INTRO TO LINGUISTICS:
LANGUAGE CHANGE

Jason Zentz • December 3, 2012
How do languages change over time?
What does it mean for languages to be related?
What were the languages of the past like?
What can the history of a language tell us about the history of its speakers?
English over time (Matthew 26:73)

- **Old English** *(West-Saxon Gospels, c. 1050)*
  ṭa æfter lytlum fyrste gēnalāton ṭa ðe þær stodon, cwædon to petre. Soðlice þu eart of hym, þyn spræc þe gesweotolað.

- **Middle English** *(Wycliffe Bible, late 1300s)*
  And a litil aftir, thei that stooden camen, and seiden to Petir, treuli thou art of hem; for thi speche makith thee knownun.

- **Early Modern English** *(King James Bible, 1611)*
  And after a while came vnto him they that stood by, and saide to Peter, Surely thou also art one of them, for thy speech bewrayeth thee.

- **Modern English** *(New International Version, rev. 2011)*
  After a little while, those standing there went up to Peter and said, “Surely you are one of them; your accent gives you away.”

Types of language change

- Lexical change
- Sound change
  - Phonetic change
  - Phonological change
- Grammatical change
  - Morphological change
  - Syntactic change
- Semantic change
Sound change
Phonetic vs. phonological change

- **Phonetic change**
  - Change in the *phonetic realization* of an allophone that has *no impact* on the *phonological system*
  - $[r] \rightarrow [ɹ]$ in English, $[ʀ, ʁ]$ in French, German, Danish

- **Phonological change**
  - Change in phonological rules and allophone distribution
  - Phoneme loss, addition, split, merger
  - Chain shifts
Conditioned vs. unconditioned

- Unconditioned (across-the-board)
  - Hawai‘ian \( *t > k \)

<table>
<thead>
<tr>
<th>Proto-Polynesian</th>
<th>Hawai‘ian</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>*taŋi</td>
<td>kani</td>
<td>‘cry’</td>
</tr>
<tr>
<td>*takele</td>
<td>kaʔele</td>
<td>‘back of canoe’</td>
</tr>
<tr>
<td>*ŋutu</td>
<td>nuku</td>
<td>‘mouth’</td>
</tr>
<tr>
<td>*pito</td>
<td>piko</td>
<td>‘navel’</td>
</tr>
<tr>
<td>*tapu</td>
<td>kapu</td>
<td>‘forbidden’</td>
</tr>
<tr>
<td>*tanata</td>
<td>kanaka</td>
<td>‘man’</td>
</tr>
</tbody>
</table>
Conditioned vs. unconditioned

- Conditioned (particular phonetic environment)
  - Banoni palatalization (*t > ts / ___ \V{[+high]} )

<table>
<thead>
<tr>
<th>Pre-Banoni</th>
<th>Banoni</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>*koti</td>
<td>kotsi</td>
<td>‘cut’</td>
</tr>
<tr>
<td>*tina</td>
<td>tsina</td>
<td>‘mother’</td>
</tr>
<tr>
<td>*puti</td>
<td>putsi</td>
<td>‘pull out’</td>
</tr>
<tr>
<td>*matua</td>
<td>matsua</td>
<td>‘rise’</td>
</tr>
<tr>
<td>*mata</td>
<td>mata</td>
<td>‘eye’</td>
</tr>
<tr>
<td>*mate</td>
<td>mate</td>
<td>‘die’</td>
</tr>
</tbody>
</table>
Types of phonological changes

- Assimilation/dissimilation
- Lenition/fortition
- Insertion/deletion
- Metathesis (ab > ba)
- Fusion/fission
- Diphthongization/monophthongization
- Tonal changes
Types of phonemic changes

- **Phoneme loss**

<table>
<thead>
<tr>
<th>Pre-Motu</th>
<th>Motu</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>*taŋi</td>
<td>tai</td>
<td>‘cry’</td>
</tr>
<tr>
<td>*laŋi</td>
<td>lai</td>
<td>‘wind’</td>
</tr>
<tr>
<td>*taliŋa</td>
<td>taia</td>
<td>‘ear’</td>
</tr>
</tbody>
</table>

- **Phoneme addition**

- **Phoneme merger** (Lat. Am. Spanish */ʎ/, */j/ > /j/)

- **Phoneme split** (English */n/ > /n/, /ŋ/)
Chain shifts

- Great Vowel Shift (1350-1700)

- Northern Cities Vowel Shift

http://eweb.furman.edu/~mmenzer/gvs/what.htm

http://www.indiana.edu/~hlw/PhonProcess/change.html
Grammatical and semantic change
Morphological change

- Allomorphy change via sound change
  - Middle Eng. seiden > Early Modern Eng. saide

- Morpheme boundary shifts
  - Fr. cerise (sg./pl.) reanalyzed as plural in English > cherry

- Analogy
  - A : B :: C : D
  - Extension (proportional analogy)
  - Leveling
  - Back formation (editor > edit + -er)
  - Folk etymology (hamburg + -er > ham + burger)
Syntactic change

- **Word order**
  - **Subject-verb inversion in English**
    - Old: gēnalǣton [þa ðe þær stodon] approached.3pl they that there stood.3pl
    - Early Modern: came vnto him [they that stood by]
    - Modern: [those standing there] went up to Peter
  - Often triggered by morphological change
    - Loss of case morphology > fixed word order

- **Grammaticalization / semantic bleaching**
  - Modern Greek future tense marker θa < θέλω ‘want’
Semantic change

- **Broadening**
  - Dog < specific breed of dog, (Facebook) friend

- **Narrowing**
  - Meat < ‘food’, starve < ‘die’, fowl < ‘bird’

- **Metonymy**
  - Bead < OE bede ‘prayer’

- **Elevation/degradation**

- **Euphemism**

- **Hyperbole**
Relatedness and reconstruction
Relatedness

- Causes for cross-linguistic similarity
  - Anatomical similarity across speakers
  - Coincidence
  - Iconicity
  - Borrowing through language contact
  - Genetic relatedness
    - Related languages have descended from a single common ancestor language.
    - Proto-language: an ancestor language reconstructed by comparing its daughter languages
## Comparative method

### Cognates

<table>
<thead>
<tr>
<th>Portuguese</th>
<th>Spanish</th>
<th>Catalan</th>
<th>French</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>grãdi</td>
<td>grande</td>
<td>grañ</td>
<td>grã</td>
<td>‘big’</td>
</tr>
<tr>
<td>sãgi</td>
<td>saŋgre</td>
<td>saŋ</td>
<td>sã</td>
<td>‘blood’</td>
</tr>
<tr>
<td>kɔrti</td>
<td>korte</td>
<td>kɔr</td>
<td>kũk</td>
<td>‘court’</td>
</tr>
<tr>
<td>kopa</td>
<td>kopa</td>
<td>kop</td>
<td>kup</td>
<td>‘cup’</td>
</tr>
<tr>
<td>dũru</td>
<td>duro</td>
<td>du</td>
<td>dyk</td>
<td>‘hard’</td>
</tr>
<tr>
<td>tɔkti</td>
<td>tore</td>
<td>tɔre</td>
<td>tũk</td>
<td>‘tower’</td>
</tr>
<tr>
<td>tẽtu</td>
<td>tanto</td>
<td>tẽn</td>
<td>tã</td>
<td>‘so much’</td>
</tr>
<tr>
<td>pezu</td>
<td>peso</td>
<td>pẽs</td>
<td>pwa</td>
<td>‘weight’</td>
</tr>
<tr>
<td>brẽku</td>
<td>blañko</td>
<td>blañ</td>
<td>blã</td>
<td>‘white’</td>
</tr>
</tbody>
</table>
## Comparative method

### Sound correspondences

<table>
<thead>
<tr>
<th>Port</th>
<th>Span</th>
<th>Cat</th>
<th>Fr</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>p</td>
<td>p</td>
<td>p</td>
<td>#__, __V#</td>
</tr>
<tr>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>#__</td>
</tr>
<tr>
<td>t</td>
<td>t</td>
<td>Ø</td>
<td>Ø</td>
<td>__V#</td>
</tr>
<tr>
<td>d</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>#__</td>
</tr>
<tr>
<td>d</td>
<td>d</td>
<td>Ø</td>
<td>Ø</td>
<td>__V#</td>
</tr>
<tr>
<td>k</td>
<td>k</td>
<td>k</td>
<td>k</td>
<td>#__</td>
</tr>
<tr>
<td>k</td>
<td>k</td>
<td>Ø</td>
<td>Ø</td>
<td>__V#</td>
</tr>
<tr>
<td>ã̃</td>
<td>aŋ</td>
<td>aŋ</td>
<td>ã</td>
<td>__velar</td>
</tr>
<tr>
<td>ë̃</td>
<td>an</td>
<td>an</td>
<td>ã</td>
<td>elsewhere</td>
</tr>
<tr>
<td>i</td>
<td>e</td>
<td>Ø</td>
<td>Ø</td>
<td>__#</td>
</tr>
<tr>
<td>u</td>
<td>o</td>
<td>Ø</td>
<td>Ø</td>
<td>__#</td>
</tr>
</tbody>
</table>
## Comparative method

### Reconstruction

<table>
<thead>
<tr>
<th>P-WR</th>
<th>Port</th>
<th>Span</th>
<th>Cat</th>
<th>Fr</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>*p</td>
<td>p</td>
<td>p</td>
<td>p</td>
<td>p</td>
<td>#__, __V#</td>
</tr>
<tr>
<td>*t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>__</td>
</tr>
<tr>
<td>*t</td>
<td>t</td>
<td>t</td>
<td>Ø</td>
<td>Ø</td>
<td>__V#</td>
</tr>
<tr>
<td>*d</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>d</td>
<td>__</td>
</tr>
<tr>
<td>*d</td>
<td>d</td>
<td>d</td>
<td>Ø</td>
<td>Ø</td>
<td>__V#</td>
</tr>
<tr>
<td>*k</td>
<td>k</td>
<td>k</td>
<td>k</td>
<td>k</td>
<td>__</td>
</tr>
<tr>
<td>*k</td>
<td>k</td>
<td>k</td>
<td>Ø</td>
<td>Ø</td>
<td>__V#</td>
</tr>
<tr>
<td>*an</td>
<td>ā</td>
<td>an</td>
<td>an</td>
<td>ā</td>
<td>__velar</td>
</tr>
<tr>
<td>*an</td>
<td>ā</td>
<td>an</td>
<td>an</td>
<td>ā</td>
<td>elsewhere</td>
</tr>
<tr>
<td>*e (?)</td>
<td>i</td>
<td>e</td>
<td>Ø</td>
<td>Ø</td>
<td>__#</td>
</tr>
<tr>
<td>*o (?)</td>
<td>u</td>
<td>o</td>
<td>Ø</td>
<td>Ø</td>
<td>__#</td>
</tr>
</tbody>
</table>
Comparative method

- Sound changes and subgrouping
  - Catalan, French:
    - $C_{\text{stop}} V^# > C_{\text{stop}} ^# > ^#$
    - But $p$ did not delete (Cat. kop, Fr. kup)...
  - Portuguese, French:
    - $aN > ãN > ã (\text{> ë in Portuguese, > ã in French})$
  - Portuguese:
    - $e^# > i^#, o^# > u^$
  - French:
    - $u > y, o > u$
Computational phylogenetics

- We borrow methods from evolutionary biology to
  - Track lexical changes
  - Quantify results
    - Avoid initial bias
    - Evaluate alternative subgrouping hypotheses
  - Study large or understudied families
  - Study rates of change
  - Do phylogeography (model geography of splits)
  - Date splits in the tree
Karnic NeighborNet: 25 taxa, 5487 binary characters.
Map and language family tree showing the settlement of the Pacific by Austronesian-speaking peoples.

Gray R D et al. Phil. Trans. R. Soc. B 2011;366:1090-1100
A dated phylogenetic tree of 87 Indo-European languages.
Why do languages change?
Causes of language change

- Drift
  - When there is variability in the input, children may assume different targets than their parents
  - Over time, the new target becomes dominant across speakers
- Contact
- Functional need
- Internal structural pressure
  - Chain shifts, analogy
Do languages change differently?

- Varying contact scenarios
- Language ideologies
- Social properties
  - Hunter-gatherer vs. agriculturalist
  - Population size
  - Population mobility
Loan rates in HG vs. AG languages

- 122 languages across three case study areas:
  - Australia (AUS)
  - Amazonia (SAM)
  - California/Great Basin (NAM)
- 204-word basic vocabulary list, coded for loan status
- Evaluated subsistence type, population size, population mobility as predictors of loan rate
- Overall, HG loan rates were not higher than range appropriate for computational phylogenetics

Loan rates in HG vs. AG languages

- Hunter-gatherer vs. agriculturalist difference is significant across the sample
  - This is skewed by the all-HG AUS sample
  - Not significant within either NAM or SAM

Numerals in HG vs. AG languages

- 397 languages across AUS, NAM, SAM, Africa
- Analyzed extent of system, compositionality, etymology
- HG-AG difference
  - Not generalizable across the sample
  - Africa: HG systems smaller than AG systems
  - NAM: large systems for both HGs and AGs
  - SAM: small systems for both HGs and AGs
- Relational etymology (‘brother’ > ‘four’) in SAM only