Some Notes on Phonological Phrasing in Lushootseed

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An examination of the Lushootseed phonological phrase reveals a highly regular pattern of phrase-formation based on the status of lexical elements as clitics or phonological words. Phrase-structure is reminiscent of syllable-structure in that phrases consist of a nucleus (a single phonological word) and an onset (a clitic); phrasal codas are ruled out, clitics following a word within a phrase becoming incorporated as affixes. Phrasing takes little account of syntactic boundaries, although phrases are sensitive to complement-adjunct distinctions and certain discourse processes; the reverse pattern—phonology affecting syntax— is not observed, offering some support for derivational or serial models of language where semantics and syntax precede phonology.

1 Introduction

Although the word-level phonology of Lushootseed (a.k.a. Puget Salish) has received a fair amount of attention in the literature, as far as I know no work has been done at all on the phrasal phonology of this or any other Salishan language. In the paper that follows, I will try to outline the basic processes that regulate the formation of the Lushootseed phonological phrase; although some attention is paid here to theory, my main goals are, in the first place, to elucidate the data and to describe as straightforwardly as possible the phrasal patterns of the language and, secondly, to try to determine if the processes that govern these patterns are primarily syntactic or phonological. What emerges from this investigation is a fairly simple and regular pattern of phonological phrasing based almost exclusively on the phonological criteria which are the topic of the first section of this paper; following this discussion, a closer look will be taken at the phonology-syntax interface and some of the syntactic factors that seem to have a direct impact on Lushootseed phrasal phonology. Finally, these results will be examined in the larger context of a representational model of human language, with an eye towards making some suggestions as to what kind of syntactic information must be available to the phonological component of the grammar, and what—if any—phonological information is required by the syntax.

Lushootseed is a language of the Salishan family spoken in the Puget Sound area of Washington State. It has the consonantal inventory given in (1). There are three vowels—/i/, /u/, and /a/—which occasionally show a phonemic long/short distinction, and /ə/, which has only the short variant. Word-level stress is largely predictable and all vowels can be stressed, although /ə/ is rarely so when there is any other option. My primary source for data is Hess (1993), which consists of a grammar, a reader, and four stories on an accompanying tape; all four texts are tradi-

(1)   Lushootseed consonantal inventory

		labial	alv	lateral	al-pal	velar unrnd	velar rnd	uvular unrnd	uvular rnd	glottal
stops	plain	p	t			k	kʷ	q	qʷ	
	glottal	p̓	t̓	ƛ̓		k̓	k̓ʷ	q̓	q̓ʷ	ʔ
	voiced	b	d			g	gʷ			
affricates	plain		c		č					
	glottal		c̓		č̓					
	voiced		dᶻ		ǰ					
fricatives			s	ɬ	š			x̌	x̌ʷ	h
resonants	plain			l	y		w			
	laryngeal			l̓	y̓		w̓			

(based on Hess 1993: 265)

tional legends told by the same consultant, a speaker of the Northern dialect of Lushootseed, recorded in the field in the early 1960s. Of the four stories, three have been analyzed for this paper using Signalyze 3.12 voice-analysis software; all data given here come from one of these three stories—"Little Mink and his Younger Cousin, Tetyika", "Coyote and the Big Stone", and "Bear and Fish-Hawk"—and will be cited by source text and line number. In most cases data is given in phonemic transcription, except in places where the phonetics is at issue; similarly, interlinear glosses given are in general as detailed as possible, but in some cases words are left unanalyzed when their composition is not relevant to the discussion or where full parsing is prevented by space limitations.

2 Phonological Phrasing

The formation of phonological phrases in Lushootseed is closely tied to the notion of the phonological word, and the building of phrases in many ways resembles the building of syllables—so much so, that in my descriptions in the following sections I will borrow a great deal of terminology from syllabic phonology. Like the syllable, the Lushootseed phonological phrase seems to be built up around a single head or phrasal nucleus, and the ideal or canonical phrase seems to allow for a single preposed non-head element—the phrasal onset; on the other hand, the phrasal structure does not allow for an unincorporated element to follow the head (*i.e.* a phrasal coda). The head of a phonological phrase is (with one or two exceptions, discussed below) phonologically a word (W) in the sense that it can stand on its own in a phrase by itself and that it is a legitimate target for cliticization. The head of a phrase bears the primary phrasal stress as marked by amplitude and, usually, vowel length,[1] and—as with syllabic nuclei—it is the position of the phrasal heads in the

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[1]Note, however, that for emphatic purposes lengthening of a non-head is used quite frequently, although in all but a few cases these elements do not bear greater stress (= amplitude) than their heads (they are on occasion of the same amplitude, particularly when the phrase bears the primary sentential stress); in some few cases, a non-head will exceed its phrasal nucleus in amplitude, but there are not enough examples of this in the data at hand to discover the conditions governing this phenomenon.

sentence that determine the associations of the various non-heads, or clitics (C), within the next-higher level units.

The Lushootseed phonological phrase (P) is set off from contiguous phrases by an audible pause, usually of approximately 50 to 100 ms; in rapid speech this pause may be smaller, but it is usually perceptible in even these circumstances by the lack of phonological interaction between segments located on either side of a phrasal boundary. Above the P-phrase there is, of course, an intonational (I) phrase—indicated notationally here as an "§"—which seems to be indicated for the most part by pauses of longer duration, lasting up to 2 seconds within a sentence and longer between them (although this is naturally reduced in more rapid speech); the fact that the I-phrase boundary apparently differs from the P-phrase boundary only in terms of its relative length may mean that, in the long run, the distinction between the two will turn out to be a spurious one, and that Lushootseed prosody may consist only of strings of P-phrases without any higher level of prosody governing them at all. Within the P-phrase is the domain of cliticization, which sees all elements that are not phrasal heads cliticized to a phonological word; cliticization is marked by the lack of a pause between elements and the beginning of coarticulatory assimilation at the word-clitic boundary. Cliticization, however, must be distinguished from affixation or phonological incorporation, a process by which an affix (and in some cases a clitic) becomes a phonological part of its head; whereas clitics generally retain their own shape and original segmental material (with some exceptions, such as the glottal stop), when a clitic is forced by the phonology to become an affix (see 2.2 below), it re-syllabifies with a stem and, in most cases, either loses a mora or some phonemic material, or triggers some phonological alternation such as consonant or schwa-deletion in the word to which it attaches. This three-way distinction between words, clitics, and affixes and the interaction between them seem to be the keys to Lushootseed phrasal phonology, and using a few simple constraints governing the behaviour of these three phonological units will allow us to construct the beginnings of a model of Lushootseed prosody.

2.1 Words and Clitics

As in other Salishan languages, Lushootseed words are often divided into predicative and non-predicative classes (Kinkade 1983; van Eijk & Hess 1986); predicative words, as their name indicates, can function as sentence predicates in copular constructions as in (2):[2]

(2)   (a) sʔuladxʷ tiʔiɬ
             salmon D
             "that [is] a salmon"

<div align="right">(Hess & Hilbert 1976: I, 7)</div>

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[2]The following abbreviations are used in this paper: 1 = first-person; 2 = second-person; 3 = third person; add = additive; appl = applicative; caus = causative; D = deictic; intj= interjection; irr = irrealis; l.o.c. = lack of control; md = middle; neg = negative; P = preposition; p = plural; pnt = punctual; po = possessive; prog = progressive; prt = particle; s = singular; stat = stative; top = topic-marker; trm = transmutative. Where necessary, these terms are defined in the text.

(b) ləÌ+qÌˆəd   čəd
[prog]+slow 1s
"I [am going] slow

(Bates *et al.* 1994: 183)

(c) tudiʔ   tə dukʷibəɬ
yonder D   Changer
"Changer [is] way over yonder"

(Hess 1993: 103)

(d) sali? tiʔəʔ sqʷigʷac
two D   deer
"the deer [are] two"

(Hess 1993: 103)

Non-predicative words, often termed "particles", on the other hand, can not serve as the predicate of a sentence and must appear associated syntactically with a predicative element. In terms of lexical category, predicative words are, for the most part, "content" words, whereas those words which are non-predicative are largely functional grammatical elements.

In the phonology, the rule of thumb is that predicative words act as phrasal heads (*i.e.*, are words) while the others cliticize either rightward or leftward to full words within the phrase boundary. This generalization captures nicely the behaviour of words such as nouns and derived verbs, and of non-predicative elements such as pronominals, prepositions, and interjections. Outside of these groups things get more complicated. Deictics, for instance, are potential predicates and are syntactic heads (Jelinek 1993; Matthewson & Davis 1995; Beck 1995), but are apparently not phonological heads, even when predicates.

(3)   (C   C+W)
ti?iɬ   ti+s?uladxʷ
D   D+salmon
"a salmon [was] this one"

(Bear & Fish-Hawk 57)

Here the deictics surface as clitics just they do in other syntactic environments.[3] Also within the category of potential predicates, there is a division between those which are always phonological words (nouns and derived verbs) and those which can be either words or clitics (adjectives and certain adverbs). Words corresponding to English adverbs are particularly interesting since these can be subdivided morphosyntactically into the adverbial particle given in (4)—which can never be predicates and are not phrasal heads—and the true adverbs in (5), which have both predicative and non-predicative functions. This latter group shows a high degree of variability as to whether they serve as phonological heads of phrases or cliticize to some other element.

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[3]See, however, (8)(b), where the deictic tudi? "yonder" surfaces as a phonological word when given emphatic length and amplitude, and the discussion of deictics in topic-setting structures (section 3.3).

(4)   Lushootseed adverbial particles

cickʷ/cay	very
ckʷaqid	always
daʔxʷ/daw	just now
dəxʷ	[?]
gʷaʔxʷ	eventually, soon
put	very much so, in a great way
tiləb	immediately, bluntly; right there
x̌ʷəɬ ti	as though, like
x̌ʷuɬ	just (that and nothing else)

<div align="right">(Hess 1993: 114)</div>

(5)   Lushootseed adverbs

bəkʷ	all	hiqab	excessively, too (much)
cəɬuɬ	previously, in advance	λ̓aɬ	also, too
cukʷ/cugʷ	only, uniquely	λ̓ub	well; ought, should
day̓	only, uniquely, separate; foremost, especially; completely, all	tux̌ʷ	in contrast to the usual or expected
gʷəhaw̓ə	it seems	xʷɬub	ultimately, in fact
haʔkʷ/hagʷ	ago, long time	x̌ʷiʔ	no, not
haʔɬ	well, good	x̌ʷuʔələʔ	maybe, perhaps
(hə)laʔab	really, a lot	yaw̓	only if, not until
hikʷ	big, very		

<div align="right">(Hess 1993: 115)</div>

Interestingly, whether or not a given adverb from table (5) is a phrasal head seems to be a purely phonological issue: the syntactic role in which these are used does not determine if they are words or not, as shown in these two examples:

(6)   (C   W)   (C   W)
   (a) hikʷ tu+haʔɬ   tiʔiɬ sqʷəlaɬəd
        big   [past]+good D   berry
        "the berry [was] really good"

<div align="right">(Bear & Fish-Hawk 30)</div>

        (W+C)   (C   C+W+C)   (C   W)
   (b) hikʷ+əw̓ə   qa   tiʔiɬ+ʔiišəd+ʔə   tiʔiɬ sbiaw
        big+[surprise] many D+relatives+P   D   coyote
        "the relatives of Coyote really [are] very many"[4]

<div align="right">(Coyote 64)</div>

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[4]The patterns of affixation shown here will be discussed in detail further below.

In both examples here, the adjective hikʷ "big" stands as a sentence-initial adverb modifying the sentence predicate, yet in (a) it is realized as a clitic whereas in (b) it is the head of its phrase and takes an adverbial particle as an enclitic.

Also variable in terms of phonological status are certain adverbials of motion:

(7)　　　　(C　　　　W)
　　(a)　tiiləb　　　dxʷɫaqt
　　　　suddenly　shorewards
　　　　"suddenly up on shore"

(Little Mink 31)

　　　　　(W+C)　　　(C　　W)
　　(b)　saq̓ʷ+dxʷšəq　ti?iɫ　c̓ix̌c̓ix̌
　　　　fly+up·high　D　　fish-hawk
　　　　"Fish-hawk flew way up"

(Bear & Fish-Hawk 11)

Note that these items are morphologically complex—being composed of a prefix dxʷ- and an adjectival root—which seems to rule out the idea of defining the phonological word in terms of some kind of morphonological complexity, just as the bisyllabicity of some particles like c̓k̓aqid "always" argues against a similar notion of phonological complexity.

　　　The issue is clouded even further by a few examples where the phonological status of a word is manipulated for grammatical/pragmatic purposes: there are a few examples of interjections, adverbial deictics, and adverbial particles standing on their own as words or acting as phrasal heads, usually accompanied by increased length and/or relative amplitude:

(8)　　　　(C　　W+C)　　　(C　　W)　　(W)　　　(W　…
　　(a)　huy　?abyidəxʷ+?ə　ti?iɫ　x̌ʷuul　p̓aƛ̓aƛ̓　　stab
　　　　then　give+now+P　D　　just　worthless　thing
　　　　"then [he] gave [him] a *totally* worthless thing"[5]

(Coyote 17)

　　　　　(C　　　　W)　　　　　　(C　　W)　　　　(W+C)
　　(b)　ti　tu+s+yəhub　　　　?ə　tuudi?　tu+sluƛ̓luƛ̓+čəɫ
　　　　D　[past]+np+tell·story　P　yonder　[past]+elders+1p.po
　　　　"a story of our ancestors"

(Little Mink 2)

Although there are fewer than a handful of examples of this in the corpus, it may well be that this phenomenon is an active one in the phonology, particularly given its expressive power in terms of encoding focus and emphasis on particular aspects of an utterance that might not be accessible to focus by syntactic means such as topic-

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[5]This example has been parsed into phrases across a sentence boundary. See the full example in (32).

fronting or predication. Seen in this light, the notion of word-"formation" as an addition to Selkirk's (1995) inventory of strategies for manipulating the information structure of a sentence is an intriguing one.

In sum, the definition of what precisely is a word in Lushootseed does not seem to be a straightforward matter of the semantic, predicative, morphological, or categorial properties of sentence-elements; instead, word or potential word status seems to be a phonological question, dependent on the entry for a given morpheme or group of morphemes in the lexicon. Nonetheless, it does seem that we can make the following generalizations:

- words belonging to the predicative classes tend to be phonological heads, in particular nouns are always heads, as are derived verbs
- particles and deictics are not words, unless marked for emphasis
- adjectives, adverbs, and perhaps verbal roots may be either clitics or words, depending on their phonological environment.

Given these criteria, as we shall see, it is possible to make predictions about the basic forms and patterns of the Lushootseed phonological phrase.

2.2 The Phonological Phrase

The rules or constraints that build phonological phrases in Lushootseed are in fact rather straightforward and, as noted above, bear a strong formal resemblance to the rules used to form syllables in many languages. Each phrase in Lushootseed seems to be built up around a phonological word serving as a kind of phrasal nucleus. A Lushootseed sentence can consist of a single word or a string of words, each constituting its own phrase.

(9)   (W)
    (a) ʔibibəšəxʷ
        [rdp]+walk+now
        "he walks all around"

                                                            (Little Mink 15)

      (W)   (W)   (W)
    (b) hay   λ̓iqagʷil+ɬi   d+suq̓ʷsuq̓ʷaʔ
        well·then come·out+[imp] 1po+[rdp]+cousin
        "well then, come out of there, my cousins"

                                                               (Coyote 56)

       (W)   (W)   (W)
    (c) stab+əxʷ   ɬu+d+s+huy   d+suq̓ʷsuq̓ʷaʔ
        what+now [irr]+1po+np+finish 1po+[rdp]+cousin
        "what do I do now, my cousins?"

                                                               (Coyote 37)

More commonly, however, simple sentences consist of a word and one or more clitics or affixes:

(10)   (W+C)
  (a) ʔu+ɬiʔɬdab+əlgʷəʔ
    [pnt]+troll+[plural]
    "they went trolling"

                   (Little Mink 7)

    (C   W)
  (b) put+əxʷ t(u)+as+ƛ̓u+il
    really+now [past]+[stat]+thin+[trm]
    "he was really getting thin now"

                   (Coyote 54)

    (C   W+C)
  (c) huy hud+čup+əxʷ+əlgʷəʔ
    then burn+wood+now+[plural]
    "then they lit a fire"

                   (Little Mink 24)

When sentences get more complex, they consist of more than one phrase, although the phrase seems to contain only a single word, and words seem never to cliticize to words or to share clitics between them:

(11) (C W) (C   W)
  (a) tiʔiɬ sbiaw gʷəl ʔux̌ʷ+əxʷ
    D coyote [top] go+now
    "this Coyote, [he] goes along"

                   (Coyote 45)

    (C   W)   (C W)
  (b) huy šu+dxʷ+əxʷ   tiʔiɬ čxʷəluʔ
    then see+[l.o.c.]+now D whale
    "then [they] caught sight of Whale"

                   (Little Mink 8)

    (C   W)   (C   W)   (C W)
  (c) x̌ʷuɬ p̓aƛ̓aƛ̓   tiʔiɬ s+ʔabyid+s tiʔiɬ čƛ̓aʔ
    only worthless D np+give+3po D stone
    "what he gave to Stone [was] only junk"

                   (Coyote 32)

As these examples show, the preferred phrasal pattern seems to be one of procliticization, with a preceding clitic joining to a word to form a sort of phrasal "onset". The same is true in (12):

(12)   (C   W)   (C   W)   (C   W) (W)

(a) huy   q̓ʷuʔ+t+əb+əxʷ   tiʔił ʔaciłtalbixʷ tuuľal bək̓ʷ čad

then   gather+[caus]+[md]+now D   people   P   all   where

"then the people were gathered together from everywhere"

<div align="right">(Little Mink 47)</div>

            (W)   (C   W)   (W) (W)   (W)

(b) hay   čəd łu+yəc+əb+tu+bicid+əxʷ   dəgʷi siʔab d+syaʔyaʔ

well·then 1s   [irr]+tell+[md]+[caus]+2s+now 2s   noble 1po+friend

"well then, I will tell [it] to you now, my noble friend"

<div align="right">(Little Mink 4)</div>

As in (12b), when a C appears between two Ws, it adjoins to its right rather than to its left:

(13)   (W)   (W) (C   W)

(a) hay   ʔəłəd tiʔəʔ sčətxʷəd

well·then   eat   D   bear

"well then, Bear ate"

<div align="right">(Bear & Fish-Hawk 22)</div>

        (W) (C   W)

(b) stab   tiʔił s+huy+ləp

what   D   np+finish+2p.po

"what is this that you folks are doing?"

<div align="right">(Coyote 6)</div>

     (W)   (C W) (C   W)

(c) ʔu+luu+d   tiʔił luƛ̓ tudiʔ łaq̓t

[pnt]+hear+[caus] D   old yonder inland

"[he] heard an old man up yonder (on the beach)"

<div align="right">(Little Mink 33)</div>

Although the patterns in the examples in (12) seem to parallel the syntactic constituent structure, an examination of a broader range of data, as we will see below, indicates that the formation of phrases is in fact a purely phonological question (see Section 3 for further discussion). In theoretical terms, the patterns observed up to now could be handled either by some sort of association rule linking clitics rightward to the nearest head before linking them leftward, or, alternatively, it could be described in terms of Optimality Theory (McCarthy & Prince 1993) as the result of a constraint ranking favouring phrasal "onsets" over phrasal "codas". While my aim here is more to describe the patterns found in the data than to develop a rigorous theoretical apparatus, I will informally opt for the latter as a descriptive convention, without going to great lengths to justify it in detail; thus, on the basis of the above data I would propose that Lushootseed has a constraint which I will dub in the OT spirit "No P-Coda" (NPC) which prevents non-words from becoming enclitics. Simi-

larly, there must be a constraint governing phrasal onsets, but what it might consist of is not immediately obvious from the data above.

The most revealing environment for examining the structure of phrasal onsets is in sentences where two clitics occur side by side:

(14)   (W+C)   (C   W)
(a) [dəgʷagʷiləxʷə   tiʔiɬ səsliʔluʔ]
     /dəgʷagʷïl+əxʷ   ʔə tiʔiɬ səsliʔluʔ/
     squeeze·inside+now   P   D   hole
     "[he] squeezed himself into the hole"

(Coyote 46)

     (C   W+C)   (C   W)
(b) [huy čalatəbə   tiʔiɬ čⁱ̓λ̓aʔ]
     /huy čala+t+əb   ʔə tiʔiɬ čⁱ̓λ̓aʔ/
     then pursued+[caus]+[md] P   D   stone
     "then [he] was chased by Stone"

(Coyote 35)

     (C   W+C)   (C   W)
(c) [tiʔiɬ   bibščəbə   tiʔiɬ suʔsuqʷaʔs] …
     /tiʔiɬ bibščəb   ʔi   tiʔiɬ suʔsuqʷaʔ+s/
      D   [rdp]+mink   and   D   [rdp]+cousin+3po
     "Little Mink and his cousin …"

(Little Mink 5)

     (W+C)   (C   W)
(d) [tudᶻ̓əlaẋadbidəl   tiʔiɬ pədɬ̓əs]
     /tu+dᶻ̓əlaẋadbid ʔal tiʔiɬ pədɬ̓əs/
     [past]+visit   P   D   winter
     "[he] went to visit [him] in the winter"

(Bear & Fish-Hawk 5)

     (W)   (W+C)   (C   W)
(e) [hay   tuk̓ʷiɬəxʷəl   tiʔiɬ stuləkʷ]
     /hay   tu+k̓ʷiɬ+əxʷ   ʔal tiʔiɬ stuləkʷ/
     well·then   [past]+go·down·to·shore+now   P   D   river
     "well then, [he] went down to the bank of the river"

(Bear & Fish-Hawk 10)

In each of these cases the clitic on the right becomes a phrasal onset, while the one on the left joins to the preceding phrase, not as an enclitic but as a suffix. The distinction between cliticization and affixation can be seen in the phonological interaction between clitic and head: in all of the above examples, the incorporated clitic loses its onset and becomes a part of the final syllable of its head. In (c) – (e) the element also undergoes vowel-reduction, the vowels of the conjunction /ʔi/ in (c) and

the preposition /ʔal/ in (d) and (e) surfacing merely as [ə]. Other examples offer even more striking evidence for affixation:

(15) (C W+C)
    (a) … [tiʔił dəxʷʔibəšəł]
        … /tiʔił dəxʷʔibəš čəł/
          D np+walk 1p.po
        "… for our journey" (utterance-final)

                                     (Coyote 10)

       (C W) (C W+C) (C W)
    (b) [puut ʔəspil ti šqabatiʔəʔ hikʷ čƛ̓aʔ]
        /puut ʔəs+pil ti šq+abac tiʔəʔ hikʷ čƛ̓aʔ/
        really [stat]+flat D high+body D big stone
        "it [was] really flat up on top of the big stone"

                                     (Coyote 4)

Here following clitics—in (a) the possessive pronominal čəł "our" and in (b) the deictic tiʔəʔ—lose onsets somewhat more substantial than a glottal stop and are resyllabified with their phrasal head; in (b) the final consonant in šqabac undergoes deaffrication ([c] > [t]). In (16), the possessive pronominal seen in (15a) loses its syllabic nucleus and is reduced to [č̣ł].

(16) (C W) (C W) (W+C)
    (a) [ti tusyəhub ʔə tuudiʔ tusluƛ̓luƛ̣č̣ł]
        /ti tu+s+yəhub ʔə tuudiʔ tu+sluƛ̓luƛ̓ čəł/
        D [past]+np+tell·story P yonder [past]+elders 1p.po
        "a story of our ancestors"

                                  (Little Mink 2)

       (C W+C) (C W)
    (b) [dił dəxʷułasadč̣ł tiʔəʔ čƛ̓aʔ]
        /dił dəxʷ+ʔu+łasa+d čəł tiʔəʔ čƛ̓aʔ/
        [focus] np+[pnt]+paid+[caus] 1p D stone
        "this [is] why we are paying Stone"

                                   (Coyote 11)

The next example contains two instances of affixation:

(17) (C W+C) (C W+C) (C W)
    [ʔal suʔələ tiʔił sʔulaxʷiiʔ kʷi gʷəsbəkʷdxʷs]
    /ʔal s+u+ʔałəd ʔə tiʔił sʔuladxʷ xʷiiʔ kʷi gʷə+s+bəkʷ+dxʷ+s/
    P np+[pnt]+eat P D salmon [neg] D [subj]+np+all+[l.o.c.]+3po
    "as he ate the salmon, [he] couldn't eat it all"

                                    (Bear & Fish-Hawk 23)

In the second case, the onset of the incorporated clitic x̌ʷiiʔ "[neg]" assimilates to the final element in the coda of sʔuladxʷ "salmon" and triggers the deletion of the /d/ in the word-final coda of its head, as does the preposition in the first incorporation, which is derived from /sʔuɬəd+ʔə/. There are a number of other boundary phenomena associated with incorporation, and while there is by no means enough space to go into all of them here, a few more will be dealt with in the section that follows, in the context of prefixation (which provides a clearer contrast between the affixation process and cliticization). For the moment it is enough to note the distinctive behaviour of affixes as opposed to clitics; in the former there is a high degree of phonological incorporation, whereas in the latter the clitic maintains a higher degree of identity with its citation form.

Because a single clitic is a legitimate phrasal onset, proclitics are not normally incorporated, whereas enclitics seem to be inevitably so. If the enclitic is treated as a suffix and hence part of the word forming the phrasal head, the result is a fairly consistent pattern of CW phrases. In Optimality terms, this seems to indicate that our constraint on phrasal onsets should consist of a requirement that these contain one and only one cliticized element, thereby forcing a phrase boundary between the clitics in a WCCW sequence. I will refer to this constraint as "Single Phrasal Onset" (SPO). In addition, there must be an (undominated) constraint requiring all clitics to be associated with a head—preventing utterance-final clitics from forming phrases of their own or being "extrametrical"—and a constraint (or pair of ranked constraints) preferring suffixation over prefixation, to prevent the creation of (C W)(C C+W) strings in situations like (17). Finally, we need a constraint governing affixation, one which would be ranked below both NPC (hence, suffixation takes place over encliticization) and SPO, as we shall see in the following section. For the moment I will refer to this constraint as "Don't Incorporate" (DI), and postulate that it is a simple prohibition against the incorporation of a clitic to a word, in the spirit of the faithfulness constraints proposed by McCarthy & Prince (1993), which work to preserve as far as possible the underlying form of a phonological string.

2.3 Clitic Sequences within Phrases

In the previous section we examined data where the input to the phonology consisted of sentences with strings of no more than two consecutive clitics that are potentially separable by a phrase boundary. Sometimes, however, the grammar creates sequences of two or more clitics which can not be divided into separate phrases. In some cases, usually when the position of the "stray" clitic corresponds to an I-phrase boundary, it is deleted:

	(W+C)		§ (C		W)
(18)	tu+yəcəb+tu+b		čəd ø ti?iɬ	tu+d+yəĺyəlab	
	[past]+tell+[caus]+[md]	1s	P D	[past]+1po+[rdp]+uncle·of·late·parent	
	"I was told [this] by my great-aunts and uncles"				

(Little Mink 3)

Grammatically this sentence, a passive, requires the preposition ʔə marking the oblique agent; in the utterance on tape, this particle does not surface, possibly having been "erased" by its failure to associate with a phrasal nucleus. It should be noted, however, that this is not a very well-attested phenomenon and could possibly be attributed to speaker error. A more common strategy for dealing with this sort of situation is seen in (19), where the addition of an element as a proclitic causes the incorporation of the next element closer to the head as a prefix:

(19)　　　(C　　　　C+W)　　　　　　　　(C　　W)
　　(a) [xʷiʔ　kʷikʷadsuk̓awdxʷ　　　　tiʔił sčaliʔ]
　　　　/xʷiʔ　kʷi　gʷə+ad+s+ʔu+k̓aw+dxʷ　　tiʔił sčaliʔ/
　　　　[neg] D　[subj]+2po+np+chew+[l.o.c.] D　heart
　　　　"don't chew on [my] heart"

(Little Mink 19)

　　　　(W+C)　　　(C　　C+W)　　　　　(W)
　　(b) [yəx̌i+huy　　xʷiʔ　kʷəxštab　　　dəxʷhaʔłs]
　　　　/yəx̌i　　huy　xʷiʔ　kʷi　gʷə+stab　dəxʷ+haʔł+s/
　　　　because　well　[neg] D　[subj]+what　np+good+3s
　　　　"because it was no good"

(Coyote 31)

　　　　(W+C)　　(C　　C+W+C)　　　　(C　　W)
　　(c) [hikʷ+əw̓ə　　　qa　　tiišədə　　　　　tiʔił sbiaw]
　　　　/hikʷ　əw̓ə　　　qa　　tiʔił ʔiišəd　　ʔə tiʔił sbiaw/
　　　　big　[surprise]　many　D　relatives P　D　coyote
　　　　"the relatives of Coyote really [are] very many"

(Coyote 64)

This happens at sentence boundaries and in places where there would otherwise be three-clitic strings; just as in suffixation, a number of boundary phenomena can be observed at work marking the phonological incorporation of the clitic-*cum*-affix into the word: in (a) we have /kʷi+gʷə+adsʔuk̓awdxʷ/ collapsing into [kʷikʷadsu-k̓awdxʷ]; in (b), /kʷi+gʷə+stab/ > [kʷəxštab]; and in (c) /tiʔił+ʔiišəd+ʔə/ > [tiišədə]. Compare this last example with the phrasing that we find in (20).

　　　　(W)　　　　　(C　　W)　　　(C　　W)
　　(20) [hay　　　　gʷəl wiliq̓ʷidəxʷ　tiʔił ʔiišəds]
　　　　/hay　　　　gʷəl wiliq̓ʷid+əxʷ　tiʔił ʔiišəd+s/
　　　　well·then　prt　ask+now　　D　relative+3po
　　　　"well then [he] asked his relatives"

(Coyote 5)

Here there is no incorporation of the deictic to the following word, and the clitic retains all of its phonological material.

In terms of our informal OT analysis, this behaviour must be accounted for by the interaction of the constraint hierarchy. Clearly, if both NPC and SPO dominate DI, then a string of proclitics would be a violation of a higher-ranked constraint (SPO, which requires a single proclitic) than is affixation of one of the clitics to a word (which violates only DI); the action of these three constraints alone seems to fully describe the behaviour of clitics in CCC environments, as we can see in (21):

(21) Input: [WCCCW]

Candidates		NPC	SPO	DI
a.	W C)(C C+W	*!		*
b.	W+C)(C C W		*!	*
c.	W+C+C)(C W			**!
d.	W)(C C+C+W			**!
e. ☞	W+C)(C C+W			*

These constraints also handle the behaviour of those lexical items which can surface either as heads or as clitics illustrated in section 2.1 above, provided we allow these to be unmarked with respect to word or clitic status in the input (and that such elements are disallowed in the output). Consider example (6a), reproduced here in (22):

(C   W)   (C   W)
(22) hikʷ tu+haʔɬ   tiʔiɬ sqʷəlaɬəd
        big   [past]+good   D   berry
        "the berry [was] really good"

(Bear & Fish-Hawk 30)

The constraint tableau for this sentence, which contains two "ambiguous" (A) elements—the adverbs hikʷ "big" and haʔɬ "good"—is given in (23).

(23) Input: [AACW]

Candidates		NPC	SPO	DI
a.	(W)(W)(C W)		**!	
b.	(W)(C C+W		*!	*
c.	(W C)(C W	*!	*	
d.	(W+C)(C W		*!	*
e. ☞	(C W)(C W			

In addition to these constraints we might need additional prohibitions against stray clitics (as mentioned above) and a constraint preventing clitics from joining together and making a single unit for the purposes of the constraint on phrasal onsets, or from clitics joining to other clitics. By the same token, we would also want to come up with some other constraint—perhaps based on pragmatic or syntactic environment—to handle the deletion of clitics in situations such as that shown in (18) above. Nevertheless, these are topics for future research. For my purposes here,

it has been enough to show that phonological phrases in Lushootseed follow a straightforward pattern captured in terms of a few simple constraints, and that phrasing is describable under most circumstances in purely phonological terms.

3 Phonology-Syntax Interactions

Up until this point we have been treating phrasing in Lushootseed as a solely phonological matter, looking at strings of clitics and words with no attention being paid to underlying syntactic or semantic structures. The result of this analysis has been an informal OT description of the behaviour of elements in strictly phonological terms; this treatment has successfully accounted for the data so far, but has begged the question of what relationship might hold between the phonological and the syntactic phrase, and whether this phrasal pattern might have some underlying syntactic motivation. In the next section, I will try to offer some evidence against either syntactic constituency or dependency being the ultimate motivation of the Lushootseed phonological phrase and show that, in fact, the phonology in most cases is blind to the divisions and boundaries of the syntax. Next, I will offer some examples of the reinforcement of syntactic boundaries by phonological phrasing when these two happen to coincide, and, finally, I will offer some evidence for the influence of syntactic and pragmatic structure on phonology, resulting in the disruption of expected phrasal patterns.

3.1 Phonology Overrides Syntax

As noted above, the phonological phrasing of a Lushootseed sentence seems to be largely predictable on purely phonological criteria, and in fact considerations of either constituent- or dependency-based syntactic structure are by and large ignored by the phonology. Thus, phrase boundaries can and often do cross constituent boundaries and a wide variety of syntactic dependency types. In (24), for instance, a P-phrase boundary intervenes between a prepositional head and its DP dependent/complement (a P   DP dependency).

```
            (W+C)                (C    W)
(24)   xʷakʷ̓i̓+s+əb+əxʷ+[ə        ti?iɬ  čxʷəlu?]
       fed·up+[appl]+[md]+P   D     whale
       "Whale got fed up [with them]"
       (lit. "they were gotten fed up with by Whale")
```
                                                        (Little Mink 11)

In (25), the phrase boundary cuts across a DP boundary, separating an NP from its head (crossing a D   NP dependency).

```
            (C       W)       (C    W+C)        (C    W)
(25)   puut  ?əs+p̓il    ti šqabat+[i?ə?      hikʷ  čƛ̓a?]
       really [stat]+flat  D high·body+D   big   stone
       "it [was] really flat up on top of the big stone"
```
                                                        (Coyote 4)

In the same spirit, P-phrase boundaries cut across verb phrases, separating verbs from adverbs (V   Adv):

```
        (C    W)   (C        W)
(26)   ?u     [tux̌ʷ  čəd   ?u+?ibibəš]
       [intj] only  1s    [pnt]+[rdp]+walk
       "I am just walking around"
```

(Little Mink 18 & 26)

They may also separate conjunctions from a following DP (Conj   DP), as in

```
        (C        W+C)              (C         W)
(27)   ti?ił  bibščəb+ə            ti?ił  su?suqʷa?+s   …
       D     [rdp]+mink+and  D    [rdp]+cousin+3po
       "Little Mink and his cousin …"
```

(Little Mink 5)

Phrase boundaries can also combine parts of syntactic phrases which are quite distant from one another in a syntactic tree, as in (28) where the prepositional head of the right member of a paratactic conjunction is paired with the final NP of the left member,

```
              (W)        §     (C    W+C)      (C     W)           (W+C)
(28)        [yəcəbaxʷ              ti?ił  bibščəb?i    ti?ił  su?suq̓ʷa?s,  tətyika+ə
       /[VP  yəcəb+axʷ  [PP ⟨?ə⟩  ti?ił  bibščəb ?i    ti?ił  su?suq̓ʷa?+s, tətyika] [PP ?ə
            tell+now         ⟨P⟩  D     mink    and  D     cousin+3s   Tetyika    P
            (C        W)
            ti?ił  sɫaliltubsəxʷ]
            ti?ił  s+ɫalil+tu+b+s+əxʷ]]/
            D     np+come·ashore+[caus]+[md]+3s+now
       "[he] told of Mink and his younger cousin, Tetyika, of their coming ashore"
```

(Little Mink 42)

Clearly, then, issues of constituency or dependency do not seem to play a direct role in the formation of phonological phrases, at least in the sense that a phonological phrase should conform to a syntactic constituent or to a dependency sub-tree.

The examples given so far, however, could be construed as evidence for another kind of syntax-based phrasal metric, something along the lines of Chen (1987), which associates the appearance of a particular phrasal boundary—Right or Left—with a certain node—X-head or X-max—of the syntactic tree. In the examples here, it appears that the right phrasal boundary coincides more or less with the appearance of a syntactic head; this is most obvious in the case of the PPs in (24) and (28), which might lead us to want to posit a Chen-like parameter X-head Right. This view is reinforced by the behaviour of DPs, which (à la Cowper & Rice 1987) form a single phrase when the D governs a simple NP, as in (24) (a phrasal boundary having been set after the P head) but which are divided when the NP is complex, as in

(25). However, X-head Right runs into some trouble with the VP in (26), where an adverbial modifier—which is not the syntactic head of anything—has been made the head of a phrase and consequently separated from its verb, which *is* the syntactic head and should thus have determined the location of the phrasal boundary. While this might be resolved by invoking various kinds of movement (which would be needed by a phrase-structure grammar to account for the linear order of the sentence elements, since the subject pronominal should appear higher in the tree than the adverb), matters are further complicated by the fact that verbs are grouped together with adverbs when no other clitics intervene:

	(C	W+C)	(C	W)
(29)	dayʼ	ʔu+hay+du+b+ʔə	tiʔił	čxʷəluʔ
	completely	[pnt]+finish+[l.o.c.]+[md]+P	D	whale
	"that was the end of Whale"			

(Little Mink 29)

VPs also present difficulties in sentences like

	(W+C)	(C	C+W+C)	(C	W)
(30)	hikʷ+əwʼə	qa	tiʔił+ʔiišəd+ʔə	tiʔił	sbiaw
	big [surprise]	many	D+relatives+P	D	coyote
	"the relatives of Coyote really [are] very many"				

(Coyote 64)

where the head of the VP—the adverb *qa* "many"—cliticizes to the following NP instead of causing the predicted insertion of a phrase boundary immediately to its right.

    A further difficulty for predicting phrase boundaries with X-head Right comes from examples like those in (31), where—as in (26)—a phonological head is by no means a syntactic head.

(31)	(W)	(C	W)	(C	W)	(W)
(a)	q̓ʷuʔ+t+əb+əxʷ	tiʔił	ʔaciłtalbixʷ	tuul̓ʔal	bəkʷ	čad
	gather+[caus]+[md]+now	D	people	P	all	where
	"the people were gathered together from everywhere"					

(Little Mink 47)

	(C	W+C)	(C	W)	(W)	(W	…
(b)	huy	ʔabyidəxʷ+ʔə	tiʔił	x̌ʷuul	p̓aƛ̓aƛ̓	stab
	then	give+now+P	D	just	worthless	thing
	"then [he] gave [him] a *totally* worthless thing"					

(Coyote 17)

       (W)   (W)   (W)

(c)   stab+əxʷ   łu+d+s+huy   d+suq̓ʷsuq̓ʷaʔ
       what+now [irr]+1po+np+finish 1po+[rdp]+cousin
       "what do I do now, my cousins?"

<div align="right">(Coyote 37)</div>

The same problem arises when a phrase cuts across sentences in rapid speech:

    (C   W+C)   (C   W) (W)   (C   W) (C   W)

(32) [huy ʔabyidəxʷə   ti?ił x̌ʷuul p̓aƛ̓aƛ̓   stab] [gʷəl xʷi? dəxʷ+ha?ł+s]
      then give+now+P D   just   worthless thing prt [neg] np+good+3s
      "then [he] gave [him] a totally worthless thing and it was no good"

<div align="right">(Coyote 17 – 18)</div>

In situations such as this, it is difficult to see how a particle like gʷəl (its function here being more or less that of an interjection) can be taken as the syntactic head of the following phrase. Once again, the problems may not be insurmountable, but one starts to wonder at the utility of a syntactic explanation when a much more straight-forward phonological analysis is at hand.

3.2 Phrase Boundaries Reinforce Syntactic Boundaries

While the phonological phrasing can often "erase" a syntactic boundary, it does appear in many cases that, when a major syntactic boundary and a phrasal boundary coincide, the two serve to reinforce each other, and result in the insertion of an intonational phrase boundary (a pause of greater than 100 ms). The most obvious and most frequent example of this is the sentence boundary, where the end of a phonological phrase coincides with the end of the clausal unit, though—as we have seen—this boundary may be overridden in rapid speech. Another common I-phrase boundary comes at the division between predicate and objects, as in (33), which contains both a singular direct object and a predicate marked for plural subject.[6]

      (W+C)   § (C   W)

(33) bapa+d+əxʷ   əlgʷəʔ   ti?ił čxʷəlu?
      annoyed+[caus]+now [plural]   D   whale
      "[they] annoyed Whale"

<div align="right">(Little Mink 10)</div>

---

[6]Hess (1993) says of the [plural] morpheme: "By means of this word speakers make explicit that a third person referent is plural whether as agent, patient, or possessor, *e.g.*, 'they', 'them', 'their(s)'" (p. 219). It is most likely not in itself a pronoun, however: it is not obligatorily sentence-second as are subject pronominals, nor does it have any of the other forms (such as subordinate or coordinative) that the pronouns do. In fact, it is not obligatory and can be left out when discourse makes the plural nature of the third person clear. For the purposes of the discussion here it will be considered a part of the verb phrase indicating that a third person actant (which in these sentences has been elided) is plural rather than as an argument or modifier of a zero pronominal argument.

The division between a predicate nominal and its subject is often marked by an I-phrase as well.

```
       (C    W+C)      (C      W)      (W)  §  (C              W)
(34)  tiʔił  bibščəbə   tiʔił  suʔsuq̓aʔ+s, tətyika,  tiʔił  łu+d+s+yəhub+tu+bicid
      D   mink+and  D   cousin+3po Tetyika   D   [irr]+1po+np+tell+[caus]+2s
      "what I will tell you about [is] Little Mink and his younger cousin, Tetyika"
                                                              (Little Mink 5)
```

Similarly, adverbial predicates may also be set-off from their subjects,

```
       (C            W)    §    (C   W+C)                (C    W)
(35)  tiiləb       dxʷłaqt    tiʔił  s+łalilə           tiʔił  čxʷəluʔ
      suddenly  shorewards   D   np+going·ashore+P   D    whale
      "the whale went suddenly way up on shore"
                                                              (Little Mink 31)
```

as are most predicate adjuncts.

```
         (W)              (C    W)  §    (W+C)     (C    W+C)
(36)  bəčatəb+əxʷ       tiʔił  k̓ʷałaq  dəxʷ+ʔibəšə tiʔił  bibščəbə
      put·down+now   D   mat      np+walk+P  D    mink+and
         (C      W)
      tiʔił  susʔsuq̓ʷaʔ+s,
      D    cousin+3po
      "[they] threw down a mat for Mink and his younger cousin to walk on"
                                                              (Little Mink 44)
```

The division between coordinated clauses, marked grammatically by the use of the coordinative pronominals in initial position of the second clause, is often reinforced by an I-phrase boundary as well.

```
       (C      C+W)  §   (C                     W)
(37)  x̌ʷul̓  čəxʷəwahəb    čxʷa          xʷəbəbxʷəbaladib
      only  2s+howl     2s-coordinative  toss·head·from·side·to·side
      "you just howl and toss your head from side to side"
                                                              (Coyote 62)
```

It should be noted, however, that I-phrases are not entirely predictable on this basis alone. On the one hand, the size and complexity of the intonational phrase seems to vary a great deal depending on the rate of speech and the degree of care being taken by the speaker to make things clear. Stuttering, hesitation while thinking of phrasing or recalling words, and pausing for stylistic or dramatic effect also play a big role in the structure of the I-phrase, and very often the boundaries mentioned above—particularly that between predicate and object—are not distinguished prosodically from an ordinary phrase boundary at all. On the other hand, as we will see in the

next section, some intonational boundaries are required by the syntax, even when the results do not coincide completely with the phonology.

3.3 Syntax and Discourse Override Phonology

As noted above, the boundary between a VP and an adjunct is generally marked by an intonational phrase boundary when this boundary coincides with the optimal phonological phrasing. The syntactic predicate-adjunct boundary, however, is frequently preserved even when this violates the constraints on phrase-formation, as in

(38)   (W)   (C   W)   § (C   C+W)   (C   W)
(a) ʔəs+x̌icil   tiʔił čƛ̓aʔ   ʔə tiš+u+čalad+s   tiʔił sbiaw
     [stat]+angry D   stone   P D+np+[pnt]+chase D   coyote
     "Stone was angry as he chased Coyote"

(Coyote 30)

       (C   W)   §   (C   C+W)
(b) ʔa   tiiščətxəd   ʔal tudi+dəxʷ+əs+łałlil+s
     there D+bear   P   yonder+np+[stat]+live+3po
     "there [was] Bear at that place he lived"

(Bear & Fish-Hawk 1)

In these sentences, rather than the expected (CW+C)(CW), we get (CW) § (CC+W), the intonational boundary apparently preventing the clitic from passing over into the previous phrase and serving to keep the adjunct together as a prosodic unit. The same thing happens with vocative expressions:

        (W+C)   §   (W)
(39) ʔu+ʔəx̌ix̌+əd+əxʷ+čxʷ   bibščəb
      [pnt]+what·happens+[caus]+now+2s   mink
      "what are you doing, Little Mink?"

(Little Mink 17)

Here the pronominal clitic čəxʷ "you" would normally be expected to form a phrase with the following word; instead, it is forced to incorporate itself onto the end of the preceding W, as it would in utterance-final position. In general, both types of sentence seem to make use of the I-phrase boundary, but there are a few examples where a P, rather than the longer I, is inserted syntactically to preserve the unity of the adjunct; while this boundary is not always audibly different than an ordinary P, I have marked it with a carat to indicate its syntactic origins:

        (W+C)   (C   W) ^ (C   C+W)
(40) dəxʷ+čib+s+ʔə tiʔił s?uladxʷ   ʔə tiłə+bə+sx̌əs
      np+dip+s+P   D   salmon   P D+[add]+fat
      "for dipping the salmon, in lots of fat"

(Bear & Fish-Hawk 20)

The same phenomenon is observed with interjections, although in these cases there is more commonly a P-phrase boundary in place of an I-phrase:

(W) ^ (C   C+W)   (C   W)

(41)   ʔuu,   tux̌ʷ čəd+əcu+q̓ʷuʔ+əd   tə d+ʔiišed
         [intj]   just 1s+[cont]+gather+[caus] D 1po+relatives
         "well, I am just gathering my relatives"

(Coyote 66)

In the same way as with vocatives and adjuncts, the syntax here seems to insert a phrase boundary which has observable phonological effects; however, like sentence boundaries, all of these divisions can be overridden completely in rapid speech,

       (W+C)   (C   W)

(42)   tu+dᶻəlax̌adbid+əl tiʔił pədtəs
         [past]+visit+P   D   winter
         "[he] went to visit [him] in the winter"

(Bear & Fish-Hawk 5)

In such cases the phrasal pattern returns to normal, the preposition cliticizing to the verb to avoid the incorporation of the deictic as a prefix; however, it does seem that under ordinary circumstances the syntax will override the phonology, resulting in a re-patterning of phonological phrases.

     A more remarkable example of syntax overriding phonology can be found in the sentence in (43), which sets the topic for a following stretch of discourse:[7]

(43)   (C   W   C) § (W)
    (a) huy   ʔibibiš+əxʷ   tiʔił bibščəb
         then [rdp]+walk+now D   mink
         "then Little Mink was walking around"

(Little Mink 14)

       (W   C) § (W+C)   (C   W)   (W)
    (b) ʔu+łiʔdab tiʔił bibščəbə   tiʔił suʔsuq̓ʷaʔ+s tətyika
         [pnt]+troll D   mink+and D   cousin+3s   Tetyika
         "Little Mink and his cousin went trolling for fish"

(Little Mink 6)

       (W)   (W   C) § (W+C)   (C   W)
    (c) hay   čəl+du+b   tiʔił   sčətxəd+ə tiʔəʔ čičix̌
         well·then win+[l.o.c.]+[md] D   Bear+P   D   fish-hawk
         "ans so then was Bear defeated by Fish-Hawk"

(Bear & Fish-Hawk 93)

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[7]For a discussion of Lushootseed discourse patterns and the function of topic-setting sentences, see Beck (1995). For a more general discussion of such structures in English and Chinese, see Pu & Prideaux (1994).

This is a very specific construction found in a particular pragmatic domain, the beginning of an episode in discourse. The sentential topic, which has been isolated from the rest of the sentence by the I-boundary and given emphasis with loudness and sometimes length, must also be subject of the sentence it appears in and, generally, of all the sentences that follow it within that episode. From a phonological point of view, this construction is interesting in two respects. One is, of course, the insertion of the I-phrase boundary between the deictic and its NP; the second is the apparent lack of incorporation of the deictic to left of the intonational boundary. This admits of two possible explanations. One is simply that there are no phonological processes that might distinguish clearly between incorporation and encliticization in the environment in these particular examples (where a fairly inert /t/ follows either a stop or a fricative with which it is not likely to interact), although it seems that at least a reduction from tiʔiɬ to tiɬ should be an option (if not actual deletion of the /t/). The second is that the insertion of the I-phrase boundary in this position in some way protects the deictic from being incorporated into the preceding word, either by licensing an otherwise unattested phrasal coda or by allowing the deictic element itself to function as a phonological word. This latter possibility is given some support by sentence (c), which has a pause of almost 100 ms—a P-phrase boundary—between the verb and the deictic. If the deictic is in fact a word, its syntactic role may actually be that of resumptive pronoun (or the left-branching equivalent thereof). This would concord nicely with the role of its referent as sentential and discourse topic in two ways. First, it makes the NP a post-posed topic syntactically as well as pragmatically. Secondly, it explains the insertion and the odd position of the I-phrase boundary, which could be analyzed as setting off the sentential topic from the remainder of the sentence, including the deictic itself, in the same way that a phrase-boundary is used to offset an adjunct. This would give us a syntactic bracketing and re-gloss of (43b) along the lines of (44):

(W)   (W)   §   (W+C)   (C   W)   (W)
(44) [S [VP ʔu+ɬiʔdab] [NP tiʔiɬ]]   [NP bibščəb+ʔi tiʔiɬ suʔsuq̓ʷaʔ+s tətyika]
        [pnt]+troll   D   mink and D   cousin+3s   tetyika
     "Little Mink and his cousin, they went trolling for fish"

While more supporting data is needed before we can draw any definite conclusions, it seems possible that these topic-setting constructions may in fact represent the use of deictics as words that we might expect from their status as potential predicates.

4 Conclusion

Although the amount of data examined for this paper was limited, it does seem that fairly coherent picture of Lushootseed phrasal structure has begun to emerge, and that the factors governing this structure are, above all, phonological rather than syntactic or semantic. This is especially true within the domain of the predicate-complement complex, where syntactic boundaries seem only to influence the phonology when these coincide with phonological ones. Outside of this domain, the influence of syntax and pragmatics becomes stronger, requiring the insertion of

phrasal boundaries to preserve the integrity of adjuncts, interjections, and paren-thetical entities such as vocatives in direct violation of the constraints on phrase formation. Similarly, the pragmatic process of topic-marking often results in a viola-tion of prosody, the markedness of the resulting phrase structure serving to code the introduction of a new discourse topic. On the basis of phenomena such as these, the conclusion that the processes governing the formation of phonological phrases must at the very least have some access to syntactic information seems inescapable; in particular, the phonology appears to be sensitive to the boundary between those elements directly associated with the sentence predicate (*i.e.* its arguments and mod-ifiers) and those which are more loosely associated to the sentence (adjuncts, topics, vocatives, etc.).[8] Such findings are unproblematic for models that assume some sort of derivational (or serial-representational) model running from semantics or syntax through to phonology, as long as these models allow the syntax to insert phrase boundaries or features that will trigger the appropriate boundaries in the phonology, although some models—particularly those that invoke movement of, say, topical NPs outwards from a base-generated internal position—will require more elaborate mechanisms than others, or mechanisms that will allow various levels of the derivational sequence to mark for phrasal boundaries.

On the other side of the coin, our investigation (once again, not surprisingly) has not turned up any evidence for the influence of phonology on the syntax of the language predicted by models such as that of Inkelas & Zec (1990). The only candi-date that comes close to this is the phenomenon of the sentence-second pronominal clitic (illustrated in (18), (26), (39), and (42)), which, one could argue, sees a phonolog-ical characteristic of an element (that it is not a word) influencing the placement of that element in the sentence; this argument could be strengthened by pointing out that most non-word modifiers and arguments of a predicate (with the exception of the plural morpheme and deictics) are fronted and therefore conform to the clitic-before-word ordering required by the prosody, as opposed to the position dictated for them by some underlying syntactic structure (assuming that this structure makes a different prediction, which would depend on your framework). This is a dangerous row to hoe, however, not only because it leads to a huge number of complications—such as explaining the fact that pronominals follow a predicate if the predicate is sentence-initial, or that a fronted adverb can in fact be a phonological word, as in (6a)—but because it also obscures the fact that the sentence-second position (Wacker-nagel's position) for pronominal clitics is a common phenomenon not only in other languages of the Pacific Northwest, but for all types of clitic in the world at large (Trask 1993)—and in at least some of these languages it seems likely that there is no C-before-W condition on the structure of phonological phrases. So, while the absence of evidence is not really proof to the contrary, it does appear that, in Lushootseed at any rate, there is no convincing evidence for the influence of phonology over syntax, and that the influence of syntax over phonology is highly

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[8]The way in which one is going to express this distinction in formal terms will depend entirely on one's theoretical framework; I know of no theory that does not in some way rely on a distinction of this nature (complement/adjunct, actant/circonstantial, direct/peripheral, etc.) and at the same time fails to give a rigorous, airtight way to differentiate between the two.

constrained and limited to certain well-defined domains—in other words, that while phonology may from time to time be called upon to reinforce or mark some types of syntactic information, it by and large leads its own life and follows its own constraints, some of which have been touched on here, in the context of the Lushootseed phonological phrase.

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Abstract

An examination of the Lushootseed phonological phrase reveals a highly regular pattern of phrase-formation based on the status of lexical elements as clitics or phonological words. Phrase-structure is reminiscent of syllable-structure in that phrases consist of a nucleus (a single phonological word) and an onset (a clitic); phrasal codas are ruled out, clitics following a word within a phrase becoming incorporated as affixes. Phrasing takes little account of syntactic boundaries, although phrases are sensitive to complement-adjunct distinctions and certain discourse processes; the reverse pattern—phonology affecting syntax—is not observed, offering some support for derivational or serial models of language where semantics and syntax precede phonology.