Lexical travel maps
A spatial view of semantic change

Alexandre François

Workshop Le DiaSeMa – Univ. de Liège – 27-28 June 2018
Visualizing historical lexicology

• Semantic maps have proven a powerful visual tool for representing polysemy & polyfunctionality:
  ▪ within one language family
  ▪ within one linguistic area
  ▪ as a proposal about universal semantic connections (typology of polysemy)

• The perspective has been mostly synchronic
  ▪ How can we use semantic maps to represent **diachrony**?
  ▪ Can we adopt a **panchronic** perspective?
    ▪ Cf. **panchronic phonology** (Haudricourt 1940, 1978): Highlighting the organic relationship between synchronic variation and long-term historical change.

• This talk illustrates the interest of semantic maps for **studying and representing semantic change in panchrony** – The **typology of semantic change**
  ▪ Preliminary thoughts – Personal interest in etymology and semantic change
    ▪ Can we visualize the findings of **historical lexicology** through a spatial representation?
  ▪ Confronting firsthand data on **Oceanic** lgs with knowledge on other families.
  ▪ Call for ideas for building a database & collaborating on the issue of **diachronic maps**.
    ▪ A workshop titled **Le DiaSeMa — LExical DIAchronic SEMantc MApS** — is a fitting venue for thinking about joint work in the future.
Colexification

• Colexification (François 2008, Georgakopoulos et al. 2016) can be understood as a structural property of a language’s lexicon, in synchrony.

(1) A given language is said to colexify two functionally distinct senses if, and only if, it can associate them with the same lexical form

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ITALIAN

- **sentire** colexifies ‘hear’ and ‘feel’
  - *Non t’avevo sentito* ‘I hadn’t heard you.’
  - *Sentiva dolore* ‘He was feeling pain.’

MWOTLAP **yoŋteg** (Oceanic) shows the same colex (pattern of colexification)
  - *Nok et yoŋteg te nēk* ‘I hadn’t heard you.’
  - *Kē ni-yoŋteg ne-memeh.* ‘He was feeling pain.’

ENGLISH **dislexifies** (=always distinguishes) the two meanings
  - *I hadn’t felt you* -- *He heard pain*

- Colexification is a property of an individual lexeme (*sentire*, *yoŋteg*...); and by metonymy, of a language (Italian, Mwotlap...)

<table>
<thead>
<tr>
<th>colexification</th>
<th>Mwotlap</th>
<th>Italian</th>
<th>Catalan</th>
<th>French</th>
<th>English</th>
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</thead>
<tbody>
<tr>
<td>hear = feel</td>
<td>yoŋteg</td>
<td>sentire</td>
<td>sentir</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Semantic maps in synchrony

Fr. *sentir*

It. *sentire*

Mtp. *yonīteg*

Eng. *feel*

*feel*

*smell*

*taste*

*hear*

*listen*

*obey*
Semantic maps in synchrony

Lexical typology
- Lgs cut up the semantic space differently = they differ in what senses they colexify
- falsifiable implicational hypotheses: e.g. if a lg colexifies hear = feel, it will also colexify hear = smell...
- see > hear > smell > taste > feel... cf. Fr. sentir
Semantic maps: earth lexemes

Typology of colexification

- **CLiCS: Cross-Linguistic Colexifications**
  - [1.0] 1280 meanings, 221 languages
  - [2.0] 1521 meanings, 1156 language varieties

<table>
<thead>
<tr>
<th>Language</th>
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<td>Kaingang</td>
<td>Macro-Ge</td>
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</table>
Typology of colexification

*project started in February 2018 – François, Souag, Vanhove*

- 320 meanings, 20 languages

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<th>Wnet id1</th>
<th>s2</th>
<th>Wnet id2</th>
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<th>Hiw</th>
<th>Teanu</th>
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<td>be with</td>
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<td>–</td>
<td>biyiîⁿ</td>
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<td>can, be able</td>
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<td>want s.th.</td>
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</table>
Typology of colexification

Bislama (English-based creole of Vanuatu) often aligns with the lexical structures of the Oceanic (substrate / adstrate) languages. ⇒ areal signal in colexification! + Theory of relexification in creole genesis (Lefebvre 1986)
Typology of colexification

3 Melanesian languages cluster together. Bislama (English-based creole of Vanuatu) often aligns with the lexical structures of the Oceanic (substrate/adstrate) languages.

Craig Lefebvre’s (1986) theory of relexification in creole genesis is supported by the areal signal in colexification. A distance measure (MDS) such as the Jaccard coefficient, which measures acquired differences, is used to quantify the similarity between languages. Siva Kalyan's contributions are acknowledged.

Bislama (English-based creole of Vanuatu) often aligns with the lexical structures of the Oceanic (substrate/adstrate) languages. ⇒ areal signal in colexification!

+ Theory of relexification in creole genesis (Lefebvre 1986)

⇒ distance measure (MDS) ("Jaccard coefficient, acquired differences")

[thanks to Siva Kalyan]
The diachrony of colexification

- Colexification can also be studied in its **historical dynamics**
  - cf. Hear / feel in Romance languages
    - Latin dislexified *sentīre* ‘feel’ vs. *audīre* ‘hear’
    - Spanish is simply **conservative** of earlier lexical structures
    - Cat. and Ital. acquired a new colex, which **disrupted** earlier lexical structures.
      - Lat. *sentīre* ‘feel’ ➔ Italian *sentire* ‘feel, hear’
      - *sentire* pushed away *audire*, and acquired a new colex meaning
    - Semantic merger = New colex \{A\} B ➔ \{A B\}

- French
  - went through a **double merger**, which ended up preserving earlier structures

<table>
<thead>
<tr>
<th>Language</th>
<th>feel</th>
<th>hear</th>
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</thead>
<tbody>
<tr>
<td>Latin</td>
<td>sentīre</td>
<td>audīre</td>
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<tr>
<td>Spanish</td>
<td>sentir</td>
<td>oír</td>
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</tbody>
</table>
Semantic maps in diachrony

- Senses and cognition

Lexical travel map
Watching meanings move around across semantic space

- smell
- taste
- feel by touching
- feel in o.'s body
- feel by intuition

- hear
- know
- see
- understand
- attend to
- *intendere

- PIE *weyd-
- Polyn. *kita

- *comprendere
- embrace
- seize
- capire
Typology of semantic change

• Semantic **merger** = emergence of new colex
  \[ \{A\} B \rightarrow \{A\ \{B\}\} \]
  \[ \text{sentíre:} \quad \text{‘feel’} 
  \rightarrow \text{‘feel, hear’} \]

• Semantic **split** = loss of colex
  \[ \{A\ \{B\}\} \rightarrow A \{B\} \]
  \[ \text{entendre:} \quad \text{‘understand, hear’} 
  \rightarrow \text{‘hear’} \]

• Semantic **shift** = merger then split
  \[ \{A\} B \rightarrow \{A\ \{B\}\} \rightarrow A \{B\} \]
  \[ \text{entendre:} \quad \text{‘understand’} 
  \rightarrow \text{‘understand, hear’} 
  \rightarrow \text{‘hear’} \]
  \[ \text{Evans & Wilkins (2000): “semantic change from meaning A to B normally involves a transitional phase of polysemy where a form has both meanings”} \]

• Double **shift** = merger then split, merger then split
  \[ \{A\} B \ C \rightarrow \{A\ \{B\}\} \ C \rightarrow A \{B\} \ C \rightarrow A \{B\ \{C\}\} \rightarrow A \ B \{C\} \]
  \[ \text{O.Fr. **chief:**} \quad \text{‘head’} \rightarrow \text{‘main part’} 
  \rightarrow \text{‘leader in a group’} \]
Typology of semantic change

- **Semantic shift** = entails a *bridging context*
  \[
  \{A\} \rightarrow \{A, B\} \rightarrow A \{B\}
  \]
  
  *entendre*: ‘understand’ ⇒ ‘understand, hear’ ⇒ ‘hear’

- Evans & Wilkins (2000):
  
  sense (cf. Traugott 1989). That is to say, meaning B often comes into existence because a regularly occurring context supports an inference-driven contextual enrichment of A to B. In these contexts, which we term **bridging contexts**, speech participants do not detect any problem of different assignments of meaning to the form because both speaker and addressee interpretations of the utterance in context are functionally equivalent, even if the relative contributions of lexical content and pragmatic enrichment differ. Subsequently this contextual sense may become lexicalized to the point where it need no longer be supported by a given context.

- Enfield (2003):

  ![Diagram](image)

  **Figure 1.7** Stages in semantic change, where ‘bridging contexts’ mask the transition from online pragmatic implicature to genuine polysemy.
Semantic maps in diachrony

• Australian languages:
  • Semantic extensions across perceptual modalities

Semantic maps

- Australian languages: fire – camp – country ++


"Should information on the directionality of change become available, 'links' could also represent [semantic change]. At this early stage of research, however, it is often difficult to decide on the direction of change." (p.490)
• **Austronesian languages:** Lexical domain of *panua*
Semantic maps in diachrony

A semantic map for breathe  (François 2008)
Semantic maps in diachrony
Semantic maps in diachrony

Latin *spīritus* > French *esprit*
Semantic maps in diachrony

Latin *spíritus* > French *esprit*
*tabu: The adjective *toq* in Hiw

**toq** \([ton^w]\) **adj.** (1) (stg) endowed with special status inducing awe and special respect: sacred.

(2) <Christ> sacred, holy. >Mama te ōne, ne ya nē toq. Our father in Heaven, hallowed be Thy name.

- **gengon toq** n. lt. "holy food": altar bread, host. >ne oye-vē-gengon-toq [the consumption of holy bread] the Eucharist

(3) (place) unapproachable, off limits, typic. due to being haunted by ghosts (temēt).

- **ṅwute toq** n. lt. "taboo place": locations on the island known to be haunted by ghosts and spirits (temēt), and to which visits are advised against.

(4) (topic) taboo, not meant to be mentioned in public. >Ne voygē pe nēne nēgē toq, tite tat vegeve vitikēyē ie ṅwute pe tuqn-kē ve toge ie mi tuṅwuyegē. Subjects like that are a bit taboo: you can't just mention it randomly when kids or women are around.

(5) (s.o.) endowed with supernatural powers (cf. *māne*). Syn. tāne.

- **tayō toq** n. lt. "sacred person": a man endowed with supernatural, magic powers, hence worthy of higher status in the grade-taking system (suqe). >Sise kaī’ ike ṅtuye tom ṅwē tom ike on ēw wroq, ike ne tayō toq. (ritual pedestal tuye) They'll shoot arrows at you [as you stand] on the stone pedestal; if you survive, this means you're a magic man.

(6) (s.th., location) of restricted access, due to its association with initiation rituals or grade-taking ceremonies. >Tekūwa pe sise ve suqe piti, sise taṅwōy on ūk ne temēt yē tegō toq. Only those who have gone through initiation are entitled to handle spirits in the sacred enclosure. Cf. tegōtōq 'piously'.

- **vonyō toq** n. <Hist >lt. "sacred land": area in a village that was restricted to initiated men, and forbidden to non-initiates. >Ne qoŕ ve toge vonyō toq. Takē vonyō toq pe takē ṅwute pe ne gemoy vē ēn eye. Stone mausoleums [for high chiefs] are erected on sacred land. We call ‘sacred land’ the area around the house of initiated men (gemoy).


in P. McConvell & R. Hendery (eds), *Diffusion & change in lexical semantics: restriction, avoidance and ‘tabu’*. Special issue of Oceania..
A semantic map of *tabu

- The polysemy of Hiw toq \[\text{tokw}\]

(Christ.) holy

endowed w. supernatural powers

haunted by spiritual forces

unapproachable, forbidden

prohibit (a place)

closed to initiates

ritual

enclosure

taboo subject

derived verb \text{teqö} < *\text{tabu-a}

‘make taboo’

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cf. François, Alexandre. f/c. \textit{Awesome forces and warning signs: the semantics of tabu-related words in Vanuatu.}
in P. McConvell & R. Hendery (eds), \textit{Diffusion & change in lexical semantics: restriction, avoidance and ‘tabu’}. Special issue of Oceania..
A semantic map of *tabu

- Meanings found in Mota [tap]

(Christ.) holy

endowed w. supernatural powers

enclosure

haunted by spiritual forces

reserved to initiates

prohibit (a place)

taboo subject

ritual

forbidden

forbidden behaviour

day of mourning
A semantic map of *tabu

- Meanings found in Mwerlap [nɔ-tɔm]

(Christ.) holy

endowed w. supernatural powers

haunted by spiritual forces

unapproachable, forbidden

taboo subject

day of mourning

enclosure

reserved to initiates

prohibit (a place)

ritual

sign of proscription

sign warning of dangerous forces

A semantic map of *tabu

- Meanings found in Mwotlap [nɛ-tɛkpw]

(Christ.) holy

endowed w. supernatural powers

enclosure

ritual

reserved to initiates

prohibit (a place)

sign of proscription

sign warning of dangerous forces

day of mourning

forbidden behaviour

taboo subject

haunted by spiritual forces

graveyard

grave, tomb

derived verb tokpwọ < *tabu-a ‘make taboo’

A semantic map of *tabu

- Lexical replacement for certain meanings (ex. Mwotlap)

**jɔŋ** < *roŋo* ‘quiet’ (< ‘listen’ ?)

- (Christ.) holy

- haunted by spiritual forces

- haunted by spiritual forces

- graveyard

- grave, tomb

**halɣɔj** < *salayoro* ‘forbidden road’

- endowed w. supernatural powers

- unapproachable, forbidden

- prohibited (a place)

- sign of proscription

- sign warning of dangerous forces

- reserved to initiates

- forbidden behaviour

- day of mourning

- taboo subject

- enclosure

Moving along the map

• Words constantly move across a **multi-dimensional semantic space**, following paths of likeliest pragmatic inference, cultural or cognitive association, discourse-based “bridging contexts”.

• The historical linguist can **reconstruct the travels of words** as they evolve in semantic space, as they concede older meanings and gain new territory, as they expand or disappear forever.

• At any point in time, a language’s lexicon is a **battlefield** of words competing with each other for a chunk of semantic territory [synchronic variation]
  - Shall I encode the auditory perception using audire or sentire?
  - Shall I translate “holy” with a word meaning ‘quiet’ or ‘taboo’?
  - Should this portion of soil be called ‘place’, ‘area’, ‘ground’, ‘land’, ‘earth’, ‘country’?

• The semantic maps developed by (synchronic) lexical typology design the territory. The **typology of lexical change** show us how the world’s languages **navigate this territory** in a dynamic fashion; what are the main roads for semantic change, the narrow paths, the dead ends, the steep slopes...
Final discussion (1/2)

• Remaining issues
  - Can we always assess the **directionality** of change?
    - Cf. **sound** change: Some changes are intrinsically directional (*s>h), but other changes can go either way (*u > o, *o > u...)
    - Can we formulate general rules in the directionality of semantic change?
  - Should we treat **attested** semantic change (<philology, **written** languages) in the same way as **reconstructed** change (<historical linguistics, **unwritten** languages)
  - Should we aim at **universal concepts**? or accommodate **culture-specific** semantic links?
  - Should we aim exclusively for **diachronic** maps? or blend synchronic and diachronic maps into a **panchronic** representation?

• Conventions for our graphs
  - Should we define principles for **laying out** senses in space?
    - avoid edges to crosscut
  - Should we aim towards **2D** representations? **3D**? **nD**?
  - What are our principles for linking senses together? (presence vs. absence of a link)
  - Should **distance** (length of edge) be significant?
  - Should the **thickness** of edge be correlated with **frequency**?
  - Could we **combine several lexical maps** into a giant map of the whole lexicon??
Final discussion  (2/2)

• What we need
  – a database of semantic change
    – Zalizniak et al. (2012) [DatSemShift]? CLiCS 2.0 ? CoLex ?
  – tools to generate (panchronic) semantic maps
  – tools to visualize the span of a given lexeme in synchrony
  – tools to visualize the evolution of a lexeme in history
    – exploiting the potential of animation technology?
  – This dynamic visualization of semantic change would be ...
    – of potential interest to a general audience
    – and also useful for the (historical / cognitive) linguist

• Panchronic lexical typology
  – This knowledge can inform our semantic reconstructions
    – some paths of change are frequent : the “highways” of lexical change
    – some paths are rare, many are not attested
  – This line of research can help us reconstruct the cognitive and functional processes of semantic change as they take place in minds and in conversations.
Thank you.
References


