

## Phrasal Clitics\*

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*Abstract.* This study proposes an Optimality-theoretic model through which the various grammar components—semantics, syntax, the lexicon, morphology, and prosody—jointly determine the placement of clitics with a phrasal positioning domain, which is either a nominal expression or a clause. In order to render scope, such clitics must be phrase-initial. However, the morphology, carrying out subcategorization encoded in the lexicon, requires many such clitics to be suffixes. A third constraint prohibits affixation across certain syntactic boundaries. These three constraints require conflicting outputs, and cannot all be satisfied simultaneously. Depending on a particular language's constraint hierarchy, at least one constraint must be violated. Thus, a typology of clitic-placement strategies is predicted. This theory of cross-linguistic variation is based on conflicting requirements imposed by the aforementioned components of the grammar. In addition to an overview of clitic phenomena in Slavic and elsewhere, this paper demonstrates the proposed typology primarily using a clitic phenomenon in Russian in comparison to those in Tagalog and Warlpiri. In addition, these proposals make specific predictions about which kinds of clitic positioning can and cannot occur. Namely, these con-

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straints predict an asymmetry in clitic-positioning types, excluding penultimate clisis.

This study is organized as follows. Section 1 both specifies what phrasal clitics are and provides an overview of clitic-placement types. Next, section 2 reviews two Optimality-theoretic models specifically of second-position cliticization and then proposes a new set of constraints to account for all types of phrasal clitics. The remaining three sections then demonstrate the benefits of this constraint-based grammar: I begin in section 3 by discussing the second-position clitic type using Russian *li* as the primary exemplar. Next, in section 4, clausal clitics in two other languages—Tagalog and Warlpiri—are discussed. Finally, I conclude the study in section 5 by assessing further consequences of these proposals.

## 1. Background

This section begins by defining phrasal clitics, primarily differentiating them from head-adjacent clitics.<sup>1</sup> It then assesses one influential typology of phrasal clitics, setting the stage for my own alternative approach in section 2.

### 1.1. Defining Phrasal Clitics

Rather than rehashing the numerous tests for clitic-hood in the literature (for example, in Zwicky 1977, 1985; Zwicky and Pullum 1983; and Nevis 1985/1988), this subsection identifies one kind of clitic and distinguishes it from other elements of the grammar. Specifically, phrasal clitics will be distinguished from the head-adjacent kind. I also briefly discuss the distinction (attributed to Zwicky 1977) between simple and special clitics.

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<sup>1</sup> In non-generative linguistics the unprefixed term “clitic” is used quite rarely; instead, “proclitic”/“enclitic” are used to refer to the property of requiring the presence of a following/preceding morpho-phonological host, respectively. Many linguists also use the term “host” without being explicit as to whether the hosting is the word that the clitic is pronounced as a part of or the peripheral element relative to which the phrasal clitic is positioned; I therefore generally avoid using this term. This paper likewise uses “suffix”, “suffixed”, “suffixation” and “prefix”, “prefixed”, “prefixation” to clarify that I am describing the prosodic orientation of the clitic (based perhaps on clitics’ morpholexical properties).

For the purposes of this study, the best way to identify phrasal clitics is their relative promiscuity of attachment. That is, they appear at or near one or the other edge of a syntactic phrasal domain, adjacent to words which do not necessarily share any semantic properties with the clitic itself. For example, in Serbo-Croatian several properties of a clause are expressed by clitics which appear following the first element of the clause:

- (1) a. *Taj*                    **MI**    **JE** pesnik   napisao   knjigu.  
       that<sub>MASC.NOM</sub> me<sub>DAT</sub> is poet<sub>NOM</sub> wrote<sub>MASC</sub> book<sub>ACC</sub>
- b. *Taj*                    *pesnik*   **MI**    **JE** napisao   knjigu.  
       that<sub>MASC.NOM</sub> poet<sub>NOM</sub> me<sub>DAT</sub> is wrote<sub>MASC</sub> book<sub>ACC</sub>

‘That poet wrote me a book.’

(Serbo-Croatian, from Browne 1974: 41)

In (1a) the “first element” is the initial PrWd.<sup>2</sup> Another way to express the same sentence is for the “first element” to be defined as the first syntactic phrase; in the case of (1b) this is a nominal expression. Other examples, not given here, show that these clitics need not be pronounced adjacent to any particular part of speech in their clause; they need only follow the first PrWd or phrase of the clause. In his historic study, Wackernagel (1892/1953) observes that in Indo-European dialects certain elements appear in the same position as in (1a), following the first stress peak (i.e., PrWd) of the clause. More recently, languages with a variation on this position—following the first syntactic phrase—have been identified. Serbo-Croatian is a bit exotic in having both such options.<sup>3</sup>

Cross-linguistically, another widely attested position where clitics appear is adjacent to the head of the phrase. (The “phrase” here is either a clause or a nominal expression. If the phrase is the clause, then the head is the verb, whereas the noun is the head to which clitics ap-

<sup>2</sup> The following special abbreviations are used: DEF(inite), DET(erminer), DO: direct object, DV: DAT voice, IO: indirect object, OBJ(ective case), p.c.: personal communication, PrWd: prosodic word, Q: yes/no interrogative, s(ubject), Std: Standard. In addition, the elements being discussed (usually clitics) appear in small caps (whereas the element to which the clitics are anchored is frequently rendered using italics). Finally, in all glosses, unless PL is indicated, grammatical number can be assumed to be in the singular.

<sup>3</sup> I am simplifying matters somewhat. Some dialects of Serbo-Croatian disprefer (1a). (See Franks and King 2000: 219–22 and Bošković 2001: esp. 15–16 and 22–23, fn. 21.)

pear adjacent in nominal expressions.) Pragmatically marked examples of head-adjacent clausal clitics from Macedonian and Bulgarian are listed in (2a–b):

- (2) a. Knigata, Petko komu **MU** **JA** *dade?*  
 book<sub>DEF</sub> Petko who<sub>DAT</sub> MASC/NEUT3.IO FEM3.DO gave<sub>3</sub>  
 ‘As for the book, to whom did Petko give it?’  
 (Macedonian, from Tomić 1996: 866)
- b. Na Petko li Penka **JA** **E** *dala* *knigata*  
 to Petko Q Penka FEM3.DO 3.S given<sub>FEM</sub> book<sub>DEF</sub>  
*včera?*  
 yesterday  
 ‘Was it to Petko that Penka gave the book yesterday?’  
 (Bulgarian, from Tomić 1996: 832)

In Bulgarian, such clitics precede the verb unless the clitic-verb complex is initial, in which case the clitics immediately follow the verb, as in (3a–b):

- (3) a. *Ti* **SI** **MU** (**GI**) *vzel*  
 you<sub>NOM</sub> 2.S MASC/NEUT3.IO 3PL.DO taken<sub>MASC</sub>  
*parite.*  
 money<sub>(PL)DEF</sub>  
 ‘You<sub>TOPIC</sub> have taken his money [I hear].’
- b. *Vzel* **SI** **MU** (**GI**) *parite.*  
 ‘You have taken his money [I hear].’  
 (Bulgarian, the latter from Tomić 1996: 831, fn. 28)

In (3a) there is a pre-verbal word, the overt subject pronoun *ti*. If this pronoun is unexpressed, in (3b), then the clitics are not allowed to appear at the beginning of the clause. Tobler (1875/1912) and Mussafia (1886; 1898) are generally attributed with having first recognized this type of clitic (in medieval stages of Romance languages). Such clitics do not have to be in second position of the clause as such; they are merely prohibited from initial position. That is, third or subsequent position is also allowed.<sup>4</sup>

<sup>4</sup> Macedonian auxiliary and pronominal clitics exhibit the Tobler-Mussafia effect as well. The circumstances under which it is observable are far more limited. Namely

Thus, Serbo-Croatian and Bulgarian provide examples of two basic clitic types, the so-called Wackernagel and Tobler-Mussafia effects. In the former, the clitics are not necessarily adjacent to any element of the clause. The latter type are invariably head-adjacent, with a restriction against being clause-initial determining which side of the verb they appear on. Other linguists have made this distinction as well. For example, Marantz (1988: 263) calls these “peripheral” and “head” clitics. Throughout this study I refer to the two as PHRASAL and HEAD-ADJACENT clitics, respectively.

While occasionally discussing head-adjacent clitics, in the current study I focus on clitics with positioning referring to one edge of the phrasal domain. In so doing, many ancillary issues having to do with whether a particular element is a clitic or an ordinary affix are largely rendered moot. Phrasal clitics are easily identified by their positioning relative to the first or last element (PrWd or syntactic phrase) of their domain. Although phrasal clitics can appear adjacent to the head, this is strictly coincidental. It is thus essential to use data in which the clitic is **not** next to the head of the phrase in order to exclude the possibility that what appear to be phrasal clitics are not in fact of the head-adjacent type.

Before turning to the array of possible kinds of phrasal clitics, I discuss the differentiation, originally proposed by Zwicky (1977), between “simple” and “special” clitics.<sup>5</sup> Both clitic types are unaccented and have accented counterparts. The former require no additional ordering mechanisms; that is, simple clitics and their stressed counterparts appear in the same position. As an example, Zwicky (1977: 5) lists reduced personal pronouns in English: [hì.sí.zɹ] ‘He sees **HER**.’

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(according to Billings 2002), if the verb to which the clitics must be adjacent is itself a clitic (i.e., a copula), then the cluster consisting of these clitics is itself subject to non-initiality. Bošković (2001: 256–66) offers another thorough discussion of this phenomenon.

<sup>5</sup> In actuality, Zwicky (1977: 3–7) lays out a **three**-way taxonomy, with bound words as the third category; all three are still characterized as unaccented. Zwicky (1977: 6–7) labels as bound words any other unaccented form which functions neither as a word nor as an affix and which has no accented counterpart. As one example of a bound word, Zwicky gives English possessive ‘s, as in (6) below. More recently, following criticism by Klavans (1980/1982), Zwicky and Pullum (1983) merge the category of bound word into special clitics. Linguists too many to number have cited only the simple/special distinction, inaccurately citing Zwicky (1977) rather than Zwicky and Pullum (1983). This misattribution—and whether bound words are subsumed under special clitics—does not bear on my arguments here about the formal status of the simple/special distinction.

Special clitics, however, are ordered distinctly from their stressed counterparts. Later on in his discussion, Zwicky (1977: 14) presents the pair in (4a–b):

- (4) a. Da **TI**                      dam   knjigu?      (special-clitic pronoun)  
       to you<sub>DAT.CLITIC</sub> give<sub>I</sub> book<sub>ACC</sub>  
       ‘Should I give you the book?’
- b. Da dam knjigu      **TEBI?**                      (non-clitic pronoun)  
       to give<sub>I</sub> book<sub>ACC</sub> you<sub>DAT.NON-CLITIC</sub>  
       ‘Should I give YOU the book?’
- (Serbo-Croatian, originally from Browne 1974: 39–40)

Some special mechanism is needed to generate the constituent order with the special clitic in (4a), whereas normal syntax can account for [hì.sí.zɚ].

In my view, the simple/special distinction is useful only up to a point for two reasons. First, although this distinction was proposed when the term “clitic” was synonymous with “unaccented”, nearly every linguist invoking this distinction no longer understands the term in this way. The term “clitic” (meaning ‘leaning’ in Greek) was, in Wackernagel’s day, a matter of lacking inherent accent. As documented by Zwicky (1994: xiv–xv), this view continued even into the 1990s; the assumptions made in Zwicky 1977 are no exception in this regard. More recently, “special clitic” has come to mean an element the position of which represents a challenge to syntactic theory; such elements need not even be unaccented (e.g., Anderson 1996: 167). Thus, while “simple clitic” can only mean unaccented, the term “special clitic” can easily be misunderstood. My other misgiving about the simple/special system is that it was not intended to be a formal distinction in the first place (Zwicky 1985: 284). The fact that other linguists—many of whom, I suspect, have not even consulted Zwicky’s original or subsequent work—have construed this distinction to be a formal delineation between clitic types has had the effect of concentrating the theory on the exotic types (namely, those in second position) and ignoring certain more mundane ones.<sup>6</sup> Moreover, linguists

<sup>6</sup> One exception is Klavans (1985), who both ignores the simple/special distinction **and** cites other specific parts of Zwicky’s study: namely, proposals about endoclititization. In addition, Spencer (1991: 376–77, 381) mentions all three clitic types (as discussed in the preceding footnote) and recognizes that this ternary distinction is necessarily descriptive. Nevis (1985/1988: 93–99) also provides a useful chronology (to date)

who attempt to use syntax to handle the easy types and design special mechanisms for the recalcitrant data are just fiddling with theory rather than providing a principled explanation for a broad range of phenomena. For these reasons, the distinction between simple and special clitics, I contend, carries no formal status in the grammar of cliticization.

I have defined the focus of this study: clitics that are positioned not adjacent to the head of the clause but rather relative to some edge constituent thereof. Moreover, I have also shown that one other distinction, usually attributed to Zwicky (1977), is not as useful as a fundamental distinction between kinds of clitic phenomena.

## 1.2. Types of Phrasal Clitics

Having sketched the fundamental differences between phrasal and head-adjacent clitics (and dispensed with the necessarily pre-theoretic notion of “special clitic”), in this subsection I discuss the different possible types of phrasal clitics. As a backdrop for this typology, I use the very influential framework proposed by Klavans (1980/1982, 1985). While empirically flawed, the Klavans approach is nonetheless useful for showing the cross-linguistic array of phrasal-clitic types. I begin by presenting the main point of that study, that the element next to which a clitic must be positioned need not contain the PrWd with which it is pronounced. Next, I lay out the three parameters in the Klavans typology, entailing eight clitic types, and discuss examples of each type proposed by Klavans. I then point out faults of that model and suggest a more restricted list of attested types.

First and foremost, Klavans (1985), synthesizing her earlier work, argues convincingly—against the prevailing assumptions at the time—that the constituent next to which a clitic is positioned need not be linked to that clitic prosodically. I repeat her arguments in this regard using data from Kwakw’ala (also known as Kwakiutl; Wakashan, spoken in British Columbia, Canada), which attests such clitics,<sup>7</sup> highlighted in (5a–b):

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of these taxonomies. More recently, Zwicky himself has abandoned the term “special clitic” while still placing emphasis on those clitics that require special positioning. Apparently following Nevis (1985/1988), Zwicky (1994: xix) focuses on two such clitic types: phrasal affixes and bound words. However, the framework I use in section 2 does not rely on that distinction.

- (5) a. Nəp'id=[**IDA**      gənanəm]=[**XA** guk<sup>w</sup>]=[**SA**  
 throw=DET1<sub>DEICTIC</sub> child=DET1<sub>OBJ</sub> house=DET1<sub>OBL</sub>  
 t'isəm].  
 rock  
 'The child hit the house with a rock by throwing.'  
 (Kwakw'ala, from Klavans 1985: 106, citing Levine 1980)
- b. Məx'id=[**IDA**      'walas=i      bəg<sup>w</sup>anəm]=[**XA**  
 hit=DET1<sub>DEICTIC</sub> big=DET2<sub>DEICTIC</sub> man=DET1<sub>OBJ</sub>  
 gənanəm].  
 child  
 'The big man hit the child.'  
 (Kwakw'ala, from Anderson 2000: 312; cf. also Anderson 1984)

These clitics precede the entire phrasal domain to which they pertain. Unlike the phrasal-clitic examples above in (1a–b) and (4a), in which the phrase is co-extensive with the entire example, the relevant phrasal domain for these clitics is the nominal expression. For clarity, in (5a–b) the data and word glosses are tabulated by PrWd, while each phrasal domain is set off using square brackets. The clitic's polarity is indicated by the equals sign. According to Klavans (1985: 107) these clitics rely on the **preceding** word for stress. As these examples' sentential translations demonstrate, however, the highlighted clitics syntactically belong with the **following** nominal expressions. Thus, in Kwakw'ala we see clitics positioned with respect to the material **following** them, which are nonetheless prosodically affiliated with the **preceding** word. Therefore, the main idea argued by Klavans (1985)—that clitics can differ in their directions of structural anchoring and prosodic support—is borne out.

In addition, Klavans (1985) proposes three binary parameters relevant to the positioning of clitics.<sup>8</sup> The first is that the clitic is anchored

<sup>7</sup> In addition to the initial clitics in (5a–b), with certain deictic categories, there is a Wackernagel clitic—e.g., =i in (5b)—which follows the first “word” of the phrase. In (5a–b) these initial and second-position clitics are simply labeled DET1 and DET2, respectively. Furthermore, I have modified the morphological analysis of the first clitic in (5a) to follow the notation used by Anderson (2000). Finally, =ida in (5b) also shows that these initial clitics are not obligatorily adjacent to the head (noun) of the phrasal domain. These clitics are therefore unambiguously phrasal.

<sup>8</sup> While presenting the feature parameters of the Klavans typology, I prefer to use terminology from later studies. For example, Anderson (1993) uses “anchor” and



to an [INITIAL/FINAL] constituent of a particular domain. The phrasal clitics exemplified so far are all of the INITIAL type. That is, the clitics are next to the leading element in the phrase. In (1a–b) *mi je* follows some first element of the clause, as does *ti* in (4a), while in (5a–b) the relevant clitics precede the first element of the nominal expression. A clitic anchored to the FINAL element of the phrase, from modern English, is shown in (6a–b):

- (6) a. [the Queen of England'S] *hat*  
 b. [the woman I talked to'S] *arguments* (from Zwicky 1977: 7)

This clitic denotes a property of the entire phrase (as in Kwakw'ala, a nominal expression) which it follows, not just of the preceding word. That is to say, in (6a) *hat* pertains semantically more to *queen* than it does to *England*. Indeed, the preceding element need not even be a noun, as exemplified by (6b). The second parameter proposed by Klavans is the clitics' orientation relative to the anchor element: [BEFORE/AFTER]. Of the phrasal clitics discussed so far, the Serbo-Croatian clitics in (1a–b) and (4a) and English possessive 's in (6a–b) all appear AFTER their respective anchors, while the bold-faced Kwakw'ala clitics are pronounced BEFORE their anchors. This leaves just one final parameter: affixal polarity; the settings are [SUFFIXAL/PREFIXAL]. All of the phrasal clitics discussed so far—from Serbo-Croatian, Kwakw'ala, and English—are SUFFIXAL; a PREFIXAL phrasal clitic, from Russian, is exemplified in (7a):

- (7) a. *Poezžaj NE v Moskvu* (a v Omsk).  
*go<sub>IMPER</sub> NEG to Moscow<sub>ACC</sub> but to Omsk<sub>ACC</sub>*  
 'Don't go to Moscow (but rather to Omsk).'  
 More archaically: 'Go not to Moscow (but to Omsk).'  
 b. *NE poezžaj v Moskvu* (a ostavajsja v Peterburge).  
 'Don't go to Moscow (but rather stay in St. Petersburg).'

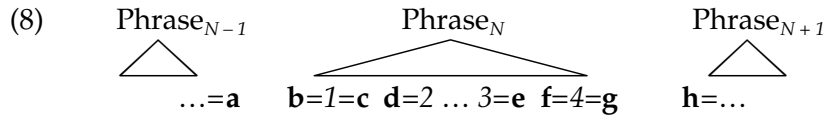
Clausal negation in Russian, exemplified in (7b), as in (14) below, is **not** as clearly an example of a clitic appearing at the beginning of a phrasal domain, since clausal *ne* invariably precedes the finite verb. It

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"orientation" as overall labels for the [INITIAL/FINAL] and [BEFORE/AFTER] parameters, respectively. In addition, I adopt "polarity" (following Noyer 1994) to describe the direction of a clitic's prosodic affiliation and (instead of [ENCLITIC/PROCLITIC]) I use [SUFFIXAL/PREFIXAL].

is thus impossible to eliminate the possibility that clausal-scope *ne* is positioned relative to the head of the clause: *poezžaj* ‘go’. Other common domain-initial clitics in Slavic are prosodically light prepositions (discussed in Billings 1996a and Yadroff and Billings 1998). In both uses of *ne*, as with light prepositions, the clitic is PREFIXAL. In languages which stress the first syllable of a PrWd, the clitic bears main stress: [NE*milujeme*]<sub>PrWd</sub> ‘not love<sub>1PL</sub>’, [PRO *mne*]<sub>PrWd</sub> ‘for me<sub>ACC</sub>’ (Czech, underlining indicates stress).

With these three binary parameters—[INITIAL/FINAL] anchoring, [BEFORE/AFTER] orientation, and [SUFFIXAL/PREFIXAL] polarity—Klavans (1985: 103) predicts a total of eight positional types, illustrated in (8a–h). The initial diagram (modified from Halpern 1992/1995: 32) shows the various clitic types: *Phrase<sub>N</sub>* is the relevant phrase—either a clause or a nominal expression—over which the clitic takes scope, whereas *1* through *4* are possible anchor elements within *Phrase<sub>N</sub>*. This entails four positions: (a–b) being initial; (c–d), second position; (e–f), penultimate; and (g–h), final.



- |    |         |        |          |                                     |                         |
|----|---------|--------|----------|-------------------------------------|-------------------------|
| a. | INITIAL | BEFORE | SUFFIXAL | Kwakw’ala; cf. (5a-b) above         | (in N’)                 |
| b. | INITIAL | BEFORE | PREFIXAL | Articles in Modern Greek            | (in N’)                 |
| c. | INITIAL | AFTER  | SUFFIXAL | Ngiyambaa = <i>ndu</i>              | (in S)                  |
| d. | INITIAL | AFTER  | PREFIXAL | Tepecano = <i>an</i>                | (in S)                  |
| e. | FINAL   | BEFORE | SUFFIXAL | Nganhcara; cf. (9b–c) below         | (in S)                  |
| f. | FINAL   | BEFORE | PREFIXAL | Sanskrit pre-verbs                  | (in S)                  |
| g. | FINAL   | AFTER  | SUFFIXAL | Spanish pronominal clitics          | (in V <sub>[–T]</sub> ) |
| h. | FINAL   | AFTER  | PREFIXAL | Classical Greek negative <i>ou=</i> | (in S)                  |

The languages listed in (8) are the ones Klavans (1985) uses to exemplify each type. Of the phrasal clitics discussed so far, the relevant Kwakw’ala clitics are [INITIAL, BEFORE, SUFFIXAL]; Russian constituent negation, in (7a), is [INITIAL, BEFORE, PREFIXAL]; Serbo-Croatian peninitial clitics are [INITIAL, AFTER, SUFFIXAL]; and English *’s* is [FINAL, AFTER, SUFFIXAL]. Four more types are predicted by the Klavans typology, listed in (8d–f, h).

Alas, two serious problems haunt the Klavans typology. These are failing to distinguish between phrasal and head-adjacent clitics and the scarcity of data to support as many as half of the eight types in (8).

To begin, Klavans fails to distinguish between phrasal and head-adjacent clitics. This undermines the data used to support many of her types. For example, in support of the [FINAL, BEFORE, SUFFIXAL] type in (8e), Klavans uses Nganhcara (Pama-Nyungan, spoken in Queensland, Australia), which has clitics (here, =*ngu*) that can appear either after or before the verb (*wa:*) which is otherwise clause-final,<sup>9</sup> as shown in (9a–c):

- (9) a. Nhila pama-ng nhingu pukpe-wu ku?a wa: =NGU.  
       he<sub>NOM</sub> man<sub>ERG</sub> him<sub>DAT</sub> child<sub>DAT</sub> dog give =DAT.3  
    b. Nhila pama-ng nhingu pukpe-wu ku?a=NGU wa:.  
    c. Nhila pama-ng ku?a nhingu pukpe-wu=NGU wa:.  
       ‘The man gave the dog to the child.’  
       (Nganhcara, from Klavans 1985: 104; cf. Smith and Johnson 1985)

Klavans actually argues that this clitic alternates between two types: (9a) corresponds to [FINAL, AFTER, SUFFIXAL], while (9b–c) are [FINAL, BEFORE, SUFFIXAL]. The clitic attaches prosodically to whichever element it follows. (Proof of this affiliation lies in certain other clitics, such as DAT.2 =*ngku* with consonant clusters that are not licit PrWd-initially; the first consonant is syllabified with the preceding word. This establishes that the preceding word, and not necessarily the verb, serves as the prosodic host.) However, as I have argued (in §1.1) above, such clitics might just as easily be of the head-adjacent kind. Indeed, many verb-adjacent clitics alternate from one side of the verb to the other, as the Bulgarian examples in (3a–b) above show. In fact, the examples Klavans provides for all of (8d–g) include head-adjacent clitics. In one of these, (8g), other unambiguously phrasal examples are available (namely, English ‘s). However, for the remainder of these types, I am aware of no conclusively phrasal-clitic data. Klavans appears to be forcing verb-adjacent clitics into the procrustean template in (8). Such a move would be more convincing if head-adjacent clitics appeared in only initial, second, penultimate, and final position. However, head-adjacent examples that do not fit this mold are readily attested—for example, Bulgarian (2b) above: *Na Petko li*

<sup>9</sup> Klavans (1985, following Zwicky 1977) uses “-” for affixal and “=” for clitic boundaries. She also adds that the meaning of all of the word-order variations in (9) is the same.

*Penka JA E dala knigata včera?* In that example the verb's position forces the clitics to be in none of the four allowed positions.<sup>10</sup>

My other main concern is that of the data used to support some of the clitic types in (8) are from extinct languages for which determining the prosodic affiliation is difficult at best. For example, as Klavans (1985: 114) herself admits, the data referred to in (8d) come "from a short grammar of Tepecano [Uto-Aztec, spoken in Mexico—L.A.B.] written in 1916" and are thus doubtful (in addition to clearly involving head-adjacent clisis). The other data of this kind, from Sanskrit in (8f) and Classical Greek in (8h), are also from extinct languages. (See also Marantz 1988: 268, Halpern 1992/1995: 34, and Sadock 1991: 72 for criticism regarding these languages.)

In the end, the elegant eight-way typology in (8) is left with only four of its types: (8a–c, g). A glaring omission is penultimate clitics in (8e–f). None of the data of this type in the literature about which I am aware withstands scrutiny.<sup>11</sup> In short, the three parameters fail to predict half of their permutations. Clearly, a more constrained typology is called for.<sup>12</sup>

To summarize section 1, there is a fundamental difference between phrasal and head-adjacent clitics. Once these two kinds are teased apart, a very limited typology of phrasal clitics remains; these are listed in (10a–d):

<sup>10</sup> Another misassumption in the Klavans approach (and others from that period) is that all clitics are unaccented. As I discuss (in §2.2) below, occasionally there are clitics which bear stress independent from any neighboring word's stress. It appears, however, that accented clitics are always head-adjacent (Billings 2002). That is to say, all phrasal clitics are also inherently unaccented. As section 2 shows, this follows from the principle that phrasal clitics are prosodically suffixal. As such, they lean on a preceding PrWd.

<sup>11</sup> Elsewhere in the literature, Sadock (1991: 71) proposes that possessive clitics in Modern Greek are penultimate (within the nominal expression). However, Halpern (1992/1995: 34–36) convincingly disputes Sadock's description. In addition, Nevis (1990: 362) claims that certain clitics in Ostyak and North Vogul (both Uralic, spoken in Russia) are phrase-penultimate. However, his Ostyak example does not appear to support his claim and his North Vogul example and description clearly shows a head-adjacent (and not a phrasal) clitic. Thus, these two reports of penultimate clitics are also inconclusive.

<sup>12</sup> Suffice it to say, there have been other influential works on the placement of clitics. For example, Halpern (1992/1995) distinguishes between "affixal" and "postlexical" clitics. Because of limitations of space, I cannot discuss every such proposal in sufficient detail here.

- 
- |                           |                                    |          |
|---------------------------|------------------------------------|----------|
| (10) a. Initial, suffixal | Kwakw'ala determiners; (5a-b)      | cf. (8a) |
| b. Initial, prefixal      | Russian constituent negation; (7a) | (8b)     |
| c. Peninitial, suffixal   | Serbo-Croatian; (1a-b), (4a)       | (8c)     |
| d. Final, suffixal        | English possessive 's; (6a-b)      | (8g)     |

This awkward assortment of types cannot be captured using the binary features of the Klavans typology. As an alternative, the next section, building on two other proposals, lays out a considerably more adequate model.

## 2. Applying Optimality Theory

This section proposes an alternative to the Klavans typology of positioning clitics discussed in the previous section. Following a brief introduction to the theoretical framework used in the rest of this study, I sketch two previous papers, which make use of the same theory, to account for second-position cliticization. I then propose a slightly different set of constraints that explains not only peninitial clitics but all four types above in (10a-d).

### 2.1. Tagalog Infixation and the Essentials of Optimality Theory

In addition to providing a primer on the theoretical framework in which the rest of this study is couched, this subsection discusses infixation in Tagalog (Austronesian, spoken in the Philippines). That phenomenon shares many properties with one of the models of second-position cliticization discussed in the next subsection.

Optimality Theory, introduced by Prince and Smolensky (1993/2002), is a model of grammar which, in addition to the generative algorithm—known as *Gen*—places much of the computational burden on competition between co-generated output candidates—in the part of the grammar called *Eval*. This study is concerned exclusively with the *Eval* portion of the grammar, in which constraints are ranked in a hierarchy for a particular language, determining the attested form in the following manner: First, all candidates are evaluated with regard to the highest ranked constraint in the language; the candidates which least violate this first constraint are retained and all oth-

ers are dropped from further consideration.<sup>13</sup> The procedure continues until a particular constraint in the hierarchy eliminates all but one of the candidates; this candidate then becomes the optimal or attested form. Languages' grammars are distinguished by having differing rankings of constraints. The constraints themselves are universal; however, a particular language can rank certain constraints so low in the hierarchy that they have little to no effect on that language.

I outline how the *Eval* algorithm works using Prince and Smolensky's discussion of infixation in Tagalog. Tagalog verbs routinely have the syllabic shape [CVCVC]; *bi.gáy* 'give' is an example. Certain prefixes, moreover, are [VC] in shape; for example, the perfective affix *in*.<sup>14</sup> In other languages, this affix is merely added to the edge of the word, \**IN.bi.gáy*; not in Tagalog, which positions the affix inside the leading edge of the verb stem: *bINi.gáy* 'gave'. Prince and Smolensky (1993: 85/2002: 93, by way of Clements and Keyser 1983: 29) evoke the following generalization, known as the Jakobsonian syllable typology:

There are languages lacking syllables with initial vowels and/or syllables with final consonants, but there are no languages devoid of syllables with initial consonants or of syllables with final vowels. (Jakobson 1958: 21/1962: 526)

They then propose constraints against vowel-initial and consonant-final syllables. The first syllable of \**IN.bi.gáy* violates both of these constraints. By positioning the prefix inside the verb's initial sequence of segments, as in the attested *bINi.gáy*, this affix does not increase the number of illicit syllables.

The following is (for expository reasons) a simplification of Prince and Smolensky's approach. A bundle of syllable-structure constraints—call them SYLLABLE—are ranked above the constraint prohibiting affixes from interrupting the stem's segments: CONTIGUITY. Furthermore, a so-called tableau is the convention in Optimality

<sup>13</sup> As the hypothetical tableau in (35) below shows, it is possible for all surviving candidates to fail a particular constraint. In such a case, all these candidates are passed on to the next constraint in the hierarchy because these candidates have the **least** violation.

<sup>14</sup> Word-internal dots indicate syllable boundaries; C = consonant; V = vowel. Schachter and Otones (1972) and Prince and Smolensky (1993/2002) give examples of another verbal infix, *um*, in Tagalog. The two behave identically with regard to infixal positioning.

Theory used to show the effects of a particular ranking of constraints. Tableau (11) shows the attested word, *bi.Ni.gáy* and two unattested forms (*\*IN.bi.gáy* and *\*bi.IN.gáy*) arrayed vertically along the left-hand side of the tableau. The constraint hierarchy is arranged from left to right across the top of the tableau, starting with the most highly ranked constraint. If a particular form (known as a candidate) violates a particular constraint, an asterisk appears in the cell beneath the constraint name and to the right of that candidate.

(11) Tagalog: {in-} + {bigáy} 'gave'	SYLLABLE	CONTIGUITY
a. <b>IN</b> .bi.gáy	* *!	
☞ b. bi. <b>NI</b> .gáy	*	*
c. bi. <b>IN</b> .gáy	* *!	*

In this tableau, all three candidates violate the SYLLABLE constraint at least once. This is because the stem has a final glide, *y* (IPA [j]), that must surface as syllable-final. In addition, the bold-faced segments in candidates (11a, c) constitute two more violations of SYLLABLE, because *in* is both vowel-initial and consonant-final in those candidates. Regarding CONTIGUITY, candidates (11b–c) both position the affix inside the stem's segments, resulting in a violation of this constraint, whereas candidate (11a) shows the affix outside the stem's segments, entailing no such violation.

Given the ranking of SYLLABLE » CONTIGUITY, the candidate forms are subjected first to SYLLABLE. One candidate, (11b), violates this constraint fewer times than any other constraints. Thus, those other candidates are eliminated from consideration. Namely, whereas all three candidates violate SYLLABLE once, (11a, c) each have more than one violation; the second asterisk is therefore the fatal violation (indicated by an exclamation point in the convention for perspicuity). There being no remaining competing candidates, (11b) is the optimal and therefore the attested form. (The ☞ symbol indicates the attested form, also strictly for purposes of clarity. The gray shading of any asterisks shows that these violations are not crucial to determining the optimal form.) Indeed, the other constraint, CONTIGUITY, is entirely irrelevant to this particular optimality determination. (Hence, all of the cells under this constraint are gray-shaded as well.) If the two constraints were ranked in the other order, however, then candidates

(11b–c) would be eliminated because they would have more CONTIGUITY violations than candidate (11a) does.<sup>15</sup> This different ranking is demonstrated using English *empower* in tableau (12):

(12) English: {εN-} + {pæwə}	CONTIGUITY	SYLLABLE
☞ a. EM.po.wer		* *
b. pE.No.wer	*!	*
c. po.EM.wer	*!	* *

All the candidates are assessed first with regard to CONTIGUITY; because in (12a) the affix is outside the string of stem segments, there is no violation of this constraint. And because all other candidates shown have a greater number of CONTIGUITY violations, (12a) emerges as optimal. The number of violations in the SYLLABLE column is therefore moot. (Additionally, the exact details of the stress, mandatory nasal assimilation, whether the final vowel is rhotic, and other factors are controlled for in this tableau.)

The crucial difference between tableaux (11) and (12)—in which the shapes of the morphemes are as identical as possible—is that English will create multiply bad syllables in order to maintain contiguity of the stem. This is formalized using the ranking CONTIGUITY » SYLLABLE for English.

To summarize briefly, the basics of Optimality Theory have been sketched here. In addition, Prince and Smolensky's approach to infixation in Tagalog has been presented. The following subsection presents a model of second-position cliticization which follows essentially the same idea.

<sup>15</sup> Contrary to standard convention, the tableaux in this study do not show dotted lines between columns of unrankable constraints. For example, in (15) ALIGN and SUFFIX cannot be ranked using the data given. In addition, many Optimality-theoretic studies use a double vertical line to show a crucial ranking between two constraints. This convention is not used here. These are mere notational differences. The algorithm itself is the same as in standard Optimality Theory (e.g., Prince and Smolensky 1993: 34-36/2002: 34-37). Incidentally, not all infixing languages can be accounted for by using syllabic well-formedness. Blevins (1999) discussed crucial data from Letinese (Austronesian, spoken in Indonesia). See also Kaufman (2003) for discussion.



## 2.2. Two Existing Approaches to Positioning Peninitial Clitics

Having introduced the theory, I now show how two studies have approached second-position clitics in this framework. Although the assumptions underlying these works are different, both studies use pairs of constraints similar to those discussed in the preceding subsection.

First, Anderson (1996) builds on his previous work which assumes that clitics are affixed to an entire phrase. As such, clitics are not elements moved around by the syntax. Instead, they are semantic features handed to the morphology by the syntax and spelled out in certain positions of the phrasal domain. Recall that the pronominal and auxiliary clitics in the Serbo-Croatian examples, as in (1a–b) above—*mi* ‘me<sub>DAT</sub>’ and *je* ‘is’—indicate that this clause has a first-person indirect object and a third-person subject (both singular). These features are pronounced following the initial element (either PrWd, *taj* ‘that’ or syntactic maximal projection *taj pesnik* ‘that poet’) of the clause. Anderson proposes two constraints that yield a second-position effect similar in many respects to how Prince and Smolensky (1993/2002) approach Tagalog infixation. As a phrasal affix, the clitic appears not after the first segment of the word, but rather follows the first element of the clause. Anderson’s EDGEMOST constraint requires a clitic to be at the leading edge of the domain, while his NON-INITIAL family of constraints prohibits clitics from being exactly at the beginning of the domain. The second-position effect is thus achieved by ranking NON-INITIAL » EDGEMOST. A phrasal clitic in second position—e.g., [PrWd c1 PrWd PrWd ...]—satisfies NON-INITIAL, while the same clause with a clitic at the beginning of the domain—namely, \*[c1 PrWd PrWd PrWd ...]—does not. Furthermore, EDGEMOST is a gradient constraint, meaning that positioning the clitic farther from the edge of the domain—for example, \*[PrWd PrWd c1 PrWd ...]—incurs even greater violation of this constraint. (By contrast, Anderson’s NON-INITIAL is a categorical constraint, meaning that a given candidate either completely violates or entirely satisfies this constraint.)

Anderson’s approach to second-position cliticization is akin to Prince and Smolensky’s model of Tagalog infixation in the following respects. First, his EDGEMOST resembles their CONTIGUITY in the sense that both constraints ensure that the affix appears external to the base (phrase or stem), respectively. Additionally, his NON-INITIAL constraint serves a similar purpose to SYLLABLE in keeping the morpheme from being at the leading edge. These similarities in Anderson’s approach between infixation and second-position cliticization are

not surprising, considering that Anderson (1993: 76–80; 1996: 168) observes many more parallels between clitics and normal affixes. One crucial difference, however, which Anderson (1996: 183) admits, is that whereas Prince and Smolensky's syllable-structure constraints are independently motivated (by the Jakobsonian syllable typology), his NON-INITIAL constraint is stipulative. I return to this issue in the following subsection, where I propose that whereas NON-INITIAL is warranted to account for head-adjacent clitics, a different constraint is required for the positioning of phrasal clitics.

From a very different standpoint, Franks (2000) sketches a decidedly syntactic model of Slavic clitics—still within the overall Optimality framework—in which the syntax remains inviolably and derivationally Chomskyan and is part of *Gen*, whereas the violable morphological and phonological constraints are within *Eval*.<sup>16</sup> Following work by Pesetsky (1997; 1998), Franks proposes that the syntax generates a single output with some elements, such as clitics, multiply copied in the structure; the mapping to Phonetic Form (PF) is then adjudicated by violable morphological and phonological constraints. Two of his proposed constraints are relevant to the phrasal clitics: The first, which Franks (2000: 36) labels FAITHFULNESS (but defines quite differently from mainstream Optimality Theory), requires PF utterances to correspond exactly to the output of the derivational syntax (= *Gen*). His syntactic model assumes a morphosyntactic motivation for clitics' movement to the front of the clause; the end result of this movement (with multiple copies left behind in most cases), according to Franks, is the sole output of the syntax. If any element in PF—say, a clitic—appears in a position at variance with its location(s) in the syntactic product, FAITHFULNESS is violated. In addition, Franks proposes the constraint PROSODIC SUPPORT, which requires every element pronounced at PF to be “prosodically parsed” (Franks 2000: 29); no additional definition of this constraint is provided. However, while discussing the positioning of *li* (the peninitial suffixal yes/no clitic in Bulgarian), Franks (2000: 37) implies that the lexicon designates particular clitics as prosodically suffixal. PROSODIC SUPPORT, at least in part, thus requires clitics to have a preceding PrWd to which they can be suffixed.

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<sup>16</sup> Franks (1998; 1999) and Franks and King (2000: 340–48) also discuss the PROSODIC SUPPORT and FAITHFULNESS constraints to some extent. For ease of exposition, in the main text I refer to the most complete discussion of this model (that of Franks 2000).

The main difference between these two authors' approaches, aside from their divergent assumptions about what clitics fundamentally are, lies in the conception and definition of their constraints. Anderson defines *EDGEMOST* and *NON-INITIAL* quite concisely but does not provide conceptual motivation for them. On the other hand, the constraints that Franks proposes offer insights into why such constraints might be motivated but are not sufficiently defined. For example, his *FAITHFULNESS* constraint measures how accurately a clitic's position matches the output of the syntax. In my view the syntactic movement in his approach is epiphenomenal to the semantic motivation for this clause-initial positioning. Similarly, his *PROSODIC SUPPORT* is a catch-all constraint restricting clitics from various positions.<sup>17</sup> The following subsection refines some of these ideas into more primitive Optimality-theoretic constraints.

### 2.3. Proposed Constraints

I now build on the Optimality-theoretic models proposed by Anderson and Franks, discussed in the preceding subsection. Most significantly, the constraints proposed here account not only for second-position clitics, but for the entire attested range of phrasal clitics (discussed in §1.2 above).

The primary constraints to be used in this study are as follows. Two constraints are similar in function to the pairs of constraints proposed by each of Anderson and Franks. I also harness a third constraint that extends the typology to the other types of phrasal clitics listed in (10a–d) above.

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<sup>17</sup> *PROSODIC SUPPORT* is used as a umbrella constraint to describe various requirements prohibiting clitics from being initial. For example, on the one hand Franks (2000: 28–29) and Franks and King (2000: 343–46, 348) invoke this constraint to require that clausal clitics in Serbo-Croatian follow a PrWd. On the other hand, Franks (2000: 37) and Franks and King (2000: 341) use *PROSODIC SUPPORT* to account for a similar but formally distinct requirement in Bulgarian prohibiting certain initial verb-adjacent clitics. Below (in §2.3), I show how these two uses correspond respectively to my *SUFFIX* and Anderson's *NON-INITIAL*.

- (13) a. SCOPE: Elements precede the domain over which they take scope.  
 b. ALIGN(*clause* | *L*, *intonation phrase* | *L*): A clause's leading edge must coincide with the leading edge of an intonation phrase.  
 c. SUFFIX: Morphemes marked as suffixes must follow some PrWd.

I justify each of (13a–c) both theoretically and empirically as follows, beginning with the two constraints adapted from the extant literature.

First, the SCOPE constraint in (13a) requires that the semantic property of scope be realized overtly in the utterance.<sup>18</sup> In the syntactic Optimality literature, Legendre et al. (1995) and others have proposed similar constraints. I should clarify, however, that my definition of scope is broader than the traditional generative sense (namely, the domain over which an operator—such as negation—has observable syntactic effects). Rather, I mean here some morphosyntactic property that is relevant to an entire phrasal domain—e.g., as proposed by Toman (1986: 132). Perhaps because of a tendency for syntactic movement to be toward the beginning of the clause, with so-called rightward movement ruled out entirely by Kayne (1994), the only way for an element inside (i.e., not at one of the edges) of a phrase to take scope over that domain is to move to the **initial** edge.<sup>19</sup> Moreover, SCOPE—similar to the EDGEMOST and FAITHFULNESS constraints discussed above—is a gradient constraint, meaning that a clitic in second position, while less favorable than being in initial position, is still preferable to being in a subsequent position in the domain.<sup>20</sup> My

<sup>18</sup> I arbitrarily restrict the breadth of the current study to clitics with **phrasal** positioning domains, excluding head-adjacent clitics. Because scope is just as relevant to the latter kind, a few words are in order here. I assume (cf. also Anderson 1993: 81) that the reason why clitics are positioned either phrasally or adjacent to the head is so that the clitics' features may percolate to the phrasal node. (See, e.g., Di Sciullo and Williams 1987.) That is, once a clitic is adjacent to the head, those features also belong to the entire phrase.

<sup>19</sup> I do not necessarily espouse Kayne's view here. At the very least, movement to check features or take scope appears to be exclusively leftward. In this connection, a reviewer has asked why verb-final languages, such as Japanese, allow other elements such as negation to be at the **right** periphery. Without having worked on Japanese, my sense is that if such elements are clitics, they are certainly not **phrasal** clitics, but head-adjacent.

SCOPE (unlike Anderson's EDGEMOST), thus follows Franks 2000 in the sense that there is some independent motivation for the fronting of clitics.

Next, *ALIGN*(*clause* | *L*, *intonation phrase* | *L*) specifies one aspect of the interface between the syntax and prosody. The *ALIGN* family of constraints, proposed by Prince and Smolensky (1993/2002) and elaborated upon by McCarthy and Prince (1993/1994), is widely used in the Optimality framework; in principle, a language can require any morphosyntactic category's (left or right) edge to coincide with the (left or right) edge of a particular prosodic category, or vice versa. Hereafter abbreviated as *ALIGN*, (13b) requires that a clause's leading edge be co-extensive with that of an intonation phrase. Progovac (2000) provides extensive empirical evidence for such a constraint. She argues against Bošković (2000, expanded into his 2001: 7-96), one of whose main arguments is that the positioning of clitics in Serbo-Croatian is second position within an intonation phrase. Progovac (2000: 254) counters that positioning within such a prosodic domain is merely epiphenomenal to a requirement identical in the relevant respects to (13b): "A kernel clause (the highest extended projection of V) forms an intonation unit. Anything preceding the kernel clause is set off by comma intonation." That is, such clitics are in second position of their clause, and each new clause must be pronounced as a separate intonation phrase.<sup>21</sup>

Finally, *SUFFIX* requires morpholexical subcategorization to be parsed prosodically (perhaps along the lines of Zec and Inkelas 1990: 369). This constraint is similar in spirit to the position taken by Franks (2000: 37) regarding his constraint *PROSODIC SUPPORT*.<sup>22</sup> In addition,

<sup>20</sup> One implication of the wording in (13a) is that there are no penultimate clitics. The only way for a phrasal clitic to interrupt the phrase it takes scope over is to be peninitial. (Cf. also Kayne 1994: 50.)

<sup>21</sup> Though preventing cross-boundary suffixation is its practical use for the current study, *ALIGN* as defined in (13b) is not limited just to this task. More generally, this constraint requires all clauses to begin separate intonation contours. Based on my own observations, this seems to hold for **all** matrix clauses and subordinated complementizer phrases in Russian (the one language discussed below in which *ALIGN* is satisfied categorically); though there is no lengthy pause at every new clause, a new intonation contour is begun.

<sup>22</sup> Alternatively, as suggested by Anderson (1993: 75), the relevant constraint may instead require that a clitic adhere overall to a language's default direction of affixation (leftward or rightward). In principle, I am willing to accept that some affixes (including clitics) are subject to a more language-wide parameter of directionality.

SUFFIX does much of the same work as Anderson's NON-INITIAL. Crucially, however, these two constraints require different kinds of non-initial position; SUFFIX entails that the clitic follow at least one PrWd (namely, the Wackernagel effect), whereas Anderson's NON-INITIAL merely prohibits absolute initial position in the domain (the Tobler-Mussafia effect). To satisfy verb-adjacent clitics' non-initiality requirement in Bulgarian, on the other hand, there need not be a preceding full PrWd; an unstressed conjunction will do: *I si mu (gi) vzel parite*. 'AND you<sub>MASC</sub> have taken his money (I hear).' Cf. (3a–b) above. Hauge (1976/1999) discusses this property in some detail. Moreover, both constraints appear to be necessary. In a later paper, Anderson (2000: 317–19) uses Warlpiri data (discussed below in §4.2) to show that prosodic requirements in some cases carry out the non-initiality task. Other phenomena, he maintains, require his more general, albeit stipulative, NON-INITIAL constraint. Such cases include prosodically heavy clitics which have no need to be suffixed to any PrWd as such. Anderson (1996: 167; 2000: 305) provides Tagalog *tayo* 'we<sub>INCLUSIVE.NOM</sub>' and Italian *loro* 'them<sub>DAT</sub>' as examples. Significantly, both of these clitics are of the head-adjacent type;<sup>23</sup> they are not (by my definition in §1.1 above) phrasal clitics.<sup>24</sup> Thus, it would appear that phrasal (i.e.,

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Similarly, an anonymous reviewer has suggested that the constraint in (13c) could be reduced to AFFIX plus another constraint (perhaps along the lines of Noyer 1994, discussed below in §5.1) dictating directionality of affixation; while the current study does not weigh in on this issue, other phenomena might require this separation. For the current purposes, the perhaps non-primitive constraint SUFFIX is sufficient.

<sup>23</sup> Baerman and Billings (1998: 24–25) and Rudin et al. (1999: 572–73) and the references cited by them report instances of verbal clitics in Balkan Slavic which, under certain circumstances, are stressed. However, these are head-adjacent clitics. As such, they are subject not to SUFFIX but to Anderson's NON-INITIAL. I am not aware of any unambiguously phrasal clitics that resort to being stressed when stranded in the same ways.

<sup>24</sup> That pronominal clitics in Italian are verb-adjacent is not controversial. In Tagalog, on the other hand, because the verb tends to appear early in the clause, the vast majority of clausal clitics are both peninitial and verb-adjacent. Consequently, all studies of Tagalog clitics that I know of assume that this language's pronominal clitics are in second position (e.g., Schachter and Otnes 1972: 183–93 and Kroeger 1990/1993: 119–23, both of which very thoroughly list the relevant data). Examples of pronominal clitics below include *sila* 3PL.NOM in (i) and (ii) of this footnote, as well as *ka* 2.NOM and *ko* 2.GEN in (19b–c); *ko* has lower, relative-clause scope. Instead, Billings and Konopasky (2002) propose that Tagalog pronominal clitics are head-adjacent, similar in numerous respects to pronominal and auxiliary clitics specifically in Bulgarian. This is not to say that all clausal-scope clitics in Tagalog are verb-adjacent. The yes/no-interrogative *ba* (again, similarly to Bulgarian *li*) and certain other so-called particle clitics can appear

second-position) clitics are formally distinguished from head-adjacent clitics in being subject to SUFFIX and NON-INITIAL, respectively. It remains to be seen, then, whether there exists a phrasal clitic subject to the NON-INITIAL constraint alone.

As the remaining three sections of this paper show, it is impossible to satisfy all three of these constraints simultaneously; a phrasal clitic with clausal scope that is lexically encoded as a suffix must do one of the following: (A) give up its initial position and be suffixed to some other PrWd of the same domain, (B) become suffixed to a PrWd outside its own domain (but be in the required scope position), or (C) give up its suffix-hood (while remaining phrase-initial). The rest of this study investigates each of these strategies, hereafter referred to as Strategies A through C.

### 3. The Wackernagel Strategy

This section looks at Strategy A: violating SCOPE in order to satisfy ALIGN and SUFFIX. There are two subtypes of this strategy, depending on how the first element of the phrasal domain is defined. I begin with the Wackernagel position as strictly defined—i.e., following the first PrWd of the phrase—using Russian data. Then I briefly consider clitics positioned after the first syntactic phrase, as in Czech, as well as the combination of the two substrategies, as in the Serbo-Croatian examples above in (1a–b).

#### 3.1. Wackernagel's Position as Originally Defined: *li* in Russian

The yes/no-question marker in Russian, *li*, is the clearest example of a Wackernagel clitic. It invariably follows the first PrWd of its intonation

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in second position, crucially separated from the verb, as examples (i) and (ii) show (from Schachter and Otnes 1972: 429–30). I have added all caps in the translations to reflect focus on that constituent.

- (i) Bukas    BA    ng    gabi='y                    *sasayaw*    sila        ng    pandanggo?  
 tomorrow Q    GEN    night=INVERSION    will.dance    3PL.NOM    GEN    fandango  
 'Will they dance the fandango TOMORROW NIGHT?'
- (ii) Bukas    DIN    ng    gabi='y                    *sasayaw*    sila        ng  
 tomorrow also GEN    night=INVERSION    will.dance    3PL.NOM    GEN  
 pandanggo.  
 fandango  
 'TOMORROW NIGHT too they will dance the fandango.'

phrase.<sup>25</sup> Following a brief review of the relevant literature, this subsection demonstrates the adequacy of these constraints in accounting for *li*.

Rudnitskaya (2000) investigates the syntactic and prosodic properties of *li* in Russian and concludes that while this clitic's positioning can be accounted for using syntactic mechanisms in most cases, a few environments elude an entirely syntactic analysis. Following work of Halpern (1992/1995), Rudnitskaya (2000) resorts to prosodic inversion in those cases. Aside from Rudnitskaya's paper, little has been written assessing both the syntax and prosody of *li* in Russian. Franks (2000: 11–12) briefly summarizes the key interface issues. (See also Franks and King 2000: 188–90 for similar discussion.) The semantic-scope properties of *li* as a focus and yes/no-interrogative operator are also treated at length by Brown (1996/1999), Brown and Franks (1995), King (1994), and Rudin et al. (1997). The most comprehensive book-length work on *li* in Russian, as well as in the rest of Slavic overall, is by Restan (1972). For the current study's purposes, it is sufficient to characterize *li* in Russian as invariably positioned after the initial PrWd of its own clause.

Example (14) illustrates Russian *li* within the model proposed here. For clarity, the PrWd and phrasal domain containing *li* is shown using curly braces and square brackets, respectively, in the word glosses. In addition, word stress (one per PrWd) is indicated with acute accents.

---

<sup>25</sup>Valentina Zaitseva (p.c.) suggests that *li* in Russian can follow an entire clause (i.e., consisting of more than one PrWd). Such *li* questions express a so-called echo question, in which the speaker is perhaps confirming what the last speaker just said. Alas, I have been unable to find confirmation of echo *li* in Russian. Bošković (2001: 207, incl. fn. 26) and Rudin et al. (1999: 543–44) point out such data for Bulgarian. Indeed, Restan (1969/1972: 601 fn. 1), comparing echo yes/no questions—from *Anna Karenina*—in these languages, consistently reports *li* (in one example, preceded by an entire clause) in Bulgarian translating non-*li* questions in the original Russian. Regardless of their possible existence in Russian, echo-*li* questions are irrelevant here.



(14) The three strategies illustrated using Russian *li*

*Strategy A:*

Violate SCOPE while satisfying the other two constraints

- a. Ne znáju, bylá =LI oná tám.  
not know<sub>1</sub> [{ was<sub>FEM</sub> Q} she<sub>NOM</sub> there]
- b. \*Ne znáju, bylá oná =LI tám.  
not know<sub>1</sub> [ was<sub>FEM</sub> {she<sub>NOM</sub> Q} there]
- c. \*Ne znáju, bylá oná tám =LI.  
not know<sub>1</sub> [ was<sub>FEM</sub> she<sub>NOM</sub> {there Q}]

*Strategy B:*

Violate ALIGN while satisfying the other two constraints

- d. \*Ne znáju =LI bylá oná tám.  
{not know [Q} was<sub>FEM</sub> she<sub>NOM</sub> there]

*Strategy C:*






Violate SUFFIX while satisfying the other two constraints

- e. \*Ne znáju, LI= bylá oná tám.  
not know<sub>1</sub> [{ Q was<sub>FEM</sub>} she<sub>NOM</sub> there]
- 'I don't know whether she was there.'

Examples (14a–c) represent three possible positions for *li* within Strategy A. That is to say, *li* is positioned after each of its own clause's three PrWds.<sup>26</sup>

The following tableau formalizes the best-formedness of the attested form, (15a), to the exclusion of the other four forms. Because of horizontal-space limitations, the data themselves are not repeated in the tableaux; the examples in (14a–e) correspond to the notations in (15a–e), respectively.

<sup>26</sup> Brown (1996/1999: 98 fn. 6, summarizing statistics in Restan 1969/1972) reports that the distribution of *li* in spoken Russian is limited (e.g., to embedded clauses). Nonetheless, Russian speakers have sharp and surprisingly uniform judgments about *li*'s positioning.

(15) Russian	ALIGN	SUFFIX	SCOPE
☞ a. [PrWd [PrWd= <b>cl</b> PrWd PrWd] ]			* 
b. [PrWd [PrWd PrWd= <b>cl</b> PrWd] ]			* *! 
c. [PrWd [PrWd PrWd PrWd= <b>cl</b> ] ]			* *! * 
d. [PrWd [= <b>cl</b> PrWd PrWd PrWd] ]	*!		
e. [PrWd [ <b>cl</b> = PrWd PrWd PrWd] ]		*!	

Candidates (15d–e) are both eliminated by the two superordinate constraints: (15d) violates ALIGN because there is suffixation (i.e., cliticization) across a clausal boundary, while (15e) violates SUFFIX because the clitic is prefixed contrary to its suffixal lexical encoding. The remaining candidates, (15a–c), each violate SCOPE, but to varying degrees: (15a) violates this constraint only once, whereas (15b–c) each violate SCOPE more than once, making (15a) the optimal candidate. Because neither ALIGN nor SUFFIX is violated by *li* constructions, it remains impossible to conclusively rank these two constraints relative to each other. However, each of ALIGN and SUFFIX dominates SCOPE. In Optimality-theoretic notation this underspecified hierarchy is represented as in (16):

(16) *Final ranking for Russian*: {ALIGN / SUFFIX} » SCOPE

This is one of several rankings possible for these constraints. Teasing apart the relative ranking of ALIGN and SUFFIX is revisited in section 5 below.

To summarize briefly, SCOPE is violated in Russian in order to adhere to the other two superordinate constraints. This does not mean, however, that SCOPE plays no role in determining the optimal form. Although violated by the optimal candidate, (15a), SCOPE nonetheless ensures that *li*'s position is otherwise as close as possible to the front of the clause.

### 3.2. Two Different Types of Second Position

Having laid out how this model generates the second position, I now discuss how a variation on the Wackernagel position is handled by this system. Here I draw extensively from proposals by Anderson (1996).



To summarize this subsection, then, I have sketched how Anderson's INTEGRITY family of constraints can be used to specify the exact type of second position used by a language. Below (in §5.2) I use a variation of this constraint to capture another of the attested phrasal-clitic types.

Overall, section 3 has shown that peninitial positioning is handled by satisfying SUFFIX and ALIGN at the expense of violating SCOPE. Moreover, different kinds of second position—following either the first PrWd or the first syntactic phrase—are handled by the INTEGRITY family of constraints.

#### 4. Another Strategy: Violate ALIGN

Strategy B, violating ALIGN in order to satisfy SCOPE and SUFFIX, is employed by Tagalog and Warlpiri. I discuss these languages in turn.

##### 4.1 Tagalog's Strictly Initial Suffixal =ng

The first language, Tagalog (already discussed, in a different connection, in §2.1 above), marks relative clauses as well as numerous modification constructions using the clitic =ng. Phonetically, this clitic consists of a velar nasal [ŋ], which is spelled here as =ng.

Kroeger (1993) and Schachter and Otnes (1972) both discuss other uses of =ng under the heading "linkers"; Dell (1981), who investigates several syntactic phenomena which use this clitic, calls this it a "ligature". I analyze only its use in relative clauses in order to avoid complications of the following sort: (i) There are two morphologically distinct variants of =ng; one has the *na=* allomorph (as mentioned below), while the other (not discussed further here) has a zero allomorph. (ii) Numerous types of modification, including simple adjective-noun combinations, use *na=*/*=ng*.

A typical example in Tagalog of this clitic, placed within the same three-strategy paradigm as the Russian example above in (14), is shown in (18):

(18) The three strategies illustrated using Tagalog data

*Strategy A:*

Violate SCOPE while satisfying the other two constraints

- a. \*Umuwí ang báta umípon =NG ng manggá.<sup>27</sup>  
 went.home NOM=child [{ collected who} GEN=mango]
- b. \*Umuwí ang báta umípon ng manggá =NG.  
 went.home NOM=child [collected {GEN=mango who}]

*Strategy B:*

Violate ALIGN while satisfying the other two constraints

- c. Umuwí ang báta =NG umípon ng manggá.  
 went.home {NOM=child [who] collected GEN=mango]

*Strategy C:*

Violate SUFFIX while satisfying the other two constraints

- d. \*Umuwí ang báta NG= umípon ng manggá.<sup>28</sup>  
 went.home NOM=child [{ who collected} GEN=mango]
- ‘The child who collected some mangoes went home.’

In the attested example, (18c), the clitic’s prosodic polarity—towards the **preceding** word—differs from its phrasal domain—the **following** clause.<sup>29</sup>

<sup>27</sup> As the discussion below clarifies, if (18a) were grammatical, there would be sandhi between =ng and its /n/-final host: \*[umíponŋ]. That is, [n] is lost when [ŋ] is added. This is illustrated with a grammatical example in (19b) below: *tindahan=ng* becomes [tindahaŋ].

<sup>28</sup> The unacceptability of (18d) is not due to the initial velar nasal [ŋ] (ruled out, e.g., in English). For example, *NGumiNGiti* ‘smiling’ contains word- and syllable-initial [ŋ].

<sup>29</sup> Unlike Russian *li*, this Tagalog clitic is written together with the preceding word. Somewhat exceptionally, the standard orthography spells another element (the prefixal GEN-case marker for non-name nominal expressions) as *ng* even though it is pronounced as [naŋ]; that element is spelled as *ng* (without an equals sign) in (18). Confusing matters even more, there is also an adverbial prefixal clitic, spelled as *nang* and pronounced [naŋ], which is shown in (22) and (23) below. My use of the equals sign—in part, to distinguish these two homographous *ng* clitics—is merely a notational convenience. I should also clarify that this symbol does not indicate a special post-lexical status as in some of the clitic literature. Elsewhere in this study, however, especially in the tableaux, the equals sign marks direction of prosodic affiliation (i.e., to the preceding or following PrWd).

I assume a conventional, generative phrase structure for relative clauses, in which the relative marker is syntactically affiliated with the clause it introduces. Note that Kayne (1994) challenges the conventional wisdom, proposing that the relative marker is outside of the relative clause. Indeed, yet a third proposal has been made, specifically with regard to this clitic: Kroeger (1990/1993: 149), proposes the tree structure in (19a), adding that the order of N' elements may be reversed, as in (19b–c):

- (19) a.
- ```

graph TD
    NP --> case
    NP --> N_prime[N']
    NP --> specifier
    N_prime --> N
    N_prime --> linker
    N_prime --> XP
    N --> ng["=ng"]
    XP --> NP_GEN[NPGEN]
  
```
- b. Pumunta ka sa *tindahan* =NG  
 go 2.NOM DAT store linker  
*pinuntahan ko.*  
 PERF-go-DV 1.GEN  
 'Go to the store that I went to.'
- c. Pumunta ka sa *pinuntahan* ko =NG  
 go 2.NOM DAT PERF-go-DV 1.GEN linker  
*tindahan.*  
 store (Tagalog, from Kroeger 1990/1993:149–50)

Although the italicized parts of (19b–c) can appear in either order and the two orders are glossed the same by Kroeger (1990/1993: 150), there is a subtle difference. I take (19b) to be the neutral order, while (19c) is derived and means something like 'Go to the place where I went which is a store.' Note that the argument structure of the two orders is the same. This subtle difference in meaning is akin to differing information structure.<sup>30</sup> Further evidence for the derived status of (19c) is that certain types of relative clauses cannot take the noun-final order.

<sup>30</sup> Deterding and Poedjosoedarmo (2001: 219–20) describe the N-linker-XP order or its reverse: "The choice between the two orders depends on which word represents the newest and most important information. The newest information would lie at the end of the phrase. In English, this information would be conveyed by stressing one word." Aldridge (2003: 632, esp. fn 2) also addresses this issue.

For example, non-restrictive relative clauses, exemplified below in (22), require the noun-initial order (Schachter and Otnes 1972: 131). Dell (1981) also discusses free (or headless) relative clauses in this regard; namely, when there is no noun, the rest of the relative clause appears without the *=ng* clitic. Thus, I assume a conventional relative-clause structure: [<sub>N</sub> noun [<sub>CP</sub> *=ng* IP ]].

Tableau (20), using the same three constraints, but ranking ALIGN below the other two, formalizes this clitic's positioning in Tagalog. Candidates (20a–d) correspond to examples (18a–d), respectively:

| (20) Tagalog                               | SUFFIX | SCOPE | ALIGN |
|--------------------------------------------|--------|-------|-------|
| a. [... PrWd [PrWd= <b>cl</b> PrWd ] ]     |        | *!    |       |
| b. [... PrWd [PrWd PrWd= <b>cl</b> ] ]     |        | *! *  |       |
| ☞ c. [... PrWd [=b <b>cl</b> PrWd PrWd ] ] |        |       | *     |
| d. [... PrWd [ <b>cl</b> =PrWd PrWd ] ]    | *!     |       |       |

The unattested candidates in (20) correspond to the other prosodic-hosting possibilities. First, (20a–b) show *=ng* as a suffix, but following either one or two words in its clause; this violates SCOPE once and twice, respectively. Next, in (20c–d), the clitic is in the proper scope position. However, in (20d) it is **prefixal** (in violation of SUFFIX), while (20c) shows this clitic hosted prosodically by a word outside its clause (violating the ALIGN constraint). Tableau (20) thus establishes that the SUFFIX and SCOPE constraints each dominate ALIGN in the Tagalog hierarchy, as (21) shows:

(21) *Final ranking for Tagalog*: {SUFFIX / SCOPE} » ALIGN

Unfortunately for the current study, SUFFIX and SCOPE cannot be ranked relative to each other using tableau (20), because the attested candidate does not violate either of these two constraints. That is to say, it is possible only to rank one of the constraints (ALIGN) below the other two. Recall that a similarly incomplete ranking obtained for the Russian data above in (16).

One environment that could be used to tease apart SUFFIX and SCOPE is an utterance-initial relative clause—i.e., where there is no preceding PrWd for *=ng* to be suffixed to. Unfortunately for the current study, it is impossible to test this idea, because *=ng* has an allo-

morph for exactly such environments; *na=* is prosodically a prefix which appears either if (i) there is no connected speech (preceding material without an intonation-phrase break) before the clause or (ii) the preceding PrWd ends in a consonant that is neither /n/ nor a glottal stop (Schachter and Otones 1972: 118).<sup>31</sup>

Schachter and Otones (1972: 131–32) illustrate this allomorphy of *=ng* and *na=* using the data in (22) and (23). The choice depends on whether there is preceding connected speech ending in the necessary segment.

(22) Nonrestrictive relative clause:

a. *Without preceding vowel, glottal stop, or /n/:*

ang mga mag-aarál, NA= nagtrabáho nang masíkap,  
NOM=PL=student [{ who worked } ADV=diligent]

b. *With preceding vowel, glottal stop, or /n/:*

ang mga estudyánt, NA= nagtrabáho nang masíkap,  
NOM=PL=student [{ who worked } ADV=diligent]  
'the students, who worked hard,'

(23) Restrictive relative clause:

a. *Without preceding vowel, glottal stop, or /n/:*

ang mga mag-aarál NA= nagtrabáho nang masíkap  
NOM=PL=student [{ who worked } ADV=diligent]

b. *With preceding vowel, glottal stop, or /n/:*

ang mga estudyánte =NG nagtrabáho nang masíkap  
{NOM=PL=student [ who } worked ADV=diligent]  
'the students who worked hard'

Examples (22a–b) show that the *na=* allomorph is used if the clitic's clause is preceded by a pause, indicated orthographically with a comma (opportunistically, in both Tagalog and English) without regard to what the preceding, extra-clausal word's final segment may be. As (23a–b) show, however, if there is no pause preceding the relative clause, then the preceding segment determines the allomorph: *na=* fol-

<sup>31</sup> Within a written word, sequences of vowel letters are pronounced with a glottal stop. However, word-final glottal stops are almost never indicated in everyday written Tagalog.



lows consonants (except for /n/ and a glottal stop), while =ng follows any other segment including vowels. The two words for ‘student’—the native *mag-aarál* and the Spanish loan word *estudyánte*—conveniently provide a minimal pair.

In short, the two allomorphs appear to be in complementary distribution. In addition, =ng is a suffix, while na= is a prefix. If the right junctural environment exists, then =ng is used; otherwise, na= is realized. For this reason, it is impossible to determine the ranking of ALIGN relative to the other two constraints using just the clitic allomorph =ng.

#### 4.2. Monosyllabic Clausal Clitics in Warlpiri

Fortunately for the current purposes, another language patterns like Tagalog, but without the complications arising from allomorphy. At first blush, Warlpiri (Pama-Nyungan, spoken in Northern Territory, Australia) appears to pattern like Russian, as the following example shows:

- (24) 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, from Anderson 1993: 82; brackets and braces added)

The three peninitial clitics in this example represent the three clitic slots in the Warlpiri clause: auxiliary, subject-agreement, and object-agreement.<sup>32</sup>

<sup>32</sup> There are a few differences not directly relevant to the main constraints in (13a–c) above. First, Russian *li* can also appear in a matrix clause, although not as frequently. In such an environment—as in subordinate clauses—*li* follows the first PrWd: *Bylá LI oná tám?* ‘Was she there?’ Next, the type of second position exercised by auxiliaries in Warlpiri is following the first syntactic phrase (Simpson 1983/1991: 265), as in Czech. In addition, PrWd stress is initial in Warlpiri and therefore not shown. Finally, the only clitic of direct relevance to the current discussion is the auxiliary; the subject- and object-agreement markers immediately follow the auxiliary clitic whether it is initial or peninitial. The position of this clitic cluster depends on the prosodic weight only of the auxiliary. Some auxiliaries in Warlpiri are disyllabic. As such they can function as full PrWds. (See Anderson 2000: 318 for discussion.) I limit the discussion of Warlpiri to smaller-than-disyllabic auxiliaries because these are the clitics that are clearly required to find a preceding prosodic host.

Superficially, the clitics in (24) resemble *li* in Russian; the clitics in this example follow the first word of their clause. That is, the ranking for Russian, {ALIGN / SUFFIX } » SCOPE [= (16) above], would also account for the Warlpiri example in (24). Tableau (25) formalizes the selection of the clitic's position and prosodic polarity when there is no preceding connected speech; (24) corresponds to (25a):

| (25) Warlpiri (no preceding connected speech) | SUFFIX | SCOPE | ALIGN |
|-----------------------------------------------|--------|-------|-------|
| ☞ a. [ PrWd= <b>cl</b> PrWd PrWd ]            |        | *     |       |
| b. [ PrWd PrWd= <b>cl</b> PrWd ]              |        | * *!  |       |
| c. [ PrWd PrWd PrWd= <b>cl</b> ]              |        | * *!  | *     |
| d. [= <b>cl</b> PrWd PrWd PrWd ]              | *!     |       |       |
| e. [ <b>cl</b> =PrWd PrWd PrWd ]              | *!     |       |       |

Crucial to this tableau is the assumption that the clitic does not prosodically adjoin itself to any word at all in (25d). Hence, it violates SUFFIX.<sup>33</sup> As such, tableau (25) shows only that SUFFIX » SCOPE.<sup>34</sup> Since ALIGN is not violated by any of the candidates in (25), this constraint cannot be ranked relative to either of the other two constraints using the example in (24). Thus, the reason why (24) looks similar to Russian is that, as tableaux (15) and (25) establish, in both languages SUFFIX dominates SCOPE.

As in Tagalog, however, the Warlpiri clitics can appear at the front of their clause: Simpson (1983/1991: 69) writes that “in connected speech, monosyllabic AUX bases [such as =*ka*/L.A.B.] are found sentence initially, because the last element of the previous sentence provides a phonological host for the clitics.” Although the preceding excerpt is unambiguous, neither Simpson (1983/1991) nor Anderson (1993; 2000) and Hock (1996), who also discuss this phenomenon, lists

<sup>33</sup> Alternatively, the unprosodizable clitic in (25d) violates *Gen*, the grammar's repository of absolutes (Prince and Smolensky 1993/2002). In such a case this candidate would not even get to be considered by *Eval*. See also footnote 44 below.

<sup>34</sup> In tableaux (25) and (26) the gray shading reflects the combined rankings of both these tableaux.

examples of this type; nor have I been able to find data of this kind.<sup>35</sup> Presumably, such an example resembles candidate (26d):

| (26) Warlpiri ( <i>with</i> connected speech) | SUFFIX | SCOPE  | ALIGN |
|-----------------------------------------------|--------|--------|-------|
| a. ... [ <i>PrWd=cl PrWd PrWd</i> ]           |        | *!     |       |
| b. ... [ <i>PrWd PrWd=cl PrWd</i> ]           |        | *! *   |       |
| c. ... [ <i>PrWd PrWd PrWd=cl</i> ]           |        | *! * * |       |
| ☞ d. ... [ =cl <i>PrWd PrWd PrWd</i> ]        |        |        | *     |
| e. ... [ cl= <i>PrWd PrWd PrWd</i> ]          | *!     |        |       |

Tableau (26), by itself, proves that ALIGN is outranked by both of SUFFIX and SCOPE—namely, {SUFFIX / SCOPE} » ALIGN. This is exactly the ranking determined for Tagalog in (21) above. Combining the results of tableaux (25) and (26) results in the fully differentiated ranking in (27):

(27) *Final ranking for Warlpiri*: SUFFIX » SCOPE » ALIGN

Whereas a full ranking of all three constraints is impossible for the other two languages, for the first time in this study a complete ranking is possible for Warlpiri.

To summarize section 4, then, there exist languages in which ALIGN is violated in order to satisfy the other two constraints. Thus, Strategy B is clearly attested. What still remains to be demonstrated is whether any language utilizes Strategy C. This issue is addressed in the next section.

<sup>35</sup> Other linguists who work on Warlpiri confirm (p.c.) that such data exist. Jane Simpson (also p.c., via an anonymous reviewer) adds that monosyllabic auxiliary clitics are not readily found in clause-initial position. The environment sketched in (25d) is only “occasionally found” (Simpson’s emphasis). To be sure, a host of other necessary factors may be required in order for the environment in (25d) to result. What is important for these purposes is that violating the ALIGN constraint is possible at all in Warlpiri. The significance of this finding has also been observed by Hock (1996: 245), who also cites work by Vogel (1986) on *r*-linking across clause boundaries in British varieties of English.

## 5. Assessing Strategy C and Other Implications of the Typology

This final section explores some consequences of the constraints proposed in this study. To begin, because SUFFIX is not violated by any of the data discussed so far, the viability of this constraint is assessed using indirect evidence from three other languages. Next, I demonstrate this typology's adequacy in generating some of the clitic types not discussed in detail so far: invariably phrase-initial or -final clitics. Finally, I explore the factorial typology predicted by the proposed constraints, showing that these constraints do not overgenerate numerous unattested types—an often justified accusation leveled at Optimality Theory.

### 5.1. Justifying SUFFIX as a Constraint

The invariant property shared by Russian *li*, Tagalog *=ng*, and Warlpiri's auxiliary clitics is suffixhood. Each language violates one (or both) of the other two constraints. Russian and Warlpiri opt to violate SCOPE, placing clitics inside the clause; cf. (15) and (25). Tagalog and Warlpiri also violate ALIGN by suffixing their clitics to PrWds across a clause boundary; cf. (20) and (26). Is there, then, a language in which an attested form violates SUFFIX in order to satisfy one of the other two constraints? I know of no such language. (In fact, I suggest below in §5.3 that such a ranking is improbable.) Thus, at this point SUFFIX could just be assumed to be part of *Gen*, the inviolable part of the grammar. Ironically, in order to clearly justify any Optimality-theoretic constraint's existence, it is necessary to show that the constraint is violated by some attested datum. Lacking such clitic evidence, I present three phenomena which show that a morpheme can vary between being prefixal and suffixal, indirectly justifying my SUFFIX constraint. The affixes investigated in these papers do not appear to be clitics as such. Still, the SUFFIX constraint, as worded above in (13c), also applies to all non-clitics.

Fulmer (1990) investigates a group of dual-position affixes in Afar (also known as Qafar or Danakil; East Cushitic, spoken in Djibouti, Eritrea, and Ethiopia). She reports that a group of affixes, clearly definable by their underlying phonological shape (i.e., containing no vowel features in their underlying representations), are realized as suffixes in some environments and as prefixes in certain other situations (namely, if the stem begins with a segment containing vowel features).

If this condition is not met, then suffixation results. The following are examples of this phenomenon:

- (28) a. T-ubl-é  
3.FEM/2-see-PERF  
'she/you saw'
- b. suk-T-é  
have-3.FEM/2-PERF  
'she/you had'
- (Afar; Fulmer 1990: 190)

These so-called dual-position affixes, Fulmer argues, are underlyingly suffixal. The motivation for this affixal migration is that these consonantal affixes move to the front of stems that begin with vowels—reminiscent of the constraint family dubbed SYLLABLE (in §2.1) above.

Similarly, Noyer (1994) reports that in Huave (probable isolate, spoken in Oaxaca, Mexico), certain affixes are lexically prefixal; others, suffixal; and yet others, unspecified as to their direction of prosodic adjunction. For example, in (29a–b) the past-tense affix /t/ is added to stems with different consonant-vowel shapes. (I have simplified somewhat the morphological analysis of the stem to which /t/ is affixed.) The crucial factor is the verb's transitivity.

- (29) a. T-awit'  
PAST-raise<sub>TRANSITIVE</sub>  
'[s]he raised [it] up'
- b. wit'i-T  
rise<sub>INTRANSITIVE</sub>-PAST  
'[s]he rose up'
- (Huave, from Noyer 1994: 71)

Unlike Fulmer (1990), Noyer does not propose an underlying position either before or after the stem. Instead, to some affixes (i.e., prefixes) he assigns positive polarity; to others (suffixes), negative polarity; and to yet others (e.g., these mobile affixes), no statement of polarity.<sup>36</sup> Thus, the various Huave affixes would appear to require SUFFIX/PREFIX constraints.

Finally, and somewhat unlike the Afar and Huave data discussed above, the etymologically reflexive morpheme in Lithuanian exhibits

<sup>36</sup> In connection with Anderson's point about default polarity within a language (mentioned in §2.3 above), Noyer (1994: 69) does not require polarity for all non-mobile affixes; if a language (e.g., suffixing in Turkish) productively affixes only in one direction, then these can likewise be unmarked.

quite unusual positioning: following an unprefixing verb,<sup>37</sup> as in (31a); after a prefix, in (31b); and, if present, between the first two prefixes, in (31c). Non-reflexive counterparts are shown in (30a–c).

(30) Without the etymologically reflexive morpheme

- |           |                               |                   |
|-----------|-------------------------------|-------------------|
| a. matýti | b. su-tikti                   | c. pri-pa-žinti   |
| ‘see’     | ‘meet <sub>TRANSITIVE</sub> ’ | ‘recognize/admit’ |

(31) With the etymologically reflexive morpheme

- |                  |                   |                    |
|------------------|-------------------|--------------------|
| a. matýti-S      | b. su-SI-[t]ikti  | c. pri-SI-pa-žinti |
| ‘see each other’ | ‘meet each other’ | ‘confess/avow’     |

(all infinitives, Lithuanian; Nevis and Joseph 1993: 95–96)

Nevis and Joseph argue that /s(i)/ is a word affix, not a clitic. They use synchronic as well as historical evidence from Balto-Slavic to make their case. Part of their argument is that clitics, being phrasal phenomena, should not be able to insinuate material (as endoclitics, Zwicky 1977: 7–9) within words—widely known as the lexical-integrity principle.<sup>38</sup> This morpheme does not consistently obey the SUFFIX constraint, as defined in (13c), in that it does not always follow the stressed stem; indeed, Nevis and Joseph (1993: 100) cite examples of this affix bearing the main word stress: *pa-sì-imu* ‘I take (for myself)’. My best analysis, based on the data in their article, is that /s(i)/ is an affix prohibited from word-initial position—i.e., subject to the subhierarchy of NON-INITIAL (within V<sup>0</sup>; cf. Anderson 2000: 321) dominating SCOPE. Using Noyer’s terms, this affix would subcategorize for no statement of affixal polarity.<sup>39</sup> Thus, like the Huave data, this Lithuanian morpheme neither supports nor argues against my SUFFIX constraint directly. Again, like mobile affixes in Huave, however, Lithua-

<sup>37</sup> Nevis and Joseph (1993: 107, n. 9, citing Stolz 1990: 18) report dialects that position the reflexive morpheme before the inflection: *sika-si-m* (spin-REFL-1PL); cf. Std. *sika-mė-s*.

<sup>38</sup> This study has so far avoided the thorny issue of differentiating clitics from affixes. Primarily this issue arises with head-adjacent clitics, not my main focus. (See, however, Franks and King 2000: 278–84 for a discussion of definite articles in Macedonian and Bulgarian.)

<sup>39</sup> Designating /s(i)/ as a suffix would incorrectly predict its position always after the stem. Designating /s(i)/ as a prefix would probably be unlearnable. (Cf. §5.3 below.)

nian supports this constraint in that non-mobile suffixes would probably need a SUFFIX constraint to limit the effect in (31b–c).

In conclusion, this subsection has shown that, although there is no evidence from clitics as such, several languages make a clear case for a SUFFIX constraint. Mobile affixes in Afar, Huave, and Lithuanian suggest that there needs to be some constraint that requires suffixhood.

## 5.2. Assessing the Empirical Adequacy of the Proposed Constraints

In this subsection I explore the ability of the proposed constraints to generate all (and only) the clitic types known to exist cross-linguistically. In particular, three types still need to be accounted for by this framework. In the overview of cross-linguistically attested clitic types above (in §1.2), only four of the eight types proposed by Klavans (1985) are convincingly attested: (8a–c, g). These clitic types are (respectively) the suffixal-initial, prefixal-initial, suffixal-peninitial, and suffixal-final types—summarized in (10a–d). Section 3 has discussed only one of these in detail: suffixal-peninitial *li* in Russian, matching type (10c). In addition, Warlpiri auxiliary clitics have been shown to represent a systematically alternating type, corresponding to either of (10a, c). Recall that Tagalog’s suppletion makes it impossible to flesh out that hierarchy. Thus, three more types still need to be accounted for by my approach. These are shown in (10a–b, d) above.

I begin with the type in (10a), illustrated by the Kwakw’ala data in (5a–b) above, in which suffixal clitics invariably precede the entire phrase over which they take scope. This is a variation of the Warlpiri type. Unlike Warlpiri, however, the relevant phrasal domain in Kwakw’ala is the nominal expression. Moreover, this language’s verb-subject-object order (Klavans 1985: 106) entails that such a clitic is invariably preceded by some other word from the same clause. For these reasons, ALIGN, as worded in (13b) above, does not apply because there is no affixation across a **clausal** boundary. Nonetheless the proposed constraints do allow for a language with Kwakw’ala-type clitics belonging to clausal domains. The ALIGN constraint in (13b) is thus vacuously satisfied by these data.

Next are prefixal phrase-initial clitics. Examples mentioned so far are constituent negation in Russian, shown in (7a); various prepositions in Slavic; and articles in Modern Greek, in (8b). There are two plausible approaches to this type. The first is for the clitic to be specified as a prefix lexically and for the PREFIX constraint (discussed above in §5.1 in connection with Huave) to apply. The more economi-

cal approach would be for the clitic to be marked as an affix but with no statement of polarity. These affixes would then satisfy the SUFFIX constraint vacuously. As such, SCOPE and ALIGN alone would ensure this clitic's positioning. This latter approach would, however, require decomposition of the SUFFIX constraint into AFFIX plus a constraint requiring direction of polarity. (A third approach is also explored, but rejected, in the following subsection.)

This leaves only phrase-final suffixal clitics. Although the example Klavans provides (from Spanish) of a final suffixal clitic in (8g) is not even a **phrasal** clitic, English possessive 's, exemplified in (6) above, does fit this description. I explore one possible approach to this clitic type here. Recall (from §3.2 above) Anderson's use of the INTEGRITY constraint to ensure that a peninitial clitic does not interrupt a PrWd or syntactic phrase (in Russian or Czech, respectively). This INTEGRITY family could be extended to the entire phrasal domain, in which case there would be a constraint prohibiting any clitics within the phrase: INTEGRITY(∇). One ranking of constraints that generates the right data is as in tableau (32):

| (32) English possessive 's         | ALIGN | SUFFIX | IN(∇) | SCOPE |
|------------------------------------|-------|--------|-------|-------|
| a. [ PrWd= <b>cl</b> PrWd PrWd ]   |       |        | *!    | *     |
| b. [ PrWd PrWd= <b>cl</b> PrWd ]   |       |        | *!    | * *   |
| ☞ c. [ PrWd PrWd PrWd= <b>cl</b> ] |       |        |       | * * * |
| d. [= <b>cl</b> PrWd PrWd PrWd ]   | *!    |        |       |       |
| e. [ <b>cl</b> =PrWd PrWd PrWd ]   |       | *!     |       |       |

Indeed, any of the sub-hierarchies in (33) will result in the same attested type:

(33) *Final ranking for English: {ALIGN / SUFFIX / IN(∇)} » SCOPE*

Thus, phrase-final suffixal clitics are accounted for readily using a variation on a constraint type independently required (in §3.2) above.<sup>40</sup>

<sup>40</sup> The constraint violated by (32d) is a variant of the one in (13b). This one prohibits affixation across the **nominal**-phrase boundary: ALIGN(DP|L, PrWd|L). This constraint is ranked relatively low in the languages discussed so far (especially in Kwakw'ala).



This subsection has shown that the constraints used above are adequate for generating the other known clitic types. No significant additional machinery is needed to account for them.

### 5.3 Factorial Typology

This final subsection assesses all the possible rankings predicted given the constraints in (13a–c), as well as INTEGRITY( $\forall$ ) from the preceding subsection. In this way, all other clitic types predicted by this approach are explored. Thus, whereas the preceding subsection verifies that the current approach accounts for a wide enough range of data, the following discussion shows that this framework does not recklessly overgenerate clitic types. I computed a so-called factorial typology including all the arithmetically possible grammars—i.e., constraint hierarchies—predicted by this approach. In order to find all such grammars, all possible rankings of the three main constraints were computed,<sup>41</sup> generating exactly six alternatives ( $3! = 3 \times 2 \times 1 = 6$ ). These six rankings are listed in (34):

(34) Factorial Typology of the Constraints in (13a–c):

|            |                           |                           |
|------------|---------------------------|---------------------------|
| Strategy A | a. ALIGN » SUFFIX » SCOPE | b. SUFFIX » ALIGN » SCOPE |
| Strategy B | c. SUFFIX » SCOPE » ALIGN | d. SCOPE » SUFFIX » ALIGN |
| Strategy C | e. SCOPE » ALIGN » SUFFIX | f. ALIGN » SCOPE » SUFFIX |

Of the six possible patterns, four are attested: by Russian, Warlpiri, and Tagalog. However, only one ranking has been exhaustively identified with a language: (34c) for Warlpiri. Note that the Russian and

<sup>41</sup> I am assuming that there are no markedness subhierarchies or tied constraints involving the three constraints in (13a–c). An example of the former is the INTEGRITY family of constraints (alluded to above in §3.2 and §5.2). That is, there is a universal subhierarchy of INTEGRITY(*Word*) » INTEGRITY(*XP*) » INTEGRITY( $\forall$ ). Languages can position other constraints inside this subhierarchy, as shown in (i) through (iii):

- |       |                                                                                    |         |
|-------|------------------------------------------------------------------------------------|---------|
| (i)   | INTEGRITY( <i>Word</i> ) » SCOPE » INTEGRITY( <i>XP</i> ) » INTEGRITY( $\forall$ ) | Russian |
| (ii)  | INTEGRITY( <i>Word</i> ) » INTEGRITY( <i>XP</i> ) » SCOPE » INTEGRITY( $\forall$ ) | Czech   |
| (iii) | INTEGRITY( <i>Word</i> ) » INTEGRITY( <i>XP</i> ) » INTEGRITY( $\forall$ ) » SCOPE | English |

Various kinds of tied constraints, explored in detail by Müller (1999/2002), would also predict more than just these six permutations. Although other linguistic phenomena appear to require such complications, this typology of where phrasal clitics appear relies on only one markedness subhierarchy, in (i) through (iii), and on no tied constraints as such.

Tagalog data are each consistent with two of the possible grammars, since both rankings produce the same output patterns in these languages: Russian could have either of (34a–b); Tagalog, either of (34c–d). Additionally, since positive evidence distinguishing between the two possibilities is lacking, we must assume that language learners are free to posit either ranking.<sup>42</sup> The following paragraphs discuss subtle distinctions among the strategies:

To begin, other constraints not intervening in the selection, Strategy A invariably results in the same Wackernagel order. Thus, (34a–b), although distinct mathematically, together represent just one practical possibility.

Next, the rankings in (34c–d) represent overtly distinct possibilities (even if no other constraint is introduced into the equation). Of course, (34c) is represented empirically, by Warlpiri; see tableaux (25) and (26) above. The ranking in (34d), when there is an available PrWd host in the preceding clause, shares the same result with tableau (26) above, while (35) shows the consequences of (34d) with no preceding PrWd as host:

| (35) <i>Hypothetical</i> (no connected speech) | SCOPE | SUFFIX | ALIGN |
|------------------------------------------------|-------|--------|-------|
| a. [ PrWd= <b>cl</b> PrWd PrWd ]               | *!    |        |       |
| b. [ PrWd PrWd= <b>cl</b> PrWd ]               | *!    | *      |       |
| c. [ PrWd PrWd PrWd= <b>cl</b> ]               | *!    | * *    |       |
| d. [= <b>cl</b> PrWd PrWd PrWd ]               |       | *      |       |
| e. [ <b>cl</b> =PrWd PrWd PrWd ]               |       | *      |       |

SCOPE first rules out (35a–c), leaving just the bottom two candidates in the running. The surviving candidates, (35d–e), then fare equally with respect to the SUFFIX constraint, with one violation each. I assume that some other constraint—ranked either above or below SUFFIX—rules out (35d). Alternatively, if the clitic’s failure to attach to any preceding

<sup>42</sup> Billings and Rudin (1996: 38–39, 50) discuss a non-clitic phenomenon in Bulgarian which shows how a language can have speakers who acquire one of two rankings. Faced, as adults, with data that would tease apart the ranking of the two constraints, speakers vary in their judgments, presumably based on the random ordering learned as children.

PrWd prevents (35d) from exiting *Gen*, then (35e) would still be the optimal form.<sup>43</sup> Such a language would have an invariably clause-initial clitic which is **suffixed** to the preceding, extra-clausal PrWd if there is an available preceding prosodic host, as in Tagalog and Warlpiri, but **prefixed** to the first PrWd of its clause if there is not an available preceding PrWd. This clitic, because it does not change position, just its prosodic affiliation, would not be considered a special clitic under Zwicky's (1977) classification. Possibly for this reason, linguists in the past quarter century or so may have overlooked such a clitic.<sup>44</sup> Moreover, most linguists—both philologists, who have few prosodic cues in their textual evidence, and syntacticians alike—have been intrigued by clitics because of their unique positioning. A clitic with no positional variation would get little attention.

The remaining two rankings, in (34e–f)—dubbed Strategy C in this study—result in an order that, while theoretically possible, is unlikely from an acquisition standpoint. Much like the rankings in (34a–b), those in (34e–f) predict the same optimal candidate. Tableau (36) happens to list the constraints as in (34f). However, if the ranking in (34e) were used (not shown here), the same polarity and constituent order would result.

| (36) <i>Hypothetical</i> (with connected speech) | ALIGN | SCOPE  | SUFFIX |
|--------------------------------------------------|-------|--------|--------|
| a. ... [ PrWd= <b>cl</b> PrWd PrWd ]             |       | *!     |        |
| b. ... [ PrWd PrWd= <b>cl</b> PrWd ]             |       | *! *   |        |
| c. ... [ PrWd PrWd PrWd= <b>cl</b> ]             |       | *! * * |        |
| d. ... [ <b>=cl</b> PrWd PrWd PrWd ]             | *!    |        |        |
| e. ... [ <b>cl</b> =PrWd PrWd PrWd ]             |       |        | *      |

<sup>43</sup> The same issue would apply to the rankings in (34e–f) in an environment without connected speech, not shown here. See also fn. 34 above.

<sup>44</sup> The possibility in (34d) predicts a language with a clitic like Tagalog =*ng* which is then suffixed *in situ* if there is no available preceding PrWd. Indeed, this is exactly the combined behavior of the Tagalog allomorphs =*ng* and *na*=. Is their combination an example of (34d)? For the sake of thoroughness, I assume (non-crucially) that separate constraints govern the two clitics. Thus, I hold out for the existence of a non-suppletive clitic as in (34d).

Both of the rankings in (34e–f) predict (36e), with the clitic initial in its clause and invariably **prefixed** to the first PrWd of its own domain. Alas, such a ranking is most likely irrelevant for psycholinguistic reasons. The child acquiring a language with such phrase-initial **prefixal** clisis would have no positive evidence to classify the clitic as a **suffix**. Because the clitic is acquired as a prefix (as discussed above in §5.2), the SUFFIX constraint would then be totally irrelevant to its polarity. Nonetheless, even if an affix not marked as a suffix were to be run through the algorithm in (36), the result would still be (36e). That is, it is clear that the rankings in (34e–f) do not predict the existence of impossible, unattested cliticization patterns. They merely generate certain types of cliticization that can be analyzed by language learners using significantly simpler mechanisms.

One final comment on the SUFFIX constraint is in order: SUFFIX, in the clitic phenomena discussed here, is far from irrelevant as a constraint. In each of the tableaux above based on real language data, removing SUFFIX would cause the tableau to incorrectly predict an unattested form: (15e) instead of the attested (15a), (20d) instead of (20c), (25e) instead of (25a), and (26e) instead of (26d). Thus, SUFFIX is needed even in clitic structures.

Adding the INTEGRITY( $\forall$ ) constraint (introduced above in §5.2) to the hierarchy results in 24 possible grammars. These are shown in abbreviated form as follows, using the same comma notation as in (16), (21), (27), and (33) above:

| (37) <i>Rankings</i>                            | <i>Strategies</i>        |
|-------------------------------------------------|--------------------------|
| a. {SUFFIX , ALIGN , IN( $\forall$ )} » SCOPE   | A (English 's)           |
| b. {SUFFIX , ALIGN} » SCOPE » IN( $\forall$ )   | A (Russian <i>li</i> )   |
| c. SUFFIX » SCOPE » {ALIGN , IN( $\forall$ )}   | B (Warlpiri auxiliaries) |
| d. {SUFFIX , IN( $\forall$ )} » SCOPE » ALIGN   | B (unattested)           |
| e. {SCOPE » SUFFIX » ALIGN} , IN( $\forall$ )   | B (unattested); cf. (35) |
| f. {{SCOPE , ALIGN} » SUFFIX} , IN( $\forall$ ) | C (unlikely); cf. (36)   |

Adding this one constraint, although quadrupling the number of factorial possibilities, adds only one distinguishable placement/polarity type, in (37d). Such a clitic, similarly to Warlpiri auxiliaries, would appear in two different positions depending on the existence of connected speech. If a preceding word is available for prosodic attachment, it would be suffixal and phrase-initial; otherwise, it would be suffixal to the final PrWd of the phrasal domain.

Having presented numerous possibilities, just two types of unique alternations are not known to exist, in (37d–e). I emphasize, however, that all of the types predicted by these rankings, initial-prefixal alternating with either initial-suffixal in (37e) or final-suffixal in (37d), consist of attested positions and polarities, listed above in (10a–d). This typology therefore predicts all and only those position-polarity combinations that are robustly attested. The only empirically unobserved aspect is these types of **alternations**. Because the full range of positions and polarities of clitics is often not reported, such alternating types may well exist. In addition, the unlikely ranking in (37f), tabulated in (36), is also not a problem for my typology because even if this grammar were acquired it would still result in a type that is readily attested. Thus, each of the combinations of positions and polarities predicted in (37) is a plausible phrasal-clitic type.

To summarize this subsection, I have shown that the arithmetically possible orders predicted by this approach are empirically attested in all but one of the six permutations—or in all but two of the 24 possibilities if the IN( $\nabla$ ) constraint is considered. These are the possibilities predicted by my approach. Future empirical studies will either refute or support these proposals based on the nature of the data reported. In the meantime, the factorial typologies show that my model hardly overgenerates at all. As such, it illustrates how an Optimality-theoretic hierarchy—built out of well motivated constraints—results in a descriptively adequate grammar.

Furthermore, section 5 overall has shown two other consequences of this Optimality-theoretic approach. First, the SUFFIX constraint has been justified using mobile-affix data. Additionally, and far more importantly, these constraints generate all and only those known phrasal-clitic types, in (10a–d)—an assortment of types that seemed at first to be rather disparate.

## 6. Summary

This paper has proposed a typology of phrasal clitics, slicing across Zwicky's (1977) special/simple distinction, and keeping some of the criteria proposed by Klavans (1985) and others. Unlike other proposals, however, I argue that only four position/polarity combinations exist: initial-suffixal (Kwakw'ala), initial-prefixal (Russian constituent negation and prepositions), peninitial-suffixal (Wackernagel clitics in Slavic and elsewhere), and final-suffixal (English possessive 's). This asymmetry is explained in part by the morpho-prosodic SUFFIX con-

straint, which keeps clitics from appearing at the front of a phrasal domain, and SCOPE, requiring clitics to appear early in the domain. More importantly, the use of ALIGN to allow the first/second alternation (in Warlpiri) into the typology is preferable on both empirical and conceptual grounds.

In closing, I emphasize that these constraints do not replace more syntactic approaches to clisis. An Optimality-theoretic mechanism can be used as a filter, following Spell-Out, in the spirit of plenty of work on the placement of clitics in Slavic (Billings 2002; Billings and Konopasky 2002; Bošković 2000, 2001; Franks 1998, 1999, 2000; and Franks and King 2000). Indeed, the Optimality algorithm seems particularly well suited to adjudicating between grammar components that place conflicting requirements on the surface representation.

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