

Phrasal tone and syntax in San Mateo Huave*

DRAFT – comments welcome

Marjorie Pak
mpak@ling.upenn.edu
University of Pennsylvania

January 10, 2007

Abstract: In the San Mateo dialect of Huave, utterances are divided into ‘tonal domains’ that each have exactly one H pitch peak. Pike and Warkentin (1961) show that in simple SVO sentences, the subject forms its own tonal domain while the verb and object group together—a pattern that is, in itself, consistent with a number of possible explanations. This paper, based on a new corpus of 334 phrases elicited during on-site linguistic interviews, looks more closely at how exactly syntactic structures are parsed into tonal domains—which constituents are grouped together tonally, which remain separate, and why. When SVO and VOS sentences are compared, a striking contrast emerges: postverbal subjects, unlike preverbal subjects, consistently group together with the verb. Pursuing the basic intuition that phonological closeness reflects syntactic closeness, I argue that preverbal subjects are structurally higher than postverbal subjects in Huave, and introduce a provisional syntax that accounts for this asymmetry.

1. Introduction: the basic pattern

The dialect of Huave (isolate) spoken in San Mateo del Mar, Mexico, exhibits one of the hallmark properties of tone languages—the use of different pitch contours to distinguish lexical items that are otherwise phonologically similar. As illustrated below, Huave words pronounced in isolation have exactly one pitch peak, a high tone (H), which usually docks on the final syllable. In some cases this H is immediately followed by a low tone (L), producing a falling tone on the final syllable (HL) (2). Whether a

* For helpful comments and discussion I am indebted to Gene Buckley, Keelan Evans, Aviad Eilam, David Embick, and especially Rolf Noyer. I would also like to thank the participants in the November 9, 2006 Speech Lunch at Penn, as well as our generous hosts and informants in San Mateo del Mar. All errors are of course my own.

given word ends with H or HL is an arbitrary property of the particular vocabulary item; cf. the minimal pairs in (1)a/(2)a and (1)b/(2)b. Any syllables preceding the pitch peak are regularly assigned L.¹

- | | |
|--|---------------------------|
| (1) Words with final H | (2) Words with final HL |
| a. kàwák ‘chicozapote (a fruit tree)’ | a. kàwák ‘south’ |
| b. chíl ‘mojarra negra (a fish)’ | b. chíl ‘needle’ |
| c. ndeór ‘mud’ | c. nàmbeôr ‘black’ |
| d. nàdám ‘big’ | d. nàngân ‘sweet’ |
| e. sàmpúy ‘coyote’ | e. kôy ‘rabbit’ |
| f. nàxéy ‘man’ | f. kàfêy ‘coffee’ |

While the contrast between final H and final HL is easily distinguished on isolation forms, it is often neutralized in phrasal contexts. In the bracketed verb phrases in (3), for example, the boldfaced adjectives from (1d) and (2c) receive H tone throughout:

- | | | | | | | |
|--------|-----------------------------------|------|------------|----------------|---------|-------------|
| (3) a. | tím | xíkè | [tâhâwás | nádám | sámpúy] | (< nàdám) |
| | yesterday | I | pst.see.1s | big | coyote | |
| | ‘Yesterday I saw a big coyote.’ | | | | | |
| b. | tím | xíkè | [tâhâwás | námbeôr | kòy] | (< nàmbeôr) |
| | yesterday | I | pst.see.1s | black | rabbit | |
| | ‘Yesterday I saw a black rabbit.’ | | | | | |

These sentences demonstrate a rule of *High Tone Plateau* (HTP), which spreads a H tone rightward onto any following words up to the right edge of a phrasal domain. In (3), HTP extends rightward from the final syllable of the verb *tahawas*, wiping out the underlying tonal contrast between the domain-medial *nadam* and *nambeor* and continuing to the end of each sentence, stopping short only of the lexically marked final syllable *koy* in (3)b (see §3). HTP does not apply in (1) or (2), where each word is spoken in isolation and necessarily forms its own domain. As argued by Noyer (1991), the correct generalization for Huave seems to be that there is exactly one H pitch peak *per phrase*, whether the phrase contains a single word (with a single H-toned syllable) or several words (with the H tone potentially extending across multiple syllables).

¹ Throughout the paper, high tones are marked with acute accent (á), low tones with grave accent (à), and falling tones with a circumflex (â). The orthographic conventions used in Kreger and Stairs’ (1981) Huave-Spanish dictionary are adopted here in a slightly modified form: **x** is a voiceless alveopalatal fricative, **u** is a high central unrounded vowel, **ch** is a voiceless alveopalatal affricate, **rr** is an alveolar trill, **ng** is a prenasalized /g/, **y** is a palatal glide, and other letters have their normal IPA values. In syllables containing glides resulting from the spreading of palatal features from surrounding consonants (usually transcribed with **e** or **i**, as in (1)c), tone is marked only on the nuclear vowel.

The basic question addressed in this paper is *what exactly counts as a phrase* for the purposes of HTP and other tone-association rules in San Mateo Huave. Pike and Warkentin (1961), the seminal work on Huave phrasal tone and previously the only primary data source including tonally transcribed phrases, report that ‘tone is used extensively for syntactic purposes’ in Huave (627) but leave unanswered a number of questions about which syntactic constituents are grouped together into tonal domains, which remain separate, and why. For example, we might ask why the preverbal subject *xike* in (3) has its own phrasal pitch peak instead of being included in a HTP domain with the following verb—is it because it is an external argument, because it has been moved to some clause-peripheral topic position, or because there is some kind of prosodic-weight restriction on the size of tonal domains? Pike and Warkentin note the basic pattern but do not examine the range of cases that would be needed to distinguish among these (and other) possibilities. The follow-up study presented here serves a dual purpose: (a) it extends our knowledge of Huave, including the particularly understudied area of Huave syntax; and (b) it contributes to a growing literature on the principles that guide syntax-phonology interactions cross-linguistically.

The current study draws on a new corpus of 334 phrases—including SVO and VOS sentences, intransitives, ditransitives, and modified verb phrases—elicited from five native speakers during on-site linguistic interviews in 2004 and 2006. I begin with some background information about Huave morphosyntax and word order (§2), then demonstrate how tone melodies are assigned in Huave according to Noyer (1991) (§3). In §4 I review the basic tone-domain breakdowns described in Pike and Warkentin (1961), and in §5 I present our findings. As we will see, sentences like (3) demonstrate a robust tendency for verbs to group together with *all* following clause-internal objects and modifiers while preverbal subjects remain separate. Furthermore, when we compare Huave SV(O) sentences to V(O)S sentences, a striking contrast emerges: postverbal subjects, unlike preverbal subjects, consistently group together with the verb. Pursuing the basic intuition that phonological closeness reflects syntactic closeness, I argue in §6 that preverbal subjects have moved to a structurally higher position than postverbal subjects in Huave. In the provisional syntax sketched here, SVO order is derived by optional raising of the subject to a

clause-peripheral location. I compare this treatment with other possible analyses and discuss some predictions that remain to be confirmed. Section 7 concludes the paper.

2. Preliminaries on Huave morphosyntax and word order

In order to familiarize the reader with the kinds of structures we will be looking at throughout the paper, I begin with some background information about Huave word and sentence structure. This information is taken primarily from Stairs and Hollenbach's (1981) grammar, supplemented by my own field observations and studies of Huave texts.² A basic question introduced here, which will play a central role in the subsequent discussion, is where exactly the subject is located across a range of sentence types.

Huave is a pro-drop language. Transitive and intransitive verbs are inflected for person and number agreement with the (overt or null) subject; verbs are also inflected for tense and what can roughly be called 'finiteness' (*n-/m-* is prefixed in an assortment of subordinate contexts, labeled 'sub' in the example glosses here). There is an eight-way pronominal distinction: 1, 2, and 3 singular and plural, plus a dual and an inclusive first-plural; gender is not distinguished. Subject and object pronouns are identical except that first- and second-person subject pronouns optionally end with a final harmonizing vowel. Outside of the pronominal system, subjects and objects are not distinguished morphologically, and number distinctions are limited to a small set of roots and derived nouns (Stairs and Hollenbach 1981:291). There is no copular verb.

At least in some contexts, word order in Huave is fixed. Within noun phrases, for example, Stairs and Hollenbach (1981:310-314) report that: (i) the definite determiner *a/aag(a)* (when used) must be initial; (ii) the deictics *kam*, *kiah*, *kiun* (approximately 'this,' 'that right there,' 'that over there,' resp.) must be final; (iii) numerals and other quantifying determiners precede the head noun; and (iv) possessed nouns precede possessors (and are inflected for person/number agreement with the possessor). The ordering of

² The written materials examined here include the example sentences in Pike and Warkentin (1961), miscellaneous example sentences from Kreger and Stairs (1981) and Stairs and Hollenbach (1981), the first ten texts in Radin (1929) (oral narratives told by a male speaker of San Dionisio Huave), and the St. John's gospel translation provided by La Liga Bíblica México (2005).

other modifiers within the noun phrase is less restricted: at least some adjectives can be either prenominal or postnominal (4), but it is not yet known if this flexibility is limited to a particular class of adjectives or if there are semantic differences between the two orders.

- (4) a. ahiur-ar noik **nakants chipin**
 find-dual one red tomato
 ‘(You and I) find one red tomato.’
 b. ahiur-ar noik **chipin nakants**

Within verb phrases, the default order is verb-object. Object-verb order occurs only once in our corpus and is rare in the written corpora I have examined; a plausible generalization is that it is limited to object *wh*-questions and other contexts where the object is emphasized or focused.

- (5) **kas omb kit i-ndium m-e-ngal**
 how.many egg chicken 2-want sub-2-buy
 ‘How many eggs do you want to buy?’ (Kreger and Stairs 1981:216)
- (6) **meawan tomiun al-wux mes t-ahoy**
 all money loc-on table pst-take
 ‘All the money that was on the table, he took.’ (Radin 1929:7)

In phrases headed by verbs that take two noun-phrase objects (e.g. *uuch* ‘give’), the default order appears to be DO-IO. The opposite order occurs occasionally in texts, but our informant F4 judged IO-DO sentences to have a corresponding reversal in argument interpretation in out-of-the-blue contexts (recall that neither object is marked for case).

To account for the facts reviewed so far, I assume that the main verb in Huave raises to T(ense) in the syntax to acquire tense and agreement inflection, passing through an intermediate head (which I will call Infl) where mood or finiteness is distinguished. The resulting complex T head includes (roughly in the order listed): tense features distinguishing present (\emptyset), preterite (*t-*), and future (*ap-/sa-*), among others; a *n-/m-* ‘subordinate’ prefix that presumably spells out [-finite]/[irrealis] on Infl in certain contexts (e.g. in imperatives, purpose clauses, under T[+future] (Stairs and Hollenbach 1981:323-325)); a theme vowel; the verb root; and person and number agreement features copied from the subject.³

³ See Stairs and Hollenbach (1969) and Matthews (1972) for further details about verb morphology. Note that person and number exponents are realized sometimes prefixally, sometimes suffixally, and sometimes ‘split’ between the two positions; see Noyer (1994), Embick and Noyer (2005:20ff), for details and analyses. I am

- (7) ap - m - a - xom - uw
 T[+fut] - Infl[-finite] - Theme - Root['find'] - Agr[3pl] 'they will find'

As in French and other languages with v-to-T raising, the verb 'skips over' intervening left-adjoined adverbs, resulting in word orders like (8), shown schematically in (9):

- (8) s-a-haw **nahen** nop tiitud
 1s-th-see quickly one tick
 'I quickly see one tick.'

- (9) TP[...T[AGR[s-] Ø v[TH[a- haw]_i] ... vP[nahen ...v[TH[a] haw]_i ... DP[nop tiitud]]]

The position of the subject with respect to the verb is variable in Huave. Perhaps for this reason, 'basic' word order in Huave has been described both as VOS (Fromkin and Rodman 1998:470) and as SVO (Campbell et al. 1986:547; SIL International Ethnologue). According to Stairs and Hollenbach (1981:335), the position of the subject is influenced by the transitivity of the verb:

- (10) 'In intransitive sentences that have a subject, the most frequent order is VS. In transitive sentences that have a subject, the most frequent order is SVO.' (translated from Spanish)

Dryer (1997, 2005) reports that transitivity plays a similar role in word order in the Mexican languages Huastec, Tepehua, and Michoacán Nahuatl, as well as in the Austronesian languages Iaa and Muna. A plausible explanation for this pattern (at least for Huave) is that in a significant portion of intransitive sentences—namely those with unaccusative verbs—the 'subject' is merged as an object and is allowed to remain in situ instead of raising to Spec,vP or Spec,TP.⁴ In other words, the asymmetry noted in (10)

assuming that theme vowels and person-number agreement nodes are inserted postsyntactically, rather than heading vP or AgrP projections in the syntax, but nothing here hinges on this assumption.

⁴ Note that Huave unaccusative verbs, like other verbs, agree with the 'subject' in person and number:

- (i) xowuy a-pat-uw xe-pet
 much th-be.fierce-3p 1-dog
 'My dogs are very fierce.' (Kreger and Stairs 1981:48)

Under the account just proposed, the verb *apat* in (i) would be agreeing with a structural object rather than a structural subject. Some evidence that object-agreement is generally available in Huave is given in (ii)-(iii). In (ii) the plurality of a direct object (whose number would otherwise be undistinguished) is indicated by a suffix on the verb. (iii) shows that the *n-/m-* subordinate prefix in InflP is sometimes conditioned not only by (non)finiteness but also by whether the verb it attaches to takes a direct object or not (Stairs and Hollenbach 1981:291, 324):

- (ii) tim t-a-ngal-as-uw a kawuy
 yesterday pst-th-buy-1s-3p the horse 'Yesterday I bought the horses.'
- (iii) a. t-amb-as n-andok tixem
 pst-go-1sg 1.sub-fish shrimp 'I went to fish shrimp.'

could have to do with argument structure rather than (just) transitivity; if unergatives were isolated, they might be expected to have the same default subject-initial order as transitives (and likewise, if unaccusatives were isolated, they might turn out to be overwhelmingly verb-initial simply because Huave is VO rather than OV). A larger corpus study of spontaneous Huave discourse will be needed in order to verify this hypothesis.

In the meantime, it is worth emphasizing that the statement in (10) describes a tendency rather than a hard-and-fast rule. VOS sentences, in particular, occur alongside their more frequent SVO counterparts in all of the corpora examined here, and our informants generally accepted VOS sentences as grammatical in out-of-the-blue contexts. While further corpus studies may show that the choice between SVO and VOS is constrained by information-packaging principles (focus, relative salience in the discourse, etc.), we at least know at this point that Huave VOS is more freely available than the superficially similar English ‘afterthought’ construction below:

(11) He_i really annoys me, John_i (I mean).

John in (11) is introduced as a repair device, to aid the hearer in identifying the referent of *he*; it is also phonologically separated from the preceding content by an independent pitch contour and an optional intervening silence (Grosz and Ziv 1996). While afterthought constructions may very well be available in Huave as well, the overwhelming majority of postverbal subjects in our corpus do not have these properties: they are used in both first and second repetitions of the same utterance, suggesting that they are planned rather than corrective, and—as we will see in §5.4—they are not set off by pauses or pitch changes but are systematically included into the same phonological domain as the preceding predicate.

The following examples demonstrate the range of available word orders discussed so far:

SV:

(12) ahkuw a hael kiah xowuy aw
 such the cloth that much fade
 ‘That kind of cloth fades a lot.’ (Kreger and Stairs 1981:76)

b. t-amb-as s-andok
 pst-go-1sg 1-fish ‘I went to fish.’

- (13) nahtah ngo m-a-ndium
 woman not sub-th-want
 ‘The woman didn’t want to.’ (Radin 1929:4)

VS:

- (14) t-a-peay mi-noh
 pst-th-arrive pos-spouse
 ‘Her husband arrived.’ (Radin 1929:4)

- (15) a-ntsorr-uw a pet
 th-bark-3pl the dog
 ‘The dogs bark.’

SVO:

- (16) namix kich atsohch-uw a paleta
 little little lick-3pl the popsicle
 ‘The children lick the popsicles.’ (Kreger and Stairs 1981:218)
- (17) maria a-wichwich mi-chiig-neh ti-how
 Maria th-rock pos-younger.sibling-3s in-hammock
 ‘Maria rocks her little sister in a hammock.’ (Kreger and Stairs 1981:77)

VOS:

- (18) t-a-mbiy mi-wakux naxey kam
 pst-th-kill pos-cow man this
 ‘This man killed his cow.’ (Radin 1929:2)
- (19) t-a-toing xe-kamis a sats
 pst-th-catch lpos-shirt the thorn
 ‘The thorn caught my shirt.’ (Kreger and Stairs 1981:191)

VSO order, another logical possibility, occurs in Radin (1929) and the St. John’s gospel when the object is a quotation or complement clause. I assume that the word order in such cases results from extraposition of the object. In fact, I will assume that this type of extraposition is obligatory, since VOS order in sentences where the object is fully clausal is so far unattested (see §6.2):

- (20) a. ngom m-a-haw t_i naxey kam [tiul mintah a-kiiub]_i
 not sub-th-see man this if wife th-accompany
 ‘This man didn’t realize that his wife was with him.’ (Radin 1929:4)
- b. * ngom m-a-haw [tiul mintah a-kiiub] naxey kam

Given that both V(O)S and SV(O) orders are available in Huave, what is their underlying syntax? One possibility, featured in Rizzi’s (1982) treatment of VOS in Italian, is that the two orders have the

same abstract hierarchical structure and that their only difference is that the subject is linearized as a left-specifier in SV(O) sentences and as a right-specifier in V(O)S sentences. In the next three sections I present evidence from the phonology that raises a problem for this type of approach. Specifically, I show that preverbal subjects consistently form their own tonal domains, separate from the verb, while postverbal subjects consistently group together with the verb—an asymmetry that (taken together with other findings) cannot be readily accounted for if both word orders have the same underlying hierarchical structure. As an alternative, I will argue that preverbal subjects have moved to a structurally higher position than postverbal subjects. I refer to this position as Spec,CP, under the assumption that this movement is a kind of topicalization, but nothing hinges on the use of this particular label.⁵

(21) SVO order derived by movement: $_{CP}[\mathbf{subject}_i \dots [[\mathbf{verb object}]\mathbf{subject}_i]]$

The internal syntax of VOS sentences is discussed in §7.

Before moving on, notice that VOS is in a sense ‘more basic’ than SVO under the current treatment because it involves fewer derivational steps. This does not, however, necessarily lead to the (apparently undesirable) prediction that VOS should be more frequent than SVO. Since Huave is a pro-drop language, it could turn out that the conditions that force a subject to be overt tend to co-occur with the conditions that force a subject to be sentence-initial, so that SVO becomes the ‘default’ order for sentences with overt subjects. For example, suppose that a subject is overtly realized iff it is not already a salient entity in the discourse, and that movement to clause-initial position sets a subject up as a ‘topic,’ or an entity that will be referred to in subsequent utterances. (For some proposals along these lines in other languages, see Vallduví and Engdahl (1996), Hoffman (1998), and other papers in the Walker et al. (1998) volume.) VOS order will then occur only in cases where the speaker wishes to clarify what the subject refers to without setting up that referent as a salient entity in the discourse—a possible but relatively infrequent scenario. This hypothesis is intended only to be illustrative; specific hypotheses about the pragmatic conditions on pro-drop and word order in Huave cannot be investigated here, given that our main corpus

⁵ The movement-based analysis here could also be recast as having the apparent subject base-generated in the higher position while the true subject, a null *pro*, remains in situ (see e.g. Alexiadou and Anagnostopoulou 1998). The differences between base-generation and movement treatments will not play a crucial role for our purposes.

consists of sentences in isolation rather than longer discourses. The main point for the purposes of this paper is that surface word order can be derived by any number of syntactic means, which do not necessarily relate pragmatic ‘markedness’ to derivational complexity.

3. Deriving tonal melodies within phrases (Noyer 1991)

In general, it is fairly easy to tell where tonal domains begin and end in Huave: there is exactly one pitch peak per domain, so any time we see a fall from H to L (e.g. at the end of the subject *xike* in (3)) we know that a tone-domain boundary has been reached. However, the exact shape of the (L)H(L) tonal melody varies considerably from phrase to phrase: the H pitch peak may be realized on a single syllable or spread over several syllables, may be preceded by a series of L tones, or may surface as part of a HL contour tone. While these distributions may seem irregular or even random at first sight, Noyer (1991) shows that they are in fact systematically constrained by the syllable structure and underlying tones of the morphemes that comprise a given domain. I briefly review his analysis here, with the aim of making subsequent examples in the paper maximally clear to the reader.

The basic claim in Noyer (1991) is that tone and stress in San Mateo Huave are both calculated by the same metrical grid (Halle and Vergnaud 1987). More precisely, tone-association rules are argued to apply to a constituent defined by the grid—the line 2 foot—the end result being that the location and extent of the pitch peak on a given phrase are largely predictable.

Most Huave words end with heavy syllables, which regularly receive primary word stress.⁶ The small class of function words and loanwords that end with light syllables (e.g. *xike* ‘I,’ *tele* ‘TV’) have penultimate stress instead. Noyer accounts for this pattern with the following grid-construction rules:

⁶ I am abstracting away from the computation of word-internal secondary stress; my grids are therefore one level shorter than Noyer’s (my line 2 corresponds to Noyer’s line 3 and so on). Aside from being possible docking sites for phrasal H and lexical L, stressed syllables are distinguished from unstressed syllables by the full voicing of the /Vh(C)/ rime (compare the boldfaced second syllables in **tashehp**-ius ‘I bathed’ (no stress), **tasheeb** ‘s/he bathed’ (primary stress), and **tasheeb**-asan ‘we bathed’ (secondary stress)). Further correlates of primary and secondary stress in Huave (e.g. duration, amplitude) have not been systematically studied to my knowledge.

- (22) a. Syllable heads are stress-bearing units and are projected onto line 0.
 b. The final segment of a word is extrametrical.
 c. Line 0 feet are unbounded and right-headed; heads are promoted to line 1.

Rule (22)c produces default final stress for words ending with heavy syllables (e.g. *kafey* ‘coffee’). Rule (22)b prevents a word-final vowel from being projected onto line 0, so that words like *xike* and *tele* receive penultimate stress.⁷

- (23) a. $\begin{array}{l} 1 \quad * \\ 0 \quad (* \quad *) \\ \text{kafe}\langle y \rangle \text{ ‘coffee’} \end{array}$ b. $\begin{array}{l} 1 \quad * \\ 0 \quad (*) \\ \text{xik}\langle e \rangle \text{ ‘I’} \end{array}$

The metrical grid continues to be built up as larger syntactic objects are computed. Specifically, Noyer argues for an ‘inner cycle’ in which right-headed line 1 feet are constructed, and an ‘outer cycle’ in which left-headed line 2 feet are constructed.

- (24) Inner cycle: Line 1 feet are unbounded, right-headed. Promote heads to line 2.

- $\begin{array}{l} 2 \quad \quad \quad * \\ 1 \quad \quad (* \quad \quad *) \\ 0 \quad (* \quad *) \quad (* \quad *) \\ \text{nerraa}\langle r \rangle \text{ kafe}\langle y \rangle \text{ ‘hot coffee’} \end{array}$

- (25) Outer cycle: Equalize stress (i.e. add a line 2 asterisk above newly-introduced words).

Line 2 feet are unbounded, left-headed. Promote heads to line 3.

- $\begin{array}{l} 3 \quad \quad \quad * \\ 2 \quad \quad (* \quad \quad \quad *) \\ 1 \quad \quad \quad * \quad \quad (* \quad \quad *) \\ 0 \quad (* \quad * \quad *) \quad (* \quad *) \quad (* \quad *) \\ \text{tanganeo}\langle w \rangle \text{ nerraa}\langle r \rangle \text{ kafe}\langle y \rangle \text{ ‘(S/he) drank hot coffee.’} \end{array}$

The crux of Noyer’s proposal is the idea that *the line 2 foot is the domain for three tonal rules*, which I will call Lexical L Licensing, Phrasal H Insertion, and High Tone Plateau (HTP).

- (26) Line-2 tonal rules in San Mateo Huave Huave (ordered):

- a. Lexical L Licensing: Certain morphemes have an underlying L tone; this ‘lexical L’ is licensed only at the right boundary of a line 2 foot and deleted elsewhere.

⁷ For current purposes the rules in (22) are adequate, but other formalizations are probably possible. The basic observation is that Huave has right-aligned moraic trochees, although there are a few words that end with a heavy syllable followed by a light syllable (e.g. the 1pl inclusive subject pronoun *ikootsa*) that might present a challenge for the idea that moraic trochees are quantitatively balanced cross-linguistically (cf. Hayes 1995).

- b. Phrasal H Insertion: Assign H to the head of a line 2 foot (i.e. the vowel that projects the leftmost line 2 asterisk). If this vowel already has lexical L, a HL contour tone is produced.⁸
- c. High Tone Plateau: H spreads rightward within the line 2 foot.

A further rule, called Default L, assigns L to all toneless syllables at the end of the derivation.⁹

Noyer illustrates these rules with several examples from Pike and Warkentin (1961). A sample derivation is shown in (27), repeated from (25). The line 2 foot, the domain for the rules in (26), is boldfaced, as are the tone-bearing units that are affected by each stage of rule application.

- (27)
- | | | | | | |
|---------------|----|-----------|----|-----|-----------|
| line 3 | | * | | | |
| line 2 | | (* | | | *) |
| line 1 | | * | | (*) | *) |
| line 0 | (* | * *) | (* | *) | (* *) |
- tanganeó<w> nerraa<r> kafe<y> ‘(S/he) drank hot coffee.’
- a. Lexical L: tanganeow nerraar kafèy
 - b. H insertion: tanganeów nerraar kafèy
 - c. HTP: tanganeów nérráár káfèy
 - d. Default L: tàngâneów nérráár káfèy

Kafey has a Lexical L tone, which is licensed because it appears at the right edge of the domain ((27)a). Phrasal H is then assigned to the head of the line 2 foot – the leftmost asterisk, in this case *-neow* ((27)b). HTP applies next, spreading Phrasal H rightward through the line 2 foot ((27)c). Finally, Default L tone is assigned to the pretonic syllables *tanga-* ((27)d).

If a noun phrase is pronounced in isolation, a line 2 constituent is still formed, but without any new material being introduced between the first and second cycles. The shape of the phrasal pitch peak is therefore predicted to be somewhat different. Consider (28):

- (28)
- | | | | | | |
|---------------|----|-----------|-----|----|-----------|
| line 3 | | * | | | |
| line 2 | | (* | | | *) |
| line 1 | | * | (*) | *) | |
| line 0 | (* | *) | (*) | *) | |
- nerraa<r> kafe<y> ‘hot coffee’
- a. Lexical L: nerraar kafèy
 - b. H insertion: nerraar kafèy

⁸ More precisely, Noyer argues that an X-slot is inserted to support phrasal H, producing a long vowel (áá).

⁹ Since the syllables that receive Default L are inevitably located at the left and right edges of the domain, Default L could probably be reanalyzed as %L and L% boundary tones. This adjustment might provide a way to account for non-L final unstressed syllables in yes-no questions (e.g. the final M tones on *xikóona* ‘(Is it) us?’ (< *xikónà*; Pike and Warkentin 1961:642)) and possibly in other environments as well (e.g. lists, vocative chants).

- c. HTP: NA
 d. Default L: n̄errãâr kâfêy

Unlike the verb phrase in (27), which has a sustained H plateau, the noun phrase in (28) has a sustained pretonic default L followed by a HL contour tone. Both structures have the same basic (L)H(L) melody, however, as predicted by Noyer’s analysis.¹⁰

Figures 1 and 2 below show pitchtracks and spectrograms for (28) and (27), respectively. In Figure 2, the verb phrase is part of the SVO sentence in (29). Notice that the preverbal subject in this sentence is treated as its own tonal domain, with a pitch peak on the final syllable; this is part of a robust tendency for preverbal subjects to phrase separately that will be discussed in more detail below.

Figure 1. Noun phrase n̄errãâr kâfêy ‘hot coffee’ in isolation

Pitch range: 150-400 Hz, Duration: 1.208 s

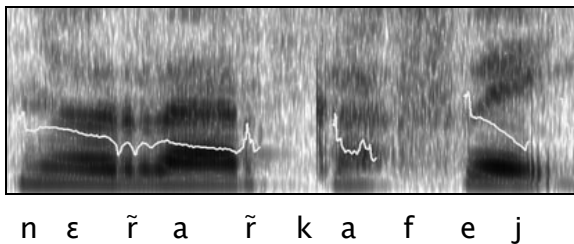
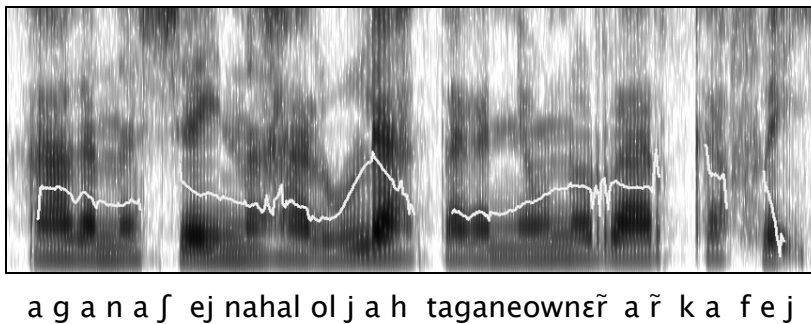


Figure 2. Noun phrase n̄errãâr kâfêy ‘hot coffee’ as object in an SVO sentence

Pitch range: 150-400 Hz, Duration: 3.367 s



¹⁰ As it turns out, the (L)H(L) melody is not always skewed rightward in noun phrases and leftward in verb phrases; our corpus contains several examples of HTP applying within isolation noun phrases (e.g. *n̄oik n̄ákãnts chípin* ‘one red tomato’), and Pike and Warkentin (1961:638) include verb phrases where Phrasal H docks on the object rather than the verb (e.g. *teàsàhàw òlám* ‘I’m seeing sugarcane’). The present study is primarily concerned with how domains are formed, rather than with where phrasal H docks within each domain, and does not rely crucially on the idea that noun phrases are right-headed while verb phrases are left-headed. One possibility is that the docking site of phrasal H is influenced by the focus structure of the sentence, so that e.g. a default accent on a verb is deleted if the verb is presupposed. I leave this question for future work.

- (29) ààgà nàxèy nàhàl òleâh tângàneów **nérráár káfèy**
 the man long body drink.pst hot coffee
 ‘The tall man drank hot coffee.’

To summarize, Noyer (1991) shows that tones are assigned at the level of the phrase, rather than the word, in San Mateo Huave. His analysis accounts for the following facts:

- (30) a. Each phrasal domain—a unit containing at least one word—has exactly one H pitch peak (i.e., there are no words with two pitch peaks in isolation, like ***nípilán** (cf. *nípilán* ‘people’)).
- b. The pitch peak must begin either on a heavy word-final syllable or immediately before a light word-final syllable (ruling out e.g. **nèrrààr káféy*, **nàdàm tèlé*).
- c. If one or more words follow the beginning of the pitch peak within the phrase, the pitch peak extends rightward to the end of the phrase, stopping one syllable short iff (i) the final syllable is lexically marked with L tone, or (ii) the final syllable is light. (I.e., there is at most one L tone at the right edge of the domain, ruling out e.g. **tàhávás nípilàn*.)
- d. Syllables preceding the pitch peak are always L (meaning, among other things, that no word in isolation can be HH, e.g. ***nádám**).

These basic generalizations are consistent with the data in Pike and Warkentin (1961) and are confirmed by the current study as well. There are probably other ways of formalizing the type of object that Noyer’s tone-association rules apply to—e.g. by replacing the metrical grid with a ToBI-style prosodic hierarchy in the tradition of Beckman and Pierrehumbert 1986 et seq.—but the rules in (26) appear to derive the correct generalizations about the tonal composition of Huave phrases, and for the purposes of this paper we can assume that they apply to some kind of phrasal domain. The question I turn to next is *how exactly utterances are parsed into phrasal domains* in the first place.

4. Defining the tonal domain: initial observations (Pike and Warkentin 1961)

Noyer (1991) does not offer a formal answer to the question of how tone domains are defined; that is, he argues that syntactic structure is mapped to metrical structure at two separate cycles but does not explicitly state how much structure can be included in a cycle before it is closed off. A review of Noyer's data source, Pike and Warkentin (1961), gives us some generalizations to start with.

Pike and Warkentin show that verbs group together with following noun phrases in at least the following three contexts (square brackets indicate tonal domains):

(31) Pike and Warkentin (1961): A verb forms a single tonal domain with a following noun (pronominal or nonpronominal) in contexts where:

- a. the noun is the head of a direct object noun phrase (DO), optionally preceded by adjectives, numerals, or determiners;

[tâxòmúw nók nángáh mánc̣hìik]
pst.find.3p one holy iron
'They found one bell.'

- b. the noun is the head of a DO and an adverb intervenes between the verb and the DO;

[sàhâw nâhén nóp tìlud]
1s.see quickly one tick
'I quickly see one tick.'

- c. the verb is intransitive and the following noun is a subject.

[lântsâhyâw xíwìs]¹¹
sweaty my.hand
'My hand is sweaty.'

On the other hand, according to Pike and Warkentin, *verbs do not group together with preceding subjects*: 'When a noun (or pronoun) precedes the verb, functioning as subject, it is tonally independent of the verb' (639). In the following examples we can tell that the preverbal subjects *xike* and *nehiw* form their own domains because of the L tones on each side of the subject-verb juncture:

¹¹ This is the only example of a VS structure provided in Pike and Warkentin 1961, and it may be incorrectly transcribed. *(L)a(n)tsahyaw* does not appear in Kreger and Stairs' dictionary, and it is a phonetically unlikely word given that palatalization does not normally occur after /h/ in Huave (Rolf Noyer, p.c.). The status of this example is not crucial for our purposes; the generalization that VS structures form a single tonal domain is corroborated by further examples from our corpus.

- (32) a. [xíkè] [sànèngóch]
 I 1s.meet
 ‘I meet (him).’
- b. [nèhîw] [àhòyíw ómál sàp]
 they carry.3p head sheep
 ‘They carry a sheep’s head.’

Right away, at least two sets of questions arise. First, why is the ‘subject’ in (31)c treated differently from the subjects in (32)? Is it because it is the argument of an unaccusative predicate and therefore structurally an object, or do postverbal subjects of all kinds group together with preceding verbs? Since Pike and Warkentin do not provide additional examples of VS structures, each of these proposals is equally possible.

Second, (31)b shows that a verb and direct object can group together even if they are nonadjacent. Does this mean that the entire verb phrase forms a single tone domain, regardless of how much material it contains? Or does the tone domain extend only to the end of the first object? Both patterns are attested in other languages; i.e. there is no *a priori* reason to favor one hypothesis over the other. For example, Truckenbrodt (1995, 1999) shows that penultimate vowels in the Bantu language Chichewa are lengthened only on the final word of a ‘maximal VP’—a ditransitive verb plus *both* of its objects—while in the related language Chimwiini, ditransitive VPs are broken up into two separate phonological domains with vowel lengthening on each object. This contrast is demonstrated in (33): each boldfaced penultimate vowel is ‘potentially’ long (e.g. if the word is pronounced in isolation) and square brackets indicate vowel-length domains, the observation being that long vowels are realized only on the domain-final word and neutralized elsewhere.

- (33) a. Chichewa: A penultimate vowel length domain is a maximal ‘lexically headed XP’, e.g. a verb plus all VP-internal arguments and modifiers (Truckenbrodt 1995, 1999).

[a-dzǎ-ónetsa mfúmú y-ǎ á-lenje gaǎlu]
 1-fut-show 9.chief 9-asc 2-hunter 1.dog
 ‘He will show the chief of the hunters the dog.’ (Truckenbrodt 1995:77)

- b. Chimwiini: A penultimate vowel length domain is maximally a head plus one complement, optionally including left-adjoined modifiers; remaining VP-internal objects form their own domains (Nespor and Vogel 1986; Selkirk 1986).

[panzi:ze choombo] [mwaamba]
he.took vessel rock

‘He ran the vessel onto the rock / He messed up.’ (Kisseberth and Abasheikh 1974:204)

Since Pike and Warkentin do not consider ditransitive verbs or other structures where the direct object is nonfinal within the verb phrase, it is unclear whether Huave has the pattern in (33)a or (33)b, or something else altogether.

The extended database that we assembled for the current study allows us to address the questions raised here. We will see, among other things, that: (a) Huave has something like the ‘maximal VP’ Chichewa pattern rather than the ‘head plus single complement’ Chimwiini pattern; and (b) postverbal subjects, unlike preverbal subjects, consistently group together with the verb in both VS and VOS structures. This second finding reveals an asymmetry that has not to my knowledge been attested in other languages. As noted earlier, I will pursue the hypothesis that this asymmetry comes about because postverbal subjects are *structurally closer* to the verb than preverbal subjects.

5. Defining the tonal domain: further observations from the current study

5.1 Data and methodology

The data discussed in this section are taken from a corpus of 334 recorded phrases elicited during linguistic interviews in July 2004 and July 2006 in San Francisco del Mar and San Mateo del Mar, Mexico. All five speakers who contributed to the corpus are native to San Mateo and bilingual in Spanish and Huave (although F4 learned Spanish late in childhood). Most of the material was elicited by presenting a phrase in Spanish and asking for the Huave equivalent. In some cases, some or all of the expected Huave words were provided with an English-style ‘questioned-list’ intonation and the informant was asked to (a) judge whether the resulting sentence was well-formed and (b) say it out loud if it was. The corpus also includes 24 sentences that were presented in Huave orthography and read aloud by

speaker F4. Speakers were usually asked to repeat each phrase once. In the handful of cases where the tone phrasing changed from one rendition to another, the two tokens were counted separately. Otherwise, each phrase counted in the corpus represents a distinct type.

Table 1. Participants

speaker	# phrases	sex	age	occupation/family
F1	14	F	~12	daughter of F2
F2	149	F	~35	mother of F1
F3	38	F	~40	weaver; married to M1
F4	88	F	14	domestic service
M1	45	M	~40	fisherman; married to F3

In general, the tone-domain parsing could be detected using a combination of impressionistic judgments and pitchtrack analysis. However, ambiguous cases of at least three types occurred. First, some utterances are syntactically ambiguous, independent of the placement of tones. In (34), for example, the 3sg pronoun *neh* could be either a sentence-final subject or a noun-phrase-internal possessor (which would make the possessor unambiguously 3sg rather than 2sg).

- (34) à-sóónd mí-kámís nèh
 [[th-remove pos-shirt] 3sg] ‘S/he removes his/her/your shirt.’
 [th-remove [pos-shirt 3sg]] ‘(S/he) removes his/her shirt.’

Furthermore, there are phonologically ambiguous cases where it is unclear whether two adjacent words belong to the same tonal domain or separate tonal domains. In (35), repeated from (3), *tim* and *xike* could be separate domains (each with their own phrasal H) or a single tonal phrase (where phrasal H docks on *tim* and spreads to *xi*-).

- (35) [tím] [xíkè][tâhâwás námbeór kòy]
 [tím xíkè][tâhâwás námbeór kòy]
 yesterday I pst.see.1s black rabbit
 ‘Yesterday I saw a black rabbit.’

Finally, there are cases where tonal distinctions are perceptually indistinguishable. If the /i/ in the subject pronoun *xike* ‘I’ is devoiced, for example, it is impossible to tell if the word is HL (and thus separate from a following verb) or LL (and thus phrased together with a following verb). Furthermore, particularly at low amplitudes, the range of pitches within an utterance sometimes becomes more compressed than is

usual for the speaker; in such cases it is difficult to tell whether e.g. a rise of 10-20 Hz should ‘count’ as a shift from L to H or not.

Certain cases of the last type—where it was impossible to distinguish L and H tones throughout the utterance—were excluded from the tonal analysis entirely. Other ambiguous cases were treated differently depending on the question being investigated. (35), for example, was treated as ambiguous with respect to whether preverbal subjects and adverbs are grouped together or not, but was counted as unambiguously demonstrating that a verb groups together with a following object (since the relevant part of the sentence, *tahawas nambeor koy*, is syntactically and phonologically unambiguous).

5.2 *Postverbal objects and modifiers*

Returning to the questions posed in the previous section, consider first the sentences below. In (36), a verb and its direct object are followed by a locative adverbial; (37) is a sentence with *uuch* ‘give,’ which takes two objects, and in (38) the head of the direct object is followed by a phrasal modifier. Strikingly, in all three sentences, HTP extends from the last syllable of the verb to the end of the utterance (domains bracketed):

- (36) [tə̀xðmás nótʃ kóçhíl sálín]
 pst.find.1s one knife Salina.Cruz
 ‘I found a knife in Salina Cruz.’ (vvv20)
- (37) [nèhîw] [tə̀hçúw nèrráár yów námbeór íchweàik]
 they pst.give.3p hot water black monkey
 ‘They gave hot water to a black monkey.’ (vvv33)
- (38) [xíkè] [sàngàneów çáw pópóç xówúy lángàn]
 I 1s.drink atole foam very sweet
 ‘I drink very sweet foam atole (a warm drink).’

Given these examples, we can already tell that the ‘head plus single complement’ hypothesis in (33)b above is unlikely to be correct for Huave. The bracketed tone domains in (36)-(38) clearly extend beyond the Chimwiini vowel length domains as analyzed by Nespor and Vogel (1986) and Selkirk (1986); otherwise, we would expect to find breaks after the direct object *kochil* in (36), *yow* in (37), and either *chaw* or *popox* (or both) in (38). Instead, the verb in Huave groups together with all of its following

modifiers and noun-phrase arguments. This tendency is quite strong, holding across 165 out of 181 verb phrases containing at least one object in our corpus, including 14 out of 15 ditransitive verb phrases.¹²

Based on what we have seen so far, Huave tone domains look very much like the Chichewa vowel length domains described briefly in (33). Assuming an OT-based ‘prosodic hierarchy’ model of the syntax-phonology interface, Truckenbrodt (1995, 1999) derives the Chichewa pattern with a high-ranking Wrap-XP constraint, which prevents any ‘lexically headed XP’ (VP, NP, AP) from being broken apart into separate Phonological Phrases (φ ’s). As long as Wrap-XP is ranked high enough, a verb phrase will be mapped to at most one Phonological Phrase, regardless of how internally complex or prosodically heavy it is. In Chimwiini, on the other hand, Wrap-XP is outranked by Align-Right(XP, φ), which causes a Phonological Phrase boundary to be placed at the right edge of every XP.¹³

Under Truckenbrodt’s analysis, subjects are predicted to phrase separately from the verb because they are external to the syntactic VP and there is no other ‘lexically headed XP’ that contains both the subject and the verb. This prediction is apparently borne out in Chichewa: Kanerva (1989) reports that subjects phrase separately from the verb whether they are preverbal or postverbal:

(39) [fiisi] [anagula chipewa ku-sanfrancisco dzuulo]
 hyena bought hat in-San.Francisco yesterday
 ‘The hyena bought a hat in San Francisco yesterday.’ (Kanerva 1989:ex. 111)

(40) [anamenya nyumba ndi mwaala] [mwaana] [osati mleenje]
 hit house with rock child not hunter
 ‘The child, not the hunter, hit the house with a rock.’ (Kanerva 1989:ex. 121a)

As we will see in §5.4, the parallelism between Huave and Chichewa breaks down when postverbal subjects are taken into account: postverbal subjects group together with the verb in Huave. This preverbal/postverbal asymmetry, which is also seen with certain types of adverbs (§5.3), is not easily explained under Truckenbrodt’s treatment—if subjects are base-generated external to the VP, there is no obvious way to get them inside the VP-inclusive tonal domain just in case they are postverbal.

¹² In the other 16 cases, the verb phrase was broken apart into two separate domains—most often at the juncture between an object noun and a modifier (e.g. after *popox* in (38)), where the postnominal modifier could be ambiguous between an adjoined AdjP and a reduced relative clause. See §6.3 for further discussion.

¹³ I am abstracting away from the effects of focus in Chichewa; briefly, Kanerva (1989, 1990) argues that additional boundaries are inserted after a focused constituent and any following noun phrases within the verb phrase.

For independent reasons, I assume a very different grammatical framework from Truckenbrodt’s—a direct-reference, cyclic-spellout model of the syntax-phonology interface (see e.g. Seidl 2001, Pak 2006) rather than an indirect-reference, optimality-theoretic model. However, I share Truckenbrodt’s basic assumption that syntactic closeness generally corresponds to phonological closeness—and likewise assume that there is some syntactic constituent, containing the verb and all of its following arguments and modifiers within the same clause, that is mapped to a single phonological domain in Huave. This constituent will need to be larger than Truckenbrodt’s VP, assuming that the verb raises to T for tense inflection in the syntax (§2), but the same basic approach is featured in both proposals. The fact that preverbal subjects escape this domain in Huave will be taken as evidence that they have moved to a higher, clause-peripheral position.

Before turning to the analysis, I present the remaining relevant data.

5.3 *Pre- and postverbal adverbs*

I follow Stairs and Hollenbach (1981) in using the term ‘adverb’ to refer to an uninflected word that modifies a verb with respect to time, duration, location, direction, intensity, manner, and so on. The positional restrictions on adverbs in Huave have not been systematically described; presumably the location of adverbs (and of adverbial PPs headed by *tiul* ‘in’, *wux* ‘on’, etc.) is restricted by their semantic scope as well as by language-specific and word-specific constraints on adjunction and linearization. At least some adverbs—including the adverbs of time and location in the examples below—are allowed to surface in multiple positions in the structure. Note in particular the interaction between adverb placement and tone-domain boundary placement in these examples:

(41) [tím] [tàxòmás ákókíáw pès]
 yesterday pst.find.1s five peso
 ‘Yesterday I found 5 pesos.’ (vvv23)

(42) [ìkórà] [ngànúy] [tàxòmár ákókíáw pés sálín]
 pro.dual today pst.find.dual five peso Salina.Cruz
 ‘Today you(sg) and I found 5 pesos in Salina Cruz.’ (zss20)

- (43) [mìkwàl xèkòmbùl] [àpmúúch óxép ákókiáw chípín áágá nàxéy kiàh]
 pos.son lpos.friend fut.give tomorrow five tomato the man that
 ‘My friend’s son will give five tomatoes to that man tomorrow.’
- (44) [xíkè] [tànàmóng tím] (<tànàmông)
 I pst.pass yesterday
 ‘I passed yesterday.’

As shown by these examples and Table 2, preverbal time/place adverbs phrase separately from the main verb, while postverbal time/place adverbs group together with it.

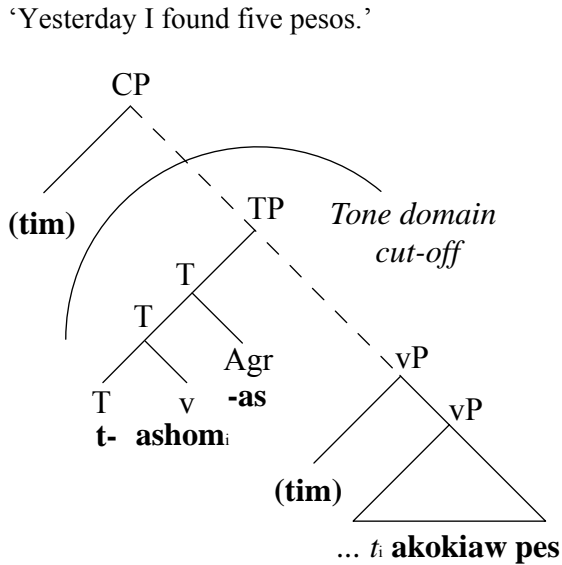
Table 2. Time and place adverbs in preverbal and postverbal position

	Phrased together with verb	Phrased separately from verb	Ambiguous
Preverbal	1	35	0
Postverbal	12	0	1

Recall from §2 that Huave verbs raise to a T head to acquire tense inflection. Assuming that *oxep* and *tim* left-adjoin to vP, then the word orders in (43)-(44) are straightforwardly derived. The preverbal adverbs *tim* and *nganuy* in (41)-(42) must then be located somewhere higher in the structure, whether they are base-generated there or have been moved from a lower position. I will call this position Spec,CP, and assume that Spec,CP is also the landing site for *wh*-phrases and topicalized subjects. Crucially, the Huave tone domain includes material up to but not including CP, so that CP-level adverbs are excluded from it and must phrase separately.

This hypothesis is shown schematically below; as we will see next, it relates in an interesting way to the placement of subjects in Huave.

Figure 3. Clause-peripheral and vP-adjoined adverbs in Huave



5.4 Pre- and postverbal subjects

The revised generalization in (45) summarizes the pattern we have observed so far.

- (45) A verb forms a single tonal domain with all of its following arguments and modifiers, while preverbal subjects and time/place adverbs form separate tonal domains.

Our data shows that this generalization extends to postverbal subjects as well—i.e., postverbal subjects behave like other postverbal arguments, and unlike preverbal subjects, in that they consistently group together with the verb.

As shown in §2, V(O)S word order appears to be generally available in Huave. Although overt subjects in our elicitations were almost always sentence-initial, this could have been an artifact of the elicitation method: since informants were translating from Spanish, and the Spanish stimuli were generally SVO, they may have simply been keeping the word order consistent between the two languages. Interestingly, F2 did produce 36 subject-final sentences (out of 98 total sentences with overt subjects); in 30 of these, the subject was included in the same tonal domain as the preceding verb:¹⁴

¹⁴ The exceptions include one phonetically ambiguous case; one case where an extended silence (353 ms) preceded the subject, suggesting that it was added as an afterthought; and two cases where the postverbal subject was the quantifier *xenteroson* ‘all of us.’ See §6 for some comments on variability in phrasing.

- (46) [ànchèèlnchèhlíw óník á néhîw]¹⁵
 shake.3p head ? they
 ‘They shake their heads.’

Similarly, when V(O)S sentences were elicited from speakers F1 and M4, they were consistently pronounced with HTP extending through the subject. This is in direct contrast to preverbal subjects, which consistently phrased separately (Table 3).

Table 3. Subjects in preverbal and postverbal position

	Phrased together with verb	Phrased separately from verb	Ambiguous
Preverbal	1	178	2
Postverbal	42	5	1

The following pairs from our corpus demonstrate this asymmetry:

- (47) a. [nèhîw][tâhâwúw nákánts ólám]
 b. [tâhâwúw nákánts ólám néhîw]
 saw.3p red cane they
 ‘They saw red sugarcane.’ (zss02)

- (48) a. [xíke][taxehpíùs]
 b. [tâxèhpiús á xíkè]
 bathed.1s ? I
 ‘I bathed.’ (zss11-12)

- (49) a. [pét] [àntsòrr]
 dog bark
 ‘The dog barks.’
 b. [àntsòrríw á pèt]
 bark.3p the dog
 ‘The dogs bark.’

Our corpus also includes 20 tonally unambiguous cases that include both a preverbal subject and a preverbal time/place adverb. In all 20 cases, the subject and the adverb phrased separately from each other, regardless of their respective order:

¹⁵ The status of the vowel between the verb and the subject in (46), (48)b is unclear. In some cases *a* is probably a reduced form of the definite determiner *aaga* (Kreger and Stairs 1981:3), as indicated in many of the other glosses in this paper, but this analysis is unlikely to be correct in examples where the following word is a pronoun or proper name. In our corpus, these extra vowels show up variably in the following contexts: between a verb phrase and a following subject, between a noun and a postnominal adjective, and at the end of a question; in the St. John’s gospel it also shows up occasionally before an indirect object. In some of our recordings the vowel harmonizes with the preceding verb (*taxeeb e aaga naxey* ‘the man bathed’, an example that also suggests that this is not a case of phonological epenthesis). I leave the analysis of this vowel for future research.

- (50) [Adverb] [Subject] [Verb...]
 a. [nìngúy][òlám][ngò màtâng]
 here cane not sub.grow
 ‘Sugarcane does not grow here.’
 b. [oxêp] [ààgà mìkwàl xèkòmbúl][àpmúúch ákókíáw chípín áágá nékiàch]
 tomorrow the pos.son my.friend fut.give five tomato the teacher
 ‘Tomorrow my friend’s son will give five tomatoes to the teacher.’
- (51) [Adverb] [Verb... Subject]
 a. [nìngúy][ngò màtáng ólám]
 here not sub.grow cane
 ‘Sugarcane does not grow here.’
 b. [òxêp] [àpmúúch ákókíáw chípín áágá nàxéy kíáh mìkwàl xékómbúl]
 tomorrow fut.give five tomato the man that pos.son lpos.friend
 ‘Tomorrow my friend’s son will give five tomatoes to that man.’

6. Discussion and analysis

6.1 Preverbal subjects raise to Spec,CP

We have seen that in Huave, unlike in Chichewa, preverbal and postverbal subjects behave differently with respect to tonal phrasing: preverbal subjects remain separate, while postverbal subjects are grouped together with the verb. One possible explanation for this asymmetry, which I have suggested at various points in the discussion, is that postverbal subjects (and adverbs) are in fact *structurally closer* to the verb than their preverbal counterparts, which have raised to a clause-peripheral position. This proposal is based on the following assumption about syntax-phonology interactions:

- (52) Syntactic structures are built up and spelled out in stages, or ‘phases’; the output of each phase potentially serves as a phonological domain. A phase (or at least one type of phase) roughly corresponds to a proposition—a predicate plus its arguments prior to *wh*-movement, topicalization, etc. (cf. Seidl 2001, Chomsky 1999 et seq.).

For Huave, I will assume that the relevant ‘propositional phase’ is a functional projection between TP and CP, provisionally called FP, which contains the tensed verb and any following arguments and modifiers. The contrast between e.g. (53)a and (53)b is derived by syntactic movement: the subject has moved out of FP to Spec,CP in (53)a, but has remained within the spell-out domain in (53)b. The idea is that FP-

internal subjects are by default postverbal; the only way a subject can become preverbal is by movement to Spec,CP. (The exact position of postverbal subjects in Huave is discussed in §6.4.)

- (53) a. $_{CP}[nèhìw_1 \text{ FP}[tàhàwúw nákánts ólám t_1]]$ ‘They saw red sugarcane.’ (SVO)
 b. $\text{FP}[tàhàwúw nákánts ólám nèhìw]$ ‘They saw red sugarcane.’ (VOS)

A similar derivation is proposed for pre- vs. postverbal adverbs, as sketched in Figure 3 above. The movement to Spec,CP in each case is assumed to be optional, or perhaps more precisely, driven by information-packaging principles rather than by features on particular heads (as with v-to-T raising or EPP-driven subject-raising in English). The basic idea behind this treatment is that *phonological closeness corresponds to syntactic closeness*, so that subjects and adverbs that have moved farther away from the verb are less likely to be related to it by phonological processes.

The proposal in (52) does not say anything about how material external to FP gets parsed into tonal domains. Based on the 20 relevant examples from our corpus, the pattern appears to be as follows: if both a subject and an adverb precede the verb, each preverbal constituent forms its own tonal domain (see e.g. (50)-(51)). This effect could be derived from the fact that these constituents have undergone phrasal movement and correspondingly undergone obligatory spell-out, becoming islands for further syntactic operations. Alternatively, it could be derived from the idea that there are multiple CP projections in sentences with multiple preverbal constituents and that spell-out takes place at each FP and CP node. I will not attempt to disambiguate these two proposals here; the basic observation is simply that each ‘topicalized’ item forms its own phonological domain.

We can now see why Rizzi’s (1982) treatment of VOS in Italian mentioned in §2—according to which the subject is in the same hierarchical position in SVO and VOS sentences but is variably linearized on either the right or the left—is unlikely to be correct for Huave. The Chichewa-style ditransitive patterns described in §5.2 suggest that Huave tone domains are coextensive with a particular syntactic constituent, which I have called FP. Assuming that this is correct, there is no particular reason under the ‘mirror-image’ approach why we do not find just as many preverbal subjects as postverbal subjects included in the FP tonal domain. Instead, we find the heavily skewed pattern in Table 3. We

could still of course argue that separate tonal domains are forced by movement of the subject to Spec,CP, but there would be no reason why only left-linearized subjects and not right-linearized subjects would be targeted for this type of movement.

6.2 *Further evidence from clausal complements*

A question that might arise at this point is whether the patterns reported in §5 really provide sufficient evidence for the proposal just sketched. Perhaps there is another explanation for these results, one that does not involve the idea that tonal domains correspond to syntactic constituents and that therefore does not entail that preverbal subjects are structurally higher than postverbal subjects. For example, we might hypothesize that Huave tone domains are formed as follows:

- (54) Alternative proposal (to be rejected):
- a. The syntactic structure is scanned from left to right. Each noun phrase and adverbial phrase preceding the main verb forms its own tonal domain.
 - b. Once the main verb is reached, scanning ends. A final tone domain begins with the main verb and extends blindly to the end of the utterance, regardless of its internal structure.

This counterproposal abandons the idea that phonological closeness reflects syntactic closeness. Under (54), what matters is the linear order of each XP constituent with respect to the main verb; the prediction is that syntactic structure is irrelevant once the main verb has been reached. The ‘mirror-image’ analysis proposed by Rizzi (1982) for Italian SVO and VOS is fully compatible with this approach, since (54) would work in the same way regardless of the hierarchical position of the subject.

To see why (54) cannot be correct, consider the following examples. Each of these sentences contains more than one verb. In (55)a-(55)c each verb belongs to its own tonal domain, while in (56)a-(56)c the two verbs are (obligatorily or optionally) grouped together into a single domain:

- (55) a. [nìpìlán] [àpìùngûw] [àpmàndeòwâts]
 people say.3p die.fut.1p/inc
 ‘People say we will die.’ (Pike and Warkentin 1961:639)

- b. [sàhàlàn teát bìumb] [pàrà **nàtsánts** á yòw]
 light.1p sir fire for 1sub.reheat the water
 ‘We make a fire to reheat the water.’
- c. [sàndíum] [**màndeák** ómbeáyìuts] [pòrkè **màhneâh**]
 want.1s sub.speak language.pos.1p/inc because sub.beautiful
 ‘I want to speak Huave because it’s beautiful.’
- (56) a. [xíkè] [**lândóh** **sáxèèb**]
 I just.finished 1.bathe
 ‘I just finished bathing.’
- b. i. [ìkónà] [**teàmbán**] [**ìndòkón** tíxém]
 ii. [ìkónà] [**teàmbán** **ìndòkón** tíxém]
 pro.2p prg.go.pl 2sub.fish shrimp
 ‘You’re going to fish shrimp.’
- c. i. [íkè] [**teàmáäch**] [**màngàneów** nángán yów xékwál]
 ii. [íkè] [**teàmáäch** **màngàneów** nángán yów xékwál]
 you.sg prg.2.cause sub.drink sweet water my.son
 ‘You’re letting my son drink soda / giving my son soda to drink.’

The boldfaced verbs in the first set of examples each arguably head their own clause. The second boldfaced verb in each of the examples in (56), on the other hand, may not necessarily head a full CP clause. The matrix predicates ‘go,’ ‘finish,’ and ‘give/cause’ are typically included in the class of modal and aspectual *restructuring* predicates cross-linguistically, and as such can be argued to take reduced complements lacking TP and CP projections (see Wurmbrand 2001, Cinque 2001 for proposals along these lines). Under the analysis sketched in the previous subsection, this variability in tonal phrasing falls out automatically: a matrix verb is grouped together with its complement into a single tonal domain just in case that complement is a structure smaller than FP, e.g. an InflP. The fact that ‘go’ and ‘cause’ sometimes form a single tonal domain with a following complement and sometimes phrase separately is consistent with the idea that some predicates can appear in either restructuring or non-restructuring environments (i.e. sometimes take full CP complements and sometimes take reduced InflP complements), as suggested by Wurmbrand (2001:39ff).

The hypothetical counterproposal in (54), on the other hand, cannot accommodate these facts. We could revise the proposal by making a tonal domain begin with *every* verb in the structure instead of just the main verb, but we would then be left without an explanation for (56)a, (56)b-ii and (56)c-ii, where

two verbs are grouped together. Crucially, since the procedure in (54)b is structure-blind, it cannot distinguish between full CP and reduced InflP structures. The data in (55)-(56) show that Huave tonal phrasing does in fact ‘see’ the internal structure of postverbal material, and the phase-based analysis outlined in the previous subsection provides a relatively straightforward way of accounting for the relevant contrasts.

If the restructuring-based analysis of variation in Huave tonal phrasing is on the right track, then we might expect the notion of ‘full’ vs. ‘reduced’ clause to play a role in other (syntactic or semantic) operations as well. Limited evidence from VSO word orders suggests that this is in fact the case. Recall from (20) (repeated below) that clausal complements undergo obligatory extraposition in sentences with postverbal matrix subjects, yielding surface VSO_{Cl} order instead of VO_{Cl}S order (where O_{Cl} stands for ‘clausal object’):

- (57) a. ngom m-a-haw t_i naxey kam [tiul mintah a-kiiub]_i
 not sub-th-see man this if wife th-accompany
 ‘This man didn’t realize that his wife was with him.’ (Radin 1929:4)
 b. * ngom m-a-haw [tiul mintah a-kiiub] naxey kam

There are in fact a handful of apparent counterexamples to this pattern—cases where a subordinate verb and its arguments appear between the matrix verb and matrix subject, yielding what looks like surface VO_{Cl}S order. In all of these cases, however, the matrix verb is causative *uuch*—which, as we saw in (56)c above, exhibits variable tonal-phrasing behavior with respect to its complement verb and is therefore arguably a restructuring predicate:

- (58) hoguy xike tiunas, **tuuch** **xik niun** Xeteat Dios
 here.is I pst.come.1s pst.cause me 1sub.come my.lord god
 ‘Here I have come, my lord God made me come.’ (John 5:43)
- (59) **tuuch** **mahneah omeaats michiig** **neh** a Juan
 pst.cause sub.good heart pos.brother 3pos ? Juan
 ‘Juan calmed his brother (lit. made his brother’s heart be happy)’ (Kreger and Stairs 1981:205)

Although the data so far are only suggestive, the idea is that the ‘propositional’ substructure that is relevant for tone-domain demarcation in Huave is also relevant for syntactic operations—more specifically, that the FP that is spelled out as a single tone domain also undergoes obligatory

extraposition. If this is correct, then at least the following predictions are made: (i) apparent VO_{CI}S order should only be possible if the matrix verb is a restructuring predicate; (ii) O_{CI} should always form a separate tonal domain in VSO_{CI} sentences but never in VO_{CI}S sentences; and (iii) any matrix verbs that allow both VO_{CI}S and VSO_{CI} orders should also show variation in tonal phrasing. While these predictions remain to be systematically tested, they are so far consistent with the available data.

This discussion has shown that there is an advantage to taking seriously the idea that Huave tone domains correspond to certain kinds of syntactic constituents, rather than to the hybrid mix of information about category label and linear order referred to in (54). The basic notion that phonological closeness corresponds to syntactic closeness is at the core of Truckenbrodt's Wrap-XP constraint as well, although the exact mechanics and theoretical grounding of his proposal are different. Viewed in this light, Huave tonal phrasing interacts with the underlying syntax in a way that is familiar from other languages. Intonational chunking, for example, appears to be cross-linguistically sensitive to the relative embeddedness of adjacent constituents—a fundamental observation that has been derived in the literature by various means, including edge-marking (Selkirk 2005), sensitivity to changes in branching direction (Wagner 2005), and reference to particular constituent types (Nespor and Vogel 1986, López 2006). If the current proposal continues to be supported by other syntactic and semantic diagnostics in Huave,¹⁶ it will represent considerable progress in the understanding of Huave syntax and phonology.

6.3 *Rate- and rhythm-induced variability*

In the previous subsection we saw that certain matrix verbs—namely 'go' and 'cause'—exhibit variable behavior with respect to tonal phrasing, sometimes grouping together with the following complement and sometimes phrasing separately (see (56)b-c). I suggested that this kind of phonological variation could

¹⁶ For possible semantic diagnostics see e.g. Alexiadou and Anagnostopoulou 1998, who argue that overt subjects in Greek obligatorily have wide quantifier scope and specific indefinite readings in preverbal position but not postverbal position; the idea is that the preverbal position is too high to be included in the domain for reconstruction.

directly reflect variation in the underlying syntactic structure: these verbs can take either a full CP complement or a reduced InflP complement.

A similar argument can be made for other cases of variation as well. As noted in §5.2, our corpus includes 16 cases where a single verb phrase was broken apart into two tonal domains instead of mapping to a single tonal domain. Included among these cases are several minimal pairs, where a speaker produced two different phonological parses of the same utterance:

- (60) a. [xíkè] [sàngàneów cháw pópóx xówúy lángàn]
 b. [xíkè] [sàngàneów cháw pópóx] [xòwù y lángàn]
 I drink.1s atole foam very sweet
 ‘I drink very sweet foam atole (a warm drink).’

It is possible that this variation, like the variation with ‘go’ and ‘cause’, has a purely syntactic source—specifically, there could be two different syntactic structures involved in this example, one where *xowuy langan* is an adjective phrase, and one where it is a (possibly extraposed) relative clause.

At the same time, it is possible that some variation in Huave tonal phrasing is attributable to *nonsyntactic* sources. Intonational chunks have been shown to fluctuate in size cross-linguistically depending on rate, prosodic weight, style, and carefulness, among other factors (Nespor and Vogel 1986, Gussenhoven 2004, etc.); based on the discussion in the previous subsection it would be unsurprising if Huave tone domains turned out to have these properties as well. If this is in fact the case, how might this variability be accommodated within the current analysis?

As a preliminary observation, we know that rhythmic uniformity—a tendency for utterances to be divided into phonological domains that are similar in prosodic weight, which has been claimed to play an important role in e.g. Italian raddoppiamento sintattico (Ghini 1993)—plays at most a secondary role in Huave. Utterances like (37), repeated below, show that tone domains can be prosodically unbalanced, with a light preverbal subject and a heavy FP-domain.

- (61) [nèhîw] [tâhchúw nérráár yów námbeór íchweàik]
 they give.3p.pst hot water black monkey
 ‘They gave hot water to a black monkey.’ (vvv33)

At the same time, nonsyntactic factors like rate and rhythm may be producing a certain amount of variability in tonal phrasing, although we do not have any direct evidence for this hypothesis at this point. For example, Pike and Warkentin (1961:639) speculate that preverbal subjects may group together with verbs in fast speech: ‘possibly a more rapid form leads to a non-junctural fusion as in *xíké sánéngóch* [‘I met (him)’]’, but it is unclear whether the two examples they include are attested or hypothetical. Our corpus includes a single example of this type; unfortunately, it is not clear what the intended meaning is:

- (62) [nèhíw ákiándìw]
 pro.3p stick.3p
 ‘They fight / stick?’ (Spanish: *ellos se pegan*) (cg29-29)

Experimental studies and corpus studies of spontaneous speech will be needed before we can establish whether Huave tonal domains are systematically influenced by rate, weight, style and carefulness. In any case, the current proposal could be incorporated into a model of the syntax-phonology interface where limited ‘rhythmic restructuring’ is allowed to take place after an initial parse of the syntax. Within such a model, the spell-out domains described in (52) above (or the boundaries between them) would provide the basic information that phonological rules refer to, but readjustments of two types would be possible: (i) separate domains could be grouped together in fast speech (e.g. by boundary deletion), accounting for (62) above; or (ii) a single domain could be broken apart in slow speech (e.g. by boundary insertion), accounting for (60)b above. This proposal would accommodate all of the examples we have seen so far, without ruling in unattested ‘mismatched’ parses like the one shown schematically in (63):

- (63) Syntactic structure: [subject [verb [adjective object]]
 → Phonological parse: (subject verb) (adjective object)

In other words, while it may be possible for two expected tonal domains to be realized as one (62) or for one expected tonal domain to be realized as two (60)b, it does not appear to be possible for a subpart of one tonal domain to ‘escape’ and join another (63). Under the analysis I have sketched here, rhythmic restructuring is limited in such a way that rules out cases like (63); it remains to be seen whether this prediction is correct.

6.4 The syntax of VOS in Huave

As noted above, a crucial assumption underlying my analysis of Huave tonal phrasing is that subjects can *only* surface preverbally if they have moved out of the relevant spell-out domain to a clause-peripheral position. In other words, non-topicalized subjects are obligatorily postverbal. In this final subsection I sketch two possible analyses of how this result might be derived—one based on obligatory right-linearization of FP-internal subjects and one based on predicate-fronting. Given that neither analysis has a clear advantage at this point, the goal of this discussion is to lay out some specific questions for future research.

In Aissen’s (1992) treatment of VOS in Tzotzil, Tz’utujil and Jakalteq, it is claimed that subjects are obligatorily linearized on the right in their pre-topicalization position (presumably either Spec,vP or Spec,TP), and obligatorily linearized on the left after movement to the clause periphery. This approach works for Huave as long as we assume that the tone-domain cut-off point is somewhere between the pre-topicalization position and the post-topicalization position of the subject. The two options are shown schematically below, where the double-pipe || represents the tone-domain cut-off point and parentheses indicate phonological domains.

- (64) a. no topicalization: ... ||_{TP}[_T[**Verb**... vP[_v[~~Verb~~ **Obj**] **Subj**] → (VOS)
 b. topicalization: CP[**Subj** ... ||_{TP}[_T[**Verb**... vP[_v[~~Verb~~ **Obj**] **Subj**] → (S)(VO)

The underlying assumption behind this proposal is that the direction in which a specifier is linearized can vary arbitrarily from node to node in the structure—specifically, from obligatory right-linearization in Spec,TP to obligatory left-linearization in Spec,CP. This idea may or may not be problematic depending on the assumed framework. In the antisymmetric syntax proposed by Kayne (1994) et seq., the idea that subjects (or any other specifiers or adjuncts) can be ‘linearized on the right’ is simply unformulable. While I have not adopted a strong version of Kayne’s hypothesis here (I have implicitly assumed that e.g. ‘extraposition’ of clausal complements involves right-adjunction), the proposal in (64) does owe some account of what forces non-topicalized subjects in Huave to be linearized on the right when no other

specifiers or adjuncts appear to be restricted in this way. Pending such an account, this treatment appears to be somewhat questionable.

As an alternative, we might follow more recent work on verb-initial languages (see e.g. Carnie and Guilfoyle 2000, Carnie et al. 2005), which derives VOS order from underlying SVO order. In particular, a ‘predicate-fronting’ analysis—where the verb and object move as a constituent over the subject (65)—could be a promising possibility for Huave.

(65) Predicate fronting: [**verb object**]_i [**subject** [~~verb object~~]_i]

Predicate-fronting analyses (67)b have been adopted for the VOS language Malagasy (Rackowski and Travis 2000, Travis 2005), as well as the VSO languages Niuean (Massam 2000, 2005) and Quiavini Zapotec (Lee 2000, 2005) (for VSO languages the object is assumed to move out of the VP before remnant movement of the phrasal predicate takes place). In order to make a predicate-fronting analysis work for Huave, we need to ensure three things: (i) the moved predicate must be at least as large as T', since the verb moves to T for tense inflection; (ii) the subject must be located above T', since it must be external to the raised predicate; and (iii) the position that the predicate is fronted to must be below CP, since we want the predicate and everything below it to be mapped to a separate tonal domain from topicalized subjects and adverbs. Essentially, what this means is that we must posit another projection between TP and CP that the fronted T' moves to—i.e., the projection I have been referring to as FP.

A partial derivation is given below. The derivation proceeds as follows: the verb raises to T for tense features (66)a; then an EPP feature on T forces the subject to move to Spec,TP (66)b; then the T' predicate is fronted to Spec,FP (66)c.

- (66) a. Verb raises to T: $TP[T[\mathbf{Verb} \dots vP[\mathbf{Subj} v'[\mathbf{Verb} \mathbf{Obj}]]]$
 b. Subject raises to Spec,TP: $TP[\mathbf{Subj} T'[\mathbf{Verb} \dots vP[\mathbf{Subj} v'[\mathbf{Verb} \mathbf{Obj}]]]$
 c. T' predicate raises to Spec,FP:
 $FP[T[\mathbf{Verb} \dots vP[\mathbf{Subj} v'[\mathbf{Verb} \mathbf{Obj}]]] TP[\mathbf{Subj} T'[\mathbf{Verb} \dots [\mathbf{Subj} [\mathbf{Verb} \mathbf{Obj}]]]]$

The lower tone-domain cut-off point under this approach is FP, as stated earlier in (53). The derivation could end after (66)c, producing a VOS sentence mapped to a single tonal domain. Alternatively, the subject could move beyond the XP domain to Spec,CP and be phrased separately.

The main question that arises under this approach—as under any predicate-fronting treatment (see e.g. Massam 2005)—is what exactly drives the movement of the predicate. Huave predicate-fronting must be obligatory; otherwise we would expect to find single-tone-domain SVO structures derived from structures like (66)b. Presumably, then, predicate-fronting takes place even in sentences with intransitive verbs and/or null subjects, where its effects are not apparent on the surface. What forces this movement to take place? Massam (2005) speculates that EPP features may be specified to attract arguments [+D] in some languages and predicates [+Pred] in others, but in Huave apparently both types of EPP would be needed (since we also need the subject to raise to Spec,TP). Conceivably the [+D]/[+Pred] distinction could be made on individual heads within a single language, so that XP would attract a predicate while TP would attract an argument—but this type of solution is at its core just as arbitrary as the linearization-based solution sketched in (64), where individual projections can vary with respect to whether their specifiers are linearized on the left or on the right. Furthermore, the predicate-fronting account owes an account of what exactly ‘FP’ is, and whether it is involved in any other syntactic interactions.

Given the difficulty of weighing the predicate-fronting and linearization-based accounts of Huave VOS on conceptual grounds, we might ask whether they can be empirically distinguished. The main difference between the two approaches has to do with the c-command relationship between the subject and the predicate: the postverbal subject c-commands the predicate in the right-linearization approach (64)a, but not in the predicate-raising approach (67)b. We do not yet have the necessary data to test the predictions of the two analyses, but if it turns out for example that postverbal subjects in Huave fail to bind variables within direct objects (see e.g. Ordóñez 1998 for such evidence from Spanish), this could be used as an argument for predicate-fronting.

At the very least, we appear to have sufficient evidence to rule out a third possible analysis of VOS in Huave: one where the verb and object move separately (67)a over the subject:

(67) Separate raising of V and O: [**verb**]_i [**object**]_j [**subject** [[**verb**]_i [**object**]_j]]

Ordóñez (1998) argues that VOS in Spanish is derived by something like (67): the verb raises by head-movement to T and the object scrambles to a position between vP and TP, while the subject remains in situ. In order to make (67) work for Huave we would need to ensure that the raising of the object is obligatory, rather than optional; otherwise, we would incorrectly predict that VSO orders should occur alongside VOS orders. Instead of arguing that the object in Huave raises by scrambling, then, we could argue that it is attracted by an EPP feature in InfIP, the intermediate projection between vP and TP where finiteness/irrealis features are expressed (see §2).

(68) TP_{[T[**Verb**]]} InfIP[**Object** Inf[**Verb**]_{vP}[**Subject** _v[**Verb Object**]]]

The problem with this analysis is that it fails to account for the fact that *multiple* verbs and/or objects can precede a subject in Huave, as demonstrated below (items appearing between the verb and the subject are boldfaced in each example):

(69) Verb DO IO Subject:

- a. òxêp àpmúúch **ákókiáw chípín áágá naxéy kiáh** míkwál xékómbúl
 tomorrow give.fut five tomato the man that son.pos friend.1pos
 ‘Tomorrow my friend’s son will give five tomatoes to that man.’
- b. nekamb lam Jordan niung tengial uuch **yow nipilan** a Juan
 other.side river Jordan where prs.prog give water people ? Juan
 ‘on the other side of the river Jordan where John was baptizing people (lit. giving water to people)’ (John 1:28)

(70) Verb Goal DO Subject:

- a. talox **tilam misombrer neh** kich nench
 throw.pst in.river hat.pos 3sg little boy
 ‘The boy threw his hat into the river.’ (Kreger and Stairs 1981: 225)
- b. kada doming akiiub **tiplas mikwal neh** a naxey
 each Sunday accompany to.plaza son.pos 3sg the man
 ‘Every Sunday the man takes his son to the plaza.’ (Kreger and Stairs 1981:248)

(71) Verb ... Verb Subject:

hoguy xike tiunas, tuuch **xik niun** Xeteat Dios
 here.is I come.1pst cause.pst me come.1sub my.lord god
 ‘Here I have come, my lord God made me come.’ (John 5:43)

In (69)a and (69)b the verb *uuch* takes two objects, both of which precede the postverbal subject. Under a serial raising account, this means that there must be at least *two* positions for objects to move to: presumably Spec,InflP and some additional projection between InflP and vP. Similarly, (70)a and (70)b contain two arguments between the verb and the subject: a goal argument prefixed with *ti-* (derived from the preposition *tiul* ‘in(to)’) and a direct object. Assuming that this goal argument starts out below the subject, these examples reinforce the need for multiple projections between vP and TP. Finally, (71) (repeated from (58)) is an example of a causative construction with *uuch* ‘give, cause’ followed by a subordinated form of *iun* ‘come’. Crucially, both verbs precede the matrix subject *Xeteat Dios*. The only way this word order can be derived under a serial-raising approach is to have *iun* raise from the *embedded* InflP to a position above the matrix subject—an unwieldy and otherwise unmotivated solution. We cannot avoid this problem by arguing that the embedded verb *iun* raises to *uuch* by head-movement, either, since the causee *xik* intervenes between them.

The basic generalization these examples seem to be pointing to is that it is not just the verb and direct object that precede the subject in Huave VOS, but all of the vP-internal material. Under the assumption that the entire predicate remains a constituent in VOS sentences, as in the linearization-based and predicate-fronting analyses sketched above, this result falls out naturally.

In this subsection I have considered three analyses of VOS order in Huave. It was shown that a ‘serial raising’ analysis, involving separate raising of the verb and direct object to positions above the subject, is unlikely to be appropriate for Huave given the fact that indirect objects and subordinate verbs can also appear before the subject. Predicate-fronting and linearization-based treatments account for the word-order facts but appear to face conceptual problems that remain to be addressed in future research.

7. Conclusion

As observed by Pike and Warkentin (1961), utterances in San Mateo Huave are broken down into phonological domains in a way that closely reflects their underlying syntax. This paper has explored the exact relationship between syntax and surface tone in more detail, drawing on a new corpus of recorded

phrases collected on-site. Two main findings were reported: (i) the main verb forms a single tonal domain with *all* following arguments and modifiers in the same clause; and (ii) when SVO and VOS sentences are compared, a striking contrast emerges—postverbal subjects, unlike preverbal subjects, consistently group together with the verb. Pursuing the basic intuition that phonological closeness reflects syntactic closeness, I argued that preverbal subjects are structurally higher than postverbal subjects in Huave. Specifically, preverbal subjects have raised to a clause-peripheral position, Spec,CP, and as such have ‘escaped’ the lower constituent that is spelled out as a single tonal domain. I provided further evidence for this analysis from verbal complementation patterns and compared the proposal with other possible analyses, showing (among other things) how the current proposal can be reconciled with rate-sensitivity effects and other pattern that may be uncovered in future work.

References

- Aissen, Judith L. 1992. Topic and focus in Mayan. *Language* 68, 43-80.
- Alexiadou, Artemis and Elena Anagnostopoulou. 1998. Parametrizing Agr: word order, verb-movement and EPP-checking. *Natural Language and Linguistic Theory* 16:491-539.
- Beckman, Mary E. and Janet B. Pierrehumbert. 1986. Intonational structure in Japanese and English. *Phonology Yearbook* 3, 255-309.
- Campbell, Lyle, Terrence Kaufman and Thomas C. Smith-Stark. 1986. Meso-America as a linguistic area. *Language* 62, 530-570.
- Carnie, Andrew, and Eithne Guilfoyle, eds. 2000. *The syntax of verb initial languages*. Oxford University Press.
- Carnie, Andrew, Heidi Harley and Sheila Ann Dooley, eds. 2005. *Verb first*. Benjamins.
- Chen, Matthew. 1987. The syntax of Xiamen tone sandhi. *Phonology Yearbook* 4:109-149.
- Chomsky, Noam. 1999. Derivation by phase. *MIT Occasional Papers in Linguistics, Vol. 18*. Cambridge, MA: MIT.
- Cinque, Guglielmo. 2001. ‘Restructuring’ and functional structure. Manuscript, University of Venice.
- Dryer, Matthew S. 1997. On the six-way word order typology. *Studies in Language* 21: 69-103.
- Dryer, Matthew S. 2005. Order of subject and verb. In *The World Atlas of Language Structures*, edited by Martin Haspelmath, Matthew S. Dryer, David Gil, and Bernard Comrie. Oxford University Press.

- Embick, David and Rolf Noyer. 2005. Distributed morphology and the syntax/morphology interface. To appear in *Oxford Handbook of Linguistic Interfaces*.
- Fromkin, Victoria and Robert Rodman. 1998. *An introduction to language* (6th ed.). Fort Worth: Harcourt Brace.
- Ghini, Mirco. 1993. φ -formation in Italian: a new proposal. *Toronto Working Papers in Linguistics* 12.2:41–78.
- Grosz, Barbara and Yael Ziv. 1998. Centering, global focus, and right dislocation. In *Centering in discourse*, Marilyn Walker, Aravind Joshi, and Ellen Prince, eds., Oxford University Press. pp. 293-307.
- Gussenhoven, Carlos. 2004. *The phonology of tone and intonation*. Cambridge University Press.
- Halle, Morris and Jean-Roger Vergnaud. 1987. *An Essay on Stress*. Cambridge, MA: MIT Press.
- Hayes, Bruce. 1995. *Metrical stress theory: principles and case studies*. University of Chicago Press.
- Hoffman, Beryl. 1998. Word order, information structure, and centering in Turkish. In Walker et al.
- Inkelas, Sharon. 1989. *Prosodic constituency in the lexicon*. Doctoral dissertation, Stanford University.
- Jun, Sun-Ah. 1996. *The phonetics and phonology of Korean prosody: intonational phonology and prosodic structure*. New York: Garland.
- Kaisse, Ellen. 1985. *Connected speech*. Orlando: Academic Press, Inc.
- Kanerva, Jonni M. 1989. *Focus and phrasing in Chichewa phonology*. Doctoral dissertation, Stanford University.
- Kanerva, Jonni M. 1990. Focusing on phonological phrases in Chichewa. In Sharon Inkelas and Draga Zec (eds.), *The phonology-syntax connection* (pp. 141-161). Chicago: University of Chicago Press.
- Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge: MIT Press.
- Kisseberth, Charles and Mohammed Imam Abasheikh. 1974. Vowel length in Chi-Mwi:ni—A case study of the role of grammar in phonology. In *Papers from the Parasession on Natural Phonology* (pp. 193-209). Chicago Linguistic Society.
- Kreger, Glenn Albert and Emily Florence Scharfe de Stairs. 1981. *Diccionario huave de San Mateo del Mar*. SIL, Mexico.
- La Liga Bíblica México. 2005. *Najneaj nanderac leaw tapiiing San Juan wüx Teat Cristo (El Evangelio según San Juan en el huave de San Mateo del Mar)*, electronic version.
- Lee, Felicia. 2000. VP remnant movement and VSO in Quiavini Zapotec. In Carnie and Guilfoyle (eds).
- Massam, Diane. 2000. VSO and VOS: Aspects of Niuean word order. In Carnie and Guilfoyle (eds.).

- Massam, Diane. 2005. Lexical categories, lack of inflection, and predicate-fronting in Niuean. In Andrew Carnie, Heidi Harley, and Sheila Ann Dooley (Eds.) *Verb first: On the syntax of verb-initial languages* (pp. 227-242). Amsterdam: Benjamins.
- Matthews, P. H. 1972. Huave verb morphology: some comments from a non-tagmemic viewpoint. *International Journal of American Linguistics* 38, 96-118.
- Nespor, Marina, and Irene Vogel. 1986. *Prosodic phonology*. Dordrecht: Foris.
- Noyer, Rolf. 1991. Tone and stress in the San Mateo dialect of Huave. *Proceedings of ESCOL '91*: 277-288.
- Noyer, Rolf. 1994. Mobile affixes in Huave: optimality and morphological wellformedness. *Proceedings of WCCFL* 12, 67-82.
- Noyer, Rolf. Forthcoming. A generative phonology of Huave. Manuscript, University of Pennsylvania.
- Ordóñez, Francisco. 1998. Postverbal asymmetries in Spanish. *Natural Language and Linguistic Theory*, 16,2,313-346.
- Pak, Marjorie. 2006. The postsyntactic derivation and its phonological reflexes. Manuscript, University of Pennsylvania.
- Pike, Kenneth L. and Milton Warkentin. 1961. Huave: a study in syntactic tone with low lexical functional load. In Benjamin F. Elson and Juan Comas (eds.), *A William Cameron Townsend en el vigesimoquinto aniversario del Instituto Lingüístico de Verano*, 627-42. SIL, Mexico.
- Radin, Paul. 1929. Huave texts. *International Journal of American Linguistics* 5:1-56.
- Rackowski, Andrea and Lisa Travis. 2000. V-initial languages: X or XP movement and adverbial placement. In Carnie and Guilfoyle (eds.).
- Rizzi, Luigi. 1982. *Issues in Italian Syntax*. Dordrecht: Foris.
- Seidl, Amanda. 2001. *Minimal indirect reference: a theory of the syntax-phonology interface*. New York: Routledge.
- Selkirk, Elisabeth. 1986. On derived domains in sentence phonology. *Phonology Yearbook* 3:371-405.
- Sheehan, Michelle. 2005. The status of preverbal subjects in Romance null subject languages. Manuscript, University of Cambridge.
- Stairs, Emily F. and Barbara Erickson Hollenbach. 1969. Huave verb morphology. *International Journal of American Linguistics* 35, 38-53.

- Stairs, Emily F. and Elena E. de Hollenbach. 1981. *Gramática huave*. In Kreger and Stairs 1981.
- Truckenbrodt, Hubert. 1995. *Phonological phrases: their relation to syntax, focus, and prominence*. Doctoral dissertation, MIT.
- Truckenbrodt, Hubert. 1999. On the relation between syntactic phrases and phonological phrases. *Linguistic Inquiry* 30:219–255.
- Vallduví, Eric and Elisabeth Engdahl. 1996. The linguistic realisation of information packaging. *Linguistics* 34, 459–519.
- Wagner, Michael. 2005. *Prosody and recursion*. Doctoral dissertation, MIT.
- Walker, Marilyn A., Aravind K. Joshi and Ellen F. Prince. 1998. *Centering theory in discourse*. Oxford University.
- Wurmbrand, Susanne. 2001. *Infinitives: restructuring and clause structure*. Berlin: Mouton.
- Zec, Draga and Sharon Inkelas. Syntax-phonology interface. In John A. Goldsmith (Ed.), *Handbook of phonological theory* (pp. 535-549). Cambridge: Blackwell.