Variability of Languages in Time and Space

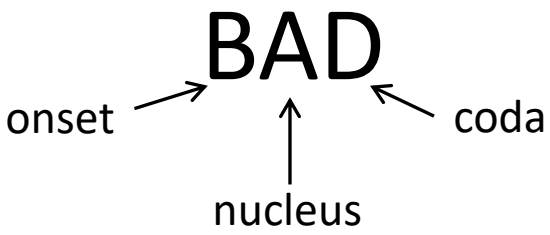
Phonological Typology – Syllables – Suprasegmentals

- Syllable structure and patterns
- Syllable repair processes
- Suprasegmentals: Stress, length, tones
- Two linguistic quizes

Anja Nedoluzhko

SYLLABLE STRUCTURE

Syllable Structure

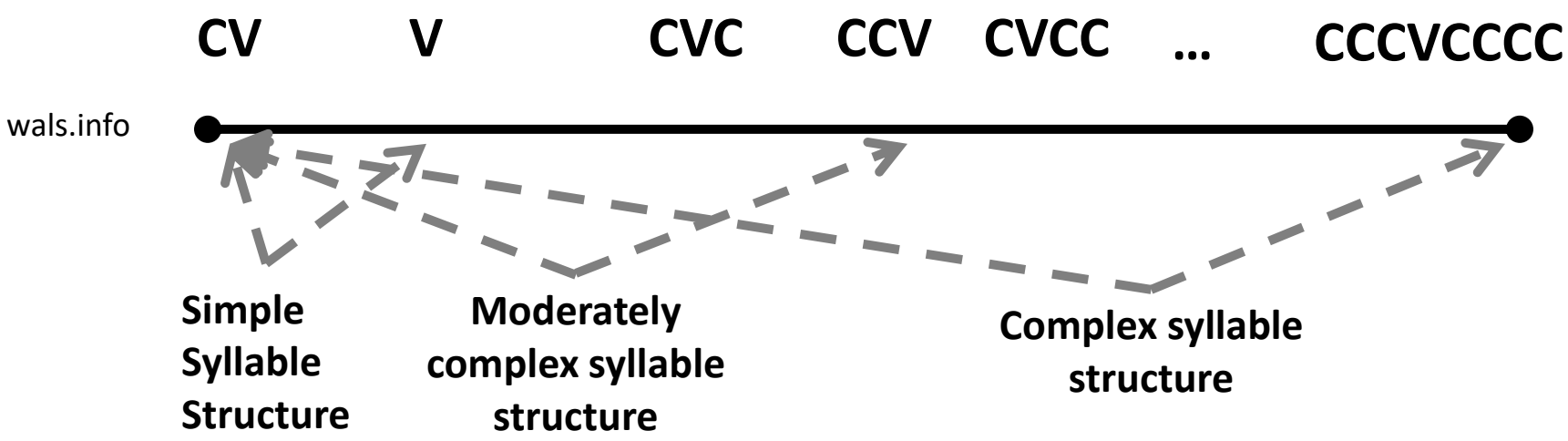


A Syllable is:

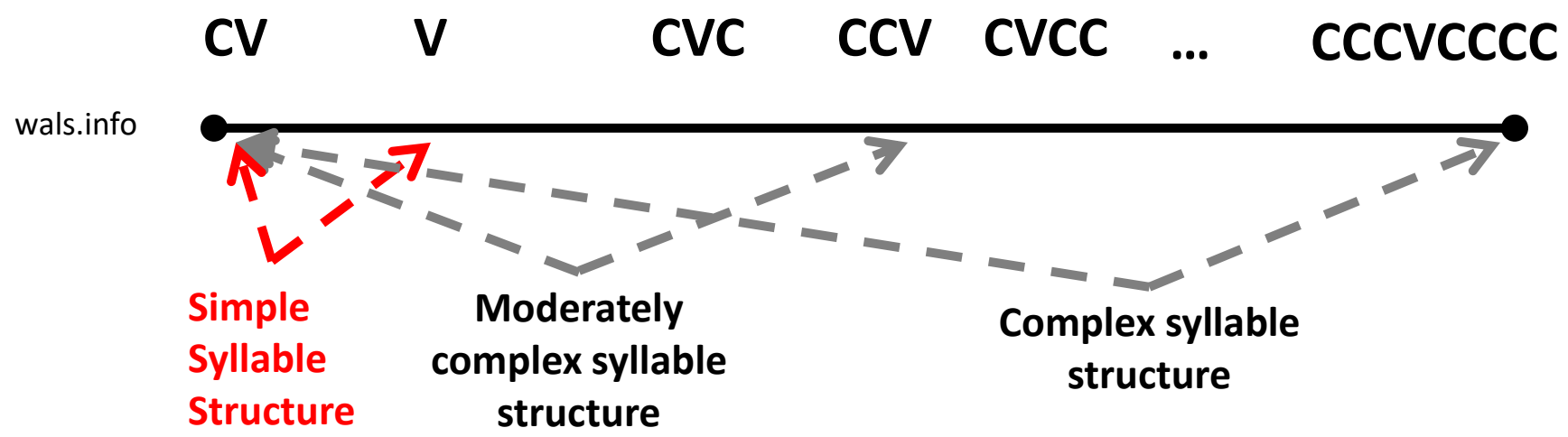
- Well-recognized unit in linguistic analysis
  - Easy concept: If listeners differ in syllabifying a word, it is generally the case that both possible syllabifications are possible (*pastry* = *past.ry* or *pas.try*)
- Explains the number of rhythmic units
- This number is usually equal to the number of vowels (but *little, eagle*)
  - Exceptions?
- Open syllables (*bar, day*) ↔ Closed syllables (*bard, tied*)
- Which syllable types are permitted in a language
  - Sequencing of segments within syllables (**C**onsonant, **V**owels)

C = consonant
V = vowel

Syllable Structures in Languages



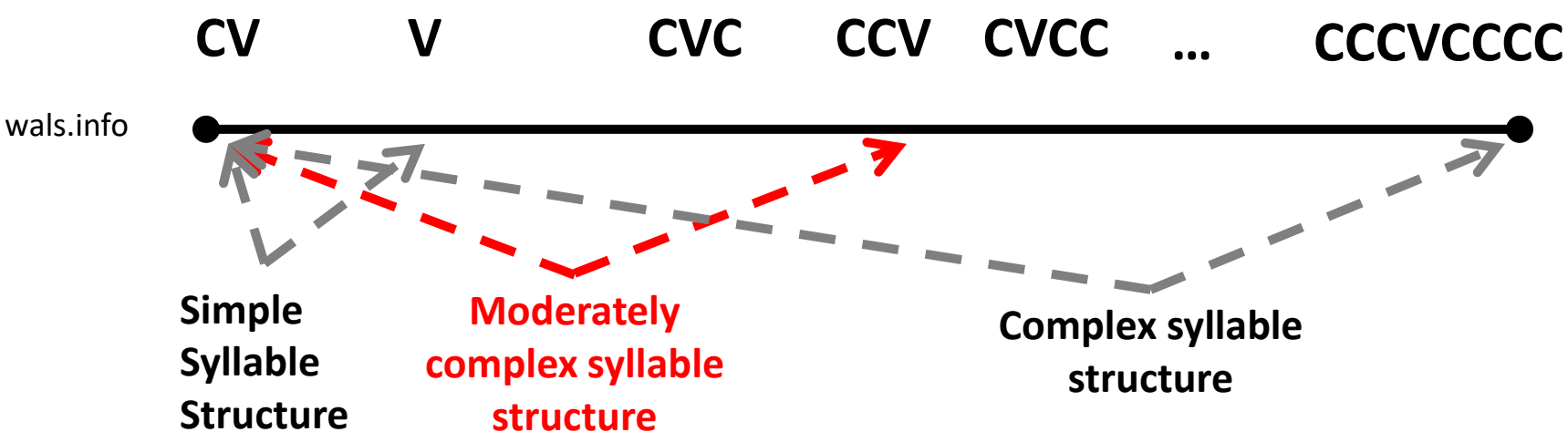
Simple Syllable Structures



only CV, also Hawaiian

(C)V: permitted not to have an initial consonant

Moderately Complex Structures



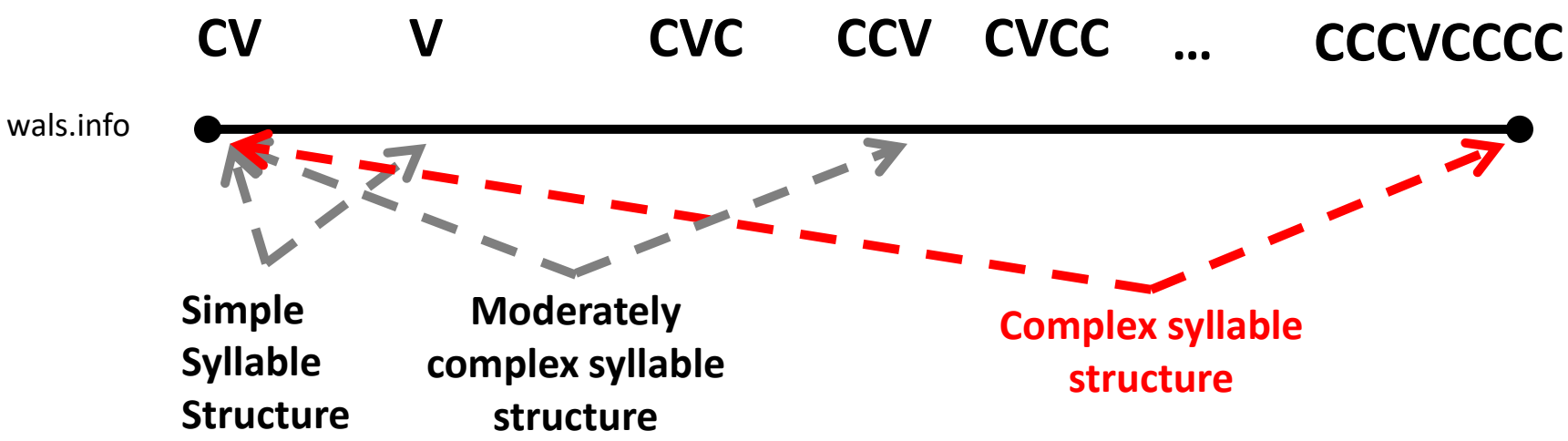
the most elaborate syllable permitted is CCVC

/bwak/ ‘(his) father’

the only possible second consonant in a sequence of two is /w/

There are strict limits on what kinds of combinations are permitted: The second of two consonants is commonly limited to being one of a small set belonging to either “liquids” (*r, l*) or “glides” ([w] in en. *wet*)

Complex Syllable Structures



English (C)(C)(C)**V**(C)(C)(C)(C)

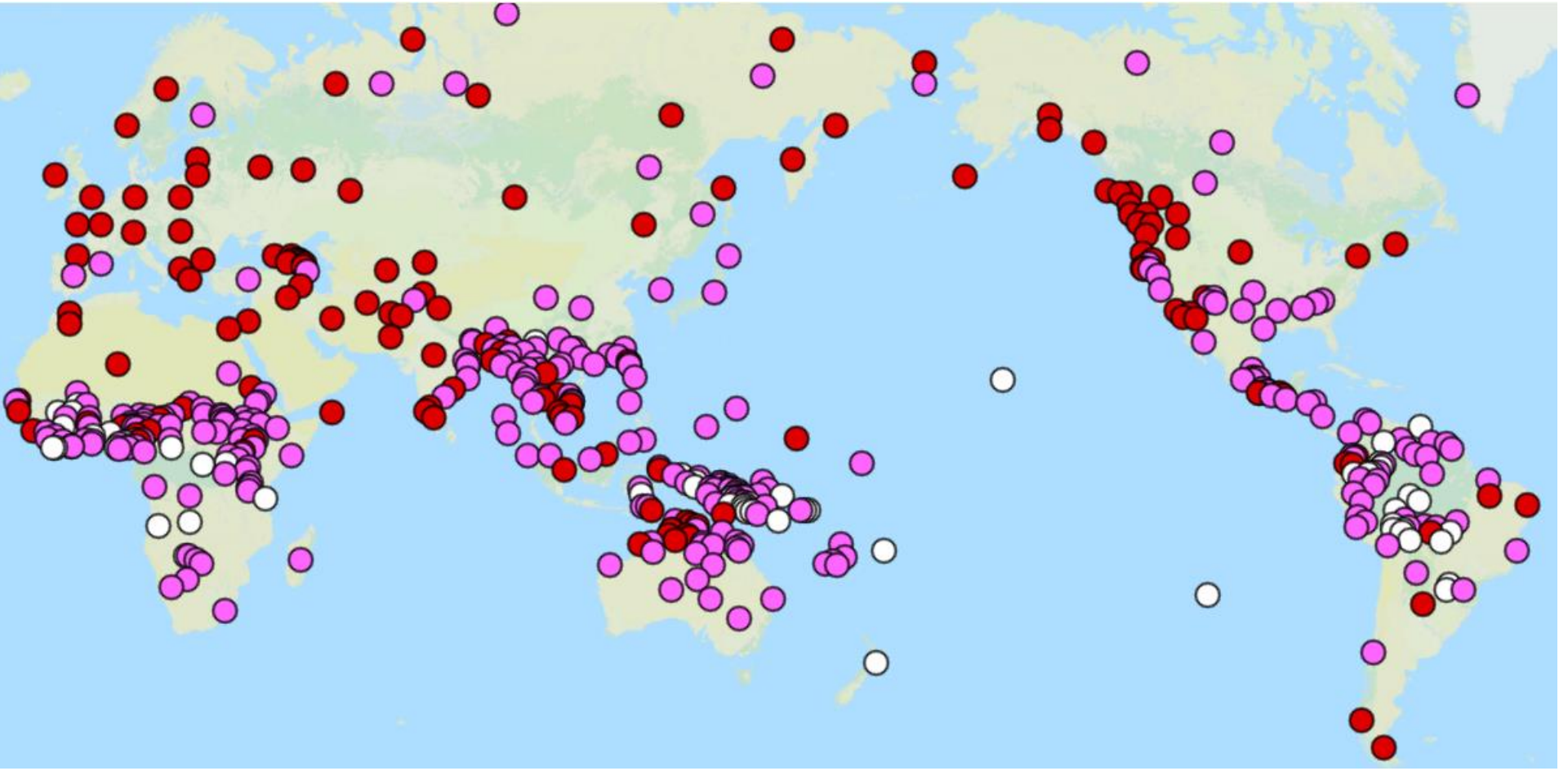
strengths /stɹ**ɛ**ŋkθs/

texts /t**ɛ**ksts/

Distribution in WALS

Value	Representation
Simple syllable structure	61
Moderately complex syllable structure	274
Complex syllable structure	151
Total:	486

http://wals.info/feature/12A#2/16.6/153.1



Canonical Syllable Patterns

- May be different in different positions (in onset vs. in cora)
  - Italian: allows more than one **C**onsonant in the onset position

    pro.fon.do ‘deep’, *tro.no* ‘throne’, *blat.ta* ‘cockroach’

    but only a single **C**onsonant in the coda position

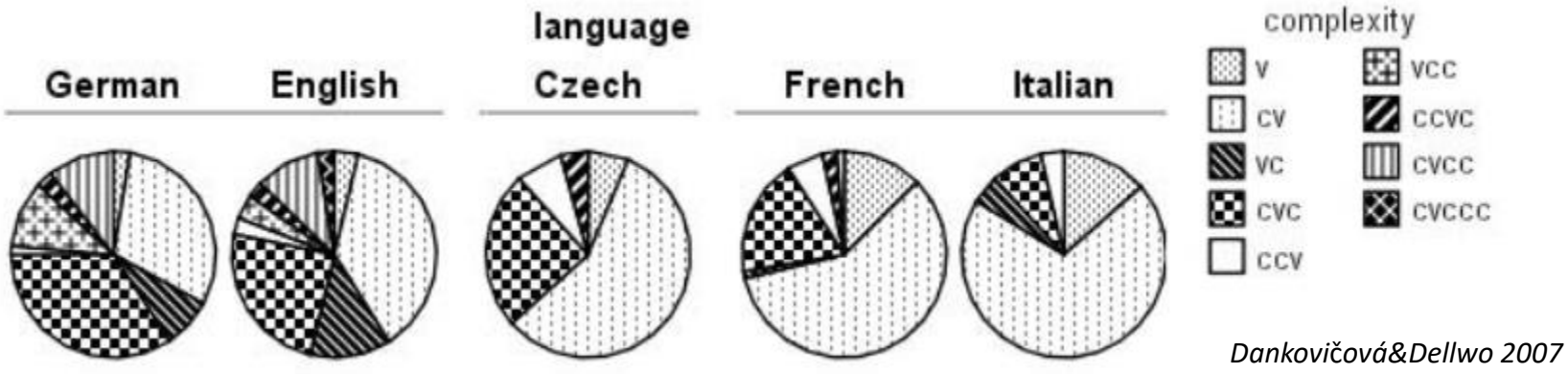
    san.to ‘saint’, *pal.ko* ‘platform’, *tor.ta* ‘cake’
  - Khalkha Mongolian: allows only a single **C**onsonant in the onset, but permits two **C**onsonant in coda position

    maiɮs ‘cypress’, *ɔims* ‘sock’, *nomx-tʰ* ‘to become tame’, *iɮs-tʰ* ‘sandy’, *ʃarx-ʧʰ* ‘coroner’, *taws-tʰ* ‘salty’

Canonical Syllable Patterns

- CV – the most basic and frequent syllable, also within a language where other possible combinations are possible
- CV > CCV > CCCV and CV > V (markedness of the onset)
- CVC > CCV > CVCC > CVCCC
- CV > CVC

C = consonant
V = vowel



Dankovičová&Dellwo 2007

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- CV > CCV > CCCV and CV > V (markedness of the onset)
- CVC > CCV > CVCC > CVCCC
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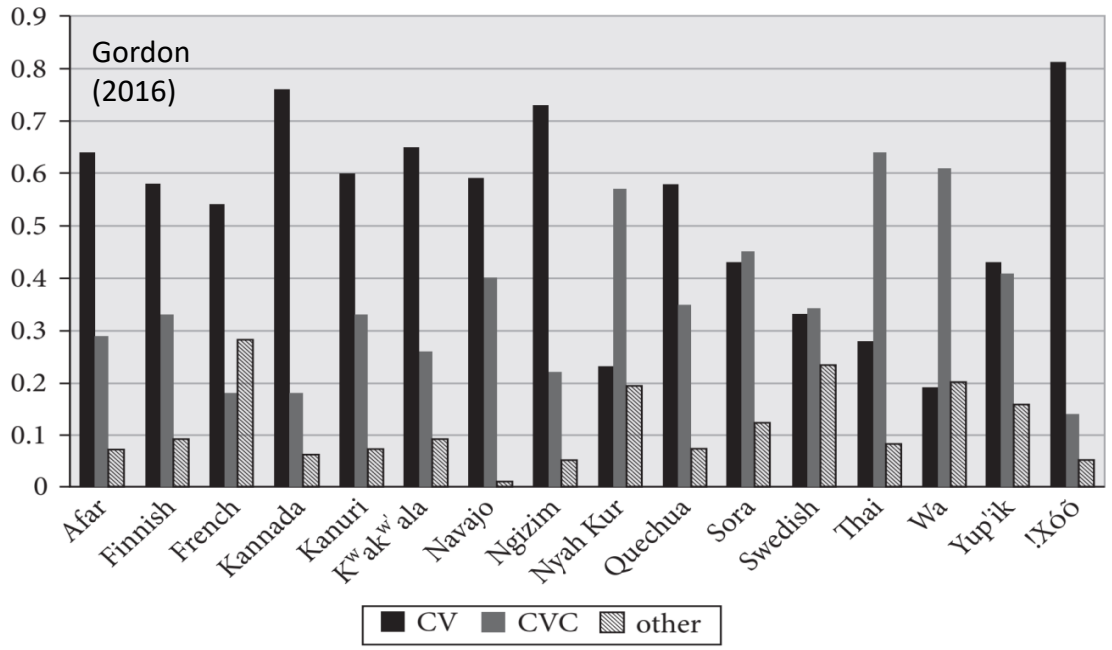
- Examples from 16 genetically diverse languages contained in the UCLA Lexical and Syllabic Inventory Database (ULSID)

C = consonant
V = vowel



Correlations Between Syllable Complexity and Other Properties

- Maddieson (2007), based on data from WALS:

  finds a positive correlation between complexity of syllable structure and the number of consonants such that languages permitting more complex syllable types tend to have a greater number of consonants.

small consonant inventories ↔ simple syllable structure

large consonant inventories ↔ complex syllable structures

		Syllable structure			
		Simple	Moderate	Complex	*Total*
Consonants	Small	20	42	16	*78*
	Mod. small	13	70	17	*100*
	Average	16	90	55	*161*
	Mod. large	3	56	37	*96*
	Large	8	15	23	*46*
	Total	*60*	*273*	*148*	***481***

Gordon (2016)

Syllable Repair Processes

- Many languages have productive processes to ensure that their syllables adhere to language-internal constraints on syllable structure
  - Most varieties of Arabic have restrictions against complex onsets and codas. In case morpheme concatenation brings together three consonants, an epenthetic /i/ is inserted to break up the clusters
  - Location of the epenthetic vowel depends on the dialect

Cairene Arabic		
(a) /ʔul-t-l-u/	ʔultilu	'I said to him'
/katab-t-l-u/	katabtilu	'I wrote to him'
Iraqi Arabic		
(c) /gil-t-l-a/	gilitla	'I said to him'
/katab-t ma-ktu:b/	katabit maktu:b	'I wrote a letter'

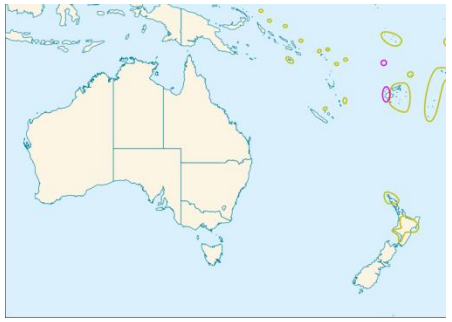
Gordon (2016)

Syllable Repair Processes

- Many languages have productive processes to ensure that their syllables adhere to language-internal constraints on syllable structure
  - deletion of a segment
    - A consonant might be deleted if it would otherwise trigger a violation of a constraint against closed syllables or against codas of a certain type.

Simple	*Perfective*	*Gloss*
api	apit-ia	'be lodged'
sopo	sopoʔ-ia	'go across'
milo	milos-ia	'twist'
oso	osof-ia	'jump'
ŋalo	ŋalom-ia	'forget'

Gordon (2016)



Austronasian family
Polynesia

redzonansu
oputimisuto
pen
endzin
medo in dz’apan
janki
noto-bukku
supu
n’ujoku-tajmudzu
sekus’on
mota
dokuta
dzigudzagu
tikketto
indakus’on
s’okku
s’oppu

burokku
baransu
uisuki
majru
ojru
surogan
rajburari
ibuningu
bandaridzumu
intab’u
pasento
massadzi
ba
suta
atorakus’on
oba-koto
supido
dz’anaridzumu

SUPRASEGMENTALS

Suprasegmentals

- Vowels and consonants: segments of which speech is composed.
- Segments are composed together to form syllables
- Suprasegmentals (also called *non-segmental* or *prosidic features*) are superimposed on the syllables. These are other features that are known as:
  - Stress
  - Length
  - Tones

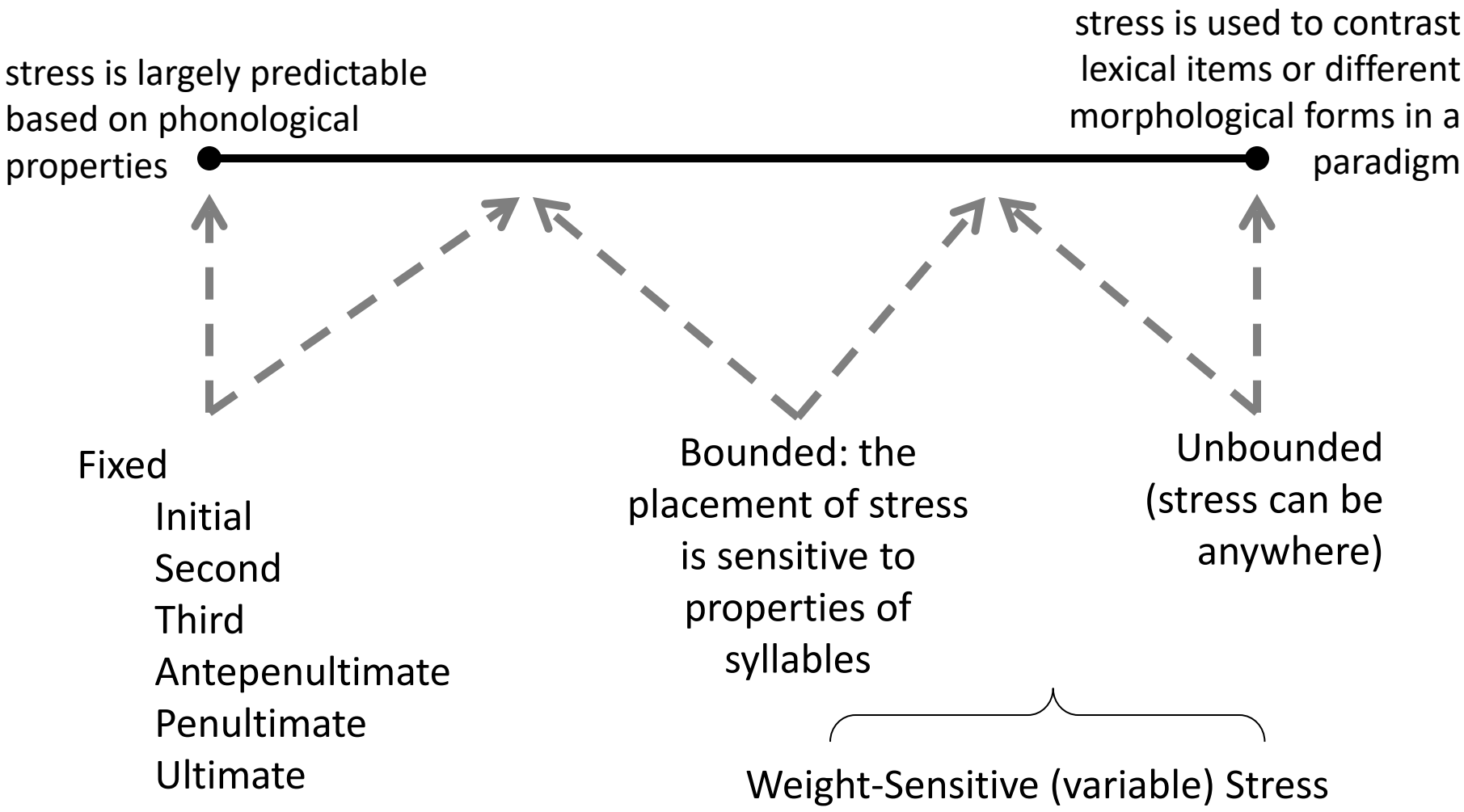
Stress

- Stress is manifested by different acoustic properties
  - increased duration
  - higher fundamental frequency [Hz] (the acoustic analog to the perceptual property of **pitch**)
  - increased intensity (greater **loudness** [dB] perceptually)
- Stress is a relative concept
- Stress may cause segmental processes
  - in stressed syllables: Consonants and vowels may undergo fortition processes
  - in unstressed syllables: Consonants and vowels may undergo lenition effects (reduction)

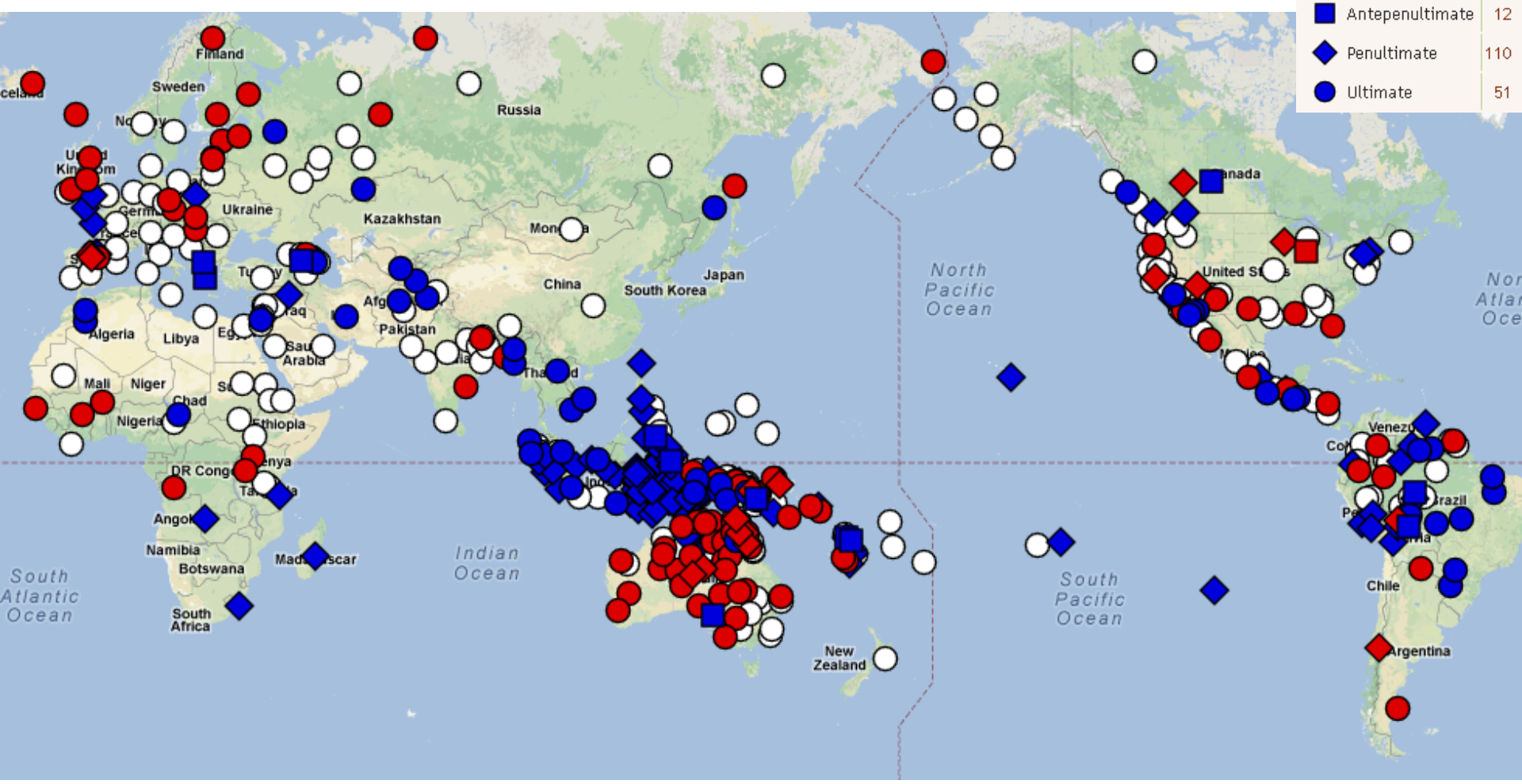
Databases on Stress Patterns

- The majority of languages possess some type of stress system
  - Languages that are reported to lack stress are mostly tonal languages.
- StressTyp , **StressTyp2** (Goedemans et al. 2015)
  - a typological database containing information on stress and accent patterns in over 750 of the world's languages with nearly every language family represented
  - http://st2.ullet.net/
- **WALS** (World Atlas of Language Structures)
  - info on 176 languages
  - In the sample, 141 (roughly 80%) use stress compared to 28 that have only tone or pitch accent.
  - https://wals.info/

Suprasegmentals: Stress



WALS: Fixed Stress Locations



WALS: Fixed Stress Locations

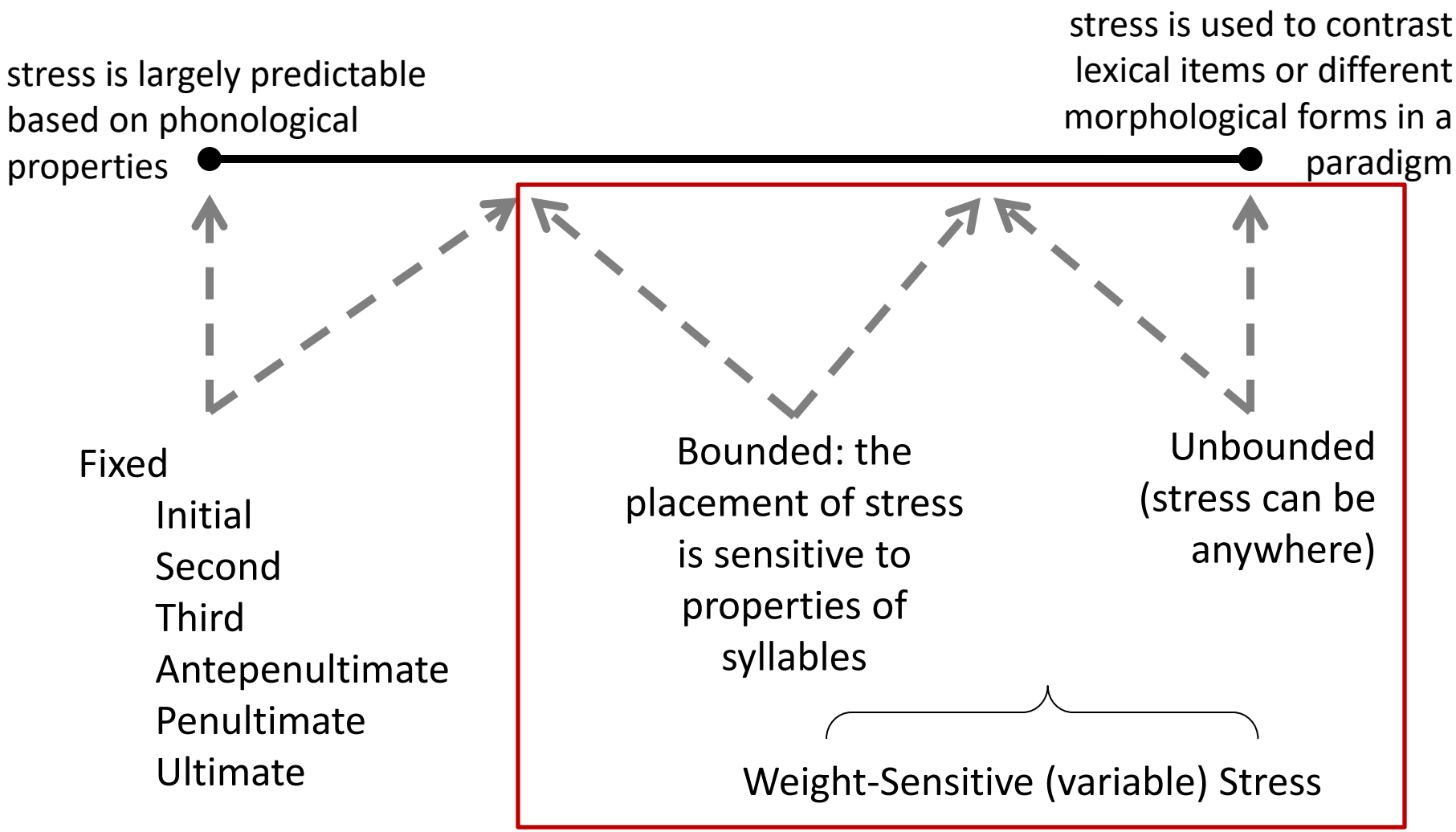
- *Czech*
- *Finnish*
- *Icelandic*
- *Hungarian*
- *Greek*
- *Macedonian*
- *Polish*
- *Welsh*

Value	Representation
No fixed stress (mostly weight-sensitive stress)	220
Initial: stress is on the first syllable	92
Second: stress is on the second syllable	16
Third: stress is on the third syllable	1
Antepenultimate: stress is on the antepenultimate (third from the right) syllable	12
Penultimate: stress is on the penultimate (second from the right) syllable	110
Ultimate: stress is on the ultimate (last) syllable	51
Total:	502

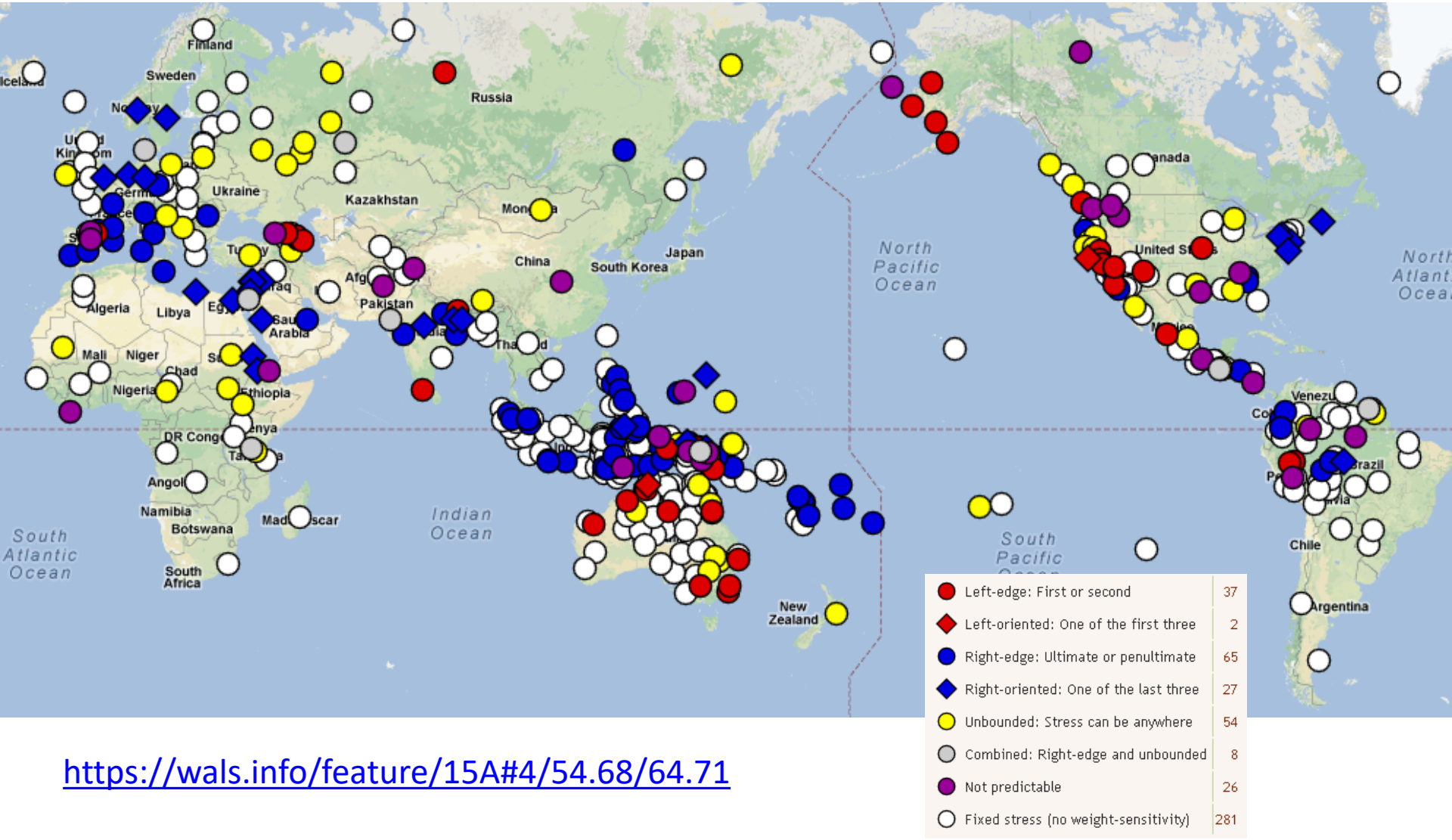
t̪iˈpanto ‘year’
eˈlumuˌyu ‘give us’.

hochiˈchinik ‘boy’
waghiˈghi ‘ball’

Suprasegmentals: Stress



Weight-Sensitive Stress



https://wals.info/feature/15A#4/54.68/64.71

Weight-Sensitive Stress: Unbounded

Russian

a) to contrast lexical items

vowel reduction

дорога (doroga)

(1) dorOga /dərOgə/
‘a road’

(2) dorogA /dərʌgA/
‘dear’

		a	b	c	d	e	f
Единственное число	И	карта	стол	море	вино	волк	губа
	Р	карты	стола	моря	вина	волка	губы
	Д	карте	столу	морю	вину	волку	губе
	В	карту	стол	море	вино	волка	губу
	Т	картой	столом	морем	вином	волком	губой
	П	о карте	о столе	о море	о вине	о волке	о губе
Множественное число	И	карты	столы	моря	вина	волки	губы
	Р	карт	столов	морей	вин	волков	губ
	Д	картам	столам	морям	винам	волкам	губам
	Т	картами	столами	морями	винами	волками	губами
	П	о картах	о столах	о морях	о винах	о волках	о губах

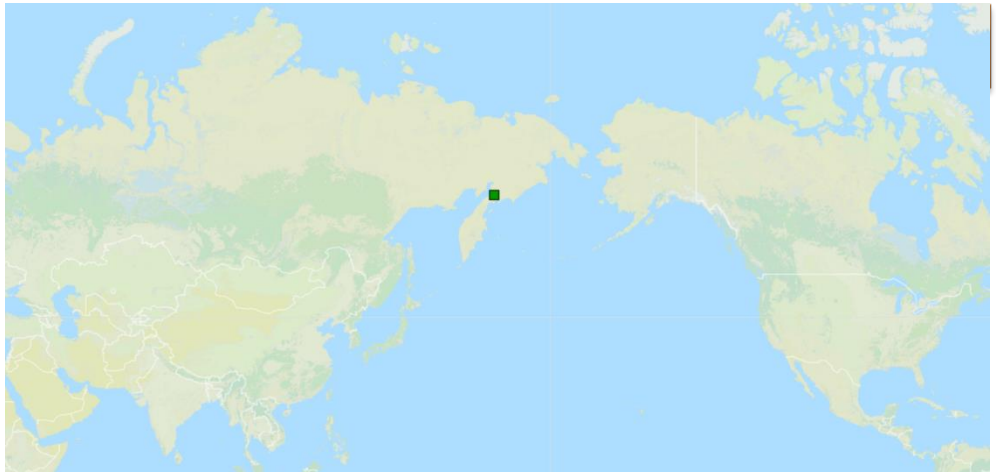
b) to contrast different morphological forms in a paradigm:

mOr’e – ‘a sea’ (Nom.Sg.)
mor’A – ‘seas’ (Nom. Pl)

Weight-Sensitive Stress: Bounded

tátul	–	fox
nətɣálqin	–	hot
nuráqin	–	far
ɣálɣən	–	skin
néqəqin	–	quick
nəsáqqin	–	cold
tapláŋətkən	–	he sews shoes
kámɣətək	–	roll up
ʔítək	–	be
paqátkuk	–	run
nílɣəqinat	–	white
púnta	–	liver
qetúmɣən	–	relative
píwtak	–	fall
nəmítqin	–	skillful
túmɣətum	–	friend
tátka	–	walrus
káttil	–	forehead
qalpúqal	–	rainbow
kəpírik	–	hold in arms
təvítatətkən	–	I work
píntəvəlŋək	–	throw at each other

Alyutor or **Alutor** is a language of Russia that belongs to the Chukotkan branch of the Chukotko-Kamchatkan languages



Formulate the stress rules and put the stress for the following words:

sawat - lasso
pantawwi - boots
nəktəqin - solid
nəminəm - bouillon

Vowel Length

- Vowel length differs in all languages
  - but only in some languages it makes phonological distinction
- Languages with phonological length distinction
  - Arabic, Czech, Sanskrit, Japanese, Mongolian, Korean, Cantonese, Hebrew, Finnish, Hungarian, Italian, German, etc.
- Languages without phonological length distinction
  - Spanish, French, Portuguese, English, Polish, Russian, Ukrainian etc.
- Within languages that make length distinctions, short segments tend to vastly outnumber their long counterparts.

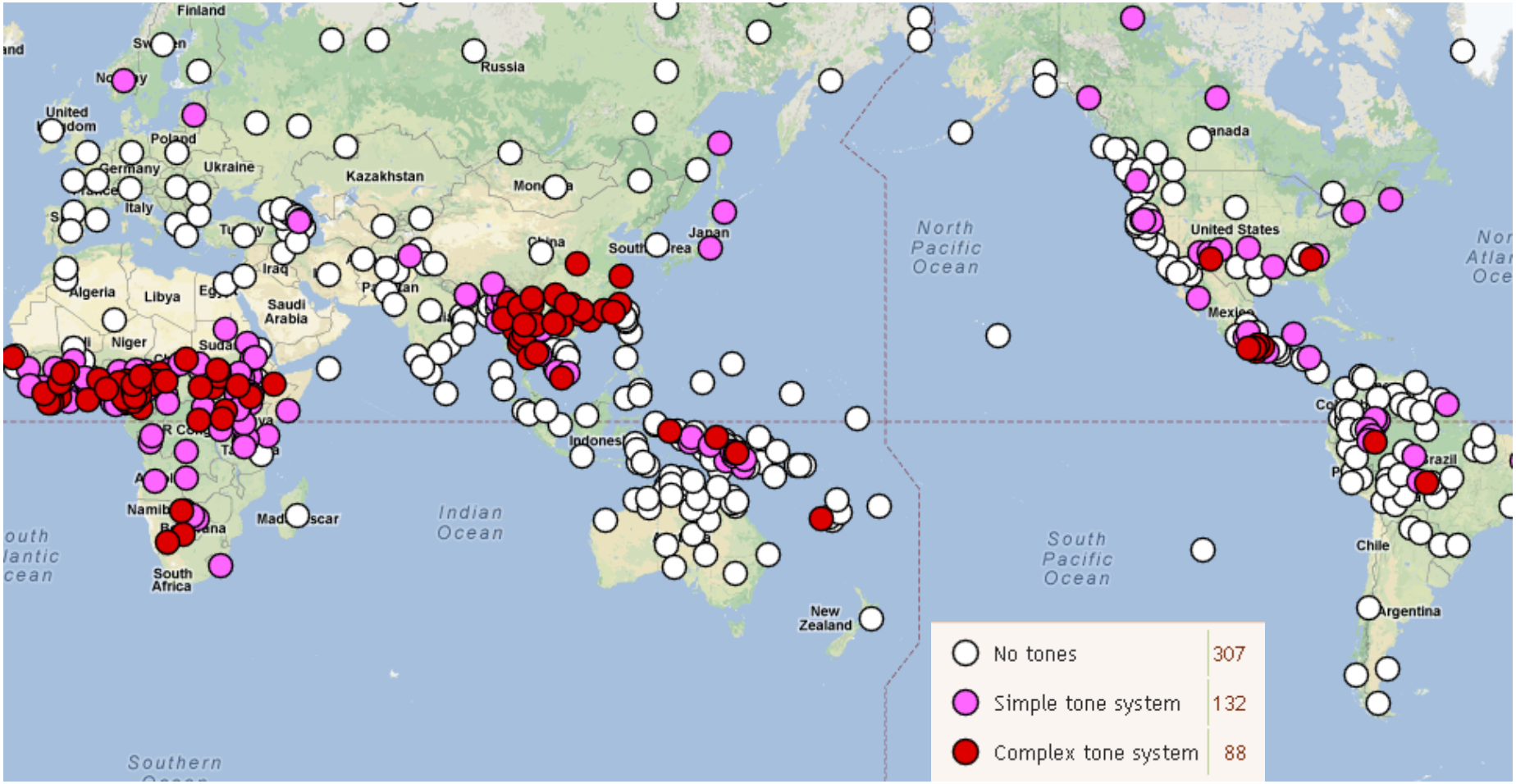
Vowel Length

- two-values distinction
  - Czech
    - šipku – ‘arrow’
    - šípku – ‘rosehip’ (Gen Sg)
- three-values distinction
  - Estonian
    - saada /saːta/ – ‘to get’
    - saada /saˑta/ – ‘send!’
    - sada /sata/ – ‘hundred’

Tones

- The use of different pitch patterns to distinguish individual words or the grammatical forms of word
- Up to 60–70% of the world's languages are tone languages
  - surprisingly sharp disagreements
  - WALS: In Maddieson's (2013) survey of 526 languages, 220 (41.8%) are classified as tonal. In the genetically balanced 100-language WALS survey, 29 of the 97 languages (30%) are tonal
- Relative concept:
  - Ideal tone language: Every syllable in a word is differentiated solely on the basis of tone (Thai);
  - Reality: most tone languages have constraints on the distribution of tones (e.g. limited to roots and certain affixal domains)
- Tone languages are not distributed evenly throughout the world
  - widespread in Africa, Central America, and Southeast Asia

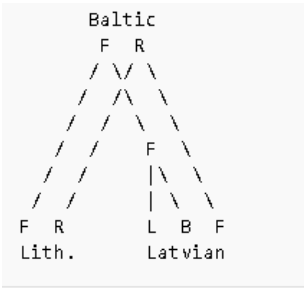
WALS: Tones in languages



Tones

No Tones — **Simple tone systems** — **Complex tone systems**

English, Czech, German, Hebrew, Arabic, Finnish, French, …



/kʰáá/ - ‘to trade’
/ kʰ āā/ - ‘to get stuck’
/kàà/ - ‘galangal’
/kàá/ - ‘leg’
/káà/ - ‘leg’

Thai

Serbian

+ length,
+ variable stress

short falling ⟨ȉ⟩,
short rising ⟨ì⟩;
long falling ⟨î⟩
long rising ⟨í⟩

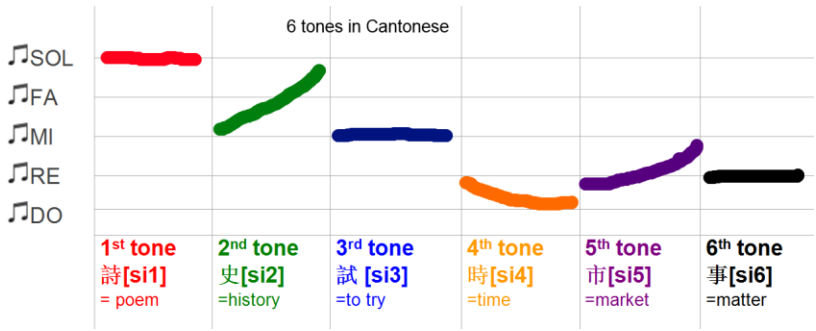
ne znam = /nèznām/ - ‘I don’t know’

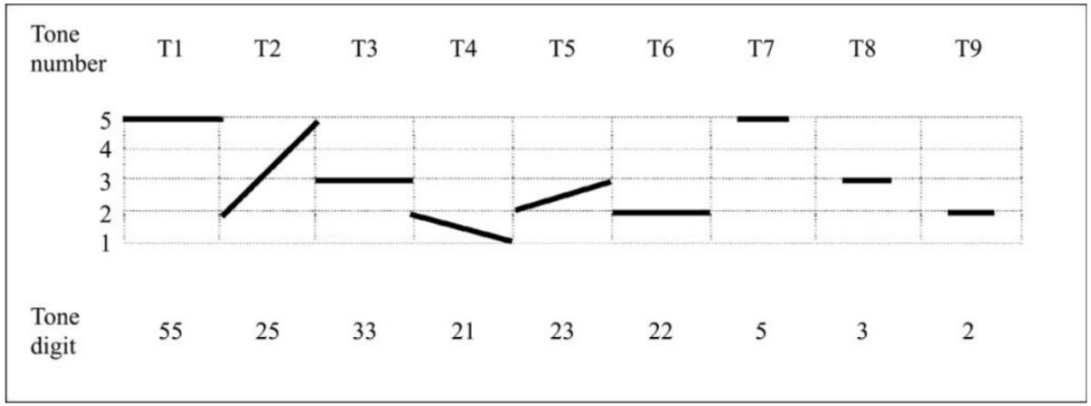
Lithuanian, Latvian

Stressed syllables containing a long vowel, diphthong, or a sonorant coda—may have one of two tones, falling (acute) tone or rising (circumflex) tone

Tones in Cantonese

Tone	Description	Example
1	High level	詩 ‘poem’ *si1*
2	High rising	史 ‘history’ *si2*
3	Mid level	試 ‘try’ *si3*
4	Mid-low falling	時 ‘time’ *si4*
5	Mid-low rising	市 ‘city’ *si5*
6	Mid-low level	是 ‘yes’ *si6*
7	High stopped	一 ‘one’ *jat7*
8	Mid stopped	八 ‘eight’ *baat8*
9	Mid-low stopped	日 ‘day’ *jat9*





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