

The 26th Lecture for the Teaching Japanese as a Foreign Language
Certificate Program, Graduate School of Languages and Cultures,
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Syllable structure in English, Japanese and Kaqchikel Part II

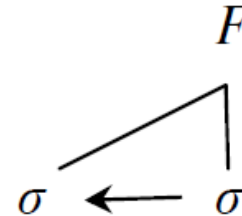
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Introduction

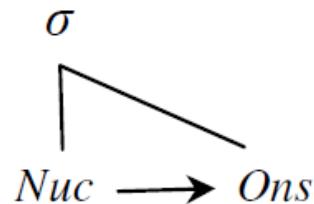
Introduction 1

This paper will argue that

- The foot/word structure of Kaqchikel (a K'iche'an language of the Mayan family) is head-final



- while its syllable structure (consisting of a vowel and an onset) is head-initial.



Introduction 2

The reasoning for this depends on the followings:

- a primary stress always appears in domain-final Vs.
- aspiration (which functions as a prosodic boundary marker in Kaqchikel) always appears in domain-final Cs.
- domain-final Cs are immune to weakening.

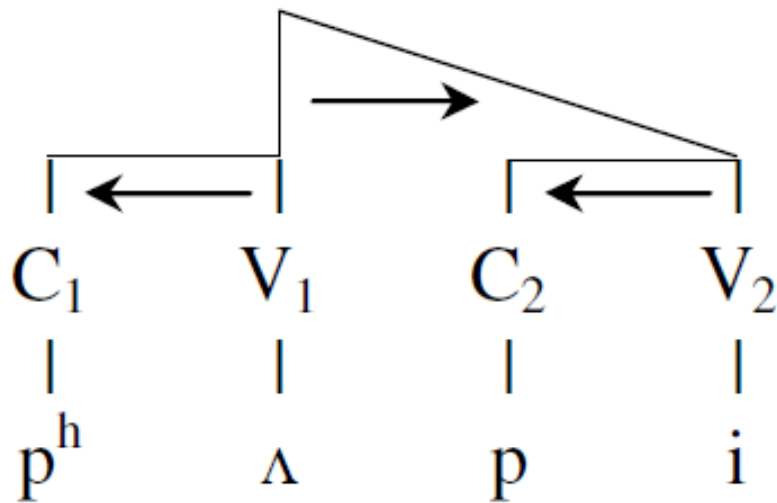
Roadmap

1. Head-dependency relations in phonological representation
2. Identifying the prosodic structure of Kaqchikel
3. Head-dependency relations and parametric settings controlling phonetic interpretation
4. Concluding remarks in relation to syntactic structure

Head-dependency relations in phonological representation

The English word 'puppy'

(1)



foot

head-initial

*syllable
position*

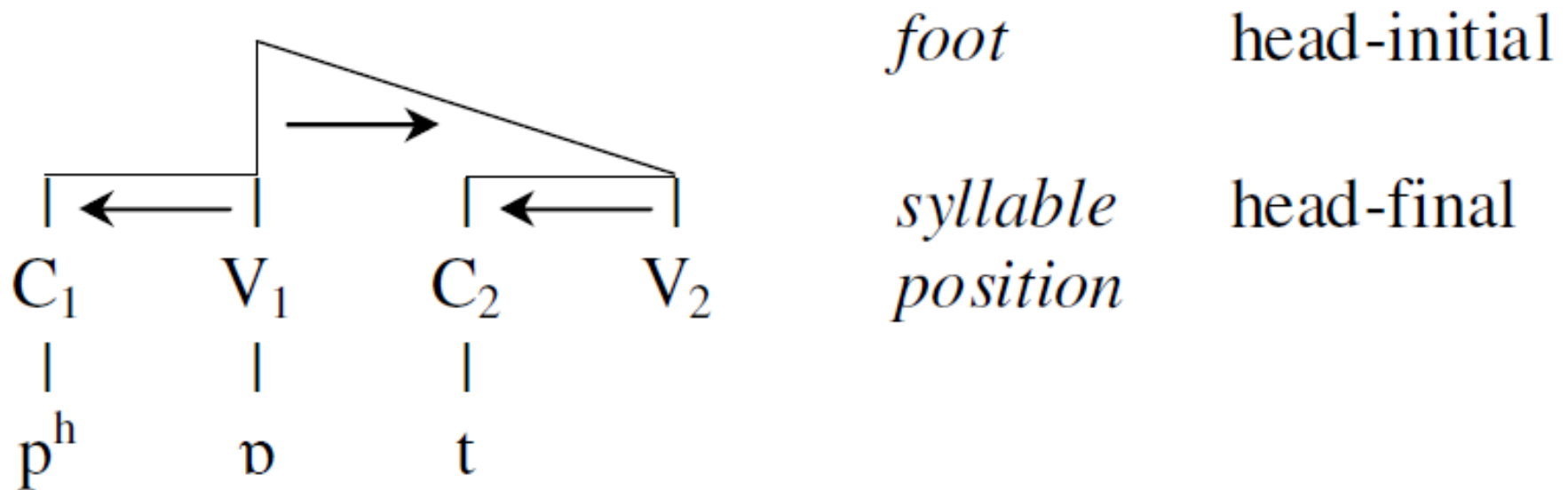
head-final

Reasoning for the structure in (1)

- (2) a. A primary stress always appears in the first V of the domain.
- b. Aspiration (the prosodic boundary marker of English: Nasukawa and Backley 2012) always appears in domain-initial Cs.
- c. Domain-initial Cs are immune to weakening. (Weakening typically takes place domain-finally and intervocalically.)

The English word 'pot'

(3)



Cf. Harris (1994, 1997), Harris & Gussmann (1998, 2002), Scheer (2004)

Harris (1994: 178)

- (4) a. Directionality of dependency relations at the foot level:
right-headed / left-headed

- b. Directionality of dependency relations at the syllable level:
right-headed (universal)

Identifying the prosodic structure of Kaqchikel

Kaqchikel consonants

(5)

| | | bilabial | labiodental | alveolar | alveopalatal | palatal | velar | uvular | glottal |
|-----------|-----------------|-------------------|-------------|-------------------|--------------|---------|-------------------|-------------------|---------|
| occlusive | aspirated/plain | p ^h /p | | t ^h /t | | | k ^h /k | q ^h /q | ʔ |
| | glottalized | | | tʼ | | | kʼ | qʼ | |
| | implosive | ɓ | | | | | | | |
| affricate | plain | | | ts | tʃ | | | | |
| | glottalized | | | tsʼ | tʃʼ | | | | |
| fricative | | | f | s | ʃ | | x | χ | h |
| nasal | | M | | n | | | ŋ | | |
| liquid | lateral | | | l̥(ɭ)/l | | | | | |
| | tap | | | ɾ(ɻ)/r | | | | | |
| glide | | w̥(ϕ)/w | | | | j̥(ç)/j | | | |

Symbols in square brackets are phonetically realized forms of symbols with diacritic ‘̥’.

Identifying strong positions

- (6) a. V positions where a stress is assigned:
domain-final Vs.
- b. C positions where a prosodic marker appears ([asp] in Kaqchikel):
domain-final Cs.
- c. C positions which are immune to weakening:
domain-final Cs.

The distribution of $p^h \sim p$

(7)

| | | | |
|------------------------------|--------------------------------------|---------------|--------------------------------|
| Word-initial p : | [poʔt ^h] | po't | 'Indian regional dress' |
| | [pár] | par | 'skunk' |
| Word-medial prevocalic p : | [nupats'án] | nupatz'an | 'my dry cornfield cane' |
| | [pispíʔy] | pispi'y | 'gizzard' |
| | [ʃuts'apíx] | xutz'apij | 'It covered it' |
| | [ʃupúx] | xupuj/xuxupuj | 'blew it' |
| Word-final p^h : | [ʃikóp ^h] | chiköp | 'bird' |
| | [sip ^h] | sip | 'tick' |
| | [top ^h] | top | 'crab, crayfish' |
| Pre-consonantal p^h : | [ʃup ^h níq ^h] | chupnäq | 'turned off' |
| | | | (Zaragoza, Patzún, Panajachel) |
| | [ʃupuníq ^h] | chupunäq | 'turned off' |
| | | | (other variants) |

The distribution of aspiration

(8) (C = obstruent)

a. CVC^h

b. $CVC^h CVC^h \rightarrow *CVC CVC^h$

c. $CVC^h CVC^h \rightarrow CVC \underline{V} CVC^h$

e.g. $\int \text{ʃák}^h \text{ʃót}^h \rightarrow \int \text{ʃak} \text{ə} \text{ʃót}^h$ ‘bent forward repeatedly’
 $\int \quad \text{ʃak}^h \quad \text{ʃót}^h$

perfect aspect ‘bend forward’ reduplicated part for expressing repeated action

$\int \text{u} \text{xup}^h \text{la}^2 \rightarrow \int \text{u} \text{xup} \text{u} \text{lá}^2$ ‘repeatedly emptied a container’
 $\int \quad \text{u} \quad \text{xu}^h \quad \text{la}^2$

perfect aspect 3rd p.s. ‘empty’ suffix for expressing repeated action

C alternations

(9)

| | | | |
|----|---|---|--------------------------------------|
| ʃ | > | s | (ʃpaʔtʃ > spaʔtʃ ~ ispatʃ: ‘lizard’) |
| q | > | x | (saqmoloʔ > saxmoloʔ: ‘egg’) |
| qʼ | > | ʔ | (qʼaqʼ > ʔaqʼ: ‘fire’) |
| ʙ | > | ʔ | (xuʙän > xuʔän: ‘tongue’) |

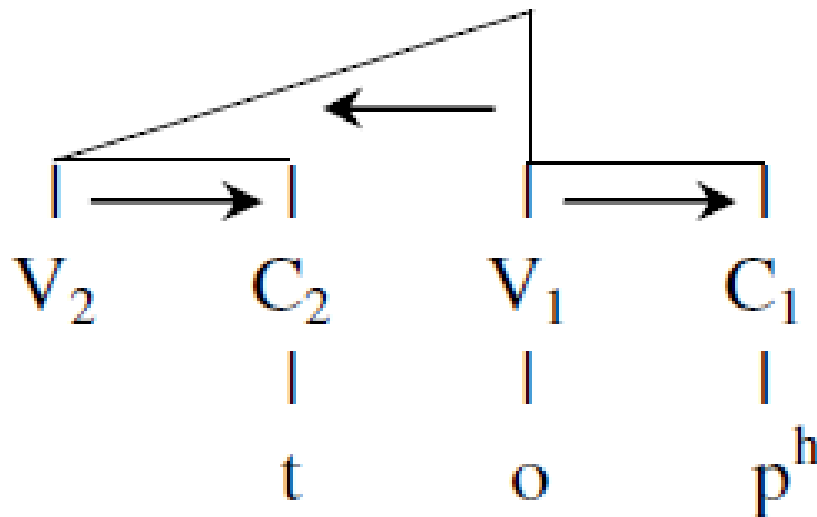
Strong positions = Heads

(10)

| | English | Kaqchikel |
|--------------------------------------|----------------|--------------|
| a. V position for a stress: | domain-initial | domain-final |
| b. C position for a prosodic marker: | domain-initial | domain-final |
| c. C position immune to weakening: | domain-initial | domain-final |

top^h 'crab, crayfish'

(11)



foot

head-final

*syllable
position*

head-initial

Head-dependency relations and parametric settings controlling phonetic interpretation

Dependency relations and their phonetic manifestation 1

(cf. Takashi 2004, Nasukawa 2011)

(12)

a. **Endocentric Dependency** (the dependent is of the same type as its head):

if , $\alpha \rightarrow \beta$, then $\alpha \ll \beta$

In endocentric dependency wherein α and β are the head and the dependent position, respectively, α strictly and immediately precedes β in phonetic interpretation.

Dependency relations and their phonetic manifestation 2

(cf. Takashi 2004, Nasukawa 2011)

(12)

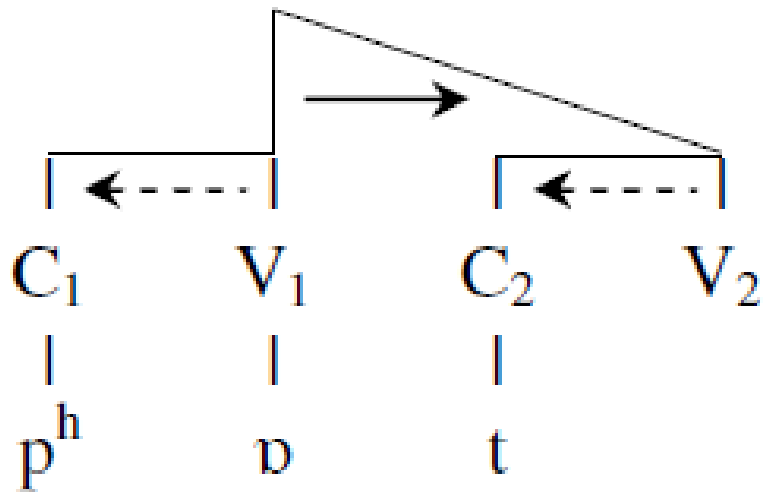
b. **Exocentric Dependency** (the dependent is of a different type from its head):

if , $\alpha \dashrightarrow \beta$, then $\alpha \gg \beta$

In endocentric dependency wherein α and β are the head and the dependent position, respectively, α strictly and immediately follows β in phonetic interpretation.

English

(13)



Endocentric

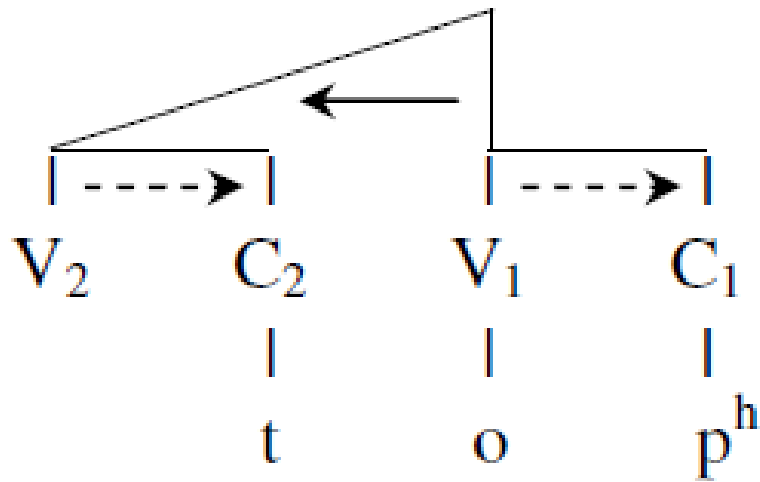
head-initial

Exocentric

head-final

Kaqchikel

(14)



Endocentric

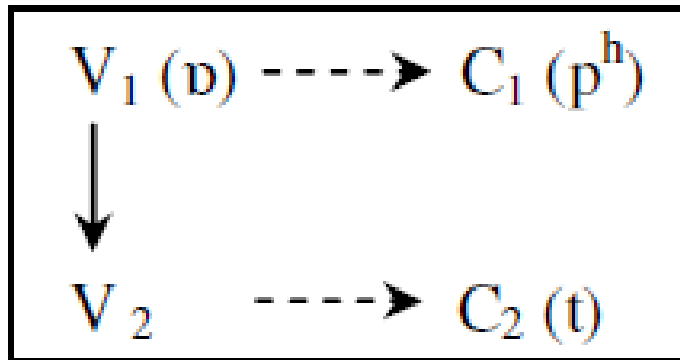
head-**final**

Exocentric

head-**initial**

English

(15) Prosodic structure



Linearisation

Endocentric (head-**initial**): $V_1 V_2$

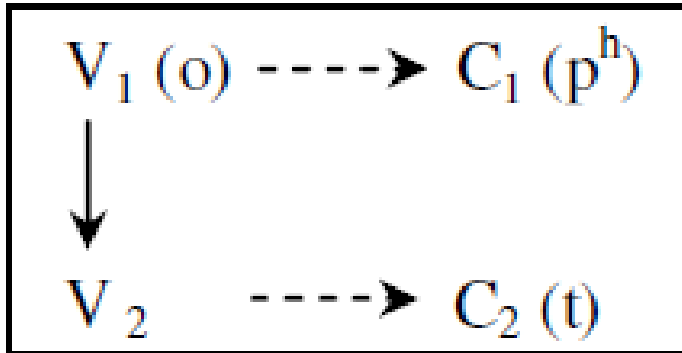
Exocentric (head-**final**): $C_1 V_1 \quad C_2 V_2$

as a result,

$C_1 V_1 C_2 V_2$ $[p^h vt]$

Kaqchikel

(16) Prosodic structure



Linearisation

Endocentric (head-**final**):
 →

$V_2 V_1$

Exocentric (head-**initial**):
 ----->

$C_1 V_1 \quad C_2 V_2$

as a result,

| |
|-------------------|
| $V_2 C_2 V_1 C_1$ |
|-------------------|

[top^h]

Parametric settings of dependency relations

(17)

| | English | Kaqchikel |
|--|---------|-----------|
| a. Endocentric dependency: head-initial head-final | ✓ | ✓ |
| b. Exocentric dependency: head-initial head-final | ✓ | ✓ |

Concluding remarks

- All data shown in this talk were collected in Guatemala in March 2011.
- There seems to be some correlation between the above phonological anomaly and the syntactically marked properties of Kaqchikel (e.g. VOS word order).

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