Class 7: Optimality Theory, part II

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1. Let's warm up by translating our English plural analysis into OT

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tʰoʊ-z	'toes'	læb-z	'labs'	bloʊk-s	'blokes'	fɪz-ɨz	'fizzes'
dɑl-z	'dolls'	sɑlɪd-z	'solids'	kʰɑf-s	'coughs'	bɹænt͡ʃ-ɨz	'branches'
pʰæn-z	'pans'	weɪv-z	'waves'			bæd͡ʒ-ɨz	'badges'
		saɪð-z	'scythes'			wɪʃ-ɨz	'wishes'

2. Contrast this with Canadian Raising—what difficulties do we run in to and why?

UR	*unsuffixed*	*X-ing*	
/swaɪp/	swʌɪp	swʌɪp-ɪŋ	'swipe'
/bɹaɪb/	bɹaɪb	bɹaɪb-ɪŋ	'bribe'
/ɹaɪt/	ɹʌɪt	**ɹʌɪɾ**-ɪŋ	'write'
/ɹaɪd/	ɹaɪd	**ɹaɪɾ**-ɪŋ	'ride'
/laɪk/	lʌɪk	lʌɪk-ɪŋ	'like'

3. Here's one we *can* solve: Catalan (from Mascaró)

bint	'twenty'
pans	'breads'
bim pans	'twenty breads'

4. And one we can't, at least not with our faithfulness constraints so far

Another Romance metaphony case from Walker 2005[1] (we'll do the leftover ones from Tues. at the end of today if time)

Lena (dialect of Asturian, a language from Spain with about 100,000 speakers)

fí-a	'daughter'	fí-u	'son'
nén-a	'child (fem.)'	nín-u	'child (masc.)'
tsób-a	'wolf (fem.)'	tsúb-u	'wolf (masc.)'
gát-a	'cat (fem.)'	gét-u	'cat (masc.)'

- Any ideas for playing with our faithfulness constraints to get this?

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5. Opacity [more on this in Week 5]

We have our first big empirical difference between SPE and OT: SPE straightforwardly predicts counterfeeding and counterbleeding, and OT doesn't.

Later on we'll talk about one version of OT that does better with opacity (Kiparsky's Stratal OT).

Here is one way to find a **term-paper topic**: find an article or book that discusses a case of counterfeeding or counterbleeding. Track down the original data source, and see if the case holds up. If so, does Stratal OT, or some other modification of OT, handle it? For an example of an investigation along these lines, see Sanders 2003[2]—of course your papers will be much shorter.

6. Process vs. target

There is also a difference between SPE and OT in typological predictions. While SPE might predict that similar rules should be seen across languages, OT predicts that a given markedness constraint should trigger diverse repairs across languages.

Some terms, coined by McCarthy, that you might run into:

Homogeneity of target
= languages strive for the same well-formedness conditions on outputs

Heterogeneity of process
= languages use different means to satisfy the well-formedness conditions

7. Case study: *NC̥ in Pater 2001, 2003[3]

*NC̥ is an abbreviation for *[+NASAL][–VOICE]. This constraint seems to have an aerodynamic basis (raising the velum after a nasal → velar leak and 'velar pumping' → prolongation of voicing)—see Hayes & Stivers.[4]

- What ways can you think of to "repair" a sequence like *ampa*?
- Let's figure out the ranking for each of the following examples.

- Japanese

present	*past*	*gloss*
kat͡s-u	kat-ta	'win'
kar-u	kat-ta	'cut'
wak-u	wai-ta	'boil'
ne-ru	ne-ta	'sleep'
mi-ru	mi-ta	'look'
ʃin-u	ʃin-da	'die'
jom-u	jon-da	'read'

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[4] Hayes, Bruce and Tanya Stivers. 2000. Postnasal voicing. Ms., UCLA.

- "Puyo Pongo" Quichua

ʃi**ŋk**i	'soot'	t͡ʃu**nt**ina	'to stir the fire'
t͡ʃu**ŋg**a	'ten'	i**nd**i	'sun'
pa**mp**aʲina	'skirt'	ɲuka**nt͡ʃ**i	'we'
ha**mb**i	'poison'	pu**nd͡ʒ**a	'day'
wasi-**t**a	'house'	kan-**d**a	'you'
ajt͡ʃa-**t**a	'meat'	atan-**d**a	'the frog'
puru-**t**a	'gourd'	wakin-**d**a	'others'
ali-**t͡ʃ**u	'is it good?'	kan-**d͡ʒ**u	'you?'
lumu-**t͡ʃ**u	'manioc?'	tijan-**d͡ʒ**u	'is there?'
mana-**t͡ʃ**u	'isn't it?'	t͡ʃarin-**d͡ʒ**u	'does he have?'

- Magindanaw (Austronesian, 1,000,000 speakers in the Philippines)

pəm-báŋun	'is waking up'
pən-dila	'is licking'
pəŋ-gəbá	'is destroying'
pəb-pása	'is selling'
pəd-síɡup	'is smoking'
pəd-tánda	'is marking'
pəg-kúpja	'is wearing a kupia'

- Standard Malay, as we've already seen

/məN+pilih/	məmilih	'to choose'
/məN+tulis/	mənulis	'to write'
/məN+kasih/	məŋasih	'to give'
/məN+bəli/	məmbəli	'to buy'
/məN+dapat/	məndapat	'to get, to receive'
/məN+ganti/	məŋganti	'to change'

note also in Malay

ə**mp**at	'four'
u**nt**uk	'for'
mu**ŋk**in	'possible'

- Kelantan dialect of Malay—I haven't been able to track down the real data, but it should look schematically like this:

/məN+pilih/	məpilih	'to choose'
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  - Can we explain why it's always the nasal that deletes (not the following C)?

- English

ɪmpʰɑsəbəl	'impossible'
ɪntʰɛmpəɹət	'intemperate'
ɪŋkʰælkjələbəl	'incalculable'
ɪmbɝb	'imberb'
ɪndisənt	'indecent'
iŋglɔɹiəs	'inglorious'

Some apparently unattested "solutions":
- Epenthesis /np/ → [nəp]
- Devoice the nasal /np/ → [n̥p][5]

8. Language-internal example of heterogeneity of process

Kwanyama (a.k.a. OshiKwanyama; Niger-Congo language with 421,000 speakers in Angola, and an unknown number in Namibia—again from Pater)

Loans:	sitamba	'stamp'	
	pelenda	'print'	
	oinga	'ink'	
Prefixes:	/eːN+pati/	eːmati	'ribs'
	/oN+pote/	omote	'good-for-nothing'
	/oN+tana/	onana	'calf'

- What's the ranking? Let's do some tableaux

9. The bare bones of correspondence theory

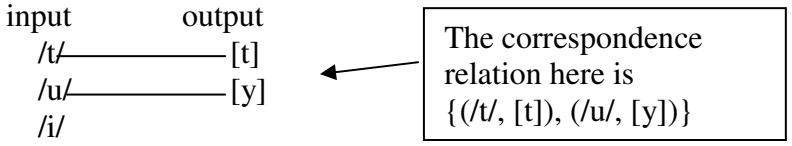
In Prince & Smolensky 1993, an output candidate contains the input form—you can see what's been inserted or deleted. This is retrospectively known as the containment approach (output *contains* the input). Changing features gets tricky, and metathesis gets very hard.

McCarthy & Prince 1995[6] proposed replacing containment with *correspondence*.
- Every segment in the input bears a unique index (and perhaps every unit of structure, including features, moras, syllables…), usually written as a subscript Arabic numeral.
- Units of the output also bear indices (instead of the output containing input material).
- An input segment and an output segment are in *correspondence* iff they bear identical indices.

	/$t_1u_2i_3$/	IDENT(round)	IDENT(back)
a	[t_1y_2]		*
b	[t_1y_3]	*	

[5] If *NC̥ is really a constraint against the extra articulatory effort of spreading the vocal folds to prevent voicing, then a devoiced nasal is an even worse violation of that same constraint, so it makes sense that this is unattested.
[6] McCarthy, J. and Alan Prince. 1995. Faithfulness and reduplicative identity. In *University of Massachusetts Occasional Papers in Linguistics 18: Papers in Optimality Theory*. Amherst, MA: GLSA.

A relation, like correspondence, can be defined by listing the items that bear that relation to each other:



Remarks

- $/p_1a_2t_3o_4k_5/ \rightarrow [p_1a_2t_3o_4k_5]$ means that Corr($/p_1/$, $[p_1]$), Corr($/a_2/$, $[a_2]$), etc., where Corr(*x*, *y*) means "*x* corresponds to *y*".
- These are also output candidates for that input: $[p_5a_1t_4o_2k_3]$, $[p_1a_1t_1o_1k_1]$, $[p_6a_7t_8o_9k_{10}]$. But they're so outrageously bad that we wouldn't normally bother including them in a tableau.
- When you see a candidate in a tableau without indices, you can assume that the correspondence relation is the obvious one.
- Sometimes it's not clear what the obvious correspondence relation is; in that case, you should spell it out (as in the tableau above)

Faithfulness constraints (sometimes also called *correspondence constraints*) are constraints that care about various aspects of the correspondence. Here are the most important ones proposed by McCarthy & Prince:

MAX-C MAX-V	(don't delete)	Every consonant in the input must have a correspondent in the output. Every vowel in the input must have a correspondent in the output.
DEP-C DEP-V	(don't insert)	Every consonant in the output must have a correspondent in the input. Every vowel in the output must have a correspondent in the input.
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(MAX = *maximize* the preservation of material in the input
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There are also constraints against merging, splitting, and reordering segments. See McCarthy & Prince 1995 for a full list.

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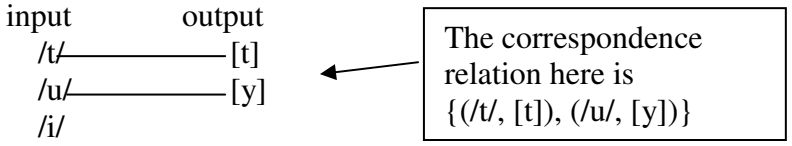

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