



# Sesquisyllabicity

The role of structural analysis  
in the study of linguistic  
diversity in Mainland  
Southeast Asia

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# Acknowledgments

- Max Planck Institute of Evolutionary Anthropology
- Max Planck Institute of Psycholinguistics
- Faculty of Arts, Chulalongkorn University
- Center of Excellence Program in Language, Linguistics, and Literature, Faculty of Arts, Chulalongkorn University (CU Centenary Academic Development Project)

# MSEA phonological diversity

- MSEA has always been seen as having high language and phylogenetic diversity but low structural diversity
- MSEA phonological features include
  - complex vowel systems
  - restricted set of final consonants
  - contrastive tones and registers
  - monosyllabicity and **sesquisyllabicity**

# Fieldwork on MSEA sound systems

- Fieldwork on understudied languages has been one of the most eminent enterprise in SEA linguistics.
- Grammar sketches and books as outputs of fieldwork
  - serve as invaluable resources
  - present phonemic analysis and often brief discussion on basic phonotactics
  - describe “surface” inventory of elements rather than how they are related to each other
  - does not facilitate areal comparison due to unclear definition and argumentation

# Sesquisyllabicity as MSEA feature

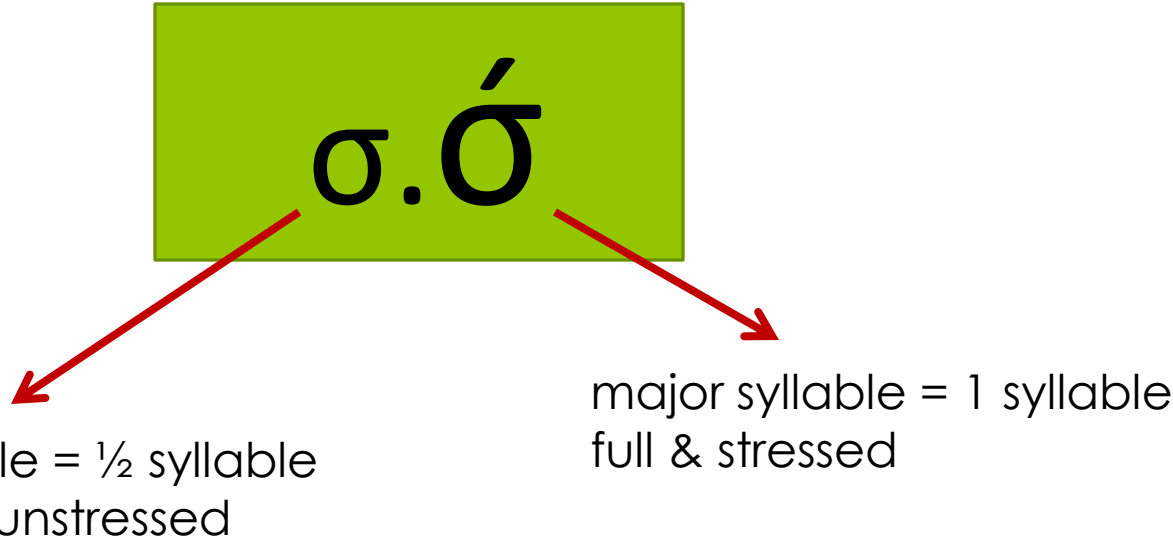
- Synchronically, MSEA languages from different families have been described as having sesquisyllables, e.g. Kammu (Svantesson 1983), Burmese (Green 1995), Buyang (Edmondson 2008), Moken (Larish 1999) etc.
- Diachronically, sesquisyllabicity is claimed to be intermediate between disyllabic and monosyllabic stages (Matisoff 2006; Michaud 2012; Brunelle and Pittayaporn 2012)

# Traditional definition

"Proto-AA had what one might call a 'sesquisyllabic' structure, with morphemes that were 'a syllable and a half' in length. That is, the prevocalic consonant was often preceded by a 'pre-initial' consonant..."

(Matisoff 1973: 86)

# Minor vs. major syllables



σ.ό

minor syllable =  $\frac{1}{2}$  syllable  
reduced & unstressed

major syllable = 1 syllable  
full & stressed

- Examples from Khmer (Matisoff 1973)
  - [psa:] ‘market’
  - [kɲaok] ‘peacock’
- Thomas (1992) is the first attempt at typologizing sesquisyllabic languages in MSEA
  - contrastiveness of sesquisyllabicity
  - vowel contrast in minor syllables



# What are minor syllables?

- Any reduced initial syllable
  - Thurgood (1999) on Northern Roglai
    - [tu<sup>h</sup>loʔ] 'knife'
    - [ri<sup>h</sup>cap] 'fragile'
    - [pi<sup>h</sup>kan] 'abstrain'
    - [ha<sup>h</sup>tai] 'liver'

(data from Cobbey and Cobbey 1977)

- Reduced syllable with no contrastive vowel
  - Svantesson (1983) on Kammu
    - [c<sup>ə</sup>ɲá:r] ‘green’
    - [t<sup>ə</sup>lú:j] ‘to hang (intr.)’
    - [sm̩̀kàr] ‘to straighten’
    - [p̩̀ǹ̩tè?] ‘to cause to get’

- Syllable containing one single consonant

- Burenhult (2005) on Jahai

- [k<sup>(ə)</sup>nɛc] ‘comb’

- [ɟ<sup>(ə)</sup>lɔʔ] ‘hole’

- [t<sup>(ə)</sup>gɪŋ] ‘to tear apart’

- [kaltong] ‘knee’

- [t<sup>(ə)</sup>mkaɭ] ‘male’

- [p<sup>(i)</sup>ŋlɔŋ] ‘to sing’

} minor + major = sesquisyllable

} full + major = disyllable

- Initial syllable with secondary stress

- Saengmani (1979) on Urak Lawoi

- [,hi'tɫp] 'black'

- [,ka'cɫk] 'bean'

- [,pɫŋ'nu] 'slingshot'

- [pə'ɲu] 'turtle'

- [pə'gɫk] 'to hold'

- [tə'mu] 'bored'

} minor + major = disyllable

} presyllable + major = disyllable

- Metrically unfooted syllables

- Butler (2011) on Svantesson's Kammu

- [kḿnòh] 'cutting board'

- [km̀nòh] 'wedding period'

- [pḿkàʔ] 'to wear by the ear'

- [pḿkàʔ] 'shy'

} Initial syllables are not minor syllables

# Fuzzy picture

- No precise definition of sesquisyllabicity
- Unclear how minor syllables differ from full syllables
- Sesquisyllables generally thought to be homogenous

# Working definitions

- Minor syllable = syllable-like structure lacking a contrastive vowel
  - may contain a neutral vowel or a phonetic vocalic transition (on the surface)
  - transcribed without vowel, e.g. Palaung [krtaʔ] ‘tongue’, Kammu [cɲá:r] ‘green’
- Sesquisyllable = prosodic word consisting of a normal stressed syllable preceded by a minor syllable.
- “Presyllable” and “pre-initial” are not used

# Proposals

- Diversity of sesquisyllabicity in
  - Contrastiveness of sesquisyllabicity
  - Prosodic status of minor syllables
- Importance of structural analysis
- Conclusion



# Structural analysis

- Structural analysis = an account of a linguistic phenomenon that pays explicit attention to how units are interrelated within the system, cf. Crystal (1997).
  - how sound elements are organized into sound systems of languages
  - how they interact with each other
- Structural analysis  $\neq$  surface description of sound inventory, cf. Hyman (2007).

# Outline

- Contrastiveness of syllabification
- Prosodic status of minor syllables
- Conclusion

# Contrastiveness of sesquisyllabicity

# Predictability of “sesquisyllabification”

- Cross-linguistically, syllabification is largely predictable from the segmental make-up of the word (Selkirk 1984; Levin 1985; Clements 1990)
- Predictable parsing of segments into monosyllables or sesquisyllables has long been recognized, e.g. Kammu (1983), Semelai (Kruspe 2004), Turung (2005), Bunong (Butler 2011) etc.
- Thomas (1992) proposes contrastiveness of sesquisyllabicity as a criterion for classifying sesquisyllabic languages

Svantesson (1983: 46) on Kammu

“A syllable boundary is inserted as far to left as possible, leaving a single consonant or one of the clusters.....between it and the vowel. (If the syllable boundary comes to the left of the whole word-base, that word-base is monosyllabic.)”

# Sonority constraints on syllabification

- Sonority Sequencing Principle (SSP)
- Minimal sonority distance (MSD)

# Sonority Sequencing Principle

“In any syllable, there is a segment constituting a sonority peak that is preceded and/or followed by a sequence of segments with progressively decreasing sonority values.”

(Selkirk 1984: 116)

- Example from Spanish

Allowed	Not allowed
[kl-] as in <i>clave</i> 'key'	*[lk-]
[kr-] as in <i>crisis</i> 'crisis'	*[rk-]
[kw-] as in <i>cuota</i> 'quota'	*[wk-]



# Minimal Sonority Distance

- Languages may also impose a language-specific minimal sonority distance (MSD) on complex onsets (Levin 1985; Selkirk 1984; Venneman 1972; Zec 2007)

- Example from Spanish

Allowed	Not allowed
$[kl-]: k(0) - l(2) = -2$	$*[kt-]: k(0) - t(0) = 0$
$[kr-]: k(0) - r(2) = -2$	$*[kn-]: k(0) - n(1) = -1$
$[kw-]: k(0) - w(3) = -3$	$*[nl-]: n(1) - l(2) = -1$

# Semelai (Austroasiatic)

- Based on Kruspe (2004)
- No complex is allowed
- CC- sequences are always syllabified as sesquisyllabic

Not allowed	Allowed	Example	Glosses
*[bl]	[bəl-]	[bələε <sup>g</sup> ŋ]	'arm'
*[dr-]	[dər-]	[dərəε]	'rattan'
*[ty-]	[təy-]	[təyʌk]	'banana'
*[rs-]	[rəs-]	[rəsʌʔ]	'kind of fish'
*[jt-]	[jət-]	[jətək]	'banana'

- Sonority does not play a role
- Sesquisyllabicity is NOT contrastive

# Khmer (Austroasiatic)

- Based on Huffman (1972)
- Simple monosyllables

Examples	Glosses
/tu:k/	'boat'
/kou/	'to stir'
/kon/	'film'

- True disyllables

Examples	Glosses
[kaka:j]	'to scratch'
[prakan]	'to maintain'
[baŋkaət]	'to originate'

- Prosodic words with initial CC-
  - voiceless stop + /h, r, s/ = [CC-]
  - voiceless stop + continuant = [C<sup>h</sup>C-]
  - Others = [C<sup>ə</sup>C-]

- [CC-]: voiceless stop + /h, r, s/

[CC-]	[C <sup>h</sup> C-]	[C <sup>ə</sup> C]	Examples	Glosses
[kh-]	*[k <sup>h</sup> h-]	*[k <sup>ə</sup> h-]	[khɤŋ]	'angry'
[tr-]	*[t <sup>h</sup> r-]	*[t <sup>ə</sup> r-]	[trɤi]	'fish'
[ps-]	*[p <sup>h</sup> s-]	*[p <sup>ə</sup> s-]	[psa:]	'market'



- [C<sup>h</sup>C-]: voiceless stop + continuant, except
  - /C/ + /r/
  - /k/ + /ŋ/

[CC-]	[C <sup>h</sup> C-]	[C <sup>ə</sup> C]	Examples	Glosses
*[pl-]	[p <sup>h</sup> l-]	*[p <sup>ə</sup> l-]	[p <sup>h</sup> liəŋ]	'rain'
*[km-]	[k <sup>h</sup> m-]	*[k <sup>ə</sup> m-]	[k <sup>h</sup> mæe]	'Khmer'
*[pt-]	[p <sup>h</sup> t-]	*[p <sup>ə</sup> t-]	[p <sup>h</sup> t <sup>ə</sup> h:]	'door'

- [C<sup>ə</sup>C-]: others

[CC-]	[C <sup>h</sup> C-]	[C <sup>ə</sup> C]	Examples	Glosses
*[kb-]	*[k <sup>h</sup> b-]	[k <sup>ə</sup> b-]	[k <sup>ə</sup> ba:l]	'head'
*[sd-]	*[s <sup>h</sup> d-]	[s <sup>ə</sup> d-]	[s <sup>ə</sup> daən]	'thin'
*[lb-]	*[l <sup>h</sup> b-]	[l <sup>ə</sup> b-]	[l <sup>ə</sup> bæən]	'game'
*[kŋ-]	*[k <sup>h</sup> ŋ-]	[k <sup>ə</sup> ŋ-]	[k <sup>ə</sup> ŋa:n]	'goose'

	C <sub>1</sub> -	-C <sub>2</sub> -																	
		p	t	c	k	ʔ	b	d	m	n	ɲ	ŋ	w	j	l	r	s	h	
CC-	p															x	x	x	
	t															x		x	
	c															x		x	
	k															x	x	x	
C <sup>h</sup> C-	p			x	x	x				x	x	x		x	x				
	t	x			x				x	x		x	x	x	x				
	c	x			x				x	x		x	x		x				
	k	x	x	x					x	x	x			x	x				
	s	x	x		x				x	x	x	x	x		x	x			
C <sup>a</sup> C-	p					x		x											
	t					x	x												
	c					x	x	x											
	k					x	x	x				x							
	ʔ												x						
	s					x	x	x											
	m			x	x		x		x		x	x				x	x	x	x
	l	x				x	x	x		x			x	x					x

- Sonority does not play a role
- Sesquisyllabicity is NOT contrastive

# Burmese (Sino-Tibetan)

- Based on Green (1995) and Jenny (p.c.)
- Only Cj- and Cw- clusters are permissible

Examples	Glosses
[kwé]	'to split'
[θwá]	'tooth'
[nwé]	'warm'
[jwɛ]	'to be moved'
[p <sup>h</sup> jaʔ]	'to cut'
[mjouʔ]	'to be buried'

- Contrast between monosyllables and sesquisyllables

	monosyllables	sesquisyllables
m+j	/mjà/ 'numerous'	/məjà/ 'wife'
k+w	/kəwí/ 'poet'	/kəwe/ 'witch, wizard'
k <sup>h</sup> +w	/k <sup>h</sup> əwa/ 'laundry'	/k <sup>h</sup> əwè/ 'kind of gourd'

- Sonority seems to play a role.
- Sesquisyllabicity is contrastive

# Kammu (Austroasiatic)

- Based on Svantesson (1983)
- Onset clusters in monosyllables
  - SSP respected
  - Sonority distance  $\geq 2$

labial	alveolar	palatal	velar
[pl-]			[kl-]
[pr-]			[kr-]
	[tr-]	[cr-]	[kw-] [k <sup>h</sup> w-]

-l-	-r-	-w-
[klwət] 'to swallow'	[prýh] 'to raise'	[kwá:ŋ] 'red cotton tree'
[klèʔ] 'husband'	[trá:k] 'buffalo'	[kwà:c] 'to beckon'
[kléh] 'bald'	[cruwəs] 'to comb'	[khwá:ŋ] 'across'
[pliá] 'lame'	[krò:ŋ] 'stalk'	
[plwəm] 'land leech'	[krá:s] 'to laugh'	



- Sonority profile of sesquisyllable

	MSD not satisfied ( $< 2$ )	MSD satisfied ( $\geq 2$ )
SSP violated	[ɾmà:ŋ] 'rich' [ptéʔ] 'earth' [sʔó:ŋ] 'tree' [kʔá:ŋ] 'wasp'	[ɾ.kèŋ] 'stretched'
SSP not respected	[tmáʔ] 'flea' [knéʔ] 'rat' [pnùm] 'termite hill' [cmò:l] 'to sow'	[k.rúk] 'to fall' [k.ló:k] 'slit drum' [h.yíər] 'fowl' [k.rùəŋ] 'neck eczema'

	monosyllable	sesquisyllable
single C	✓	
obstruent+liquid	✓	✓
obstruent+nasal	x	✓
obstruent+obstruent	x	✓
nasal+obstruent	x	✓
liquid+obstruent	x	✓

- Sonority plays a crucial role.
- Sesquisyllabicity is contrastive.

# Survey: sonority and sesquisyllabicity

Languages	Subgroup	[k.r]	[k.t]	[kr]	[kt]
Kammu (Svantesson 1983)	Austroasiatic	✓	✓	✓	
Nyah Kur (Diffloth 1984)	Austroasiatic	✓	✓	✓	
Sedang (Smith 2000)	Austroasiatic	✓	✓	✓	
Chrau (Thomas 1979)	Austroasiatic	✓	✓	✓	
Bruu (L-Thongkum 1980)	Austroasiatic	✓	✓	✓	
Ruc (Nguyễn 1993)	Austroasiatic	✓	✓	✓	
Burmese (Green 1995)	Sino-Tibetan	✓	✓	✓	
Sgaw Karen (Ratakul 1986)	Sino-Tibetan	✓	✓	✓	

# Survey: sonority and sesquisyllabicity

Languages	Subgroup	[k.r]	[k.t]	[kr]	[kt]
Lawa (Ratanakul and Daoratanahong 1987)	Austroasiatic		✓	✓	
Khmer (Henderson 1952)	Austroasiatic		✓	✓	
Kuay (Markowski 2005)	Austroasiatic		✓	✓	
Mon (Kitisarn 1996)	Austroasiatic		✓	✓	
Pacoh (Alves 2006)	Austroasiatic		✓	✓	
Turung (Morey 2005)	Sino-Tibetan		✓	✓	
Jarai (Nguyễn 1975)	Austronesian		✓	✓	

# Survey: sonority and sesquisyllabicity

Languages	Subgroup	[k.r]	[k.t]	[kr]	[kt]
Jahai (Burenhult 2005)	Austroasiatic	✓	✓		
Semelai (Kruspe 2004)	Austroasiatic	✓	✓		
Thavung (Premsrirat 2004)	Austroasiatic	✓	✓		

# Summary (1)

- Sesquisyllabic languages may differ with respect to the contrastiveness of their sesquisyllabicity.
- Contrast between sesquisyllabic and monosyllabic CCs is possible when sonority constraints are respected.
- Theoretically-informed structural analysis reveals the role of sonority in the formation of sesquisyllables.

# Prosodic status of minor syllables

# Prosodic hierarchy

- Prosodic Phonology (Nespor and Vogel 1981, Selkirk 1981)
- A string of phonological segments is organized into a hierarchical structure that groups sequences of sound into layers of prosodic constituents.



prosodic word ( $\omega$ )



foot ( $\phi$ )

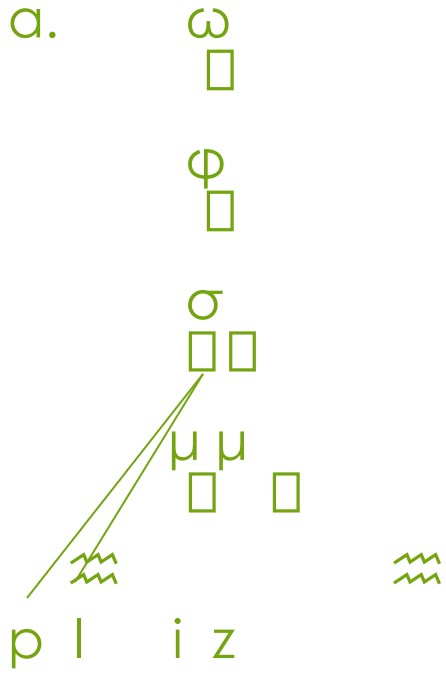


syllable ( $\sigma$ )

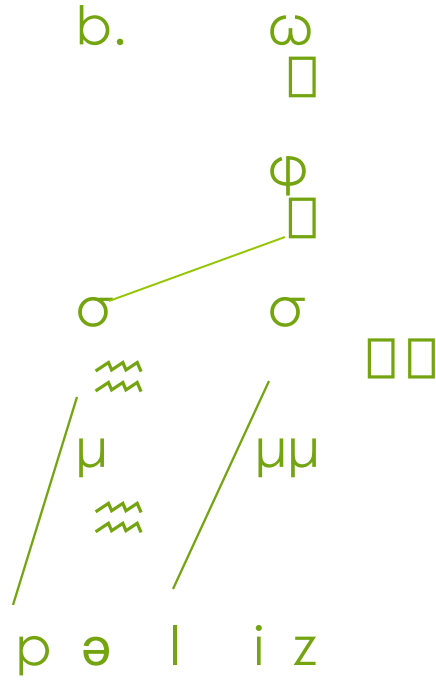


mora ( $\mu$ )

a.



b.

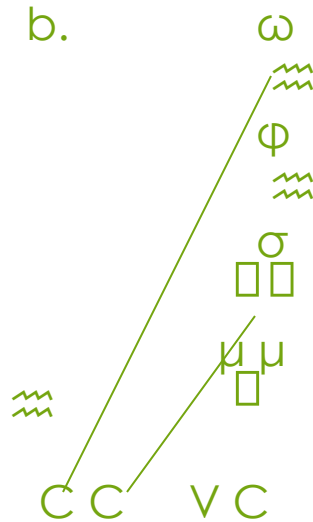
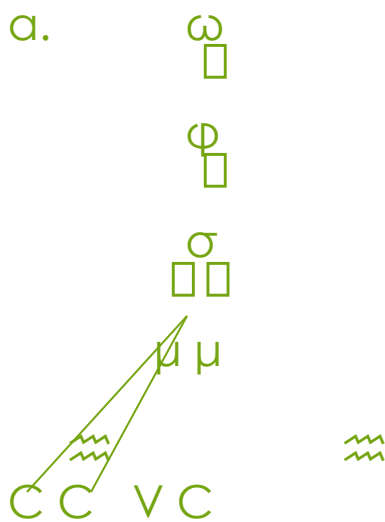


# Prosodic views on minor syllables

- Minor syllables as part of complex onset (Henderson 1952; Huffman 1972)
- Minor syllables as semisyllables (Kiparsky 2003, Cho and King 2003, Gafos 1998)
- Minor syllables as “marginal syllables” (Green 1995, Butler 2011)
- Minor syllables as normal syllable

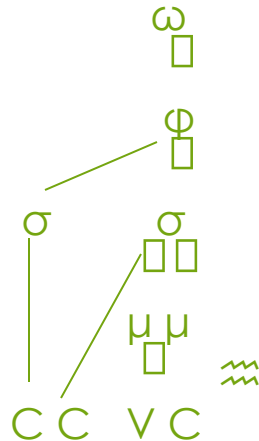
# Minor syllables as parts of complex onsets

- Minor syllables are in fact not syllables but part of the major syllable onset clusters



# Minor syllables as semisyllables

- Non-moraic, e.g. weightless syllables (Cho and King 2003; Féry 2003)
- Non-MSEA examples: Polish, Czech, Georgian, Bella Coola (Cho and King 2003)



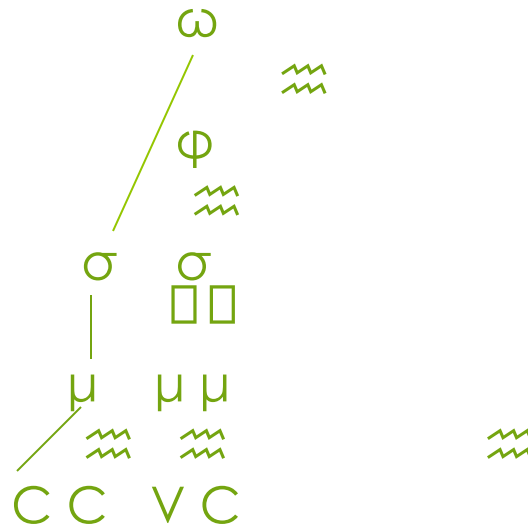
# Properties of semisyllables

- No nucleus
- No codas
- No stress/accent/tone
- Prosodically invisible
- Well-formed onset clusters
- Restricted to morpheme peripheral positions

(Cho and King 2003)

# Minor syllables as “marginal syllables”

- Unfooted syllables (Green 1995; Butler 2011)
- Non-MSEA examples: English (Zec 2003)



# Properties of marginal syllables

- Never stressed
- Never in monosyllables or disyllables consisted of marginal syllables only
- Only “extraprosodic” position

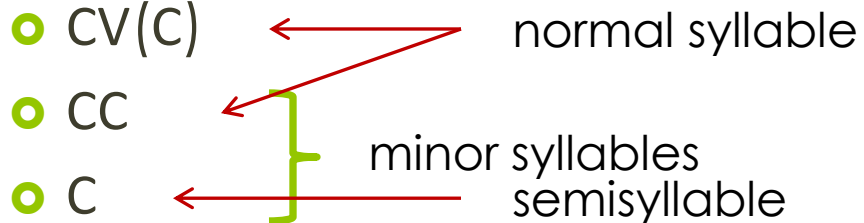
(Zec 2003)



# Semisyllable vs. marginal syllables

	semisyllables	marginal syllables
Nucleus allowed	x	✓
Coda allowed	x	✓
Tone allowed	x	Depending on TBU
Stressable	x	x
Allowed in monosyllable	x	x
Prosodically invisible	✓	✓
Well-formed onset	✓	(✓)
Restricted to morpheme periphery	✓	(x)
Restricted to domain periphery	(✓)	✓

# Jahai (Austroasiatic)

- Based on Burenhult (2005)
  - Three types of unstressed syllables
    - CV(C) ← normal syllable
    - CC } minor syllables
    - C } semisyllable
- 

- Both C and CC minor syllables pattern with full syllables in morphological processes
- Both are structurally separate syllables from the major syllables

- Causative affixation

- Prefix /pr-/ to monosyllabic roots

- /hir/ 'frightened' → /prhir/ 'to frighten'

- /gej/ 'to eat' → /prgej/ 'to feed'

- /bj/ 'to run' → /prbj/ 'to cause to run away'

- Infix /-ri-/ to sesquisyllabic and disyllabic roots

- /bkit/ 'hot' → /brikít/ 'to cause to run away'

- /kbis/ 'die' → /kribis/ 'to kill'

- /pcah/ 'to break' → /pricah/ 'to kill'

- /manəh/ 'old' → /mrinəh/ 'to make old'

- Distributive formation

- Prefix /CiV-/ to monosyllabic roots

- /cip/ 'to go' → /cipcip/ 'to go here and there'

- /bih/ 'to put' → /bihboh/ 'to put here and there'

- /ŋɔk/ 'to sit' → /ŋikŋɔk/ 'to sit here and there'

- /-iV-/ prefix to sesquisyllabic and disyllabic roots

- /lwec/ 'to climb' → /licwec/ 'to climb here and there'

- /tbɔh/ 'to hit' → /tihbɔh/ 'to hit here and there'

- /kriŋ/ 'to dry' → /kiriŋ/ 'to dry here and there'

- /sapuh/ 'to sweep' → /sihpuh/ 'to sweep here and there'

- Reciprocal formation

- Prefix /Ca-/ to monosyllabic root

- /cip/ 'to go' → /**ca**cip/ 'to go together'

- /cɔl/ 'to tell' → /**ca**cɔl/ 'to tell each other'

- /gej/ 'to eat' → /**ga**gej/ 'to eat together'

- Infix /-a-/ to sesquisyllabic root

- /smɛŋ/ 'to ask' → /**sa**mɛŋ/ 'to ask each other'

- /bdil/ 'to shoot' → /**ba**dil/ 'to shoot each other'

- /ʔnaj/ 'to bathe' → /ʔ**a**naj/ 'to bathe each other'

- Positional restrictions on minor syllables (Burenhult 2005: 31)

Word type	Canonic structure	Example	Gloss
Monosyllabic	/CVC/	/cɛp/	'to catch'
Sesquisyllabic	/C.CVC/	/knɛc/	'comb'
Disyllabic	/CV.CVC/	/kawip/	'sun bear'
	/CC.CVC/	/tmkal/	'male'
	/CVC.CVC/	/kaltoŋ/	'knee'
Trisyllabic	/C.CV.CVC/	/kɫaŋis/	'heart'
	/C.CC.CVC/	/prŋgəŋ/	'pharynx'
	/C.CVC.CVC/	/cmalpɔk/	'(a type of millipede)'

- Different distribution of minor syllables
  - C minor syllables always on left periphery of root and prosodic word
  - CC and CV show identical distribution
- Jahai minor syllables are separate syllables from major syllables
  - CC normal syllables
  - C semisyllables (cf. Polish)
- Jahai sesquisyllables as structurally disyllabic



# Kammu (Austroasiatic)

- Based on Svantesson (1983)
- Two types of minor syllables
  - Tonal = CC or C ← marginal syllable
  - Non-tonal = C ← semisyllable
- Both types seem structurally separate from major syllables

- Alternation of causative /pn/
  - Prefix /pn/ to monosyllabic roots
  - Infix /m/ to sesquisyllabic roots

/tèʔ/ ‘to get’

/p<sup>h</sup>.tèʔ/ ‘to cause to get’

/krùal / ‘alive

/p<sup>h</sup>.krùal/ ‘to spare sb’s life’

/cɲá:r/ ‘green’

/c<sup>m</sup>.ɲà:r/ ‘to make green’

/skár/ ‘straight’

/s<sup>m</sup>.kàr/ ‘to straighten’

- Contrast between sesquisyllables and monosyllables in /kàm pɿ.ʔɛ:n/

/kɔ́ɔn/ ‘child’

/kɔ́ʔ kɔ́ɔn káɫn/

/klèʔ/ ‘husband’

/klèʔ klèʔ klàɫn/

/lɪ̀mpòɔŋ/ ‘to talk’

/lɪ̀mpòʔ pòɔŋ pàɫn/

/kɪ̀múʔ/ ‘person’

/kɪ̀móʔ múʔ málɫn/

- Non-tonal minor syllables
  - C if obstruents
    - /cɲár/ 'green'
    - /pkù:n/ 'respect'
  - No moraic nucleus = weightless

- Tonal minor syllables
  - C if sonorant  
HERE
  - CC  
/kɛ̀nòh/ 'cutting-board'  
/pɛ̀nòʔ/ 'broom'
- One moraic consonants

- Positional restrictions on minor syllables

Word type	Canonic structure	Example	Gloss
Monosyllabic	/CVC/ /CCVC/	/tèn/ /klét/	'to sit' 'smooth'
Sesquisyllabic	/C.CVC/ /CC.CVC/	/pkùn/ /kʰʔɪŋ/	'respect' 'beautiful face'

- One minor syllable per prosodic words
- Always on left periphery
- Kammu sesquisyllables as structurally disyllabic
- Kammu minor syllables are separate syllables from major syllables
  - non-tonal = semisyllables (cf. Polish)
  - tonal = marginal syllables (cf. English)

## Summary (2)

- Minor syllables have counterparts in languages outside of the area
- Sesquisyllabic languages may differ with respect to the prosodic status of their minor syllables
- Typological study is currently not feasible
  - Surface description of the sound system
  - Lack of structural evidence



# Conclusion

- Sesquisyllabicity is an oft-cited MSEA feature but among the least understood
- Structural definition provides a frame within which sesquisyllabicity can be compared
- Theory-oriented structural analysis helps reveal both unity and diversity among MSEA languages
- Future study of MSEA should continue the strong fieldwork tradition while incorporating structural analysis as well as current theoretical thinking.

# References

- Brunelle, Marc and Pittayaporn, Pittayawat. 2012. Phonologically-constrained change: The role of the foot in monosyllabization and rhythmic shifts in Mainland Southeast Asia. *Diachronica* 29.4.
- Burenhult, Niclas. 2005. A grammar of Jahai. Canberra: Pacific Linguistics.
- Butler, Becky. 2011. A reanalysis of minor syllables: the interaction of word maximality and positional markedness. Paper presented at SEALXXI.
- Clements, G. Nick. 1990. The role of syllabification cycle in core syllabification. In J. Kingston and M. E. Beckman, eds, *Papers in Laboratory Phonology I: Between the grammar and physics of speech*, pp. 283-333. Cambridge; New York, Port Chester, Melbourne, Sydney: Cambridge University Press.
- Cho, Young-mee and King, Tracy Holloway. 2003. Semisyllables and universal syllabification. *The Syllable in Optimality Theory*, ed. by Caroline Féry and Ruben van de Vijver. Cambridge: Cambridge University Press.
- Cobbey, Maxwell and Cobbey, Vurnell. 1977. *Suraq vungã sanãp Radlai* [Northern Roglai vocabulary]. Huntington Beach, CA: Summer Institute of Linguistics.

# References

- Crystal, David. 1997. A dictionary of linguistics and phonetics. 4<sup>th</sup> edition. Oxford: Blackwell.
- Edmondson, J. A. 2008. Kra or Kadai languages. *Tai-Kadai Languages*. London and New York: Routledge.
- Féry, Caroline. 2003. Onsets and nonmoraic syllables in German. In: *The Syllable in Optimality Theory*. C. Féry and R. van de Vijver (eds.) Cambridge University Press. 213-237.
- Gafos, Diamandis. 1998. A-templatic reduplication. *Linguistic Inquiry*, 29(3), 515-527.
- Green, Antony D. 1995. The prosodic structure of Burmese: A constraint-based approach. *Working Papers of the Cornell Phonetics Laboratory* 10: 67-96.
- Henderson, Eugénie J. A. 1952. The main features of Cambodian pronunciation. *Bulletin of the School of Oriental and African Studies, University of London* 14:149-174.

# References

- Huffman, Franklin E. 1972. The boundary between the monosyllable and the disyllable in Cambodian. *Lingua*, 29, 54-66.
- Hyman, Larry M. 2007. Universals of tone rules: 30 years later. In Tomas Riad & Carlos Gussenhoven (eds), *Tones and Tunes: Studies in Word and Sentence Prosody*, 1-34. Berlin: Mouton de Gruyter.
- Kiparsky, Paul. 2003. Syllables and moras in Arabic. In C. Féry & R. van de Vijver, eds., *The Syllable in Optimality Theory*, 147-182. Cambridge: Cambridge University Press.
- Kruspe, Nichole. 2004. *A grammar of Semelai*. Cambridge; New York: Cambridge University Press.
- Larish, Michael D. 1999. *The position of Moken and Moklen within the Austronesian language family*. Bell & Howell Information & Learning.
- Levin, Juliette. 1985. *A Metrical Theory of Syllabicity*. Ph.D. dissertation. Department of Linguistics and Philosophy, MIT. Cambridge, MA.

# References

- Matisoff, James A. 1973. Tonogenesis in Southeast Asia. In L. M. Hyman, ed, *Consonant types & tones*, pp. 71-95. Los Angeles: The Linguistic Program, University of Southern California.
- Matisoff, James A. 2006. *English-Lahu Lexicon* (Vol. 139). University of California Press.
- Michaud, Alexis. 2012. Monosyllabization: Patterns of evolution in Asian languages. In Thomas Stolz, Nicole Nau and Cornelia Stroh, *Monosyllables: From phonology to typology*. Berlin: Akademie Verlag.
- Nespor, M., & Vogel, I. (2007). *Prosodic phonology* (Vol. 28). Walter de Gruyter.
- Saengmani, Amorn. 1979. *Phonology of the Urak Lawoi' Language: Adang Island*. Doctoral dissertation, Mahidol University).
- Selkirk, Elizabeth O. 1981. On the nature of phonological representation. In J. Anderson, J. Laver and T. Meyers, eds., *The cognitive representation of speech*. Amsterdam: North Holland.

# References

- Selkirk, Elizabeth O. 1984. On the major class features and syllable theory. In M. Aronoff and R. T. Oehrle, eds., *Language sound structure*, pp. Cambridge, MA: MIT Press.
- Svantesson, Jan-Olof. 1983. *Kammu phonology and morphology*. Lund: CWK Gleerup.
- Thomas, David. 1992. On sesquisyllabic structure. *Mon-Khmer Studies*, 21: 206-210.
- Thurgood, Graham. 1999. *From ancient Cham to modern dialects: two thousand years of language contact and change: with an appendix of chamic reconstructions and loanwords (Vol. 28)*. University of Hawaii Press.
- Venneman, Theo 1972. On the Theory of Syllabic Phonology. *Linguistische Berichte* 18:1-18.
- Zec, Draga. 2003. Prosodic weight. *The Syllable in Optimality Theory*, 123-143.
- Zec, Draga. 2007. The syllable. In P. de Lacy, ed, *The Cambridge handbook of Phonology*, pp. 161-194. Cambridge: Cambridge University Press.