

Synchronic typology of metrical systems

Day 4:
Thursday – Foot inventory II

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What we did yesterday...

Stress as a structural position in non-linear phonology

- The structural position corresponding to stress is **the foot**
- Typically, feet are characterized by one strong and one weak syllable

Some typological properties of stress systems

- Obligatoriness
 - Every content word has at least one stressed syllable
- Culminativity
 - In every word / phrase there is one syllable which is stronger than the rest

Some typological properties of stress systems

- Non-assimilation
 - Stress cannot assimilate like segmental features / tones
- Rhythmic distribution
 - Syllables bearing stress tend to occur in roughly equal distances

Stress in nonlinear phonology

- Hayes (1981) proposed a theory of stress that is an improvement upon the linear account in two ways:
 - Stress is no longer a feature but a strength relation between syllables
 - Parameters account for the different stress patterns in natural languages

Different stress patterns in natural languages

- The parameters in Hayes (1981):
 - Right-dominant vs left-dominant
 - Bounded vs unbounded
 - Left to right vs Right to left
 - Quantity-sensitive vs quantity-insensitive

Some examples

- Pintupi
- Garawa
- Hixkaryana

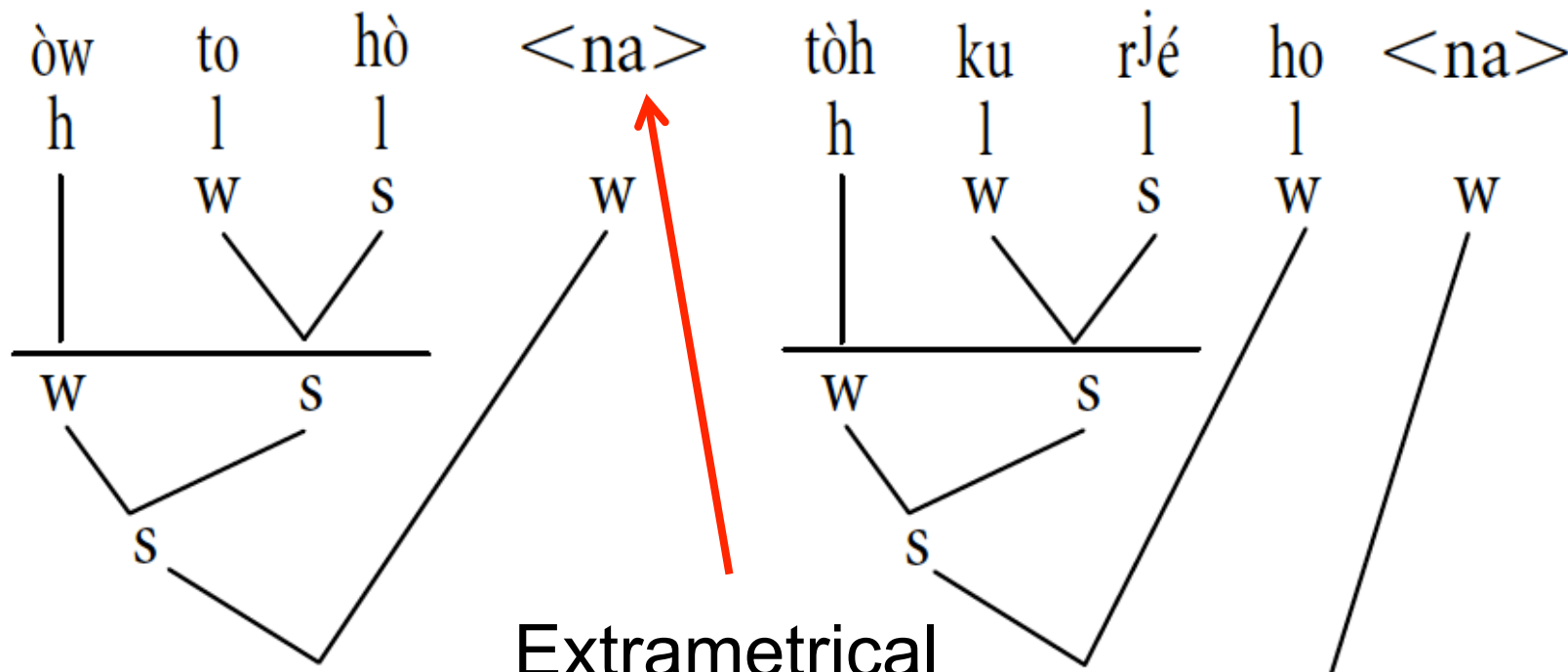
Day-to-day program

- Monday – Introduction / phonetic correlates of stress
- Tuesday – Moraic Phonology
- Wednesday – Foot inventory
- Thursday – Foot inventory II
- Friday – Metrical structure in Optimality Theory

Hixkaryana

- òw.to.hò.na 'to the village'
- tòh.ku.rjé.ho.na 'to Tohkurye'
- kha.nà.n'ih.no 'I taught you'
- mī.hà.na.n'ih.no 'you taught him'

Hixkaryana (quantity-sensitive, right-dominant)

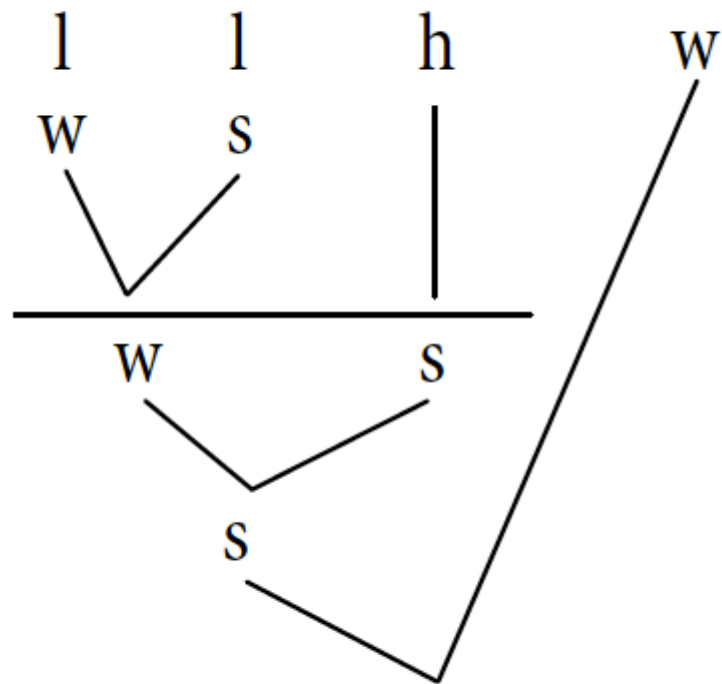


'to the village'

'to Tohkurye'

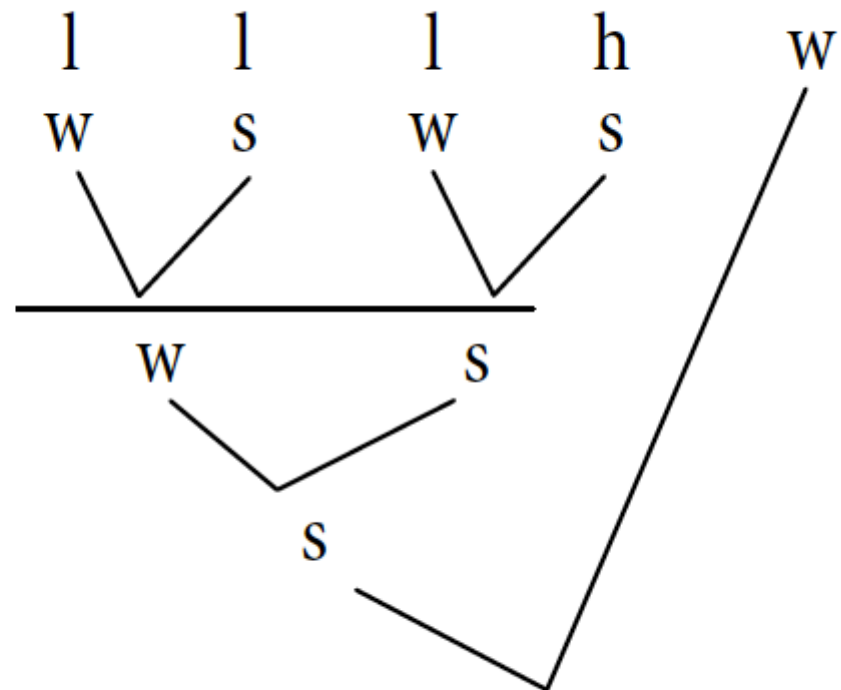
Hixkaryana

kha nà níh <no>



'I taught you'

mí hà na níh <no>



'You taught him'

Hixkaryana

- One additional fact will be discussed when we talk about the Iambic-trochaic law

Next step in the study of linguistic rhythm

- Trochaic and Iambic rhythm

Trochaic and iambic rhythm

- Not of all of the abovementioned foot types are equally common
- QI-rd feet are rare
- QS feet are mostly right dominant
- Hayes 1995 connects these facts with the results of perception experiments: he gives a **functional explanation**.

Perception tests

(as summarized in Hayes 1995)

- Listeners group sequences of even duration in a binary fashion with initial prominence
- Listeners group sequences of uneven duration in a binary fashion with final prominence

From Hyde (2011)

Intensity contrasts: Left-prominent groupings

... [O o][O o][O o][O o][O o][O o][O o][O o] ...

Duration contrasts: Right-prominent groupings

... [- —][- —][- —][- —][- —][- —][- —][- —] ...

Trochees and iambs

- Based on these results, Hayes defines two kinds of alternating rhythm
- **Trochaic rhythm** (initial prominence, even duration)
- **Iambic rhythm** (final prominence, uneven duration)

Three foot types

- Hayes (1995) proposes three foot types. He uses bracketed grids instead of trees:
 - ‘x’ relates to strong
 - ‘.’ relates to weak,
 - ‘l’ represents a monomoraic, light syllable
 - ‘h’ represents a bimoraic, heavy syllable

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Three foot types

a. SYLLABIC TROCHEE:

(x .)

σ σ

(where σ is either l or h)

b. MORAIC TROCHEE:

(x .)

μ μ

(where $\mu\mu$ is either ll or h)

c. IAMB:

(. x)

(x)

μ σ or h

Degenerate feet

- Feet that are not binary are referred to as degenerate feet

Deriving main stress

- Main stress is derived by a so-called END RULE that marks either the first (END RULE INITIAL) or the last (END RULE FINAL) dominant position by an additional 'x'.
- This position then receives main stress

Garawa (grid representation)

| | | | |
|------------------|---------------------------|----------------------|-----------------|
| | a. já mi | b. pún ɟa la | c. wá cim pà ŋu |
| SYLLABIC TROCHEE | (x .) | (x .) | (x .) (x .) |
| END RULE INITIAL | (x) | (x) | (x) |
| | d. ká ma la rìn ɟi | e. já ka làka làm pa | |
| SYLLABIC TROCHEE | (x .) (x .) | (x .) (x .) (x .) | |
| END RULE INITIAL | (x) | (x) | |
| | f. ɲán ki ri kì rim pà ɟi | | |
| SYLLABIC TROCHEE | (x .) (x .) (x .) | | |
| END RULE INITIAL | (x) | | |

Can also be drawn as a metrical tree

Hixkaryana

a. òw to hó <na>

h l l

(x) (. x)

(x)

IAMB

END RULE FINAL

b. tòh ku r^jé ho <na>

h l l l

(x) (. x)

(x)

c. kha nà níh <no>

l l h

(. x) (x)

(x)

IAMB

END RULE FINAL

d. mì hà na níh <no>

l l l h

(. x) (. x)

(x)

More about trochees and iambs

- Recall the following patterns:
trochaic rhythm has preferably even duration and initial prominence
iambic rhythm has preferably uneven duration and final prominence
- We observe these patterns in segmental processes

Stress in Fijian

- See handout

Stress in Fijian

- Basic insights
- Moraic trochee (quantity-sensitive)
- Trochaic shortening
 - Word final sequence H.L becomes (L.L) instead of...
 - (HL): uneven trochee
 - (H): last syllable deleted

Stress in Cahuilla (from Hyde 2011)

- Heavy syllables are of two types
 - Long vowel
 - Short vowel plus glottal stop

Stress in Cahuilla (from Hyde 2011)

| | |
|-------------------------------|-------------------|
| ('taxmu)(,ʔat) | 'song' |
| ('taka)(,litʃem) | 'one-eyed ones' |
| ('paʔ)(,li) | 'the water (OBJ)' |
| ('qaː)(,nitʃem) | 'palo verde (PL)' |
| ('su)(,kaʔ)(,ti) | 'the deer (OBJ)' |
| (,nesun) ('ka)(,viː)(,ʃi-wen) | 'I was surprised' |

Stress in Cahuilla (Hyde 2011)

| | | |
|---------------|-------------------------------|-------------------|
| ('LL)(,L) | ('taxmu)(,ʔat) | 'song' |
| ('LL)(,LL) | ('taka)(,litfem) | 'one-eyed ones' |
| ('H)(,L) | ('paʔ)(,li) | 'the water (OBJ)' |
| ('H)(,LL) | ('qaː)(,nitfem) | 'palo verde (PL)' |
| ('L)(,H)(,L) | ('su)(,kaʔ)(,ti) | 'the deer (OBJ)' |
| ('L)(,H)(,LL) | (,nesun) ('ka)(,viː)(,ʔi-wen) | 'I was surprised' |

Stress in Cahuilla

- Crucial: disyllabic feet with H in it are avoided, even if this creates a degenerate foot at the right edge of the word
- → Moraic trochees prefer even duration (i.e., bimoraic feet)

Hyxkaryana again

| | | | |
|--------------------|---|---------------------|------------------|
| (L'L)('H)L | → | (L'H)('H)L | |
| (khæ'næ)('nuh)nɔ | → | (khæ'næ:)('nuh)nɔ | 'I taught you' |
| (L'L)(L'H)L | → | (L'H)(L'H)L | |
| (mu'hæ)(næ'nuh)nɔ | → | (mu'hæ:)(næ'nuh)nɔ | 'you taught him' |
| ('H)(L'L)L | → | ('H)(L'H)L | |
| ('ɔw)(tɔ'hɔ)næ | → | ('ɔw)(tɔ'hɔ:)næ | 'to the village' |
| ('H)(L'L)LL | → | ('H)(L'H)LL | |
| ('tɔh)(ku'r'i)hɔnæ | → | ('tɔh)(ku'r'i:)hɔnæ | 'to Tohkurye' |

Hixkaryana again

Iambic lengthening in Hixkaryana

- | | | | | |
|----|--------------------|---|---------------------|------------------|
| a. | (L'L)('H)L | → | (L'H)('H)L | |
| | (khæ'næ)('nʷh)nɔ | → | (khæ'næ:)('nʷh)nɔ | 'I taught you' |
| b. | (L'L)(L'H)L | → | (L'H)(L'H)L | |
| | (mʷ'hæ)(næ'nʷh)nɔ | → | (mʷ'hæ:)(næ'nʷh)nɔ | 'you taught him' |
| c. | ('H)(L'L)L | → | ('H)(L'H)L | |
| | ('ɔw)(tɔ'hɔ)næ | → | ('ɔw)(tɔ'hɔ:næ) | 'to the village' |
| d. | ('H)(L'L)LL | → | ('H)(L'H)LL | |
| | ('tɔh)(ku'rʲi)hɔnæ | → | ('tɔh)(ku'rʲi:)hɔnæ | 'to Tohkurye' |

Iambic Lengthening

- Thus: Iambic languages (. x) have processes that create the desired unevenness within feet:
 - ‘ll’ becomes ‘lh’ by either...
 - vowel lengthening (Iambic lengthening, see Hixkaryana)
 - gemination

Three foot types

a. SYLLABIC TROCHEE:

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