Ling 105
Sounds of Language

Tuesday, November 19, 2024

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Readings for this/next week (last ones!)

- Stress: *LJ* chap. 10 (skip the section on "Timing")
- Tone: *Odden* chap. 10 (excerpt posted on Canvas)

Stress defined

- In some languages, syllables differ in prominence
- Some common phonetic correlates
  1. f_0 (usually peak, but possibly other markers)
  2. Longer duration
  3. Greater intensity
  4. Greater vowel peripherality/tensity
- Not all stress languages use all cues
  - If the only cue is f_0, we'd consider that tone, not stress
- Not all languages have (clear) stress
- Stress is considered **suprasegmental**

In English, all four correlates matter

- *Permit* as a noun, then verb ♪
- Just f_0 (sine wave) ♪
- Flat f_0 (other spectral structure intact) ♪
- Check in Praat

More English noun/verb pairs

noun	verb
cónduct	condúct
súbject	subjéct
ínsert	insért
prótest	protést
ímpact	impáct

- Accents vs. IPA: *prótèst* [ˈpɹoʊˌtʰɛst]
- Plus many others, but not all such pairs:
  damage, assault, address? detail? default?
- *Blackbird* vs. *black bird*

Noun-verb shifters

absent, abstract, accent, access, addict, address, affect, affix,
alloy, ally, annex, array, assay, attribute, augment, belay,
bombard, combat, combine, commune, compact, complex,
composite, compost, compound, compress, concert, conduct,
confect, confine(s), conflict, conscript, conserve, consist, console,
consort, construct, consult, content, contest, contract, contrast,
converse, convert, convict, costume, cushion, decrease, default,
defect, desert, detail, dictate, digest, discard, discharge,
discount, discourse, dismount, embed, envelope, escort, essay,
excise, exploit, export, extract, ferment, finance, foretaste,
foretoken, forward, frequent, gallant, impact, implant, impound,
import, impress, imprint, incense, incline, increase, indent,
inlay, insert, insult, intercept, interchange, intercross, interdict,
interlink, interlock, intern, interplay, interspace, interweave,

Noun-verb shifters

intrigue, invert, invite, involute, mandate, mentor, mismatch, misprint, object, offset, overcount, overlap, overlay, overlook, override, overrun, overturn, perfect, perfume, permit, pervert, prefix, present, proceed(s), process, produce, progress, project, protest, purport, rebel, recall, recap, recess, recoil, record, re-count, redirect, redo, redress, refill, refresh, refund, refuse, regress, rehash, reject, relapse, relay, remake, repeat, reprint, research, reserve, reset, retake, retard, retract, retread, rewrite, segment, separate, subject, survey, suspect, torment, transfer, transform, transplant, transect, transport, transpose, traverse, undercount, underlay, underline, underscore, update, upgrade, uplift, upset

Noun-verb shifters

Latham & Maberly (1861)

Absent.	Compress.	Contrast.	Extract.	Permit.	Rebel.
Abstract.	Concert.	Converse.	Ferment.	Prefix.	Record.
Accent.	Concrete.	Convert.	Frequent.	Premise.	Refuse.
Affix.	Conduct.	Converse.	Import.	Presage.	Subject.
Augment.	Conflict.	Desert.	Incense.	Present.	Survey.
Colleague.	Conserve.	Descant.	Insult.	Produce.	Torment.
Compact.	Consort.	Essay.	Object.	Project.	Transfer.
Compound.	Contract.	Export.	Perfume.	Protest.	Transport.

In Russian, pitch is less important

['muka] "torture" vs. [mu'ka] "flour" (Praat)

Secondary stress

- Mississippi
- Weekend vs. weakened

Predictability of stress

- Continuum of predictability

    - Entirely, e.g. Finnish
        $\rightarrow$ stress rule(s)
    - Largely, e.g. Spanish
        $\rightarrow$ stress rule(s) + memorized exceptions
    - Unpredictable, e.g. Russian
        $\rightarrow$ memorization (stress is **lexicalized**)

Lexicalized stress

- Stress is arbitrary
- Must be indicated in URs
- E.g. Russian /ˈzamok/ "castle" vs. /zaˈmok/ "lock"
- May still be tendencies

Rule-governed stress

- Two simple cases
  - Finnish: always initial
  - Balinese: always final
- URs omit stress, since it's supplied by rule

Mixed lexical/rule-driven systems

- Spanish {V, n, s}-final words: usually penultimate stress, e.g. *sabana* "savannah"
- Occasionally antepenultimate stress (e.g. *sábana* "sheet") or ultimate stress (e.g. *dominó* "dominoes")
- 3-syllable window: pre-antepenultimate stress is impossible in roots

Mixed systems: English

- English is also mixed, but more complex than Spanish
- Chomsky & Halle's (1968) attempt at a main stress rule

$$V \rightarrow [1 \text{ stress}] \ / \ \left[X \_ C_0 \left(\begin{bmatrix} -\text{tense} \\ \gamma\text{stress} \\ V \end{bmatrix} C_0^1 \left(\begin{bmatrix} \alpha\text{voc} \\ \alpha\text{cons} \\ -\text{ant} \end{bmatrix} \right) \right) \right]$$

$$/ \_ \left\langle \left(\left\{ \begin{matrix} (fik)At \\ [+D]C_0 \end{matrix} \right\} \right) \left\{ \begin{matrix} \langle_1 + C_0 \rangle_1 \begin{bmatrix} -\text{stress} \\ -\text{tense} \\ -\text{cons} \end{bmatrix} [+\text{cons}]_0 \\ \langle_1 \begin{bmatrix} -\text{seg} \\ \langle_2 -FB \rangle_2 \end{bmatrix} \rangle_1 \ C_0 [\beta\text{stress}] C_0 \langle_2 V_0 C_0 \rangle_2 \end{matrix} \right\} \right\rangle \right]_{\langle NSP \langle_1 VA \rangle_1 \rangle}$$

Conditions: $\beta = \left\{ \begin{matrix} 2 \\ 1 \end{matrix} \right\}$
$\gamma \leq 2$
X contains no internal #

- Still lots of exceptions, e.g. *adjective*

a.	Mérlin	Berlín
b.	Dúrex	duréss
c.	própane	cocáine
d.	córal	corrál
e.	tútu	tattóo
f.	sítar	guitár

Fixed stress

- To a first approximation, rule-based stress can be fixed, i.e. quantity-insensitive, or
- Quantity-sensitive (in this context, "quantity" means "weight")

Fixed stress locations

(Goedemans & van der Hulst 2011)

	location	# languages	%
1.	initial	92	33%
2.	peninitial	16	6%
3.	post-peninitial	1	0%
4.	antepenultimate	12	4%
5.	penultimate	110	39%
6.	ultimate	51	18%

Syllable weight

- Stress placement in some languages depends on the structure of syllables
- Latin

a.	*populos*	ˈpo.pu.loːs
	conspectu	koːnˈspek.tuː
	acuto	aˈkuː.toː
	oppidum	ˈop.pi.dum
	capitis	ˈka.pi.tis
b.	*indignantes*	in.digˈnan.teːs
	fortissime	forˈtis.si.me
	impulerit	imˈpu.le.rit
	caelestibus	kae̯ˈles.ti.bus
	despectare	deːs.pekˈtaː.re

Syllable weight

- Binary criterion in Latin: 2+ moras = heavy
- Mora: unit of length/weight
    - Short vowel: +1
    - Long vowel or diphthong: +2
    - Coda consonant: +1
- (Not all languages use this criterion for weight, however)

Quantity-sensitive stress

- Bounded: stress cannot exceed a certain fixed distance from one edge of the word
  - All fixed systems are bounded
  - Some, but not all, quantity-sensitive systems are bounded
- Two parameters of unbounded systems
  1. If one or more heavies, leftmost or rightmost heavy receives stress
  2. If no heavies in word, a default fixed position

Unbounded quantity-sensitive stress

- Thus, four possibilities ("else" applies if no heavy syllable is available)
    1. Rightmost heavy, else rightmost (e.g. Golin)
    2. Leftmost heavy, else leftmost (e.g. Khalkha Mongolian)
    3. Rightmost heavy, else leftmost (e.g. Huasteco)
    4. Leftmost heavy, else rightmost (e.g. Kw'akwala)

Unbounded quantity-sensitive stress

- Selkup (not same weight criterion as Latin)

pynakɨˈsəː	uːˈcɔːmɨt
uːcɨkˈkoːqɪ	ˈuːcɨqo
ˈkarman	ˈsərɨ
ˈqoʎcɨmpatɨ	ˈyŋːɨntɨ

a.	qumˈmɪː	'our friend'
b.	kanaŋˈmiː	'our dog'
c.	uːˈcɔːmɨt	'we work'
d.	ˈqoːkɨtilʲ	'deaf'
e.	qumoːqlɪˈlɪː	'your two friends'
f.	uːcɨkˈkoːqɪ	'they two are working'
g.	ˈamɨrna	'eats'
h.	ˈqolʲcimpatɨ	'found'

Bounded quantity-sensitive stress

- Malayalam (Latin was also bounded quantity-sensitive)

ˈmara	"shade"
ˈnammaɭ	"we"
ˈkaʈal	"ocean"
ˈmaːnam	"sky"
maˈhaːn	"expert"
epˈpoːɭ	"when"
ilˈleː	"doesn't it?"
ˈmaraʋi	"amnesia"
ˈbalaʋaːn	"strong man"

Non-finality constraint: Azkoitia Basque (Hualde 1998)

	/gizon/ 'man'	/txakurr/ 'dog'
ABS	gizóna	txakúrre
DAT	gizonái	txakurréi
GEN + ABS	gizonána	txakurréna
COM	gizonákin	txakurrékin
BEN	gizonántzako	txakurréntzako

	/alkate/ 'mayor'	/alargun/ 'widow'
ABS	alkatíe	alargúne
DAT	alkatíei	alargúnei
GEN + ABS	alkatíena	alargúnena
COM	alkatíekin	alargúnekin
BEN	alkatíentzako	alargúnentzako

Non-finality constraint: Azkoitia Basque (Hualde 1998)

Azkoitia: ABS SG + copula

a. gizóna   'the man'
    gizoná da   'is the man'[5]
    txakúrre   'the dog'
    txakurré da   'is the dog'
    óna   'good'
    oná da   'is good'
b. alkatíe   'the mayor'
    alkatíe da (*alkatié da)   'is the mayor'

General tendencies of stress systems

- Tendencies; not every stress system satisfies every desideratum

1. **Rhythm**: regular alternation, avoiding clashes & lapses
2. **Culminativity**: one primary stress per word
3. **Demarcation**: stress often signals word edges
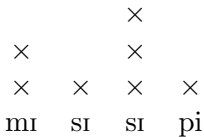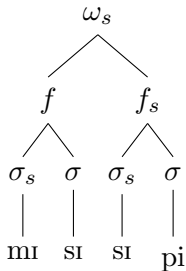4. **Weight**: heavy syllables often attract stress

Rhythm

- Stresses tend to be evenly distributed
  - e.g. *Minnesota* avoids both clash & lapse
  - *Supercalifragilisticexpialidocious*

- Pintupi (Kager 1999)

a.	ˈtʲuʈaja	"many"
b.	ˈmaɭaˌwana	"through (from)"
c.	ˈpuɭiŋˌkalatʲu	"we (sat) on the hill"
d.	ˈtʲamuˌlimpaˌtʲuŋku	"our relation"
e.	ˈtʲiɭiˌriŋuˌlampatʲu	"the fire flared up for us"

- A rhythmic grouping of (usually two) syllables, e.g.
  (ˌmɪ.r̃ə)(ˈsoʊ.ɹə)
  - *Some languages permit a single syllable to be a foot
- Each foot has exactly one strong (or head) syllable, which receives (some degree of) stress
  - Trochee: left-headed foot
  - Iamb: right-headed foot

- Rhythm can be represented as either a tree or grid

Fixed stress with feet

- Schematic à la Albanian; foot analysis?
  3. $\sigma\acute{\sigma}\sigma$
  4. $\sigma\sigma\acute{\sigma}\sigma$
  5. $\sigma\sigma\sigma\acute{\sigma}\sigma$
  6. $\sigma\sigma\sigma\sigma\acute{\sigma}\sigma$
  7. $\sigma\sigma\sigma\sigma\sigma\acute{\sigma}\sigma$
  8. $\sigma\sigma\sigma\sigma\sigma\sigma\acute{\sigma}\sigma$

Stress feet

- Footing procedure for Pintupi

a.	ˈtʲuʈaja	"many"
b.	ˈmaɭaˌwana	"through (from)"
c.	ˈpuɭiŋˌkalatʲu	"we (sat) on the hill"
d.	ˈtʲamuˌlimpaˌtʲuŋku	"our relation"
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- Iambic or trochaic? Directionality? Is the head foot the leftmost or rightmost foot? Why isn't *ja* stressed in (a)?

Stress feet

- Warao

a.	koˈranu	"drink it!"
b.	jiˌwaraˈna.e	"he finished it"
c.	ˌjapuˌrukiˌtaneˈhase	"verily to climb"
d.	eˌnahoˌro.a.ˌhakuˈta.i	"causer of eating"

- Iambic or trochaic? Directionality? Is the head foot the leftmost or rightmost foot?

Stress feet

- Piro (weight is irrelevant)

a.	ruˈtxitxa	"he observes taboo"
b.	ˌsalwajeˈhkakna	"they visit each other"
c.	ˌpetʃiˌtʃhimaˈtlona	"they say they stalk it"
d.	ˌrusluˌnotiniˈtkana	"their voices already changed"