1. **Current UCLA Covid policy**

   "Universal Indoor Masking at UCLA Strongly Recommended Jan. 3-13, 2023
   
   - Universal indoor masking at UCLA is strongly recommended to mitigate anticipated spike in new cases from Bruins returning from winter break travel and gatherings
   - This recommendation is intended to reduce viral spread among the Bruin community and help UCLA avoid dramatic impacts to teaching, research and campus operations"

2. **Assignment**

   - Read: Kaun reading (Factorial Typology of rounding harmony) on web site.
   - Write a summary of this paper *not more than one half page long.*
     - Meaning: synthesize, condense, emphasize the big picture and the main points (don’t go step-by-step or page-by-page)
   - Due Wed. 1/12/23 in class (hard copy please).

3. **Go over the syllabus**

4. **Intellectual diversity in the field of phonology**

   - It’s really wide — just go to a conference to find out.¹
   - I could try to teach a little bit about everyone’s views, but the result would be
     - Trivial coverage for any one particular thing.
     - Grouchiness on my part as I tried to do justice to research lines I find unpromising.
   - So this is going to be, for better or worse, “topics found interesting/promising by me and probably by other UCLA phonology faculty.”
   - If time I’ll give a brief survey of omitted material at the end of the course.

5. **My own stance**

   - I seek to ride a wave of “scientificization” that has swept through phonology in the last 20 years or so.

¹ I would say that the two top conferences, for now, are the Annual Meeting on Phonology in North America and the Manchester Phonology Conference in Europe.
6. “Scientificized” phonology

- Evaluate (and construct) theories primarily by their performance in accounting for phenomena, with issues like elegance and internal form still important but not paramount.
- The phenomena seem to be basically two:
  - How linguistic material is rendered phonologically by people, partly through retrieval of memorized forms, partly through synthesis using a phonological grammar. When we do experiments, the wug test tests the synthesis capacity.
  - How people assign well-formedness values to phonological forms and use this knowledge in speech perception, loanword adaptation, L2 learning. The blick test\(^2\) tests such knowledge.
  - How people learn these two capacities, starting in infancy.
- Re. scientific methodology, anything that helps is good, including methodologies borrowed from other sciences.

7. List of research activities/methods that can help us

- Classical elicitation and descriptive analysis — nothing useful can happen on other fronts until this has been done, and done well — we’ll start with this.
- Experiments (wug and blick tests, per above)
- Use of corpora (try to study all the forms the native speaker knows, not just a hopefully-representative subset)
- Computation (for linguistic analysis that can’t be done by hand, learning simulations)
- And still: Theoretical speculation and theory-based analysis — nothing other than theory things can ground and unify all the other methods.

A BIT ON DESCRIPTIVE PHONOLOGY

8. What do you do if you have the opportunity to take on a new language?

9. Collect a lexicon and perform phonemic analysis

- To this day, minimal pairs (and their extension, minimal sets) are essential to establish structural contrasts.
- Use the classical method from the 1940s to work out the phonemic system
  - The set of phonemes (minimal sound inventory from which all surface sounds can be derived)
  - Allomorphy (contextual or free variation of the phonemic sounds)
- Intro textbooks to this day (e.g., mine, Introductory Phonology 2008) cover how to do this.

10. Collection of paradigms and search for phonological alternation

- The paradigms can be either

\(^2\) Chomsky and Halle (1965): “Could blick be a word?” “Could bnick be a word?”
morphological (different stems affixed in parallel ways)

syntactic (different words placed in parallel phrasal contexts)

- Look for how a morpheme varies in its realization across context.
- Assess if the variants can be derived in a grammar or must be listed items.
- Work out the rules that derive phonologically predictable variants.

11. The data path to theory

observations → generalizations → analysis → theoretical implications

- No step can be skipped.
- It’s been done many times.

12. Publication of phonological results from this kind of work

- Collect nuggets that engage in novel ways with theory and write theoretical articles about them.
- Write a reference grammar or phonology of X book to be comprehensive and useful to others.
- UCLA grad Laura McPherson is having a career of this kind.

WHY OPTIMALITY THEORY?

13. Why OT?

- UCLA phonology is an OT shop, as are quite a few other departments.
- OT dominates the journals, though perhaps less so than in former decades
- As dinosaur, I possess pre-OT theoretical experience, having used rule-based phonology for 15 years before 1993.
- I like OT because:
  - It is satisfying to reduce phonology to simple ingredients and let complexity be derived by letting them interact — see below for example.
  - It is even more satisfying when the simple ingredients have strong typological or experimental support.
  - There are data patterns that seem hard to handle without something like OT — see later today.
OT has a track record of broadening phonological research, opening up new paths of research (acquisition, learnability, L2 phonology, variation, phonology-syntax interaction...). It’s a good fit for the “scientificization” trend just noted.

- Is OT actually true? A scary question for a linguist to ask!
  - Best case, I feel: biased-based modeling: use of OT and UG principles to explain non-veridical language acquisition.

AN OT-REVIEW EXAMPLE, USING JUST MARKEDNESS CONSTRAINTS

14. The Finnish “bad foot hiccup”

- This is meant to be an example of a canonical OT virtue: by using a “hierarchy of overrides”, we reduce complexity to simplicity — using typologically wholesome ingredients.
- Finnish word stress is extensively studied; sources used here:

15. Preliminaries I: feet

- We can think of stress assignment not as putting in a feature [+stress], but parsing of the words into headed domains — feet.
- The idea is that effects that might seem contextually complex make sense as principles of foot form.

16. Preliminaries II: Syllable weight

- Finnish respects the widespread principle that CV: and CVC syllables are “heavy”; CV syllables are “light”.
- How to represent weight in phonology is an ever expanding area in phonology; for the latest see Kevin Ryan’s (2019) book Prosodic Weight.

---


4 Yang Wang and Bruce Hayes (in progress) Learning underlying representations: An approach guided by the Kenstowicz-Kisseberth UR Hierarchy, ms., UCLA.

5 Hiro Katsuda (2023) Loanword accentuation in Japanese: Corpus study, modeling, and experiments, UCLA dissertation, finished last weekend!

17. **Data**

- Finnish has initial main, and alternating secondaries—left to right trochees.
  
  
  \[\text{’jær jes ,te le ,mæt tø ,my: des ,tæn sæ} \]
  
  ‘from his lack of systematization’

- Don’t stress a final syllable…

  
  \[\text{’o pis ,ke li ja} \]
  
  can’t find gloss

- …unless it is the only syllable.

  
  \[\text{’pu:} \]
  
  gloss missing

- Exception to the alternation pattern: if a non-initial trochee would be of the form L + H, then you make a ternary interval — the “bad foot hiccup”.

  
  \[\text{’ka las te ,lem me} \]
  
  ‘we’re fishing’

  \[\text{’voi mis te ,lut te le ,mas ta} \]
  
  ‘from causing to do gymnastics’

- But don’t make a ternary interval if you would produce final stress

  
  \[\text{’ra vin ,to lat} \]
  
  ‘restaurants’

- Also perhaps relevant: “In Finnish the word must contain at minimum two vocalic moras and can thus be either of the shape (C)VV or (C)VCV” (Karoven dissertation; http://finnish.umn.edu/WordProsodyinFinnish.pdf)

18. **Finnish stress by rule**

- From left to right, form trochees. Codicils:
  
  ➢ Don’t make a trochee if it would be L H,  
    — but L H is in fact ok if it’s final or initial.
  
  ➢ Don’t make a monosyllabic trochee unless the word is monosyllabic.

19. **The ingredients of Finnish stress are simple**

- Alignment of main stress to initial syllables
- Avoidance of final stress
- *LAPSE: two stressless syllables in a row
- Avoidance of [’L H] feet.

7 In truth: *optionally* don’t; we’ll cover this later.
Cf. nonstandard Finnish dialects in which such feet are “repaired” by geminating the medial consonant: /kotihin/ \( \rightarrow \text{kot}i:n \rightarrow [\text{kotti}:n] \) (Kiparsky 1968)

Again: what is an override in one language is an absolute principle elsewhere.

- General leftward alignment of feet

- All of these elements can be found pervasively in stress languages, though they are probably combined in this way only in Finnish.
- The art of it is to prioritize them: “subject to the above …”

EXERCISE: RANKING THE MARKEDNESS CONSTRAINTS FOR FINNISH STRESS

20. Please don’t look ahead

(if you wish to receive full Socratic benefit from this exercise :=) )

21. Miniaturizing the candidate set

- I am not fully confident that the following cases fully illustrate the system, but they hopefully will serve a pedagogical purpose.

<table>
<thead>
<tr>
<th>Input</th>
<th>Candidates</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>( \emptyset )(H)</td>
</tr>
<tr>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>L H</td>
<td>( \emptyset )(L H)</td>
</tr>
<tr>
<td>L (H)</td>
<td>(L)(H)</td>
</tr>
<tr>
<td>(L)(H)</td>
<td></td>
</tr>
<tr>
<td>L H L L L</td>
<td>( \emptyset )(L H)(L L)L</td>
</tr>
<tr>
<td>L (H L)(L L)</td>
<td></td>
</tr>
<tr>
<td>(L H)(L L)(L)</td>
<td></td>
</tr>
<tr>
<td>(L H) L (L L)</td>
<td></td>
</tr>
<tr>
<td>(L H) L L L</td>
<td></td>
</tr>
<tr>
<td>L H L H L</td>
<td>( \emptyset )(L H) L (H L)</td>
</tr>
<tr>
<td>(L H)(L H) L</td>
<td></td>
</tr>
<tr>
<td>L H L H</td>
<td>( \emptyset )(L H)(L H)</td>
</tr>
<tr>
<td>(L H) L H</td>
<td></td>
</tr>
<tr>
<td>(L H) L (H)</td>
<td></td>
</tr>
<tr>
<td>L H L</td>
<td>( \emptyset )(L H) L</td>
</tr>
<tr>
<td>(L H)(L)</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>( \emptyset )(H)</td>
</tr>
<tr>
<td>(L)</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
</tr>
</tbody>
</table>
22. Some fairly standard constraints for Finnish

ALIGN(W,Ft) there must be an initial foot
FtBin feet must have more than one mora; i.e. *[ L ]
NON-FINALITY *stress on last syllable
*LAPSE *two adjacent unstressed syllables
*(L H) (what it says) — a sensible ban of severe stress-weight contradiction
ALL FEET L OT translation of L-R foot parsing:
   Count one violation for each σ in the configuration: σ ... [foot ]

- Let us assume without further comment constraints that guarantee that feet must be
  maximally disyllabic and bear initial stress.

23. Socratic Finnish

- Do the ranking with tableaux.
- Add columns by grabbing “low-hanging fruit”.
- Cross out data in red once it is explained — first failed candidates, then whole inputs

24. Let’s make it a little harder (relevant to first homework)

L H L H: ['ra vin ,to lat] ‘restaurants’

can also be

['ra vin to ,lat]

What is a sensible way to get this one?

FOLLOW-UP ON THE FINNISH STRESS PROBLEM

25. What were we just doing at the blackboard?

- We tacitly employed a standard algorithm, Recursive Constraint Demotion:
  ✓ Find the set of non-loser-prefferrers, designate them as the next in a descending
    series of “strata”
  ✓ Remove explained losing candidates
  ✓ Remove explained inputs
  ✓ Repeat until all data explained.
- Finnish as an example of “complexity from layered simplicity”
26. About Recursive Constraint Demotion

- Discovered by Bruce Tesar and Paul Smolensky in 1993, topic of multiple publications by them culminating in their 2000 book *Learnability in Optimality Theory*
- Normal mode of operation is to rank the constraints in “batches” or (better) “strata”; internally unranked.
  - Any full ranking compatible with the strata will work.
- The strata for the Finnish grammar I did are shown below
- This work was the launch point for a now-widespread effort to do computational modeling of acquisition in OT.

27. Finnish with software

- There are various softwares available (Boersma, Pater, Tesar/Prince, Zuraw/Mayer); this from my “OTSoft”:

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Constraint Name</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stratum #1</td>
<td>ALIGN(W,Ft)</td>
<td>ALIGN(W,Ft)</td>
</tr>
<tr>
<td></td>
<td>*CLASH</td>
<td>*CLASH</td>
</tr>
<tr>
<td></td>
<td>FOOTBIN</td>
<td>FOOTBIN</td>
</tr>
<tr>
<td>Stratum #2</td>
<td>NON-FIN</td>
<td>NON-FIN</td>
</tr>
<tr>
<td></td>
<td>DEP</td>
<td>DEP</td>
</tr>
<tr>
<td>Stratum #3</td>
<td>LAPSE</td>
<td>LAPSE</td>
</tr>
<tr>
<td>Stratum #4</td>
<td>*(L H)</td>
<td>*(L H)</td>
</tr>
<tr>
<td>Stratum #5</td>
<td>ALL FEET L</td>
<td>ALL FEET L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/L H L H L/</th>
<th>ALIGN(W,Ft)</th>
<th>*CLASH</th>
<th>FOOTBIN</th>
<th>NON-FIN</th>
<th>DEP</th>
<th>LAPSE</th>
<th>*(L H)</th>
<th>ALL FEET L</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>(L H)</td>
<td>(H L)</td>
<td></td>
<td>*</td>
<td>***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(L H) (L H)</td>
<td>L</td>
<td></td>
<td></td>
<td>*</td>
<td>**</td>
<td>**</td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>L</td>
<td>(H L)</td>
<td>(H L)</td>
<td></td>
<td>*</td>
<td>**</td>
<td>****</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

28. A bit more on Finnish empirically

- Karvonen (2005, §3.2) notes a second “hiccup,” based on avoidance of [’CVC CVV] feet:
  - [’ho ri son ,taː li] ‘horizontal’
  - [’sak ra men ,taː ri nen] ‘sacramental’

---

['di ag nos ,tiik ka] ‘diagnostics’

vs.

['a ka ,te: mik ko] ‘academic’

so the constraint hierarchy is actually a bit more complicated.

QUICK REVIEW OF FAITHFULNESS CONSTRAINTS

29. Historical note

- Prince and Smolensky (1993) proposed a system of Faithfulness not well-articulated enough to handle phonology in general; you will see references to it from time to time but it is not widely employed today.

30. Ur-source


31. There are so many ways to do Faithfulness

- Faithfulness is based on resemblance.
- Resemblance can be formalized in many ways.
- Conventional SPE-representations (sequences of feature matrices) make it easy, but one might also pull in
  - hierarchical structure (phrasing, syllables, feet, autosegmental tiers)
  - actual phonetic form
- More on this later.

32. McCarthy and Prince’s strategy: SPE representations + atomism

- I believe their idea was to find the ways that two representations could differ — allocating constraints to the smallest possible differences.

33. Indices

To make the differences utterly explicit, we put an index on every segment.

- IDENT = differ in one feature value

/p1 a2 k3/, candidate [b1 a2 k3] violates IDENT(voice)
/p1 a2 k3/, candidate [m1 a2 k3] violates IDENT(voice) and other constraints
• **MAX** = an underlying segment of *some natural class* (specified with features) is missing in the surface form.

/\text{p}_1\text{a}_2\text{k}_3/, candidate [\text{p}_1\text{a}_2] violates ?? (multiple answers)

• **DEP** = a surface segment of some natural class (specified with features) is missing in the underlying form.

/\text{a}_2\text{k}_3/, candidate [?\text{a}_2\text{k}_2] violates ?? (multiple answers)

• **LINEARITY**, violated when the linear order of any pair of segments is switched. Count the violations here:

/\text{p}_1\text{a}_2\text{k}_3/, candidate [\text{k}_3\text{a}_2\text{p}_1] (how many violations?)

Socrates: What about this candidate: [\text{p}_3\text{a}_2\text{k}_1]

• **CONTIGUITY**, violated when two segments are adjacent in the input but not the output, or vice versa (IO, OI)

• **ANCHOR**, violated when a segment is adjacent to an edge in the input but not the output.

34. **Not a standard Faithfulness constraint**

• **IDENT(p)** “Don’t change anything about [p] so it isn’t [p] any more.”

  ➢ You’re welcome to deviate from the “standard” theory — but in the interest of scientific coherence, it’s crucial to *label* such deviations.

  ➢ This raises vexed issues of “scientific community”, “community standards”—inevitable in writing up research results.

35. **A fundamental principle of OT presentation**

• Always declare the Faithfulness constraints violated by winners.

  ➢ Or more precisely, at least one member of the lattice-based family violated by winners.

  ➢ i.e., they all need to be accounted for by the Markedness constraints that outrank them.

36. **Extensions of Faithfulness**

• Between a paradigm member and its presumed “base” form (Benua 1995)

  healing [ˈhɪln] compare: *Darjeeling* [ˈdɑɹdʒɪlɪŋ]
• Between a reduplicated morpheme and its base (McCarthy and Prince 1994)9
• Between a free variant and its careful-speech norm (Kawahara 2002)10

**DEFINING FACTORIAL TYPOLOGY**

37. Assume

• A class of universal inputs
• Some version of GEN
• A set of constraints

then, each ranking of the constraints defines a set of outputs
(many rankings define the same output set, however)

The set of distinct sets of outputs constitutes the **factorial typology** of the system
[called “factorial” because \( n \) constraints permit \( n! \) rankings]

38. The appeal of factorial typology

• Proposals can be tested against typological data.
• We can consider them for defects of both undergeneration (instantly fatal) and
  overgeneration (hard to assess)

39. Sometimes the missing case walks in the door

• **Majority-rule vowel harmony**11: “Harmonize a suffix in backness with which ever
kind of vowel (back or front) occurs more often in the stem.” (Linda Lombardi12; for a
remedy see Baković 199913.)
• But Margit Bowler’s work suggests this happens in Warlpiri.

40. Some work in factorial typology

  *Phonology* 16: 273-330.
  Language and Linguistic Theory* 20, 491-552

---

11 Unless Margit is right…

41. How to compute a factorial typology

• Chose an empirical domain (we can’t do all of phonology at once)
• Choose constraints: these embody a proposal in phonological theory.
• Choose inputs: they must somehow suffice to illustrate the full range of possible phenomena.
• Choose candidates (see above for discussion)
• Calculate the typology, by hand or with software.
• (oral explanation of how it can be done fairly easily)

A TURKISH PROBLEM, FOR FACTORIAL STUDY

42. The vowels of Turkish

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th></th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unrounded</td>
<td>Rounded</td>
<td>Unrounded</td>
</tr>
<tr>
<td>high</td>
<td>i</td>
<td>y</td>
<td>u</td>
</tr>
<tr>
<td>nonhigh</td>
<td>e</td>
<td>ø</td>
<td>a</td>
</tr>
</tbody>
</table>

43. Data

• Solve this with rules.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>at</td>
<td>atu</td>
<td>atum</td>
<td>ata</td>
<td>attan</td>
<td>‘proper name’</td>
</tr>
<tr>
<td>2.</td>
<td>kik</td>
<td>kiki</td>
<td>kikim</td>
<td>kike</td>
<td>kikten</td>
<td>‘idyll’</td>
</tr>
<tr>
<td>3.</td>
<td>idil</td>
<td>idili</td>
<td>idilim</td>
<td>idile</td>
<td>idilden</td>
<td>‘bandage’</td>
</tr>
<tr>
<td>4.</td>
<td>sarum</td>
<td>sarumu</td>
<td>sarumum</td>
<td>saruma</td>
<td>sarumdan</td>
<td>‘grave’</td>
</tr>
<tr>
<td>5.</td>
<td>yzym</td>
<td>yzymy</td>
<td>yzymym</td>
<td>yzyme</td>
<td>yzymden</td>
<td>‘grape’</td>
</tr>
<tr>
<td>6.</td>
<td>ufun</td>
<td>ufunu</td>
<td>ufunum</td>
<td>ufuna</td>
<td>ufundan</td>
<td>‘gleam, flash’</td>
</tr>
<tr>
<td>7.</td>
<td>gorym</td>
<td>gorymy</td>
<td>gorymym</td>
<td>goryme</td>
<td>gorymen</td>
<td>‘sight’</td>
</tr>
<tr>
<td>8.</td>
<td>sатур</td>
<td>sатuru</td>
<td>sатурum</td>
<td>sатура</td>
<td>sатурdan</td>
<td>‘large knife’</td>
</tr>
<tr>
<td>9.</td>
<td>пакт</td>
<td>пaktu</td>
<td>пактum</td>
<td>пакта</td>
<td>пактan</td>
<td>‘pact’</td>
</tr>
<tr>
<td>10.</td>
<td>sарт</td>
<td>sартu</td>
<td>sартум</td>
<td>сarta</td>
<td>сартан</td>
<td>‘rope’</td>
</tr>
<tr>
<td>11.</td>
<td>пул</td>
<td>пulu</td>
<td>пulum</td>
<td>пula</td>
<td>пuldan</td>
<td>‘stamp’</td>
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<tr>
<td>12.</td>
<td>son</td>
<td>sonu</td>
<td>sonum</td>
<td>sona</td>
<td>sondan</td>
<td>‘end’</td>
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<tr>
<td>13.</td>
<td>коеz</td>
<td>коыz</td>
<td>койым</td>
<td>коеz</td>
<td>койден</td>
<td>‘village’</td>
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<tr>
<td>14.</td>
<td>тiнент</td>
<td>тiнenti</td>
<td>тiнентим</td>
<td>тiнente</td>
<td>тiнентen</td>
<td>‘a few’</td>
</tr>
<tr>
<td>15.</td>
<td>гark</td>
<td>гarku</td>
<td>гarkum</td>
<td>гarka</td>
<td>гarktan</td>
<td>‘drowning’</td>
</tr>
<tr>
<td>16.</td>
<td>ilk</td>
<td>ilki</td>
<td>ilkim</td>
<td>ilke</td>
<td>ilkten</td>
<td>‘beginning’</td>
</tr>
<tr>
<td>17.</td>
<td>тиенк</td>
<td>тиенki</td>
<td>тиенkim</td>
<td>тиенке</td>
<td>тиенктен</td>
<td>‘hand’</td>
</tr>
<tr>
<td>18.</td>
<td>fuск</td>
<td>фуску</td>
<td>фускум</td>
<td>фуска</td>
<td>фусктан</td>
<td>‘sin’</td>
</tr>
<tr>
<td>19.</td>
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<td>балкону</td>
<td>балконум</td>
<td>балкона</td>
<td>балконdan</td>
<td>‘balcony’</td>
</tr>
<tr>
<td>20.</td>
<td>еl</td>
<td>еli</td>
<td>еlim</td>
<td>еle</td>
<td>elden</td>
<td>‘hand’</td>
</tr>
<tr>
<td>21.</td>
<td>ilим</td>
<td>ilми</td>
<td>ilмим</td>
<td>ilме</td>
<td>ilимден</td>
<td>‘science’</td>
</tr>
<tr>
<td>22.</td>
<td>везин</td>
<td>везни</td>
<td>везним</td>
<td>везне</td>
<td>везинден</td>
<td>‘burial’</td>
</tr>
<tr>
<td>23.</td>
<td>бурун</td>
<td>бурну</td>
<td>бурум</td>
<td>буруна</td>
<td>бурундан</td>
<td>‘nose’</td>
</tr>
<tr>
<td>24.</td>
<td>тeфн</td>
<td>тeфни</td>
<td>тeфним</td>
<td>тeфне</td>
<td>тeфнден</td>
<td>‘intelligence’</td>
</tr>
<tr>
<td>25.</td>
<td>akул</td>
<td>акул</td>
<td>акулям</td>
<td>акуля</td>
<td>акулдан</td>
<td>‘village’</td>
</tr>
</tbody>
</table>

44. OTifying the Turkish

- Suggested constraints:
  - Something about bad codas
  - Think of all the ways you could fix /vezn/ and put in candidates and appropriate Faithfulness constraints
45. Epenthesis in Palestinian Arabic

{| \( 'i\)bin | ‘son’ | \( 'i\)akil | ‘food’ |
<p>| ( 'i)bni | ‘my son’ | ( 'i)akili | ‘my food’ |
| ( 'i)binha | ‘her son’ | ( 'i)akilha | ‘her food’ |</p>
<table>
<thead>
<tr>
<th>( 'i)binkum</th>
<th>‘your son’</th>
<th>( 'i)akilkum</th>
<th>‘your food’</th>
</tr>
</thead>
<tbody>
<tr>
<td>We know this isn’t Syncope (which Palestinian also has) because of opaque stress. Heavy penults are, in general, stress-attracting:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(/j)rib-na/ (\rightarrow) (j)ribna ‘we drank’</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Gouskova and Hall suggest that the epenthetic [i] is not quite the same vowel as underlying /i/.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Roughly speaking, Palestinian epenthesis is across-the-board rather than sonority-based as in Turkish: /taxt/ (\rightarrow) [taxit] ‘bed’, but see source for complications we will ignore.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

46. Cairene Arabic

Epenthetic vowel is final: [vezni]

EPENTHESIS: A SMALL FACTORICAL TYPOLOGY SIMULATION

47. Inputs

| /ipl/ | Exemplifies a bad-sonority coda |
| /ilp/ | Exemplifies a coda with good sonority profile |

48. Reasonable outputs

<table>
<thead>
<tr>
<th>/ipl/</th>
<th>ipl</th>
<th>/ilp/</th>
<th>ilp</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.pil</td>
<td>i.lip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ip.li</td>
<td>il.pi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i.pli</td>
<td>i.li.pi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i.pi.li</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Do we have them all?
• If not, what would we include to expand the typology?

---


49. Should we include [i.lpi] among the outputs?

- Proposal: to keep the problem under control, you can assume some constraints to be undominated (i.e. “we are considering only the class of languages that don’t allow sonority-reversed codas”).
- Often, this leaves enough languages under consideration to make the problem still worthwhile.
- Thus, let’s avoid, for /ilp/: i.lpi, il, ip, lip, pli, ilu (p becomes u).
  - Undominated: *HORRIBLE ONSET, MAX(C), LINEARITY, IDENT(syl)

50. Constraints

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DEP(i)</td>
<td>Penalizes insertion of vowels; quality ignored here.</td>
</tr>
<tr>
<td>2. *BAD SONORITY CODA</td>
<td>Should be suitably formalized; violated by final [pl].</td>
</tr>
<tr>
<td>3. *CC CODA</td>
<td></td>
</tr>
<tr>
<td>4. *CODA</td>
<td></td>
</tr>
<tr>
<td>5. *BRANCHING ONSET</td>
<td>i.e. *[σ CC</td>
</tr>
<tr>
<td>6. CONTIGUITY</td>
<td>one violation for each pair of segments adjacent input but not output</td>
</tr>
<tr>
<td>7. ANCHOR</td>
<td>one violation for each segment adjacent to a particular word edge in the input but not in the output</td>
</tr>
</tbody>
</table>

51. Some outputs we need never consider

/i/lp/ → [i.p.il]
   [i.pi.li.i.i.i]

[ Socrates: Why? Show with tableau rows. ]