

## *Today's topics:*

- **Syllable-structure constraints**
- **Practice with OT analysis**

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### *Background preparation:*

- *Prep questions: Syllable structure in English*
- *Handouts - OT concepts / Ranking arguments / Markedness and faithfulness*

# 0. Today's objectives

After today's class, you should be able to:

- Assign violations using a set of syllable-structure constraints
- Find rankings in a set of constraints to account for patterns in a data set
  - Construct informative losers
  - Identify valid ranking arguments
  - Create a Hasse diagram

# 1. Warm-up: OT check-in

Doing phonological analysis in OT

- What does the **grammar** of a language consist of?
- What is/How do we make a **ranking argument**?

# 1. Warm-up: OT check-in

## Doing phonological analysis in OT

- What does the **grammar** of a language consist of?
  - Universal set of constraints
  - Universal procedure for finding a winner
  - The individual language's own constraint ranking
- What is/How do we make a **ranking argument**?
  - **Evidence** that  $\text{CONSTRAINT A} \gg \text{CONSTRAINT B}$ 
    - Such evidence comes from **constraint conflict** (look for W/L in tableau!)
    - Requires an **informative loser**

# 1. Warm-up: OT check-in

## Constraints

- How should every constraint **definition** start?
- How is a constraint **different** from a **rule**?

# 1. Warm-up: OT check-in

## Constraints

- How should every constraint **definition** start?
  - Assign one \* for every...
- How is a constraint **different** from a **rule**?
  - **Rules** identify a target (in an environment) and **specify how to change it**
  - **Constraints** identify what phonological structures are **assigned violations**
    - In OT, what makes a surface form *different* from its UR?

## 2. Syllable-structure analysis of English

### Discussion

- Data set: [English syllabification with constraints](#)

Each group picks one word:

/ɪɡlu/ [ɪ.ɡlu] 'igloo' (nuclei are underlined)

/fild/ [fild] 'field'

For the word that you are working on:

- What is the **input** in an OT tableau?
- Which **output** candidate must be in the tableau?
- What constraint(s) does the winner violate?

## 2. Syllable-structure analysis of English

### Checking in

- Which of these constraints are **markedness** constraints, and which are **faithfulness** constraints?  
Data set - [English syllabification with constraints](#)
- Any other questions about these constraints?  
See also: Handout - [Syllable structure in OT](#)

## 2. Syllable-structure analysis of English

### Checking in

- Considering the form /ɪɡlu/ [ɪ.ɡlu] ‘igloo’
  - What is the **input** in an OT tableau for this word?
  - Which **output** candidate must be in the tableau?
  - What constraint(s) does the winner violate?

/ɪɡlu/ ‘igloo’	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [ɪ.ɡl <u>u</u> ]						

## 2. Syllable-structure analysis of English

### Checking in

- Considering the form /ɪglu/ [ɪ.glu] ‘igloo’
  - What is the **input** in an OT tableau for this word?
  - Which **output** candidate must be in the tableau?
  - What constraint(s) does the winner violate?

/ɪglu/ ‘igloo’	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [ɪ.glu]			*		*	

## 2. Syllable-structure analysis of English

### Checking in

- Considering the form /fild/ [fild] ‘field’
  - What is the **input** in an OT tableau for this word?
  - Which **output** candidate must be in the tableau?
  - What constraint(s) does the winner violate?

/fild/ ‘field’	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [fild]						

## 2. Syllable-structure analysis of English

### Checking in

- Considering the form /fild/ [fild] 'field'
  - What is the **input** in an OT tableau for this word?
  - Which **output** candidate must be in the tableau?
  - What constraint(s) does the winner violate?

/fild/ 'field'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [fild]				*		*

## 2. Syllable-structure analysis of English

### Group discussion

/ɪɡlu/ [ɪ.ɡlu] 'igloo'

/fild/ [fɪld] 'field'

- What **other** candidates should be in the tableau?

*Hint:*

- The winner violates **two** constraints in each case
  - See if it is possible to look at the (failed) alternatives to violating those two constraints **separately**
- What **ranking arguments** can we make?

## 2. Syllable-structure analysis of English

### **Debriefing**

- What are some informative losers you found?

## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/ɪglu/ 'igloo'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [ɪ.g <u>l</u> u]			*		*	
(b) [hɪ.g <u>l</u> u]						
(c) [g <u>l</u> u]						
(d) [hɪg.l <u>u</u> ]						
(e) [ɪg.l <u>u</u> ]						

## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/ɪglu/ 'igloo'	No EPEN	No DEL	ONSET	No CODA	No ONSC <sub>L</sub>	No COD <sub>L</sub>
→ (a) [ɪ.g <u>l</u> u]			*		*	
(b) [hɪ.g <u>l</u> u]	* w		L		*	
(c) [g <u>l</u> u]		* w	L		*	
(d) [hɪg.l <u>u</u> ]	* w		L	* w	L	
(e) [ɪg.l <u>u</u> ]			*	* w	L	

## 2. Syllable-structure analysis of English

- Rankings proven:
  - (b) NoEPENTHESIS » ONSET
  - (c) NoDELETION » ONSET
- What can we conclude from candidate (d), [hɪg.lu]?
  - (d) NoEPENTH » ONSET                    *or* NoCODA » ONSET
  - NoEPENTH » NoONSClust *or* NoCODA » NoONSClust
  - More informative to look at (b), (e) separately
  - Useful to address one of the winner's \* at a time
- What can we conclude **about ONSET** from (e), [ɪg.lu]?

## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/ɪɡlu/ 'igloo'	No EPEN	No DEL	ONSET	No CODA	No ONSC <sub>L</sub>	No COD <sub>CL</sub>
→ (a) [ɪ.ɡ <u>l</u> u]			*		*	
(b) [hɪ.ɡ <u>l</u> u]	* w		L		*	
(c) [ɡ <u>l</u> u]		* w	L		*	
(d) [hɪɡ. <u>l</u> u]	* w		L	* w	L	
(e) [ɪɡ. <u>l</u> u]			*	* w	L	

## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/ɪglu/ 'igloo'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [ɪ.g <u>l</u> u]			*		*	
(e) [ɪg.l <u>u</u> ]						
(f) [ɪgl. <u>u</u> ]						
(g) [ɪ.gə.l <u>u</u> ]						
(h) [ɪ.l <u>u</u> ]						

## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/ɪglu/ 'igloo'	No EPEN	No DEL	O <sub>NS</sub> ET	No CODA	No O <sub>NS</sub> CL	No CODCL
→ (a) [ɪ.g <u>l</u> u]			*		*	
(e) [ɪg.l <u>u</u> ]			*	* W	L	
(f) [ɪgl. <u>u</u> ]			** W	* W	L	* W
(g) [ɪ.gə.l <u>u</u> ]	* W		*		L	
(h) [ɪ.l <u>u</u> ]		* W	*		L	

## 2. Syllable-structure analysis of English

- Rankings proven:
  - (e) NoCODA » NoONSETCLUSTER
  - (g) NoEPENTHESIS » NoONSETCLUSTER
  - (h) NoDELETION » NoONSETCLUSTER
- What can we conclude from candidate (f), [ɪɡl.u]?
  - (f) ONSET » NoONSETCLUSTER
    - or* NoCODA » NoONSETCLUSTER
    - or* NoCODACLUSTER » NoONSETCLUSTER
  - Not actually informative: too many constraints favor the winner

## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/ɪglu/ 'igloo'	No EPEN	No DEL	O <sub>NS</sub> ET	No CODA	No O <sub>NS</sub> CL	No CODCL
→ (a) [ɪ.g <u>l</u> u]			*		*	
(e) [ɪg.l <u>u</u> ]			*	* W	L	
(f) [ɪgl. <u>u</u> ]			** W	* W	L	* W
(g) [ɪ.gə.l <u>u</u> ]	* W		*		L	
(h) [ɪ.l <u>u</u> ]		* W	*		L	

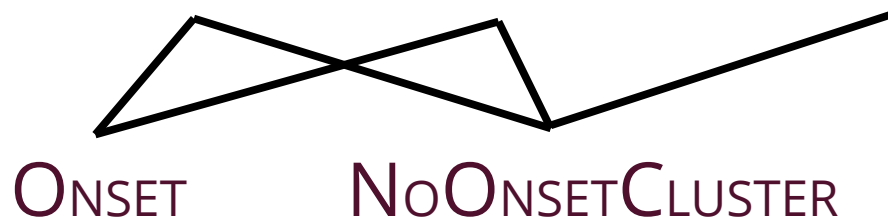
## 2. Syllable-structure analysis of English

- All rankings proven using /ɪɡlu/ 'igloo'
  - (b) NoEPENTHESIS » ONSET
  - (c) NoDELETION » ONSET
  - (e) NoCODA » NoONSETCLUSTER
  - (g) NoEPENTHESIS » NoONSETCLUSTER
  - (h) NoDELETION » NoONSETCLUSTER
- Summarize our analysis so far, using a **Hasse diagram**

## 2. Syllable-structure analysis of English

- All rankings proven using /ɪglu/ 'igloo'
  - (b) NoEPENTHESIS » ONSET
  - (c) NoDELETION » ONSET
  - (e) NoCODA » NoONSETCLUSTER
  - (g) NoEPENTHESIS » NoONSETCLUSTER
  - (h) NoDELETION » NoONSETCLUSTER
- Hasse diagram: (no info yet about NoCODACLUSTER)

NoEPENTHESIS    NoDELETION    NoCODA    NoCODACLUSTER



## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/fild/ 'field'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [f <u>i</u> ld]				*		*
(b) [fi <u>l</u> ]						
(c) [fi.l <u>ə</u> d]						
(d) [fi.l <u>ə</u> .d <u>ə</u> ]						

## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/fild/ 'field'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [fild]				*		*
(b) [fil]		* w		*		L
(c) [fi.ləd]	* w			*		L
(d) [fi.lədə]	** w				L	L

## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/fild/ 'field'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [f <u>i</u> ld]				*		*
(e) [f <u>i</u> ]						
(f) [f <u>i</u> ldz]						
(g) [f <u>i</u> l.əd]						

## 2. Syllable-structure analysis of English

- Are these losers informative? What rankings do they prove?

/fild/ 'field'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [fild]				*		*
(e) [fi]		** w		L		L
(f) [fildz]	* w			*		*
(g) [fil.əd]	* w		* w	** w		L

## 2. Syllable-structure analysis of English

- Candidate (f) is not actually an informative loser
  - No constraints prefer the loser (**no L** in the row)
  - That means there is **no constraint conflict** here
  - This gives us **no information** about how the constraints are **ranked** — (a) *always* beats (f)!

/fild/ 'field'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [fild]				*		*
(f) [fildz]	* w			*		*

## 2. Syllable-structure analysis of English

- Candidate (f) is not actually an informative loser
- Does this mean we should *never* discuss losers that are not informative?
  - Not necessarily — it can sometimes be useful to show that **the grammar correctly rejects** a certain form, even if that doesn't help us figure out the ranking
  - But it is important to clearly understand which losers **actually provide information** about the ranking

## 2. Syllable-structure analysis of English

- What does candidate (g) show us about the ranking?
  - What must dominate NoCODACLUST for (a) to win?

/fild/ 'field'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [fild]				*		*
(g) [fil.əd]	* <sub>w</sub>		* <sub>w</sub>	** <sub>w</sub>		L

## 2. Syllable-structure analysis of English

/fild/ 'field'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
(g) [fɪl.əd]	* <sub>W</sub>		* <sub>W</sub>	** <sub>W</sub>		L

- Remember: Every L-marked constraint must be dominated by **at least one** W-marked constraint
- We can't tell if it's NoEPENTHESIS, ONSET, or NoCODA (or more than one) that's making (g) lose
- So (g) does technically provide ranking information, but it's not very useful in practical terms — it's better to find candidates that compare these constraints **separately**

## 2. Syllable-structure analysis of English

- Candidates must show **syllable structure!**  
(if it is relevant for the constraints under discussion)
  - Candidates (c) and (g) are **not the same thing** — your tableau has to make clear which you mean

/fild/ 'field'	No EPEN	No DEL	ONSET	No CODA	No ONSCl	No CODCl
→ (a) [fild]				*		*
(c) [fi.ləd]	* <sub>w</sub>			*		L
(g) [fil.əd]	* <sub>w</sub>		* <sub>w</sub>	** <sub>w</sub>		L

(Side note: Can we explain why no language ever picks (g)?)

## 2. Syllable-structure analysis of English

- What rankings have we proven using /fild/ 'field'?

/fild/ 'field'	NoEP	NoDL	ONS	NoCD	NoOCL	NoCCL
→ (a) [fild]				*		*
(b) [fil]		* W		*		L
(c) [fi.ləd]	* W			*		L
(d) [fi.lə.də]	** W			L		L
(e) [fi]		** W		L		L

## 2. Syllable-structure analysis of English

- What rankings have we proven using /fild/ 'field'?
  - (b) NoDELETION » NoCODACLUSTER
  - (c) NoEPENTHESIS » NoCODACLUSTER
  - (d) NoEPENTH » NoCODA *and* NoEPENTH » NoCODACLUST
  - (e) NoDEL » NoCODA *and* NoDEL » NoCODACLUST

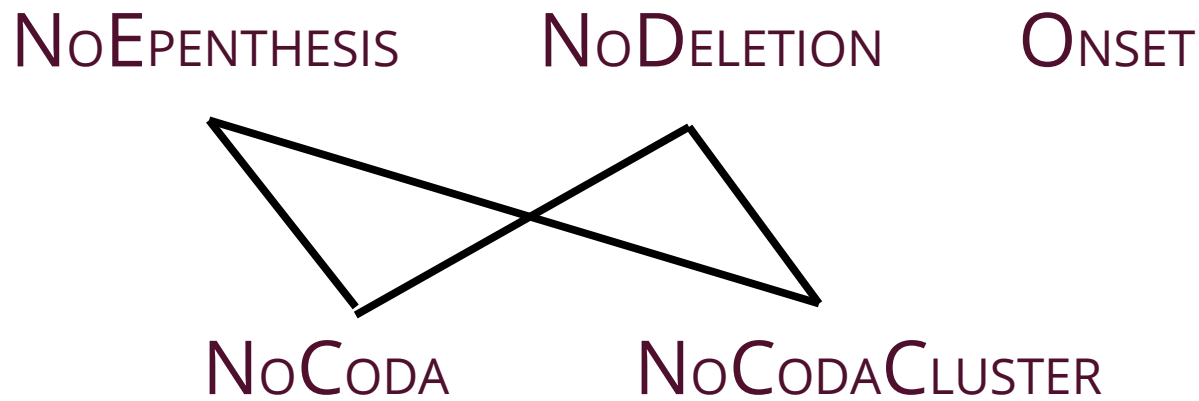
## 2. Syllable-structure analysis of English

- Combining these rankings in a Hasse diagram
  - (b) NoDELETION » NoCODACLUSTER
  - (c) NoEPENTHESIS » NoCODACLUSTER
  - (d) NoEPENTH » NoCODA *and* NoEPENTH » NoCODACLUST
  - (e) NoDELETION » NoCODA *and* NoDELETION » NoCODACLUST

- Try it!

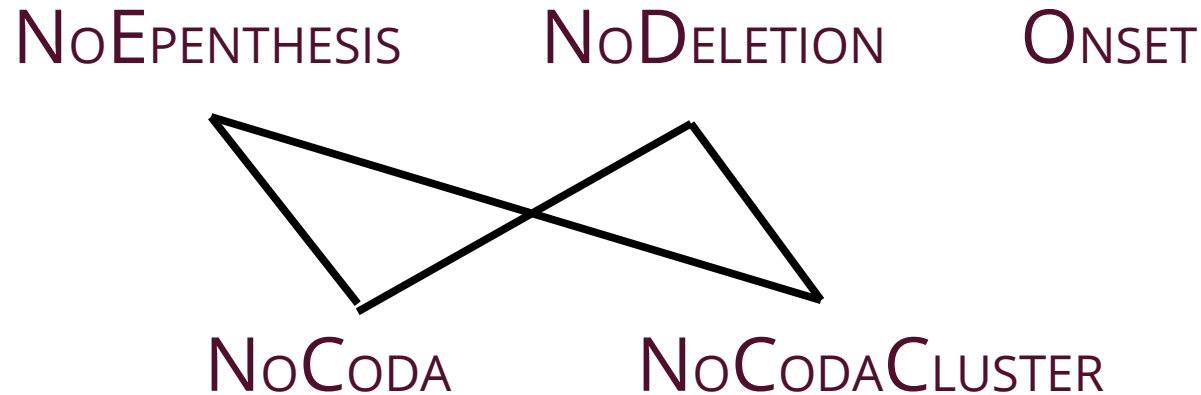
## 2. Syllable-structure analysis of English

- Combining these rankings in a Hasse diagram
  - (b) NoDELETION » NoCODACLUSTER
  - (c) NoEPENTHESIS » NoCODACLUSTER
  - (d) NoEPENTH » NoCODA *and* NoEPENTH » NoCODACLUST
  - (e) NoDELETION » NoCODA *and* NoDELETION » NoCODACLUST



## 2. Syllable-structure analysis of English

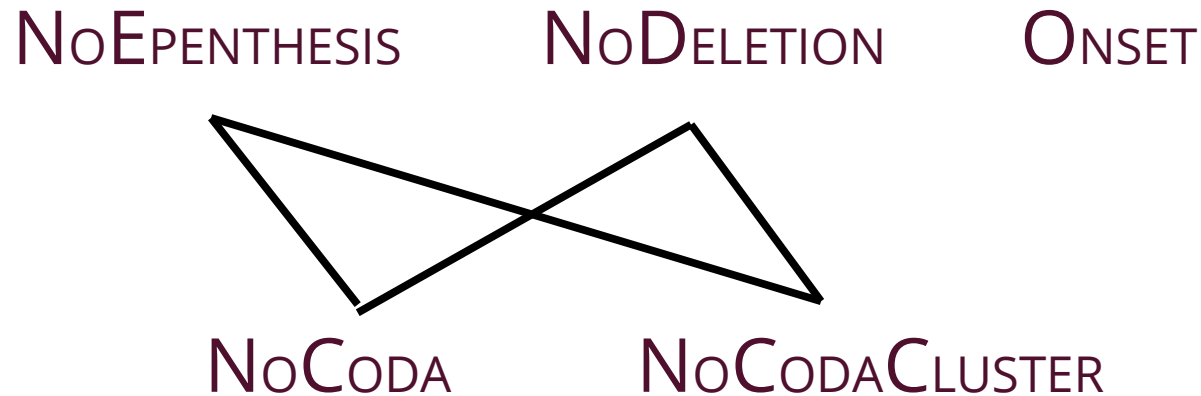
- Combining these rankings in a Hasse diagram



- Note: We have no information here about ONSET
  - It is not always possible to rank all constraints
  - Check: Are there additional informative losers?
  - Sometimes, looking at a different input (a different form from the data set) will help find more rankings

## 2. Syllable-structure analysis of English

- Combining these rankings in a Hasse diagram



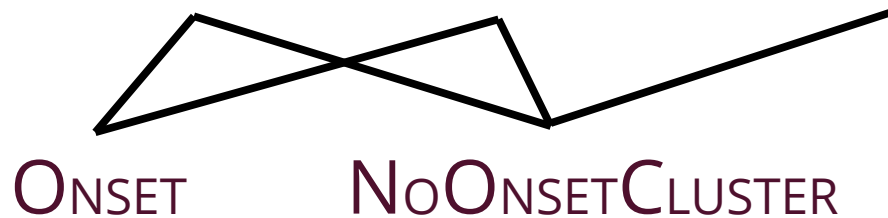
Something interesting we can see here:

- NoCODA is lower than NoEP and NoDEL; codas survive
- But what did we conclude earlier about NoCODA vs. NoONSETCLUSTER?

### 3. Combining all the rankings — Implications

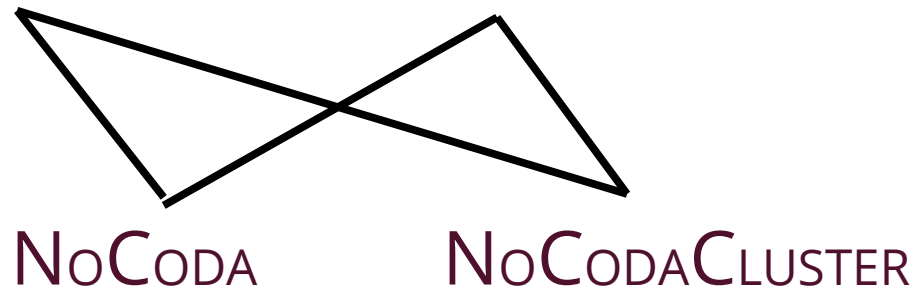
- All rankings proven using /ɪglu/ ‘igloo’

NoEPENTHESIS      NoDELETION      NoCODA



- All rankings proven using /fild/ ‘field’

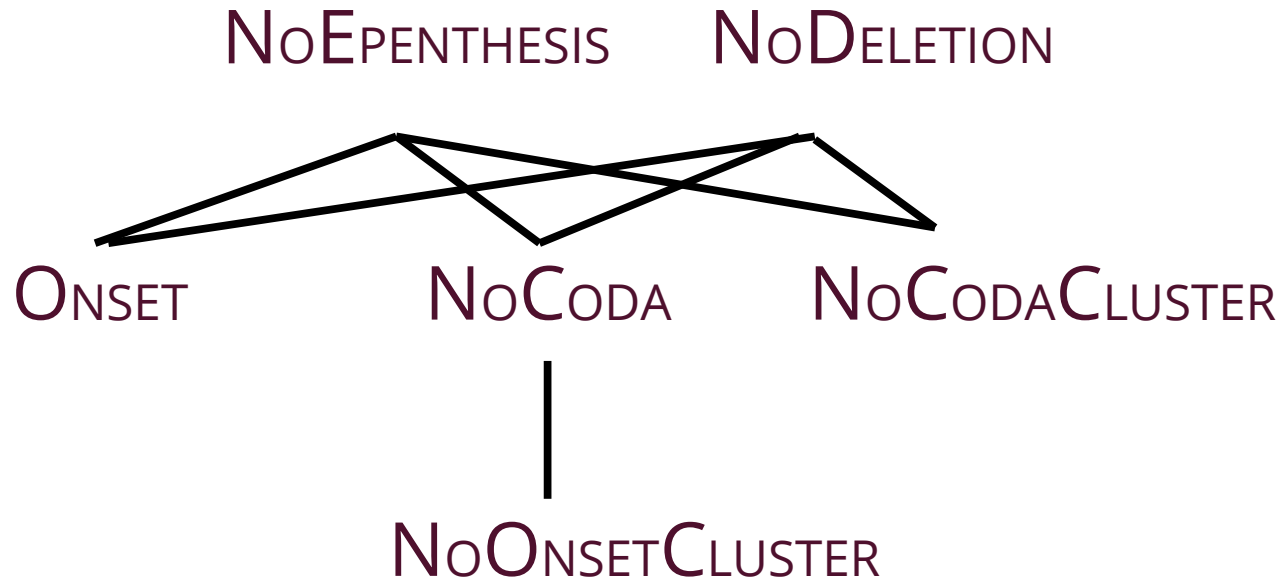
NoEPENTHESIS      NoDELETION      ONSET



- What **overall ranking** can we prove for English?

### 3. Combining all the rankings — Implications

- What **overall ranking** can we prove for English?



### 3. Combining all the rankings — Implications

- Constraints can be **dominated** but still matter!
  - Example: NoCODA is lower than NoEP and NoDEL
    - This means **codas survive**, in general
  - But NoCODA is higher than NoONSETCLUSTER
    - This means **codas are avoided** when faithfulness is not at stake
- **Not all pairs** of constraints can be **ranked**
  - In particular: Constraints that are **never violated** can't be directly ranked with respect to each other

## 4. For next time

- **Review for quiz!** We have been asking the question:
  - Given an input and the winning output,
  - how does this language rank its constraints?

This lets us **analyze a specific language**

- **Next topic:** OT lets us to ask another question:
  - Given an input and a ranking,
  - what candidate would win?

This allows us to test claims about the constraints in the **universal constraint set** — what kinds of languages are we **predicting** to be **possible**?