Today's topics:

- **Correspondence Theory**

Background preparation:

- (none)

0. Checking in

- Any questions about AA #2?
- Change in procedure: 3-person write-ups will be allowed, by request

0. Today's key points

- Developing an explicit model of faithfulness constraints
- The Parse-Fill model
- Correspondence Theory
  - In reduplication
  - As a general approach to faithfulness

1. The need for an explicit model of faithfulness

- We have (informally) introduced a number of faithfulness constraints
  - Which ones have we seen?
  - How have we defined *faithfulness constraint*?

1. The need for an explicit model of faithfulness

- We have (informally) introduced a number of faithfulness constraints
  - MAX — a constraint against deletion
  - DEP — a constraint against insertion
  - IDENT[F] — a family of constraints against changes to feature [F]
- We have (informally) discussed the idea that a faithfulness constraint is one that *refers* to both inputs and outputs and *compares* them
- But how does this ‘referring’ and ‘comparing’ work?

2. Early OT faithfulness: The Parse/Fill model

- Prince & Smolensky (1993) made the following proposals about faithfulness:
  - **A 'deleted' segment** is one that is **not incorporated** into higher prosodic (e.g., syllable) structure — as such, **it is still there** in the phonological surface representation, but it will be ignored by the phonetics
  - **An 'inserted' segment** is an **empty position**, such as a root node, whose **features are filled in by default** after the phonological grammar (perhaps in the phonetics?)

2. Early OT faithfulness: The PARSE/FILL model

- Prince & Smolensky (1993) made the following proposals about faithfulness:
  - In other words: all candidates produced by GEN have **the same segments** as the input — there is no literal ‘insertion’ (except of empty nodes) or ‘deletion’

2. Early OT faithfulness: The Parse/Fill model

- This led to the following two (families of) faithfulness constraints ("families," since they may be applied to different levels of phonological representation other than segments)
  - **Parse**

    Segments are associated with prosodic structure (JLS, based on prose discussion in P&S 1993: 24–25)

  - **Fill**

    Syllable positions are filled with segmental material [i.e., features] (P&S 1993: 25)

2. Early OT faithfulness: The Parse/Fill model

- Example:

/tap/	NoCoda	Parse	Fill
a. tap	*		
b. ta<p>		*	
c. ta.p□			*

- ta<p> would be realized as [ta] in the phonetics
- ta.p□ would be realized as [ta.pə], [ta.pi], etc., according to the **phonetic component** of the language

2. Early OT faithfulness: The Parse/Fill model

- Note that Parse and Fill don't actually meet our (informal) diagnostic for faithfulness constraints — why not?
  - **Parse**

    Segments are associated with prosodic structure (JLS, based on prose discussion in P&S 1993: 24–25)

  - **Fill**

    Syllable positions are filled with segmental material [i.e., features] (P&S 1993: 25)

2. Early OT faithfulness: The PARSE/FILL model

- Note that PARSE and FILL don't actually meet our (informal) diagnostic for faithfulness constraints — why not?
  - We have (informally) discussed the idea that a faithfulness constraint is one that *refers* to both inputs and outputs and *compares* them

2. Early OT faithfulness: The PARSE/FILL model

- PARSE and FILL are *simpler* than constraints that have to refer to, and compare, inputs and outputs
    - This is why they were proposed!

- But: Can you think of any potential problems with the PARSE/FILL model of faithfulness?

2. Early OT faithfulness: The PARSE/FILL model

- Problems with the PARSE/FILL model (as discussed in McCarthy & Prince 1995, 1999)
  - Epenthetic segments do interact, phonologically, with other phonological structures (see also Yip 1993)
  - Lack of any formal connection between **input/output** faithfulness and **other kinds of faithfulness**

3. Correspondence Theory

- The idea of ‘correspondence’ was originally developed for OT analyses of **reduplication**
  - **Reduplication**: A morphological process in which an affix ‘copies’ segments or features from the **base** to which it attaches
  - The surface realization of a reduplicative morpheme is known as a **reduplicant**
- Discussion exercise - Reduplication examples

3. Correspondence Theory

- DE: Reduplication examples — Axininca Campa

/osampi-RED/ ‘ask’	
a. o.sam.pi.o.sam.pi	
→ b. o.sam.pi.sam.pi	
c. sam.pi.sam.pi	

3. Correspondence Theory

- DE: Reduplication examples — Indonesian

/lalat-RED/ 'flies'	
→ a. la.lat.la.lat	
b. la.lat.la.la	
c. la.la.la.la	

3. Correspondence Theory

- DE: Reduplication examples
  - What determines whether reduplication is **full** or **partial**, and if partial, **which segments** get copied?

3. Correspondence Theory

- Other questions about reduplication:

  How can we explain situations where a segment in **just one** of the base **or** the reduplicant is in the environment for a phonological process, and the process either:
  - applies to **both** ('overapplication')
  - applies to **neither** ('underapplication')?

3. Correspondence Theory

- Questions about reduplication:
  - What determines whether reduplication is **full** or **partial**, and **which segments** get copied?
  - How can we account for processes that…
    - apply to **both** B and R ('overapplication')
    - apply to **neither** B nor R ('underapplication')?

- Proposal (McCarthy & Prince): Constraints must
  - refer to the base **and** to the reduplicant
  - assign violations when they **don't match**

3. Correspondence Theory

- McCarthy & Prince (1995, 1999) extended this notion of correspondence **to the input/output relationship** (**IO**-Correspondence)
  - They replaced the PARSE/FILL model of faithfulness with **Correspondence Theory**
  - Correspondence Theory is now the **standard approach** to faithfulness in OT/HG

3. Correspondence Theory

- Additional correspondence relations include:
  - **base-reduplicant** (**BR**-Correspondence), the original application of Correspondence Theory
  - **output-output** (**OO**-Correspondence), for morphologically related forms (Benua 1995, 1997; Burzio 1998)
  - correspondence between **phonologically similar segments**, as part of a model of long-distance assimilation and dissimilation known as **Agreement by Correspondence** (**ABC**; Rose & Walker 2004)

3. Correspondence Theory

- DE: Reduplication examples — Axininca Campa

/osampi-RED/ 'ask'	MAX-IO	ONSET	MAX-BR
a. o.sam.pi.o.sam.pi		** W	L
→ b. o.sam.pi.sam.pi		*	*
c. sam.pi.sam.pi	* W	L	L

- MAX-IO » ONSET » MAX-BR

3. Correspondence Theory

- DE: [Reduplication examples] — Indonesian

/lalat-RED/ 'flies'	MAX-IO	MAX-BR	NOCODA
→ a. la.lat.la.lat			**
b. la.lat.la.la		* W	* L
c. la.la.la.la	* W		L

- { MAX-IO, MAX-BR } » NOCODA

3. Correspondence Theory

- Work through the formal definitions of correspondence-theory constraints in M&P (1999), sec 2 and Appendix — make sure you understand how they work

- We'll try some on the next few slides

3. Correspondence Theory

- Define a **correspondence relation** (M&P 1999: sec 2)

(1) Correspondence

Given two strings S_1 and S_2, **correspondence** is a relation $\Re$ from the elements of S_1 to those of S_2. Elements $\alpha \in S_1$ and $\beta \in S_2$ are referred to as **correspondents** of one another when $\alpha \Re \beta$.

Here we will assume that the structural elements α and β are just (tokens of) segments, but it is a straightforward matter to generalize the approach to other units of phonological representation. For

/t_1 a_2 p_3/	
a. t_1 a_2 p_3	
b. t_1 a_2	
c. t_1 a_2 p_3 i_7	
d. t_1 a_2 f_3	

3. Correspondence Theory

- Some frequently used correspondence constraints (M&P 1999: Appendix)

(A.1) MAX

Every element of S_1 has a correspondent in S_2.

Domain($\Re$) = S_1

(A.2) DEP

Every element of S_2 has a correspondent in S_1.

Range($\Re$) = S_2.

MAX (= (3)) and DEP are analogous respectively to PARSE-segment and FILL in Prince & Smolensky (1991, 1993). Both MAX and DEP should be further differentiated by the type of segment involved, vowel versus consonant. The argument for differentiation of FILL can be found in Prince & Smolensky (1993), and it carries over to FILL's analogue DEP. In the case of MAX, the argument can be constructed on the basis of languages like Arabic or Rotuman (McCarthy 1995), with extensive vocalic syncope and no consonant deletion.

3. Correspondence Theory

- Some frequently used correspondence constraints (M&P 1999: Appendix)

(A.3) IDENT(F)

Correspondent segments have identical values for the feature F.

If x$\Re$y and x is [γF], then y is [γF].

IDENT (= (5)) replaces the PARSE-feature and FILL-feature-node apparatus of Containment-type OT. See Pater (this volume) and §5.4 above for further developments. As stated, IDENT presupposes that only segments stand in correspondence, so all aspects of featural identity must be communicated through correspondent segments. Ultimately, the correspondence relation will be extended to features, to accommodate "floating" feature analyses, like those in Archangeli & Pulleyblank (1994) or Akinlabi (1996). (Also see Lombardi 1995, Zoll 1996.)

3. Correspondence Theory

- Some frequently used correspondence constraints (M&P 1999: Appendix)

/t_1 a_2 p_3/	MAX	DEP	IDENT[±cont]
a. t_1 a_2 p_3			
b. t_1 a_2			
c. t_1 a_2 p_3 i_7			
d. t_1 a_2 f_3			

3. Correspondence Theory

- Some frequently used correspondence constraints (M&P 1999: Appendix)

/t_1 a_2 p_3/	MAX	DEP	IDENT[±cont]
a. t_1 a_2 p_3			
b. t_1 a_2	*		
c. t_1 a_2 p_3 i_7		*	
d. t_1 a_2 f_3			*

3. Correspondence Theory

- GEN **assigns** correspondence relations
  - The candidate set includes candidates with **all possible assignments of correspondence** between S_1 (e.g., input) and S_2 (e.g., output)
  - Yes, this means a lot of candidates...but as we have discussed before, some of them are never going to win and can be quickly removed from consideration

- All correspondence (faithfulness) constraints assign violations **according to** the correspondence relations assigned to each candidate by GEN

3. Correspondence Theory

- How are violations assigned here? Note: (a) vs. (d)?

/t_1 a_2 p_3/	NoCoda	Max	Dep
a. t_1 a_2 p_3			
b. t_1 a_2			
c. t_1 a_2 p_3 i_7			
d. t_1 a_2 p_9			

3. Correspondence Theory

- How are violations assigned here?

/t_1 a_2 p_3/	NoCoda	Max	Dep
a. t_1 a_2 **p_3**	*		
b. t_1 a_2		*	
c. t_1 a_2 p_3 i_7			*
d. t_1 a_2 **p_9**	*	*	*

- Two phonetically identical candidates can have different violations, if they have different correspondence to the input!

3. Correspondence Theory

- How to define a faithfulness constraint in your work
  - There is a tradition of *citing* M&P (1995) or (1999), but *defining* constraints in more accessible terms
  - A good technique is to use some form of the root ***correspond*** in your definition:
    - Assign one violation for every pair of ***corresponding*** segments that...
    - Assign one violation for every segment in the {input} that has no ***correspondent*** in the {output}

3. Correspondence Theory

- See additional correspondence (faithfulness) constraints in McCarthy & Prince (1999: Appendix)

References

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