Class 9 & 10: Optimality Theory, part III

Overview: Correspondence theory. More practice with OT, and relating it to rules+constraints issues.

0. Your examples of constraint conflict?

- Your examples of constraint conflict?

1. We need a better theory of faithfulness

❓ Trick question: fill in the constraint violations:

	/tui/	IDENT(round)	IDENT(back)
a	[ty]		

- In Prince & Smolensky 1993, an output candidate *contains* the input form—nothing is truly deleted, only "under-parsed" (unattached to any syllable structure, and thus not pronounceable).
  - This is retrospectively known as the containment approach.
  - Changing features gets tricky, and metathesis (switching order) gets very hard.

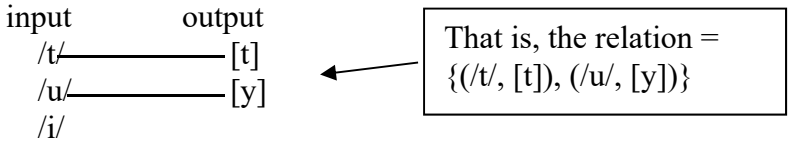
2. The correspondence relation

McCarthy & Prince 1995 proposed replacing containment with **correspondence**.

- Every segment in the input bears a unique index (maybe even every feature, mora, syllable…).
- Units of the output also bear indices.
- 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]	*	

- These indices define a relation between input segments and output segments:



❓ Which candidate does this drawing represent from the tableau above, *a* or *b*?

- /$p_1a_2t_3o_4k_5$/ → [$p_1a_2t_3o_4k_5$] means 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: [$p_5a_1t_4o_2k_3$], [$p_1a_1t_1o_1k_1$], [$p_6a_7t_8o_9k_{10}$].

- ? Try drawing them in the connecting-lines format

/p$_1$a$_2$t$_3$o$_4$k$_5$/ → …

[p$_5$a$_1$t$_4$o$_2$k$_3$] [p$_1$a$_1$t$_1$o$_1$k$_1$] [p$_6$a$_7$t$_8$o$_9$k$_{10}$]

input	output	input	output	input	output
/p/	[p]	/p/	[p]	/p/	[p]
/a/	[a]	/a/	[a]	/a/	[a]
/t/	[t]	/t/	[t]	/t/	[t]
/o/	[o]	/o/	[o]	/o/	[o]
/k/	[k]	/k/	[k]	/k/	[k]

  - But they're so outrageously (and pointlessly) 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.
- But sometimes it's not clear what the obvious correspondence relation is
  - in that case, spell it out with subscripts.

3. Constraints on the relation

- Faithfulness constraints (sometimes also called *correspondence constraints*) are constraints that care about various aspects of the correspondence relation.
- 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. " vowel " " etymology: *maximize* the preservation of material in the input
DEP-C DEP-V (don't insert)	Every consonant in the output must have a correspondent in the input. " vowel " " etymology: every segment in the output should *depend* on a segment in the input.
IDENT(F) IDENT(voice) (don't change feature values)	If two segments are in correspondence, they must bear identical values for feature [F]. If two segments are in correspondence, they must bear identical values for feature [voice]. This constraint doesn't care about *whether* segments have correspondents or not, only about making sure values for F match *if* two segments do correspond.

- There are also constraints against merging, splitting, and reordering segments. See McCarthy & Prince 1995 for a full list.

Let's revisit the issues we saw for rules+constraint theory. Prepare an explanation for your classmates to remind them of the issue that arises in a rules+constraints theory, and how it is handled in OT. You will probably want to prepare derivations and tableaux to illustrate your explanation.

4. Why aren't constraints always obeyed?

- Korean avoids VV and CC through allomorph selection (narrow-ish transcription):

plain	*nominative*	
ton	ton-i	'money'
saɾam	saɾam-i	'person'
koŋ	koŋ-i	'ball'
namu	namu-ga	'tree'
pʰaɾi	pʰaɾi-ga	'fly'
kʰo	kʰo-ga	'nose'
ɕ*i	ɕ*i-ga	'seed'

- And yet, CC and VV occur in the language

plain	*locative*
namu	namu-e
kʰo	kʰo-e
	plural
saɾam	saɾam-dɨl
koŋ	koŋ-dɨl

As we saw in class, this is problematic for a rules+constraints theory if constraints are supposed to be "surface-true". Show how this works out in OT. You can assume for the nominatives that the underlying form on the nominative suffix is "{i,ga}", meaning that either input can be used with no constraint penalty other than the markedness constraints that may end up getting violated. Include tableaux for /koŋ +{i,ga}/, /kʰo+{i,ga}/, /koŋ+dɨl/, /kʰo+e/.

5. What happens if there's more than one way to satisfy a constraint?

- ? Assume the rules+constraints grammar {*CC, C → Ø, Ø → i}. What happens to /absko/??

- Maybe we need to prioritize the rules that could be triggered (e.g., through ordering).

*I suggest sketching derivations to show different things that might happen to /absko/ under that rules+constraints grammar. Then show a tableau for /absko/ with *CC and suitable faithfulness constraints. Since we don't know what the winner would be in this hypothetical language, you might want to show tableaux for two different possible winners. Don't worry about explaining why, if a vowel is inserted, it's [i]—just assume that's the best vowel. (If you are already fluent in OT you may find it easy to read different possible winners off a tableau, but for the benefit of those who are still new-ish to OT, separate tableaux could help.)*

6. Can different constraints prioritize rules differently?

- ? Assume the rules+constraints grammar {*CC, *C#, C → Ø, Ø → i}. What happens to /ubt/??

*I suggest sketching derivations to show different things that might happen to /ubt/ under that rules+constraints grammar. Then show a tableau for /ubt/ with *CC, *C#, and suitable faithfulness constraints. Since we don't know what the winner would be in this hypothetical language, you might want to show tableaux for two or three different possible winners. Don't worry about explaining why, if a vowel is inserted, it's [i]—just assume that's the best vowel. (If you are already fluent in OT you may find it easy to read different possible winners off a tableau, but for the benefit of those who are still new-ish to OT, separate tableaux could help.) Talk about some harmonically bounded candidates.*

7. What happens when constraints conflict?

- What if one constraint wants to trigger a rule, but another wants to block it?

⍰ Assume the rules+constraints grammar {*VV, *ʔ$\begin{bmatrix} \text{V} \\ \text{–stress} \end{bmatrix}$, Ø →ʔ}.[1] What happens to /aórta/? /xáos/?

- Must the grammar **prioritize** constraints?

*I suggest sketching derivations to show different things that might happen to /aórta/ and /xáos/ under that rules+constraints grammar. Then show tableaux for those inputs with *VV, *ʔ$\begin{bmatrix} \text{V} \\ \text{–stress} \end{bmatrix}$, and suitable faithfulness constraints. Since we don't know what the winners would be in this hypothetical language, you might want to show tableaux for two or different rankings. Don't worry about explaining why, if a consonant is inserted, it's [ʔ]—just assume that's the best consonant. (If you are already fluent in OT you may find it easy to read different possible winners off a tableau, but for the benefit of those who are still new-ish to OT, separate tableaux could help.)*

8. Should a rule be allowed to look ahead in the derivation to see if applying alleviates a constraint violation? (how far?)

⍰ Assume the rules+constraints grammar: {*C#, C → [–voice], [–voice] → Ø}. What happens to /tab/?

- Or does the alleviation have to be immediate?

*I suggest sketching derivations to show different things that might happen to /tab/ under that rules+constraints grammar. Then show a tableau for /tab/ with *C# and suitable faithfulness constraints. Include the candidate [tap], among others. Since we don't know what the winner would be in this hypothetical language, you might want to show tableaux for two different possible winners. (If you are already fluent in OT you may find it easy to read different possible winners off a tableau, but for the benefit of those who are still new-ish to OT, separate tableaux could help.)*

[1] based on Dutch; data from Booij 1995 via Smith 2005

9. Relatedly, is a rule allowed to make things *worse* if a later rule will make them better?

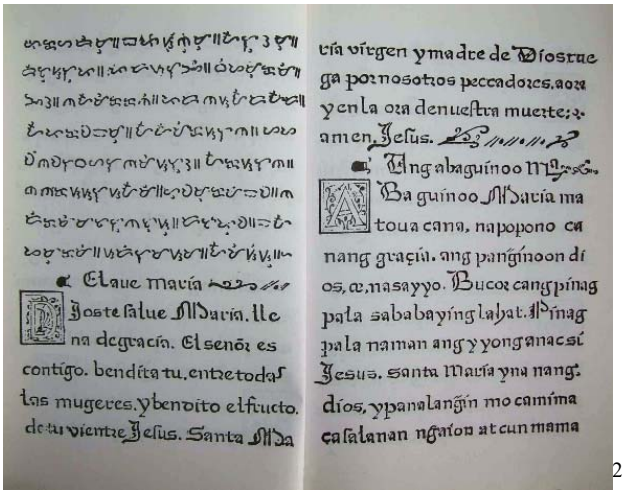
❓ Assume the rules+constraints grammar: {*CCC, Ø → p / m__s, $\begin{matrix}C & C & C & C\\ 1 & 2 & 3 & 4\end{matrix}$ → 3 ("if you have 4 consonants in a row, delete all but the third one")} What happens to /almso/??

*I suggest sketching derivations to show different things that might happen to /almso/ under that rules+constraints grammar. Then show a tableau for /alsmo/ with *CCCC and suitable faithfulness constraints. Include the candidates [almpso] and [apo], among others. Since we don't know what the winner would be in this hypothetical language, you might want to show tableaux for two or three different possible winners. (If you are already fluent in OT you may find it easy to read different possible winners off a tableau, but for the benefit of those who are still new-ish to OT, separate tableaux could help.)*

More OT exercises

10. Special type of counterbleeding that we can capture: Tagalog

- Austronesian language from the Philippines with ~24 million L1 speakers
- Is basis for Filipino, national language of the Philippines, ~45 million speakers
- #4 language in Los Angeles County (after English, Spanish, Chinese)
- English word *boondocks* comes from Tagalog *bundok* 'mountain'
- Now written in Roman alphabet, used to use own abugida, derived from Brahmic family



[2]


[3]

Baybayin vs Roman alphabet *José Rizal, national hero*

Rule account of "nasal substitution" (my favourite phonological rule):
see (Pater 1996; Pater 2001; Zuraw 2010)

	/maŋ+píliʔ/ 'choose'	/maŋ+tákot/ 'frighten'
Place assimilation	mampíliʔ	mantákot
Deletion	mamíliʔ	manákot

- ? Why is this counterbleeding?
- ? Let's try a tableau together and see how it fails

[2] commons.wikimedia.org/wiki/File:DoctrinaChristianaEspanolaYTagala8-9.jpg
[3] commons.wikimedia.org/wiki/File:Jose_rizal_01.jpg

- ? We can make it work if we assume that the mapping is really /maŋ$_1$+p$_2$íli?/ → [mam$_{1,2}$íli?]—but, we can't use regular IDENT and will have to invent a faithfulness constraint that's a little different

- The moral: if a rule analysis copied a feature from one sound onto another, then deleted that original sound, that's counterbleeding
  - but we can capture it in OT by saying that the two sounds actually merged into one (as long as we can get the faithfulness right)

11. Correspondence exercises—fill in the violations (space for your requests)

	/b$_1$a$_2$k$_3$i$_4$/	MAX-V	DEP-V	IDENT(SYLLABIC)	IDENT(HI)	LINEARITY	MAX-C	DEP-C
a	b$_1$a$_2$k$_3$i$_4$							
b	b$_1$a$_2$k$_3$e$_4$							
c	b$_1$a$_2$k$_3$j$_4$							
d	b$_1$a$_2$k$_3$							
e	b$_1$a$_2$i$_4$k$_3$							
f	u$_1$a$_2$k$_3$i$_4$							
g	i$_5$b$_1$a$_2$k$_3$i$_4$							
h								
i								
j								
k								
l								
m								

LINEARITY = don't change order, but I won't attempt today to define how violations are counted. See (Heinz 2005) for some possibilities

Below are five examples from real life—or at least outside phonology. There is one group for each example—choose which one you want to work on. Figure it out as a group, then present it to us translated into OT. It will be ***up to you to decide what counts as an input or as an output candidate, what counts as a constraint, and which tableaux*** *to show.*

12. UCLA Calendar

At UCLA, the winter quarter starts on the first Monday of the year that isn't January 1 or 2.

13. Parking rules (different sign from Ling 165A ☺)

[4]

[4] www.alamy.com/stock-photo-no-parking-sign-parking-restrictions-notices-confusing-street-cleaning-37588575.html

14. House Hunters International (reality TV show where someone looks at 3 dwellings and chooses one to live in)

Valencia, Spain

- Apartment #1: $2,150, city center, modern style, no terrace, beautiful
- Apt. #2: $1,850, city center, modern style, terrace but you have to go through the bedroom to get to it, so not good for entertaining
- Apt #3: $2,000, outside center, no style, great huge terrace for entertaining, ugly

The person chose #2.
Note to Kie: show Hasse diagram

15. Good/fast/cheap meme

[5]

[5] www.juniqe.com/good-cheap-fast-premium-poster-landscape-23231.html#step=design&productId=23231&frameId=false

16. Prescriptive rules for gender of French *gens*

The French word *gens*, always plural, means 'people'.

- *gens* normally takes masculine agreement
  - Les gens sont **contents**
  - The people are happy.**masc**.pl

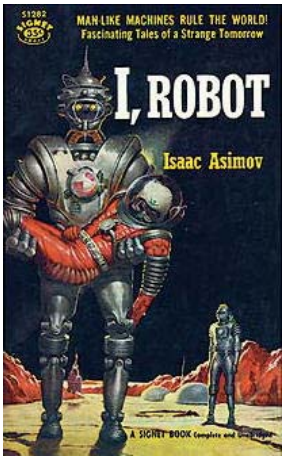
- but, preceding adjectives take feminine agreement
  - Les **bonnes** **vieilles** gens sont **contents**
  - The good.**fem**.pl old.**fem**.pl people are happy.**masc**.pl

- unless the last adjective is spelled (yes, spelled!) the same for masculine and feminine, like *braves*
  - Les **bons** **braves** gens sont **contents**
  - The good.**masc**.pl honest.**?**.pl people are happy.**masc**.pl

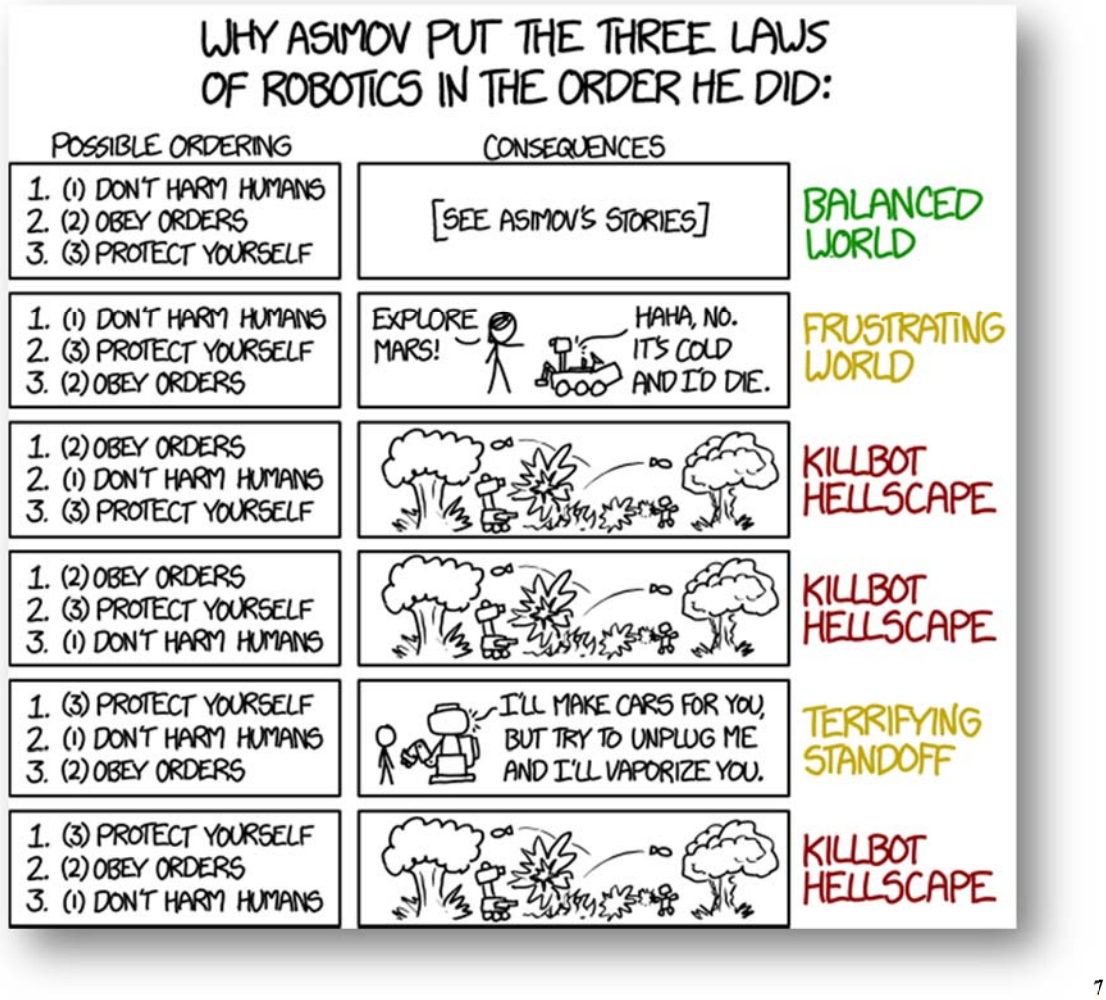
- and unless *gens* is followed by *de* 'of'
  - Les **bons** gens de lettres sont **contents**
  - The good.**masc**.pl people of letters are happy.**masc**.pl (people of letters = literary people)

This one is long—your group may run out of time, so build it up piece by piece and show us what you have for how far you got

17. The three Law of Robotics



- Isaac Asimov wrote several science fiction novels and stories set in a world with advanced robots
- These robots were programmed to live according the **Three Laws of Robotics**:[6]
    - First Law: A robot may not injure a human being or, through inaction, allow a human being to come to harm.
    - Second Law: A robot must obey the orders given it by human beings
        - except where such orders would conflict with the First Law.
    - Third Law: A robot must protect its own existence
        - as long as such protection does not conflict with the First or Second Law



7

[6] en.wikipedia.org/wiki/Three_Laws_of_Robotics
[7] xkcd.com/1613/

Assorted OT practice exercises

18. In the following example, the winning output for the input /park/ is [pa.rək].

- Account for this by putting ***COMPLEXCODA**, **MAX-C**, and **DEP-V** into the tableau in a correct ranking.
- Fill in the violations, exclamation mark(s) and shading.

/park/			
a. [park]			
☞ b. [pa.rək]			
c. [pa.rə.kə]			
d. [par]			
e. [pa]			

19. Fill in the asterisks, exclamation marks, shading, and pointing finger/arrow. *plickers: winner is A, B, C, or D?*

/βada/	* V [–cont]	*FRICATIVE	IDENT(cont)
a. bada			
b. baða			
c. βada			
d. βaða			

What is the contrast status of *β* and *b*? Assume that the above three constraints are the whole language. *Plickers: A, B, or C?*

☐ A. separate phonemes
☐ B. allophones of the same phoneme
☐ C. separate phonemes, but contextually neutralized

20. In the following example, the winning output for the input /ãzpã/ is [az.ˈpã]

- Account for this by putting the constraints **IDENT(nasal)**, **IDENT(nasal)/stressed**, and ***[+nasal]** in the tableau in a correct ranking.
- Fill in the asterisks, exclamation marks and shading.

/ãzpã/			
a. [ãz.ˈpã]			
☞ b. [az.ˈpã]			
c. [ãz.ˈpa]			
d. [az.ˈpa]			

- **IDENT(nasal)/stressed** = don't change the [nasal] value of a segment that is in a <u>stressed output syllable</u>.

21. French allows complex onsets. A toddler learning French named Théo[8] produced complex onsets, but not everywhere, as shown by the winners below.

- Account for this by putting the constraints **MAX-C**, **MAX-C/stressed**, and ***COMPLEXONSET** in the tableaux in a correct ranking.
- Fill in the asterisks, exclamation marks and shading.

/ˈgʁo/			
☞ a. [ˈgʁo]			
b. [ˈgo]			
/gʁyˈjo/	(same ranking as for *a* and *b*)		
c. [gʁy.ˈjo]			
☞ d. [gy.ˈjo]			

- **MAX-C/stressed =** a C in a stressed input syllable must have an output correspondent.

[8] From Yvan Rose's 2000 McGill dissertation, via Jesney & Tessier 2010

Next:

- Now that we've got our two theories firmly in place, let's see what they do with some tough cases. We'll start with…
- What happens when there are multiple places within a form where a rule could apply or a constraint is violated?
- What if applying a rule (satisfying a constraint) creates a new environment for the same rule to apply (creates a new violation of the same constraint)?
- We'll look at how this should play out in SPE (not always clear) and OT (clear, but are the typological predictions correct?)

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