Class 24
Intro to Stress

4/13/2022

1 Recap: Distributions in OT

- Last time, we saw how the different possible rankings of the constraint types in (1) can yield four different types of distributions.

(1) Three different kinds of constraints
   a. Faithfulness constraints — e.g. IDENT[voice]
   b. *Context-free* Markedness constraints — e.g. NOVOICEDOBS (*[+voice,−son])
   c. *Context-sensitive* Markedness constraints — e.g. NOINTERVOCALICVOICELESSOBS (*V[−voice,−son]V)

- The following summarizes the results we found last time.

1.1 Language 1: Full Contrast

- In Language 1 (2), voiced and voiceless obstruents contrast in all positions. This follows from the ranking in (3), where faithfulness outranks all of the markedness constraints (thus markedness plays no role).

(2) **Language 1: Full Contrast**

Word-final	Intervocalic
/pat/ → [pat]	/pat-o/ → [pato]
/pad/ → [pad]	/pad-o/ → [pado]

(3) **Full Contrast ranking**

$\mathbb{F}$	≫	$\mathbb{M}_{CS}$	,	$\mathbb{M}_{CF}$
IDENT[voice]	≫	*VTV	,	*D

- This is demonstrated with the following tableaux:

(4)

/pat/	IDENT[voice]	*VTV	*D
☞ a. [pat]			
b. [pad]	*!		*

(5)

/pad/	IDENT[voice]	*VTV	*D
a. [pat]	*!		
☞ b. [pad]			*

(6)

/pat-o/	IDENT[voice]	*VTV	*D
☞ a. [pat-o]		*	
b. [pad-o]	*!		*

(7)

/pad-o/	IDENT[voice]	*VTV	*D
☞ a. [pat-o]	*!	*	
b. [pad-o]			*

1.2 Language 2: Neutralization

- In Language 2 (8), voiced and voiceless obstruents contrast in most positions (e.g. word-finally), but are neutralized to voiced in intervocalic position (driven by the context-sensitive markedness constraint). This follows from the ranking in (9).

(8) **Language 2: Neutralization**

Word-final	Intervocalic
/pat/ → [pat]	/**pat-o**/ → **[pado]**
/pad/ → [pad]	/pad-o/ → [pado]

(9) **Neutralization ranking**

$\mathbb{M}_{CS} \gg \mathbb{F} \gg \mathbb{M}_{CF}$

*VTV ≫ IDENT[voice] ≫ *D

- This is demonstrated with the following tableaux:

(10)

/pat/	*VTV	IDENT[voice]	*D
☞ a. [pat]			
b. [pad]		*!	*

(11)

/pad/	*VTV	IDENT[voice]	*D
a. [pat]		*!	
☞ b. [pad]			*

(12)

/pat-o/	*VTV	IDENT[voice]	*D
a. [pat-o]	*!		
☞ b. [pad-o]		*	*

(13)

/pad-o/	*VTV	IDENT[voice]	*D
☞ a. [pat-o]	*!	*	
b. [pad-o]			*

1.3 Language 3: Allophony

- In Language 3 (14), voiced and voiceless obstruents both appear, but they never contrast: we observe the voiced obstruent in intervocalic position (driven by the context-sensitive markedness constraint), but observe the voiceless obstruent everywhere else (driven by the context-free markedness constraint). This is a "complementary" or "allophonic" distribution, where the value of voicing in obstruents is completely predictable. This follows from the ranking in (15), where only markedness ever plays a role (faithfulness is irrelevant).

(14) **Language 3: Allophony**

Word-final	Intervocalic
/pat/ → [pat]	/pat-o/ → [pado]
/**pad**/ → **[pat]**	/pad-o/ → [pado]

(15) **Allophony ranking**

$\mathbb{M}_{CS} \gg \mathbb{M}_{CF} \gg \mathbb{F}$

*VTV ≫ *D ≫ IDENT[voice]

- This is demonstrated with the following tableaux:

(16)

/pat/	*VTV	*D	IDENT[voice]
☞ a. [pat]			
b. [pad]		*!	*

(17)

/pad/	*VTV	*D	IDENT[voice]
☞ a. [pat]			*
b. [pad]		*!	

(18)

/pat-o/	*VTV	*D	IDENT[voice]
a. [pat-o]	*!		
☞ b. [pad-o]		*	*

(19)

/pad-o/	*VTV	*D	IDENT[voice]
a. [pat-o]	*!		*
☞ b. [pad-o]		*	

1.4 Language 4: No Contrast

- In Language 4 (20), voiced obstruents never appear; we only observe voiceless obstruents (driven by the context-free markedness constraint). This follows from the ranking in (21), where only the context-free markedness constraint ever plays a role (faithfulness is irrelevant).

(20) **Language 4: No Contrast**

Word-final	Intervocalic
/pat/ → [pat]	/**pat-o**/ → **[pato]**
/pad/ → [pat]	/**pad-o**/ → **[pato]**

(21) **No Contrast ranking**

$\mathbb{M}_{CF} \gg \mathbb{M}_{CS}$, $\mathbb{F}$

*D ≫ *VTV , IDENT[voice]

- This is demonstrated with the following tableaux:

(22)

/pat/	*D	*VTV	IDENT[voice]
☞ a. [pat]			
b. [pad]	*!		*

(23)

/pad/	*D	*VTV	IDENT[voice]
☞ a. [pat]			*
b. [pad]	*!		

(24)

/pat-o/	*D	*VTV	IDENT[voice]
☞ a. [pat-o]		*	
b. [pad-o]	*!		*

(25)

/pad-o/	*D	*VTV	IDENT[voice]
☞ a. [pat-o]		*	*
b. [pad-o]	*!		

2 Stress in English

- So far, we have talked about features, segments, and syllables as the main units/properties of phonology.
- For the remainder of the course, we will talk about another phonological property, and how it relates to these other units:

(26) **Stress:** a cluster of phonetic properties (especially increased loudness, duration, and pitch) indicating extra emphasis on a vowel/syllable.

∗ In the IPA, stress is indicated with a tick mark before the syllable:

(27) IPA notation
   a. Stressed: ˈσ, ˈCVC
   b. Unstressed: σ, CVC

∗ More frequently, people use accent marks:

(28) Alternative notation
   a. Stressed: $\acute{\sigma}$, CV́C
   b. Unstressed: σ, CVC

- In some languages, including English, stress is (partially) **unpredictable** — it can be the sole/primary way of distinguishing between words.

(29) Stress pairs in English

	Noun **1st syll stress**	*Verb or Adjective* **2nd syll stress**
convert	[ˈkan.vˌɪt]	[kən.ˈvˌɪt]
converse	[ˈkan.vˌɪs]	[kən.ˈvˌɪs]
project	[ˈpɹa.ʤɛkt]	[pɹə.ˈʤɛkt]
produce	[ˈpɹoʊ.ɾus]	[pɹə.ˈdus]
install	[ˈɪn.stal]	[ɪn.ˈstal]
increase	[ˈɪŋ.kɹis]	[ɪŋ.ˈkɹis]
content	[ˈkan.tɛnt]	[kən.ˈtɛnt]
perfect	[ˈpɻ.fəkt] (adj.)	[pɻ.ˈfɛkt]
record	[ˈɹɛ.kɔɹd]	[ɹi.ˈkɔɹd]/[ɹə.ˈkɔɹd]
reject	[ˈɹi.ʤɛkt]	[ɹi.ˈʤɛkt]/[ɹə.ˈʤɛkt]

- The kind of stress that distinguishes between these words is called **primary stress** — it's the *most prominent* syllable in a word.

- But, in some languages, including English, when words are long enough, there can be additional syllables that are more prominent than usual but less prominent than the primary stress — these syllables have **secondary stress**.

(30)
a. *Cà.li.fór.nia*
b. *À.la.bá.ma*
c. *Mìn.ne.só.ta*
d. *Tèn.ne.sée*
e. *À.pa.là.chi.cól.a*
f. *Wìn.ni.pe.sáu.kee*

- While in English the position of stress is only partially predictable, in many languages stress is fully predictable.

⋆ In this unit, we'll look at some of the ways in which predictable stress systems can vary, and how we can use constraints to explain where stress surfaces in these different systems.

3 Some stress patterns

- Here are the stress patterns for several languages. **Describe the patterns.**
  - "1" = primary stress, "2" = secondary stress, "0" = unstressed

(31) Maranungku (Australian)

a.	2σ	tíralk	[10]	'saliva'
b.	3σ	mérepèt	[102]	'beard'
c.	4σ	yángarmàta	[1020]	'the Pleiades'
d.	5σ	lángkaràtetì	[10202]	'prawn'
e.	6σ	wélepènemànta	[102020]	'kind of duck'

(32) Pintupi (Australian)

a.	2σ	pá:na	[10]	'earth'
b.	3σ	tʲúɻaya	[100]	'many'
c.	4σ	máɻawàna	[1020]	'through from behind'
d.	5σ	púɻiŋkàlatʲu	[10200]	'we (sat) on the hill'
e.	6σ	tʲámulìmpatʲùŋku	[102020]	'our relation'
f.	7σ	ʈíɻirìŋulàmpatʲu	[1020200]	'the fire for our benefit flared up'
g.	8σ	kúranʲùlulìmpatʲùɻa	[10202020]	'the first one (who is) our relation'
h.	9σ	yúmaɻìŋkamàratʲùɻaka	[102020200]	'because of mother-in-law'

(33) Weri (Papuan)

a.	2σ	ŋintíp	[01]	'bee'
b.	3σ	kùlipú	[201]	'hair of arm'
c.	4σ	ulùamít	[0201]	'mist'
d.	5σ	àkunètepál	[20201]	'times'