A cognitive semiotic perspective on sound symbolism

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Lecture 8

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Outline

- “What is language?”
- Arbitrariness vs. Sound symbolism
- A cognitive-semiotic analysis
- An experimental study of cross-modal iconicity (Ahlner & Zlatev 2010): Case study I
- A typological study of non-arbitrariness in spatial deixis (Johansson & Zlatev forth): Case study II
- Conclusions: What is language?
The Ladder of Meaning

- Life
- Consciousness
- Culture
- Signification
- Language

Emerge ➔ Imply
Implications of the theory

1. Meaning and cognition are nearly identical concepts, and “at the bottom” - properties of Life (cf. Varela)
2. Consciousness is a “natural” outgrowth of Life: “the deep continuity of Mind and Life” (cf. Thompson)
3. Culture evolves under certain cognitive and social conditions, and thereby changes the character of further evolution (cf. Richerson & Boyd)
4. Signification (sign use) evolves in the context of complex cultures, altering the nature of communication and cognition (cf. Donald)
5. Language evolves from sign use, through particular processes of bio-cultural and historical evolution
Signification (sign use)

A sign is used (produced or understood) by S, if and only if E (expression) signifies C (content) for subject S, so that:

- E and C are *connected*: in perceiving or enacting E, S indirectly perceives, or conceives of C
- E and C are *differentiated*: E is qualitatively different from C for S
- The relation is *asymmetrical* \((E \rightarrow C, \text{ not } C \rightarrow E)\)
Signified Lifeworld

Sign-based value

S1

S2

Level 4: Sign-based meaning
What is language?

“A predominantly conventional-normative semiotic system for communication and thought.”

(Zlatev 2007, 2008)

Semiotic system =
Signs in complex interrelations
+ a system for the production of novel signs
Conventions/norms

• “A regularity $R$ in the behaviour of members of a population $P$ … is a *convention* if and only if it is … common knowledge in $P$ that, … (1) everyone conforms to $R$; (2) everyone expects everyone else to conform to $R$; …”

  (Lewis 1969: 76)

• The expectation that everyone (should) “conform to” them implies a *normative* aspect.

• Conventions need not be “arbitrary”

• Conventions concern the “historical level” of language
**E. Coseriu’s *Integral Linguistics***

<table>
<thead>
<tr>
<th>Levels</th>
<th>Activity</th>
<th>Knowledge</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal</td>
<td>Speaking in general</td>
<td>Elocutional knowledge</td>
<td>Totality of utterances</td>
</tr>
<tr>
<td>Historical</td>
<td>Concrete particular language</td>
<td>Idiomatic knowledge</td>
<td>(Abstracted particular language)</td>
</tr>
<tr>
<td>Individual</td>
<td>Discourse</td>
<td>Expressive knowledge</td>
<td>Text</td>
</tr>
<tr>
<td>(Situated)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Coseriu (1985)
Helps avoid mistakes:

- **Reification**: thinking of processes and activities as determined by knowledge and “structure”

- **Radical emergentism**: denying the existence of any kind of stable conventions/norms

- **Confusing the levels** (Zlatev 2011)
  - “image schemas”: Universal (motivations) rather than Historical (linguistic meanings)
  - “recursion” (Historical rather than Universal)
Arbitrariness vs. Sound symbolism

Is the relationship between the expression and content poles of the linguistic sign **fundamentally arbitrary**, as it is typically claimed, following the famous dictum of the “father of modern linguistics” (cf. Lyons 1968), Ferdinand de Saussure, or is there some kind of ‘natural connection’ between the two?
Cratylus (Plato 400 BC)

Cratylus (phýsei)

- a particular sound-pattern is more or less appropriate for expressing a particular meaning.
- movements of the tongue and mouth ‘imitate’ or resemble what the word means. For example, [r] is said to naturally express ‘rapidity’ and ‘motion’, and [o] ‘roundness’: gónyilon (‘round’)

Hermogenes (thései)

- words are man-created and passed on through generations, thus constituting the core of a conventional system
- Counter-examples to the proposed “appropriate” mappings

1) Presented as mutually exclusive alternatives
2) Vaguely defined concepts: ‘natural connection’, ‘imitate’...
From XIX century...

- “there is no inner or essential connexion between idea and word [...] in any language upon earth” (Whitney 1867: 32)

- “[the] onomatopoeic system would be most detrimental to all scientific etymology and no amount of learning and ingenuity displayed in its application could atone for the lawlessness which is sanctioned by it” (Muller 1864: 94).
... to the “primordial principle”

- “The bond uniting signifier and signified is arbitrary”.

- “Because the sign is arbitrary, it follows no law other than that of tradition, and because it is based on tradition, it is arbitrary.” (?)

- Onomatopoeia: “such words are never organic elements of a linguistic system. [...] Moreover, they are far fewer than is generally believed”

Cours de linguistique générale (Saussure 1916)
To “the Saussurean dogma”

- “The forms of language are arbitrary” (Bloomfield 1933)

... 

- “It is generally the case that there is no ‘natural’ connection between a linguistic form and its meaning. [...] There are some words in language with sounds that seem to ‘echo’ the sounds of objects or activities and hence seem to have a less arbitrary connection. English examples are cuckoo, CRASH, slurp, squelch or whirr. However, these onomatopoeic words are relatively rare in human language.” (Yule 2006: 10)
Jakobson (1965): *Quest for the essence of language*

As a matter of fact, the agreement with the Saussurian dogma of arbitrary sign was far from unanimous. In Otto Jespersen’s opinion (1916) the role of arbitrariness in language was excessively overstated and neither Whitney nor Saussure succeeded in solving the problem of relationship between sound and meaning. J. Damourette, E. Pichon’s and D. L. Bolinger’s rejoinders were identically entitled: “Le signe n’est pas arbitraire” (1927), “The sign is not arbitrary” (1949). E. Benveniste in his timely essay “Nature du signe linguistique” (1939) brought out the crucial fact that only for a detached, alien onlooker is the bond between the signans and signatum a mere contingency, whereas for the native user of the same language this relation changes into a necessity.
A minority position

- Jakobson (1965):
  - Indexical elements of language: deixis
  - Diagrammatic iconicity: clause order, subject/object asymmetry, poetry...

The final chapter of Jules Romains’ novel *Les amours enfantines* is entitled “Rumeur de la rue Réaumur.” The name of this Paris street is said by the writer to resemble a song of wheels and walls and various other forms of urban trepidation,

- “[discussion] of sound symbolism in natural languages often trigger laymen’s curiosity but linguists’ skepticism”. (Hamano 1998: 3)
Convention (*thései*) vs. Nature (*phýsei*)

**Problems for *thései***
- Operating with a ‘skewed database’, and thus underestimating exceptions to arbitrariness
- Conflating the notion of convention (i.e. common knowledge) and arbitrariness

**Problems for *phýsei***
- Lacking a consistent theoretical apparatus (‘imitation’, ‘natural connection’, ‘resemblance’ etc.)
- Failing to explain the conditions and function of the phenomenon
• A wealth of data from Native American, South American, Asian, African, Australian, and (even) European languages

• The cross-linguistic prominence of ideophones

• Attempts at psychological explanation: “the frequency code” (Ohala 1994)
Figure 22.1. The $F_0$ contours of two samples of “stripped speech” (see text) presented as a pair to listeners to determine which sounded “more dominant, more self-confident.” The contour depicted as a dotted line was identical to that depicted by the solid line except that it was upshifted in frequency by a factor of 1.25. The latter, with lower frequency, was judged “more dominant” in 92% of the judgments.

Table 22.2 Examples of sound-symbolic words in which choice of consonants and/or vowels show a systematic correlation with concepts of size

<table>
<thead>
<tr>
<th>Language</th>
<th>“Small”</th>
<th>“Large”</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>teeny, wee, itsy-bitsy</td>
<td>humongous</td>
</tr>
<tr>
<td>Spanish</td>
<td>chico</td>
<td>gordo</td>
</tr>
<tr>
<td>French</td>
<td>petit</td>
<td>grand</td>
</tr>
<tr>
<td>Greek</td>
<td>/mikros/</td>
<td>/makros/</td>
</tr>
<tr>
<td>Japanese</td>
<td>/tsisai/</td>
<td>/ookii/</td>
</tr>
</tbody>
</table>
From motivation to convention?

The explanation for the systematic use of $F_0$ in the choice of tones in sound symbolism is somewhat more problematic. The Yoruba speaker who utters the words /bìrì/ and /bírí/ is presumably not trying to appear large and small, respectively, or even dominant or submissive. Rather it is the size of the referent of the word which is symbolized by the tone. But there is still this common element: $F_0$ is used to make the receiver react as if something in the environment were large (or small, as the case may be). If the purpose of communication is to effect a change in the receiver – one might say a change in the “cognitive map” of the receiver (MacKay 1969) – then the use of different extremes of frequency in the signal is quite an effective way to accomplish this, whether with an emotive or denotative intent.

(Ohala 1994: 335)
Ideophones


(1) Taro-wa sutasuta-to haya-aruki-o si-ta
Taro-TOP IDPH-COMP haste-walk-ACC do-PAST
‘Taro walked hurriedly’

(2) ḍ-ṭ-fiɛ mùnyêmùnyɛ
3SG-FUT-shine IDPH.sparklingly
‘It will shine sparklingly’

Dingemanse (in press):
<table>
<thead>
<tr>
<th>Language</th>
<th>Affiliation (Location)</th>
<th>Examples of ideophones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somali (Dhoorre and Tosco 1998)</td>
<td>East Cushitic, Afro-A Asiatic (Somalia)</td>
<td><em>shalalab</em> ‘sound of rain dripping’, <em>juluq</em> ‘to gulp down (something solid) without chewing’, <em>jac</em> ‘to crackle’, <em>halalac</em> ‘to give off a sparkling light’, <em>dhag</em> ‘to puncture making a small hole’</td>
</tr>
<tr>
<td>Korean (Lee 1992)</td>
<td>Probable isolate (Korea)</td>
<td><em>potil</em> ‘soft and tender (surface)’, <em>paltak</em> ‘palpitating, jerking’, <em>c’onc’on</em> ‘woven tightly’, <em>ulakpulak</em> ‘unbalanced scary appearance’, <em>colcol</em> ‘flowing liquid’, <em>kalpəncilpəN</em> ‘unable to decide’</td>
</tr>
<tr>
<td>Pastaza Quechua (Nuckolls 1996)</td>
<td>Quechua IIB, Quechuan (Ecuador)</td>
<td><em>dzing</em> ‘a sudden awareness or intuition, especially one that causes fright’, <em>sa</em> ‘expanded or random movement from or within a locus’, <em>tsung</em> ‘to absorb, cover, or drench with a liquid substance’, <em>palay</em> ‘to fall rapidly and/or peltingly, as a collectivity of entities’</td>
</tr>
<tr>
<td>Upper Necaxa Totonac (Beck 2008)</td>
<td>Totonac-Tepehua (Mexico)</td>
<td><em>kimkim</em> ‘a light flashing on and off’, <em>Poníllu</em> ‘woodpecker pecking on a tree’, <em>liplip</em> ‘sparkling like a diamond or piece of glass’, <em>poníponífu</em> ‘objects falling into the water’, <em>tsantsanj</em> ‘water dripping’</td>
</tr>
</tbody>
</table>

**Table 1** Semantic diversity of ideophones in seven languages
An implicational hierarchy

| Sound | Movement | Visual Patterns | Other Sensory Perceptions | Inner Feelings and Cognitive States |

- Ideophones are
  - Largely cross-modal
  - Widely spread (possibly universal)
  - Display a certain degree of systematicity
  - Conventional
  - Non-arbitrary
Experiments

- “Shape symbolism”: matching fictive words and shapes (Köhler 1929: *maluma vs takete*; Nuckolls 1999; Westbury 2005; Ramachandran & Hubbard 2001)

- “Phonetic symbolism”: matching word-pairs from familiar and unfamiliar languages, e.g. *big-small, round-flat* (Sapir 1929; Brown et al. 1955; Hunter-Smith 2007).
Cross-modal iconicity: A cognitive semiotic approach to sound symbolism

Felix Ahlner, Jordan Zlatev
[a] sign, or *representamen*, is something which stands to *somebody* for something in some respect or capacity. [...] The sign stands for something, its *object*. It stands for that object, not in all respects, but in reference to a sort of idea which I have sometimes called the *ground* of the representamen. (CP 2.229)
One of the most important features of Peirce’s semiotic classification is his shrewd cognizance that the difference between the three basic classes of signs is merely a difference in relative hierarchy. It is not the presence or absence of similarity or contiguity between the signans and signatum, nor the purely factual or purely imputed, habitual connection between both constituents which underlies the division of signs into icons, indices and symbols, but merely the predominance of one of these factors over the others. Thus the scholar refers to “icons in which the likeness is aided by conventional rules,” and one

(Jakobson 1965: 26)
Primary iconicity

*the perception* of an iconic ground obtaining between two things is one of the reasons for positing the existence of a sign function joining two things together as expression and content.

Secondary iconicity

*the knowledge* about the existence of a sign function between two things is one of the reasons for the perception of an iconic ground between these same things.
Which figure is called by the respective name?

kiki → bouba
Matching figures with fictive words

1) Two (or more) representamena are said to be “the names” of two (or more) objects.

2) As a result, a relational iconic ground is perceived (i.e. secondary iconicity).

3) Serving as the basis for “positing the existence of a sign function” (i.e. primary iconicity).
Matching familiar (antonyms) and unfamiliar words

1) Familiar words expressing the poles of a single semantic dimension, and two unfamiliar words.

2) The relational iconic ground is perceived for the familiar words

3) and is extended to the unfamiliar words

4) serving as the basis for postulated sign-relation
Thus, a (cross-modal) iconic ground

can be perceived (and extended), and thus fulfill the conditions for *primary iconicity*: functional in language learning and use (Kita et al. 2010), under the conditions:

- The subject expects the existence of a sign-relation (*Secondary iconicity*)
- If matching antonyms to those of unfamiliar languages, these words need to be known (giving R–O pairings)
- The iconic ground needs to be *relational*: the (structuralist) principle of *contrast* and Peirce’s notion of *diagrams*
Goals of the empirical study

• Perform a systematic figure-fictive word matching study with Swedish adults

• Varying vowels and consonants, in “congruent” and “incongruent” combinations
  • In order to tease apart the two kinds of “segments” (and their combination)

• Gain some clarity in how the task is solved, i.e. the iconic ground being perceived: cross-modally (and which modalities?) or a-modally?
Methods (1)

- Consonants:
    \[ [p, t, k, tʃ] \] vs. \[ [m, l, n, ŋ] \]

- Vowels:
  - Front close unrounded (‘sharp’, ‘small’) vs. back open (‘round’, ‘large’):
    \[ [i] \] vs. \[ [u] \]
Methods (2)

Four conditions for the two fictive words:

a) Different vowels, same sonorant consonant:
   e.g. *lili* vs. *lulu*

b) Different consonants, same vowel [i]:
   e.g. *kiki* vs. *nini*

c) Incongruent combination: ‘hard’ consonant and ‘round’ vowel, and ‘soft’ consonant and ‘sharp’ vowel:
   e.g. *tutu* vs. *lili*

d) Congruent combination: ‘hard’ consonant and a ‘sharp’ vowel vs. ‘soft’ consonant and ‘round’ vowel:
   e.g. *titi* vs. *lulu*
Methods (3)

<table>
<thead>
<tr>
<th>#</th>
<th>(a) Vowel</th>
<th>(b) Consonant</th>
<th>(c) Incongruent</th>
<th>(d) Congruent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$C_2V_1$ vs. $C_2V_2$</td>
<td>$C_1V_1$ vs. $C_2V_1$</td>
<td>$C_1V_2$ vs. $C_2V_1$</td>
<td>$C_1V_1$ vs. $C_2V_2$</td>
</tr>
<tr>
<td>1</td>
<td><em>lili</em></td>
<td><em>lulu</em></td>
<td><em>tʃ/iʃ</em></td>
<td><em>mimi</em></td>
</tr>
<tr>
<td>2</td>
<td><em>mimi</em></td>
<td><em>mumu</em></td>
<td><em>pipi</em></td>
<td><em>ŋiŋi</em></td>
</tr>
<tr>
<td>3</td>
<td><em>ŋiŋi</em></td>
<td><em>ŋuŋu</em></td>
<td><em>kiki</em></td>
<td><em>nini</em></td>
</tr>
<tr>
<td>4</td>
<td><em>nini</em></td>
<td><em>nunu</em></td>
<td><em>titi</em></td>
<td><em>lili</em></td>
</tr>
</tbody>
</table>

**Participants:** 4 groups (#) of 5 Swedish speakers (median 25 years), from Lund University

**Procedure:** E-prime, with “amoeba” and “star” figures, and one of the fictive words pronounced: “let’s say that one of these figures is called *<Word X>* and the other *<Word Y>* , which one would you call *<Word X>*?”

(The order of X and Y, and left-right order of figures was randomized.)
Hypotheses

If the iconic ground is mostly due to ...

**H1.** the contrast between ‘soft’ and ‘hard’ *consonants*

then the condition with the largest effect will be ...

... consonant contrast, incongruent and congruent combination. Less in vowel contrast.

**H2.** the contrasts between ‘round’ and ‘sharp’ *vowels*

... vowel contrast, incongruent and congruent combination. Less in consonant contrast.

**H3.** the *combination of consonants and vowels*, and the *transitions between them*

... congruent combination, less in vowel contrast and consonant contrast, presumably no effect in the incongruent combination.
## Results

<table>
<thead>
<tr>
<th>Condition</th>
<th>Significance (binominal test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vowel</td>
<td></td>
</tr>
<tr>
<td>[i] – 90%</td>
<td>[u] – 10%</td>
</tr>
<tr>
<td>[i] – 10%</td>
<td>[u] – 90%</td>
</tr>
<tr>
<td>Consonant</td>
<td></td>
</tr>
<tr>
<td>[p, t, k, tʃ] – 80%</td>
<td>[m, l, n, ŋ] – 20%</td>
</tr>
<tr>
<td>[p, t, k, tʃ] – 20%</td>
<td>[m, l, n, ŋ] – 80%</td>
</tr>
<tr>
<td>Incongruent combination</td>
<td></td>
</tr>
<tr>
<td>[u] + [p, t, k, tʃ] – 65%</td>
<td>[i] + [m, l, n, ŋ] – 35%</td>
</tr>
<tr>
<td>[u] + [p, t, k, tʃ] – 35%</td>
<td>[i] + [m, l, n, ŋ] – 65%</td>
</tr>
<tr>
<td>Congruent combination</td>
<td></td>
</tr>
<tr>
<td>[i] + [p, t, k, tʃ] – 90%</td>
<td>[u] + [m, l, n, ŋ] – 10%</td>
</tr>
<tr>
<td>[i] + [p, t, k, tʃ] – 10%</td>
<td>[u] + [m, l, n, ŋ] – 90%</td>
</tr>
</tbody>
</table>

* p < .01
Factors that contribute to the matching

- Vowels and consonants (in combination) + supersegmental features

- Cross-modality: with haptic-kinaesthetic as the common sense...
The role of the lived body

“If we start with the shapes, the cross-modal mapping between vision and touch would allow them to be perceived as “soft” and “sharp” [respectively], motivating the use of these quasi-synaesthetic metaphors as a natural way to describe these figures.

From the side of the expressions the production of the velar stop /k/, even more so combined with the front, unrounded vowel /i/ involves obstructions and narrowings in the vocal tract, which can similarly be perceived as “sharp” and “edgy”. [...]

A robot, or a Martian with a very different kind of body [...] would not be able to perceive the iconicity involved.”

A theoretical synthesis

- **Primary and secondary iconicity**: their combination, rather than either-or (cf. Sonesson 2010)
- **A phenomenological semiotics** (cf. the central role of the embodied subject for the perception of similarity) and the second main principle of structuralism: that value arises from contrast.

![Diagram of vision, touch, and sound categories]
Case study II

“Motivations for Sound Symbolism in Spatial Deixis: A Typological Study of 101 languages”
(Johansson & Zlatev forthcoming)

Goals

• Test predictions related to the “frequency code” (Ohala 1994) with respect to spatial demonstratives
• Analyze motivations considering semiotic and cross-modal factors
• Use a representative language sample
Spatial deixis (Diessel 2008)

- Demonstrative pronouns such as the English *this* and *that* are relative in distance to a *deictic center*.
- In some languages: is the referent visible or out of sight? at higher or lower elevation in relation to the deictic center?
- Three-way systems can either be distance-oriented or person-oriented.
- More advanced distance-oriented systems are possible, such as Malagasy which contrasts between six different degrees of distance.
- Still: all languages have a minimum of two adverbial demonstratives or deictic particles and are able to distinguish between the concepts *proximal* and *distal*.
Spatial deixis and non-arbitrariness

- **Ultan (1978)**: 136 languages - 33% conform to sound symbolism, *proximal* = closed, front, unrounded vowel
- **Woodworth (1991)**: 26 languages: 13 (50%) proximal = high F2, distal = low F2
- **Traumüller (1994)**: 37 languages (making a contrast in vowel quality)
  - In 32 (86%) F2 in the vowels would be higher in the proximal form: [i] - *smallest* (distance) and [u] - *largest* (distance).
  - Why? when pointing at something far away it is usually a large object, such as a tree; when pointing at something close by it is usually something small.
Issues

- Relatively small, and “unbalanced” samples (with the exception of Ultan 1978)
- Not sufficiently well-explained motivations:
  - Frequency?
  - Place of articulation (front/back)
  - Vowels, consonants?
  - Pointing?
- Specific predictions not stated in advance
Prediction 1

- Motivation: iconicity b/n felt size of mouth opening and distance
- Relevance: Speaker
- Sound type: Vowels (primarily)
Prediction 2

- **Motivation:** iconicity between seen size of mouth opening and distance

- **Relevance:** Hearer

- **Sound type:** Vowels (primarily)

More proximal

| y | u | o | o | æ | ə | æ | ə | e | ə | i | ɪ | ə | æ | ə | ə | a | a | a |

More distal
Prediction 3 + 4

- Motivation: indexical association (frequency-size) + iconic mapping (size-distance)
- Relevance: Speaker and Hearer
- Sound type: Vowels

```
i Y e e o Æ i a æ e æ ə ə ə ə ə ə ə ə a a a a a a a a m m m m m o o U
```

more proximal

more distal

- Sound type Consonants

```
t k ɾ m  d n  g  m
```

more proximal

more distal
Summary of 4 predictions

<table>
<thead>
<tr>
<th>Type of ground</th>
<th>Motivation</th>
<th>Sound type</th>
<th>Senses involved</th>
<th>Person</th>
<th>Example</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Iconic</td>
<td>Felt size = Distance</td>
<td>Vowels</td>
<td>Haptics</td>
<td>Speaker</td>
<td>i</td>
<td>a</td>
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<td>Vision</td>
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<td>Hearing</td>
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<td>Seen size = Distance</td>
<td>Vowels</td>
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<td>Vision</td>
<td>Hearer</td>
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<td></td>
<td>Sound</td>
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<tr>
<td>Indexical + Iconic</td>
<td>High F2 - Small = Close</td>
<td>Vowels</td>
<td>Hearing</td>
<td>Speaker + Hearer</td>
<td>i</td>
<td>a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low F2 – Large = Far</td>
<td>Consonants</td>
<td>Vision</td>
<td>Speaker + Hearer</td>
<td>t</td>
<td>m</td>
<td></td>
</tr>
</tbody>
</table>
Language sampling

- Ethnologue (http://www.ethnologue.com): a free and frequently updated language database, which contains information of approximately 6800 living languages
- 68 languages = 1%
- Language families that contain more than 68 languages (and are represented by more than 1 language) were divided into subgroups
- All language families containing less than 68 languages were divided into five bigger groups, with areally spread out choices (Bybee, Perkins & Pagiuca 1994; Veselinova 2005)
<table>
<thead>
<tr>
<th>Language family</th>
<th>% of the world’s languages</th>
<th>Aim of languages per family or group</th>
<th>Actual number of languages in sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afro-Asiatic</td>
<td>5.1</td>
<td>5</td>
<td>6 (+1)</td>
</tr>
<tr>
<td>Australian</td>
<td>2.2</td>
<td>2</td>
<td>3 (+1)</td>
</tr>
<tr>
<td>Austro-Asiatic</td>
<td>2.5</td>
<td>3</td>
<td>4 (+1)</td>
</tr>
<tr>
<td>Austronesian</td>
<td>17.8</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Dravidian</td>
<td>1.2</td>
<td>1</td>
<td>3 (+2)</td>
</tr>
<tr>
<td>Indo-European</td>
<td>6.2</td>
<td>6</td>
<td>9 (+3)</td>
</tr>
<tr>
<td>Mayan</td>
<td>1</td>
<td>1</td>
<td>2 (+1)</td>
</tr>
<tr>
<td>Niger-Congo</td>
<td>21.7</td>
<td>21</td>
<td>16 (-5)</td>
</tr>
<tr>
<td>Nilo-Saharan</td>
<td>2.9</td>
<td>2</td>
<td>4 (+2)</td>
</tr>
<tr>
<td>Oto-Manguean</td>
<td>2.5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sino-Tibetan</td>
<td>6.4</td>
<td>6</td>
<td>9 (+3)</td>
</tr>
<tr>
<td>Tai-Kadai</td>
<td>1.3</td>
<td>1</td>
<td>2 (+1)</td>
</tr>
<tr>
<td>Trans-New Guinea</td>
<td>6.9</td>
<td>6</td>
<td>4 (-2)</td>
</tr>
<tr>
<td>Creoles, Pidgins and Mixed languages</td>
<td>1.5</td>
<td>1</td>
<td>2 (+1)</td>
</tr>
<tr>
<td>Language families containing less than 7 languages, isolates and unclassified languages</td>
<td>2.2</td>
<td>2</td>
<td>4 (+2)</td>
</tr>
<tr>
<td>Language families containing 7-20 languages</td>
<td>2.9</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Language families containing 21-44 languages</td>
<td>7</td>
<td>6</td>
<td>5 (-1)</td>
</tr>
<tr>
<td>Language families containing 45-67 languages</td>
<td>5.6</td>
<td>5</td>
<td>6 (+1)</td>
</tr>
<tr>
<td>Total</td>
<td>~100</td>
<td>90</td>
<td>101</td>
</tr>
</tbody>
</table>


Coding of 101 languages

- demonstrative pronouns in their least marked forms, converted to IPA (as far as possible)
- Two-way and three-way deictic systems
- Each prediction: (1) Motivated, (2) Neutral, (3) Non-motivated

For three-way: Proximal vs. Medial, Proximal vs. Distal

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>iyiyun</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>yu</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>iyi</td>
<td>e</td>
<td>e</td>
<td>e</td>
</tr>
<tr>
<td>tkum</td>
<td>m</td>
<td>m</td>
<td>m</td>
</tr>
</tbody>
</table>

more proximal | more distal
## Results

<table>
<thead>
<tr>
<th>Motivation/Prediction</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Motivated</td>
</tr>
<tr>
<td>Iconic Felt size = Distance</td>
<td>47.5</td>
</tr>
<tr>
<td>Iconic Seen size = Distance</td>
<td>44.5</td>
</tr>
<tr>
<td>Iconic and Frequency code: V</td>
<td>56</td>
</tr>
<tr>
<td>Indexical Frequency code: C</td>
<td>27.5</td>
</tr>
</tbody>
</table>
Conclusions

• Mutually supporting factors ("frequency code", felt size) of both indexical/associative and iconic (relational) nature appear to **motivate** word-forms for spatial deixis in more languages than can be explained by chance or borrowing

• Still, since conventions (historical level) are never determined by motivations (universal level), in existing languages, motivated correlations will be statistical

• Experiments (bouba-kiki, language learning) show that these are not historical/evolutionary “relics”
Conclusions

- At least three different kinds iconicity in language
  1. **Non-systematic**: (mostly) uni-modal (*bang, meow ...*)
  2. **Relational**: (mostly) cross-modal, and relying on contrasts (and dimensions such as SIZE, SHAPE, SPEED etc.)
  3. **Analogical**: Extending the R-O mapping within a single language, in novel word-formation (“phonaesthemes”) (cf. Abelin 1999)

- All three are conventionalized and their motivations bleached (i.e. “secondary iconicity”: $3 > 2 > 1$)
- But in the appropriate context, in all three cases this “dormant” iconicity can be re-awakened (i.e. it is not “purely epiphenomenal”)
What is language?

“A predominantly conventional-normative semiotic system for communication and thought.”

(Zlatev 2007, 2008)

Semiotic system =
Signs in complex interrelations
+ a system for the production of novel signs
Human languages are

- Biologically grounded
- Experientially motivated
- Socially shared (conventional)
  - Highly evolvable
  - Semiotic systems

for

- Interpersonal communication
  - Intrapersonal cognition
  - Cultural organization
Merci à

- Centre for Cognitive Semiotics (CCS) in Lund for the research environment
- Ecole normale supérieure (ENS) for the kind invitation to give this lecture series
- Lattice and LABEX for hosting my 4 month visit
- Benjamin Fagard – without whom none of this would have been possible
- All of you for coming to these (too long) lectures in long Metro/RER trips... and giving me opportunity to develop these ideas