Pressures toward phonological iconicity in the evolution of linguistic signs

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Arbitrariness of the linguistic sign

The First Principle of Linguistics:

“The signal is arbitrary in relation to its signification, with which it has no natural connexion in reality.”
Phonological iconicity is scarce

Cocoricó
Kikirikí
Cook-doodle-doo
Gestural iconicity
Gestural iconicity

Iconicity facilitates the connection between signal and referent
Iconicity in language origins

1) Phonological iconicity is very scarce
2) Gestural iconicity is strong
3) Iconicity helps connecting sign and referent
4) Iconicity is specially important at the beginnings of language
5) First languages were probably gestural

Gesture-first theories of language evolution

e.g., Corballis (2009).
Alternative:
Iconicity is a linguistic principle, on a par with arbitrariness

Iconicity ->
• connection between sign and world
Alternative:
Iconicity is a linguistic principle, on a par with arbitrariness

Iconicity ->
  • connection between sign and world

Arbitrariness ->
  • combinatoriality
  • fluent production
  • perceptual discriminability
Alternative: Iconicity is a linguistic principle, on a par with arbitrariness

- **Iconicity** ->
  - connection between sign and world

- **Arbitrariness** ->
  - combinatoriality
  - fluent production
  - perceptual discriminability

Pressure toward iconicity

Pressure toward arbitrariness

Language
Language evolution should balance iconicity and arbitrariness

- Iconic signs tend to become more arbitrary

Frishberg (1975).
Do arbitrary signs tend to become more iconic?

Jones et al. (submitted).
Diffusion chains
Motion iconicity

Shape iconicity
Learning phase

nadozu
Learning phase
Recall phase
Recall phase
Learning phase

nozu
Six chains of 10 participants (generations)  
\( N = 60 \)

Exp. 1 - Written response  
Exp. 2 - Oral response

Measures on the response words:

- Spikiness ratings of the whole word
- Length in letters/syllables
Shape iconicity

Exp. 1 - Written response

Exp. 2 - Oral response
Length iconicity

Exp. 1 - Written response
Exp. 2 - Oral response
A completely arbitrary vocabulary tends to become more iconic with language evolution.
A completely arbitrary vocabulary tends to become more iconic with language evolution.

Can communication increase this effect?

Tamariz et al. (2018).
Learning game
Learning game

Communicative cooperative game
The LEARNING game
The LEARNING game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

poweni
The LEARNING game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

malili
1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

Score: 0

kinilowe
The LEARNING game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

Score: 0
The LEARNING game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

Score: 0
The LEARNING game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING
The LEARNING game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

Score: 0
The LEARNING game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

Score: 0
The LEARNING game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

Score: 1
The LEARNING game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING
The COMMUNICATIVE COOPERATIVE game
The COMMUNICATIVE COOPERATIVE game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING
The COMMUNICATIVE COOPERATIVE game

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kinilowe
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2. PLAYING
   GUESSING
   SPEAKING

Score: 0
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   SPEAKING

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kinilowe
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   GUESSING
   SPEAKING

Score: 0
The COMMUNICATIVE COOPERATIVE game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

Score: 1

kinilowe
The COMMUNICATIVE COOPERATIVE game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING
The COMMUNICATIVE COOPERATIVE game

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2. PLAYING
   GUESSING
   SPEAKING

Score: 0
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   SPEAKING

Score: 0
The COMMUNICATIVE COOPERATIVE game

1. TRAINING
2. PLAYING
   GUESSING
   SPEAKING

Score: 0
The COMMUNICATIVE COOPERATIVE game
100% language shown at training

Feedback during recall

Four chains of 6 generations
\[ N = 72 \]

Measures on the response words:
- Shape iconicity ratings
Shape iconicity arose only in the communicative condition.

Communication fosters the evolution of iconicity in the vocabulary.
Conclusions

- There is pressure for phonological iconicity in the evolution of linguistic signs
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- Original verbal signs also had the potential and the pressure for phonological iconicity.
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• Original languages probably mixed phonological and gestural signs
Conclusions

- There is pressure for phonological iconicity in the evolution of linguistic signs.
- Original verbal signs also had the potential and the pressure for phonological iconicity.
- Original languages probably mixed phonological and gestural signs.

Thank you!
Phonological iconicity should be widespread in oral languages

<table>
<thead>
<tr>
<th>Spanish</th>
<th>Basque</th>
<th>Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td>chin-chin ‘to toast’</td>
<td>tzillotzallo ‘to shamble’</td>
<td>korokoro ‘a light object rolling repeatedly’</td>
</tr>
<tr>
<td>crujido ‘crack’</td>
<td>xingi-xango ‘to skip’</td>
<td>nurunuru ‘the tactile sensation caused by slimy</td>
</tr>
<tr>
<td>tic-tac ‘clock sound’</td>
<td>kiskun-kaskun ‘to babble’</td>
<td>substance’</td>
</tr>
<tr>
<td></td>
<td>kirrinka-karranka ‘sound of a cart’</td>
<td>yochiyachi ‘the manner of walking typical for</td>
</tr>
<tr>
<td></td>
<td>tir-tir ‘rain sound’</td>
<td>infants’</td>
</tr>
</tbody>
</table>

English
sluggish
crack
hop
Iconicity should be important in language acquisition.

Thompson et al. (2012).

Perry et al. (2015).
Iconicity in sign language