word.) If there is no preceding word to prosodically adjoin to, as in example (6) above, then the data begin to look like the Russian instead. This would indicate that while SUFFIX is categorically unviolated in either type of Warlpiri data, ALIGN **is** violated in order for the monosyllabic clitics to be prosodically adjoined to a word of a preceding clause (i.e., in connected speech). When there is no accessible prosodic host preceding the clause (either because this clause is utterance-initial or because the preceding speech is not "connected"), then PARSESCOPE is violated (minimally!) in order to satisfy SUFFIX. These two data types are tabulated in (7) and (8):

(7) Warlpiri (**without** connected speech; cf. ex. (6) above)					SUFFIX	PARSESCOPE	ALIGN
a.	[**=cl**	PrWd	PrWd	]	*!		
b.	[**cl=**	PrWd	PrWd	]	*!		
c. **$**	[	PrWd**=cl**	PrWd	]		*	
d.	[	PrWd	PrWd**=cl**	]		* *!	

Tableau (7) formalizes the environment in example (6), similar to the Russian pattern in (2c), in which the clitic follows the first PrWd of its clause. Crucial to Tableau (7) is the notion that the clitic in candidate (7a) does not prosodically adjoin itself to any word. It may well be that this lone, unprosodized clitic violates other constraints (or even *Gen*, the repository of absolute universals); if so, then it could be plausible that this candidate doesn't actually violate SUFFIX but rather some other constraint which is likewise more highly ranked than PARSESCOPE. For these purposes I continue to assume that SUFFIX is violated by such a

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[2] In the orthography final glottal stops and /h/ are usually not written, *=ng* is written with the preceding word without a space, and *na=* is written as a separate word. When *=ng* is added to word ending in *n*, *g* is added.

[3] Simpson specifically identifies "monosyllabic" AUX clitics because disyllabic ones are apparently optionally clitics. I abstract away from that variable by restricting my discussion to monosyllabic clitics.

form. Candidate (7a) aside, however, Tableau (7) proves that {SUFFIX . » PARSESCOPE} › ALIGN.

Tableau (8), on the other hand, formalizes the connected-speech environment:

(8) Warlpiri (**with** connected speech; no example shown)					SUFFIX	PARSESCOPE	ALIGN
a. **$** ... PrWd	[**=cl**	PrWd	PrWd	]			*
b. ... PrWd	[**cl=**	PrWd	PrWd	]	*!		
c. ... PrWd	[	PrWd**=cl**	PrWd	]		*!	
d. ... PrWd	[	PrWd	PrWd**=cl**	]		*! *	

Because the clitic can find a preceding, connected-speech host, this proves that {SUFFIX » PARSESCOPE} › ALIGN. These two tableaux together transitively prove the ranking in (9):

(9) Warlpiri SUFFIX » PARSESCOPE » ALIGN

Whereas a complete ranking of all three constraints is impossible in Tagalog (or, for that matter, in Russian), this is possible in Warlpiri.

To summarize briefly, whereas Warlpiri employs two strategies, depending upon whether there is an extra-clausal, preceding prosodic host available for the clitic, Russian and Tagalog each employ only one of these two strategies. In Russian, even though *=li* is almost always in an embedded clause with preceding extra-clausal material, there always appears to be a pause at the clause boundary (i.e., where the comma appears by convention in (1c)). Thus, it is difficult to test for a Russian counterpart to (8).

As for Tagalog, as I mention above, the clitic *=ng* has the allomorph *na=* which is used, *inter alia*, when there is no preceding available extra-clausal prosodic host.[4] This suppletion of *=ng* and *na=* complicates the picture somewhat: Are the two allomorphs both subject to the SUFFIX constraint? This is unlikely, since *na=* would then be an enclitic that

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[4] Unlike *=ng*, which is enclitic (i.e., prosodically hosted by a preceding word), *na=* is proclitic to the first word of its clause. Schachter & Otanes (1972:131-132) list the following examples with *=ng* and *na=*, depending on whether the preceding word has a preceding, connected-speech word ending in the right segments:

(i) { ang mga mag-aaral }, [{ **na=** nagtrabaho } { nang-masikap }], ...
the students who worked hard
'the students, who worked hard, ...' [nonrestrictive, two intonation phrases (in both languages)]

(ii) { ang mga mag-aaral } [{ **na=** nagtrabaho } { nang-masikap }] ...
the students who worked hard
'the students who worked hard ...' [restrictive, one intonation phrase (in both languages)]

(iii) { ang mga estudyante }, [{ **na=** nagtrabaho } { nang-masikap }], ...
the students who worked hard
'the students, who worked hard, ...' [nonrestrictive, two intonation phrases (in both languages)]

(iv) { ang mga estudyante [**=ng** } { nagtrabaho } { nang-masikap }] ...
the students who worked hard
'the students who worked hard ...' [restrictive, one intonation phrase (in both languages)]

A comma in the orthography in both languages represents a pause. The synonyms *mag-aaral* and *estudyante* are an opportune minimal pair. The former ends in a consonant (other than *n* or glottal stop), while the latter ends in a vowel. As such, *=ng* can be prosodically hosted by *estudyante*, but not by *mag-aaral*. Because of the syntactically required pause in (i) and (iii), however, *=ng* is never possible. Only in (iv), where there are both connected speech **and** a suitable final segment, can *=ng* be used. Dell (1981) lists other examples as well.

always surfaces as a proclitic. Short of developing an Optimality-style theory of suppletion here, I leave this issue open to future research.[5]

To summarize Section 3, I have shown that there are languages that employ Strategy I: They violate ALIGN in order to satisfy each of SUFFIX and PARSESCOPE. Tagalog exhibits this ranking hierarchy. Warlpiri shows the same ranking, further clarifying the rankings of SUFFIX » PARSESCOPE.

4. Is Strategy II attested? Justifying the Suffix constraint.

Are there, then, languages that violate SUFFIX in order to satisfy the other two constraints? Essentially, I must show that there is indeed a constraint which requires a constituent to be lexically identified (somehow) as a "suffix" (i.e., to be adjoined prosodically to the preceding word). Ideally, there would need to be a non-suppletive special clitic which surfaces as an enclitic when there is an available preceding prosodic host, but as a proclitic otherwise. Unfortunately for this study, I know of no such a language. Lacking such evidence, I know of three phenomena that show that some morphemes can be either prefixal or suffixal, indirectly supporting the existence of a SUFFIX constraint.[6]

4.1 Languages with pre- and post-verbal clitics

Anderson (1995:§6) reports the relatively well known facts about various Romance languages in which pronominal clitics "accumulate in a fixed sequence before [a] finite verb. In some languages, however, the clitics appear[] *after* a non-finite form of the Verb in [the] same linear sequence as that found before finite forms." It is unclear from Anderson's characterization whether the clitics are actually prosodically adjoined to the verb in both environments. Sharon Peperkamp informs me that these clitics are indeed prosodically hosted by the verb in either position. My preliminary analysis of such constructions suggests that the pre-verbal clitics are syntactically incorporated into a null syntactic element and therefore require a prosodic host; furthermore, it seems that procliticizing to a preceding host (if any) can be explained by some sort of ALIGN constraint.

Bulgarian and Macedonian also have verb-adjacent clitics that are pre- or post-verbal depending on various factors.[7] In Bulgarian, Rudin (1996) reports, these clitics are nonetheless enclitics in both environments. In Macedonian, according to Rudin & Kramer (1994), these clitics are prosodically hosted by a preceding (finite) verb; if the verb follows

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[5] Alan Prince has suggested to me that another type of ALIGN constraint may be involved in the Tagalog data: a proclitic is required to be in one or more entirely separate syllables from its prosodic host. This observation also appears to hold elsewhere in the language without exception. As a lone consonant, *=ng* cannot procliticize (without vowel epenthesis). As a sequence consisting of a licit syllable, *na=* can however, be a tautosyllabic proclitic. Thus, it appears that *=ng* is the "preferred" allomorph of the suppletive pair, but is restricted to appearing as a proclitic. I will not explore this suggestion further here.

[6] Anderson (1983), incidentally, seems to avoid specifying affixation direction by assuming that Warlpiri merely adjoins clitics to a preceding word by default. That is, =ka, =rna, and =ngku in (6) are positioned after the first PrWd, njuntu, because they are prosodically deficient (i.e., less than disyllabic). It is not entirely clear from his account, but Anderson appears to assume that prosodically adjoining to a PrWd on the clitic's left is a given. There are, to be sure, languages in which all affixation is in one direction—e.g., all affixation is suffixal in Turkish, as Noyer 1994:69 reports, except for some now-unproductive prefixal reduplication, as Jaklin Kornfilt informs me). Whether or not each affix/clitic is specified lexically as pre/suffixal or just the marked ones is not crucial to this discussion. I need only show that some affixes appear in both positions.

[7] As Rudin & Kramer (1994) and Rudin (1996) point out, the yes/no clitic *li* in Macedonian and Bulgarian does not behave like the verbal clitics described here.

the clitics, however, the verb hosts the clitics as well.[8] Thus, it seems that in Macedonian, as in Romance languages, there is a case for dual directionality of prosodic adjunction. I will investigate this phenomenon in Billings (1996).

Thus, verb-adjacent clitics in Romance and Macedonian appear to be the kind of clitic that would support the existence of a SUFFIX constraint. Still, because these elements remain adjoined prosodically to the same word, it is not as easy to define them as "special" clitics as defined in Zwicky (1977). Clearly, further investigation of them is warranted.

4.2 Mobile affixes in Australian languages and Huave

Noyer (1994) shows that in Huave (isolate, spoken in Oaxaca, Mexico), as well as in some Australian languages, certain affixes are lexically prefixal, others suffixal, and yet others are unspecified as to their direction of prosodic adjunction, "showing that phonological well-formedness crucially positions these [mobile] affixes, sometimes at a location at variance with the expected syntactic position" [p. 80]. To account for such data, Noyer assumes some form of Baker's (1984) Mirror Principle as an Optimality-theoretic (i.e., violable) constraint. It would appear possible to employ constraints like SUFFIX (and the analogous constraint PREFIX) to account for such data. These mobile affixes are not special clitics, however. For this reason, these affixes remain adjacent to the same word.

4.3 Dual-position affixes in Afar

Fulmer (1990) investigates a group of apparent dual-position affixes in Afar (East Cushitic, spoken in Ethiopia and Djibouti). Fulmer concludes that a certain group of affixes, which are clearly definable by their underlying phonological shape (i.e., they contain no specified vowel features in their underlying representations), are realized as suffixes in most environments but as prefixes in certain specific situations (namely, only if the stem begins with a segment containing vowel features). If this condition is not met, then suffixation results. The scenario in Afar, therefore, is that the so-called dual-position affixes are underlyingly suffixal and are realized as prefixes to satisfy other (more highly ranked) constraints. My preliminary proposal is that either Afar has a rather language-specific constraint that requires each word's left edge to ALIGN with a [+ consonantal] feature or possibly some form of the ONSET-requirement constraint (Prince & Smolensky 1993). As in the preceding subsection, the morphemes discussed by Fulmer are apparently not special clitics.

I conclude this section by summarizing the salient facts: In Romance languages and Macedonian certain clitics remain adjacent to—and prosodically hosted by—the verb but appear on either side of that stem, depending on the finiteness of the verb. Such phenomena, although not investigated fully in this working paper, appear to be the best candidate so far for the violability of a SUFFIX constraint. In Huave, certain affixes appear to be positioned with respect to their PrWd host on either the left or the right side. Assuming, with Noyer (1994), that there is no underlying marking of suffix- or prefix-hood on the dual-position affixes he investigates, the Huave data do not therefore actually support my proposed SUFFIX constraint. Noyer's mechanisms do support the notion that in some languages at least it is necessary to mark some affixes as suffixal (and others as prefixal, yet others as neither). Fulmer's account of Afar does argue convincingly for the underlying suffix-hood of some affixes which then appear as prefixes in very specified phonological environments. The Afar facts, if fully spelled out in Optimality terms, would need a SUFFIX constraint. In each of these subsections, therefore, there seems to be a need for some sort of SUFFIX constraint.

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[8] The literature on Macedonian clitics, summarized in Elson (1993:158, n. 3), is generally in agreement that post-verbal clitics (aside from *=li*) are part of the verb's PrWd. Primary evidence is that each enclitic syllable shifts the stress rightward by one syllable, stressing the antepenult of the verb + clitic(s) cluster. The picture with pre-verbal clitics is not nearly as clear: Pre-verbal clitics do not attract stress (e.g., a disyllabic verb stem with one preceding monosyllabic clitic will nonetheless stress the verb stem's initial syllable, not the clitic).

5. Languages that employ strategies outside this typology: NON-INITIAL.

I should add—without providing the necessary supporting arguments, regrettably—that other languages utilize a similar strategy. Instead of requiring its second-position special clitics to follow (and prosodically adjoin to) the first word, these languages instead require such clitics to follow the first **syntactic** maximal projection. Anderson (1995), using data from Serbo-Croatian, employs a NON-INITIAL family of constraints to achieve this syntactic second-positioning (analogous to the NONFINALITY constraint used to keep stress from appearing on final elements in the phonological Optimality literature; cf. Prince & Smolensky (1993)). Serbo-Croatian (specifically dialects described in Browne 1974; 1975 and Ćavar & Wilder 1994) is further complicated by being able to employ either the syntactic (post-XP) or the prosodic (post-PrWd) second-position type.[9]

Czech, reported recently in Toman (1996), primarily uses the syntactic second-position strategy for its special clitics. The one exception is *=li* (with similar meaning as Russian *=li*), which must be prosodically suffixed to the first word of the clause it is in. Unlike Serbo-Croatian, there is no option between the syntactic and prosodic types; any given clitic in Czech has only a single option: prosodic or syntactic second position.

I conclude this section by showing that other constraints are necessary to account for syntactic second-position effects. From the behavior of the data presented in the preceding sections of this paper, however, it is necessary to posit some constraint that requires the clitics not only to be NON-INITIAL, as Anderson (1995) proposes, but one that specifically requires the clitic to be prosodically adjoined as a suffix. NON-INITIAL-type constraints account for a range of Wackernagel's Law phenomena (including post-PrWd suffixes like *=li* in Russian). Such constraints cannot, however, account for the Tagalog and (entire) Warlpiri data (above in §3) in a principled way.

6. Conclusion.

It is necessary to have the SUFFIX constraint along with PARSESCOPE (Legendre *et al* 1995) and clausal ALIGNment (Prince & Smolensky 1993; McCarthy & Prince 1993) to account for the behavior of various **prosodic** second-position clitics. I have not dwelt on the operator-hood of these clitics, but assume that these clitics must be clause-initial for such reasons. I do examine in detail, however, these elements' suffixhood and the requirement that prosodic and syntactic clausal units ALIGN their right edges. I have also shown that all three of these constraints are violable in some languages.

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[9] As Damir Ćavar argues in his paper in this volume, Browne's data can be accounted for in syntactic terms.

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