CLICS 2.0

Towards an Improved Handling of Cross-Linguistic Colexification Patterns

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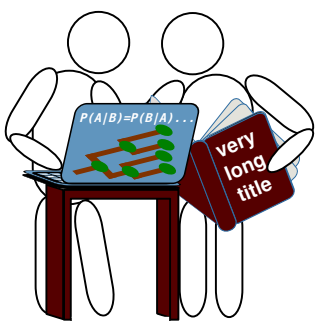

MAX-PLANCK-GESELLSCHAFT

European Research Council

A long, long time ago...

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- World Loanword Typology (WOLD, Haspelmath and Tadmor 2009) offers 1430 concepts translated into 41 languages (some overlap with IDS).

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- Cysouw (2010) shows how to use polysemy data to draw networks.

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- In contrast to earlier approaches, they use techniques for *community detection* (Girvan and Newman 2002) to further analyse the network, and to partition the concepts into communities which seem to make intuitively sense, reminding of naturally derived semantic fields.

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- In contrast to earlier attempts, they increased the data by merging IDS, WOLD, and additional datasets which they collected themselves, thus containing 220 languages in total.
- They also improved the community detection procedure by using Infomap (Rosvall and Bergstrom 2008), an advanced algorithm based on random walks in complex networks.

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- Språkbanken project (University of Gothenburg) offers 8 word lists for SEA languages, 6 were included in CLICS.

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Solutions

- (A) Show communities instead of showing all the data, offer a subgraph-view that cuts out the nearest neighbors of one concept to compensate for data loss in the community view.
- (B) Filter by language families and weight the concept links by frequency of occurrence, following Dellert's (2014) suggestion. This will cut most of the links resulting from homophony and leaves the links which are due to polysemy.

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- The interactive component of the network browser was specifically designed for CLICS and builds on the D3 framework by Bostock et al. (2011).
- The underlying network with the inferred communities is offered for download from the website, and the whole code which was used to create the website is available for download at `http://github.com/clics/clics`.

DEMO

CLICS 2.0

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- difficult to catch up (we know much, much better now, how to curate datasets, but we did not know this when preparing CLICS initially)

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- normalize the data which is analysed by CLICS

Excursus: Concepticon

Concept List	# Items	Concept Label
Allen (2007)	500	animal oil; 动物油（脂肪）
Gregersen (1976)	217	fat-grease*fat-grease
Heggarty (2005)	150	fat (grease); grasa
Swadesh (1955)	100	fat (grease)
Alpher and Nash (1999)	151	fat, grease
Hale (1961)	100	fat, grease
OGrady and Klokeid (1969)	100	fat, grease
Blust (2008)	210	fat/grease
Matisoff (1978)	200	fat/grease
Samarin (1969)	218	fat/grease
Dunn et al. (2012)	207	fat
Swadesh (1950)	215	fat
Zgraggen (1980)	380	fat
Jachontov (1991)	100	fat n.
Wiktionary (2003)	207	fat (noun)
Starostin (1991)	110	fat n.; жир
TeilDautrey et al. (2008)	430	fat, oil
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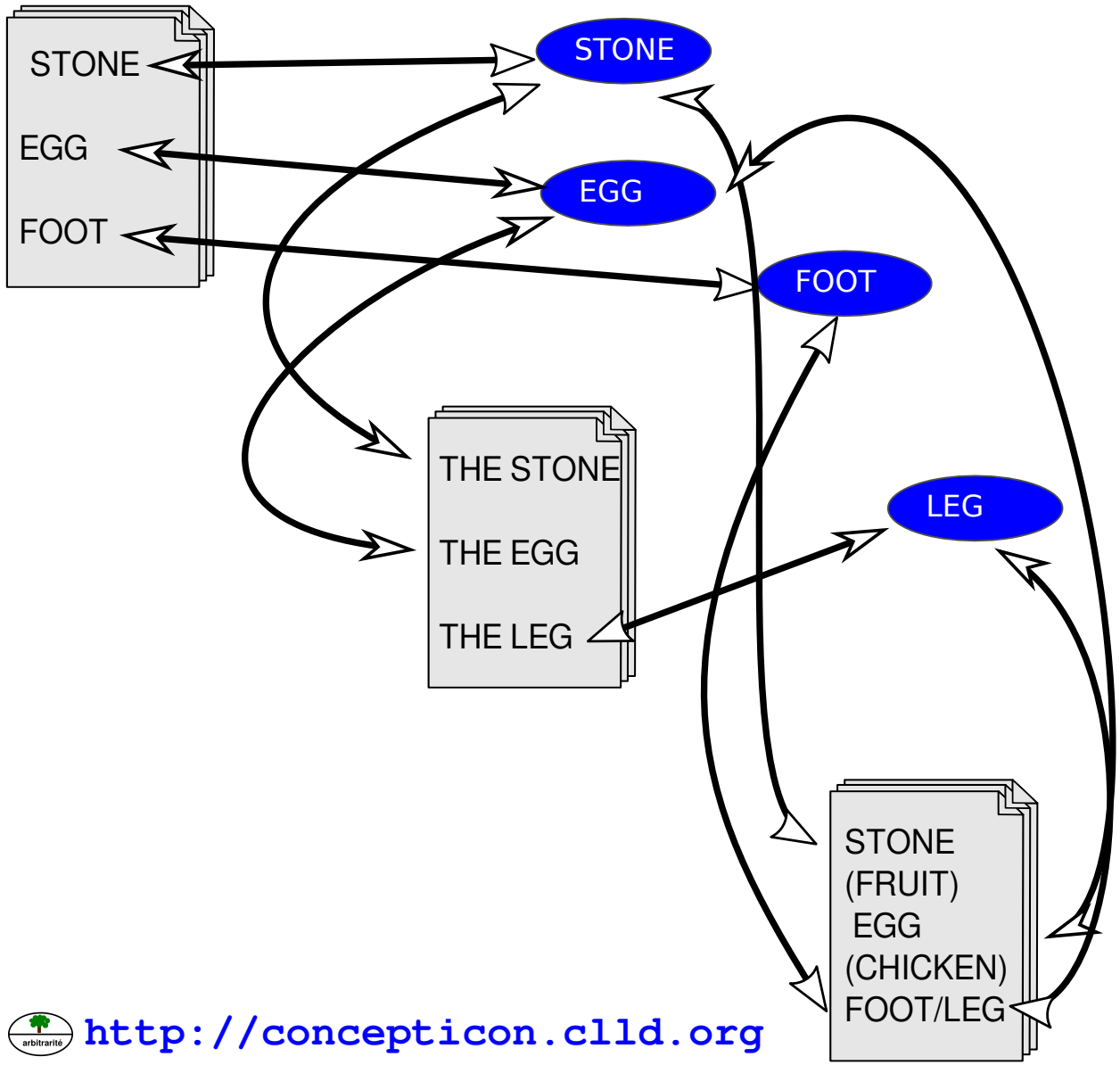
Concepticon (List et al. 2016)

- link **concept labels** in published **concept lists** (questionnaires) to **concept sets**
- link **concept sets** to meta-data
- define relations between concept sets
- never link one concept in a given list to more than one concept set (guarantees consistency)
- provide an API to check the consistency of the data and to query the data
- provide a web-interface to browse through the data

Concepticon



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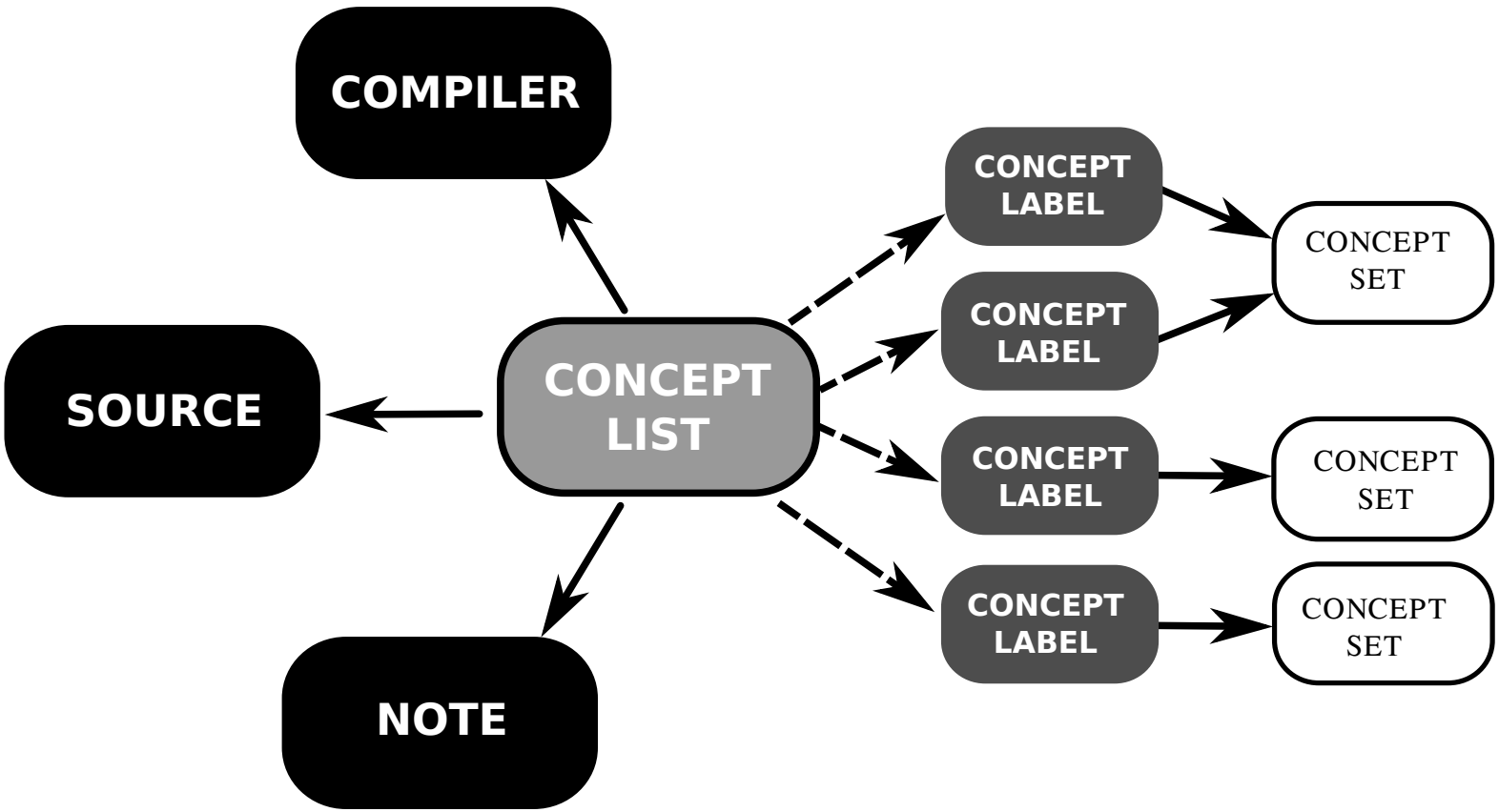

http://concepticon.clld.org

Excursus: Data

DATASET	EDITORS	LANGUAGES	CONCEPTS
IDS	Key and Comrie (2016)	367	1310
WOLD	Haspelmath and Tadmor (2008)	41	1430
BaiDial*	Allen (2007)	8	500
HuberReed	Huber and Reed (1992)	71	374
Kraft1981	Kraft (1981)	68	434
BantuBVD*	Teil-Dautrey (2008)	10	430
Tryon1983*	Tryon (1983)	111	324
Madang*	Zgraggen (1980)	100	380
Cihui*	Beijing Daxue (1964)	17	905
TBL*	Huang (1992)	50	1800
NorthEuraLex	Dellert and Jäger (2017)	106	1000

Datasets with an asterisk are currently in preparation and will be most likely released already within this year.

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- Given problems with concept overlap in the datasets, we can make different selections for the users, including datasets with many concepts but not so many languages and datasets with many languages but less concepts.

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Subset	Datasets	Concepts	Languages
High-Low	>= 2	>= 1000	>= 300
Mid-Mid	>= 5	>= 500	>= 600
Low-High	>= 10	>= 250	>= 1000

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Effectively this means, that with CLICS 2.0, we can immediately offer different views on the data, which allow scholars to investigate very broad patterns of semantic associations, as well as fine-grained patterns with a lower attestation.

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- By shifting to the CLLD framework, scholars can also create their own CLICS websites, since the source code for the creation of interactive networks will be transparently shipped with the data.
- Spring schools and further events carried out at the MPI-SHH as part of my ERC project on Computer-Assisted Language Comparison will cover – among others – introductory tutorials to all the software APIs that are shipped with the different tools and datasets developed at our department.

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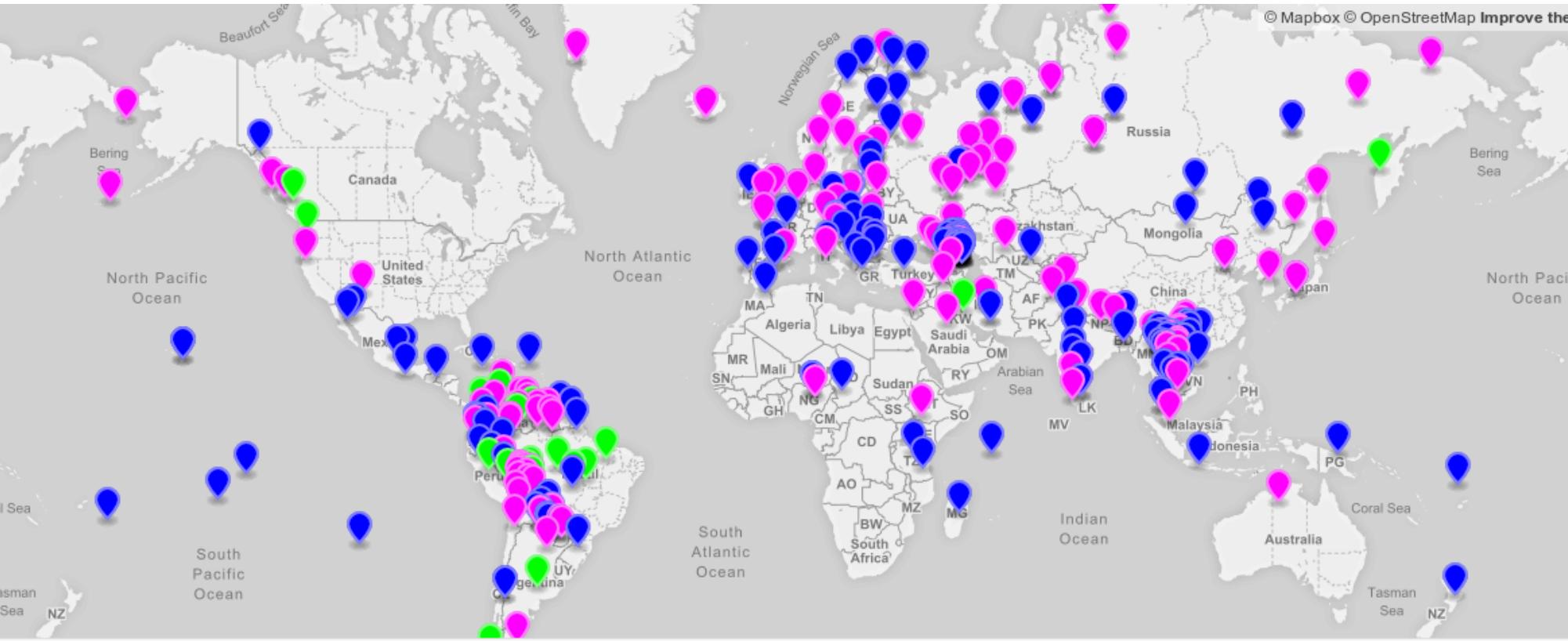
- new methods (see demo on next slide)
- rigid policy towards open data (since we heavily profit from all of our colleagues who publish their data!)

Features: Coverage



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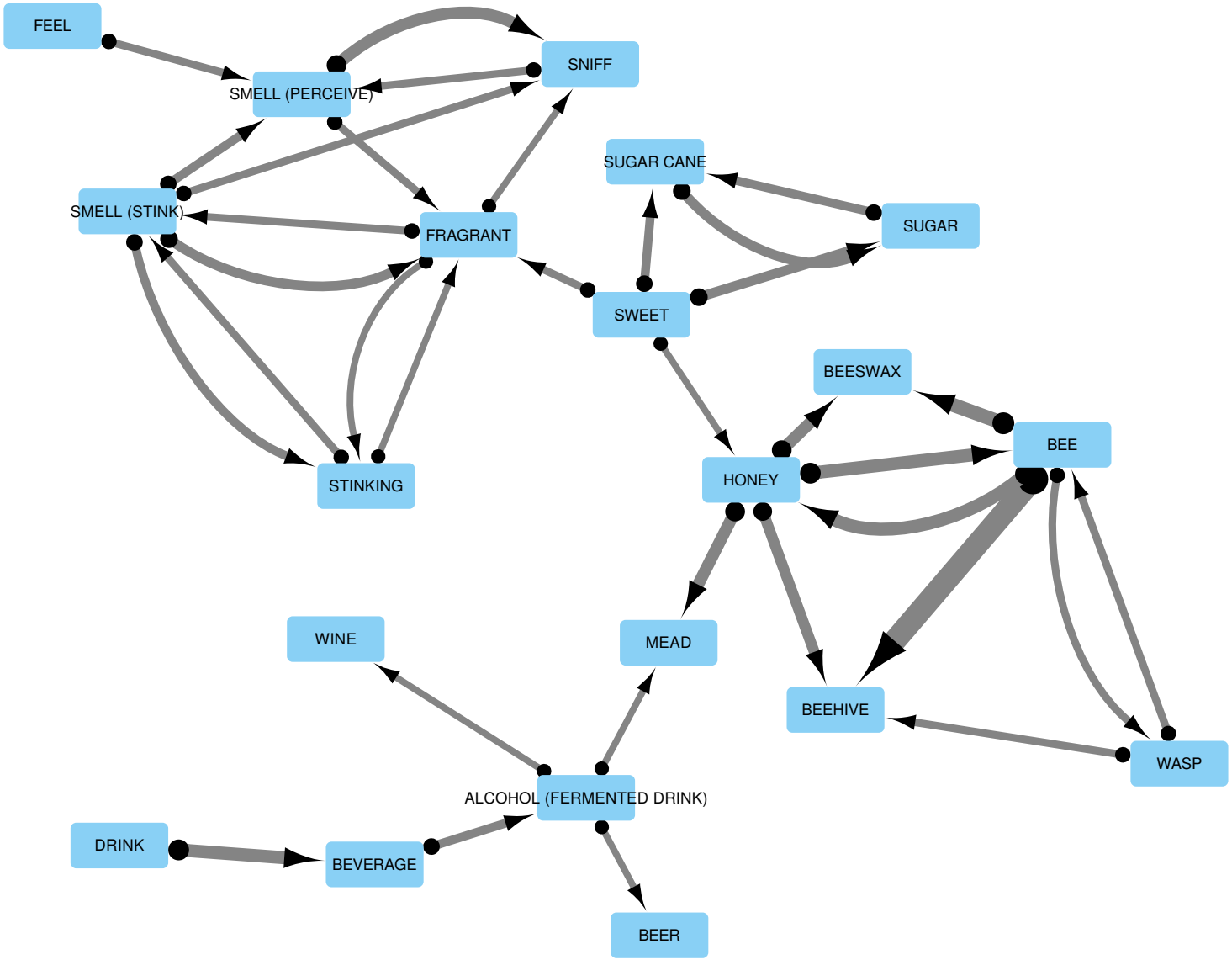
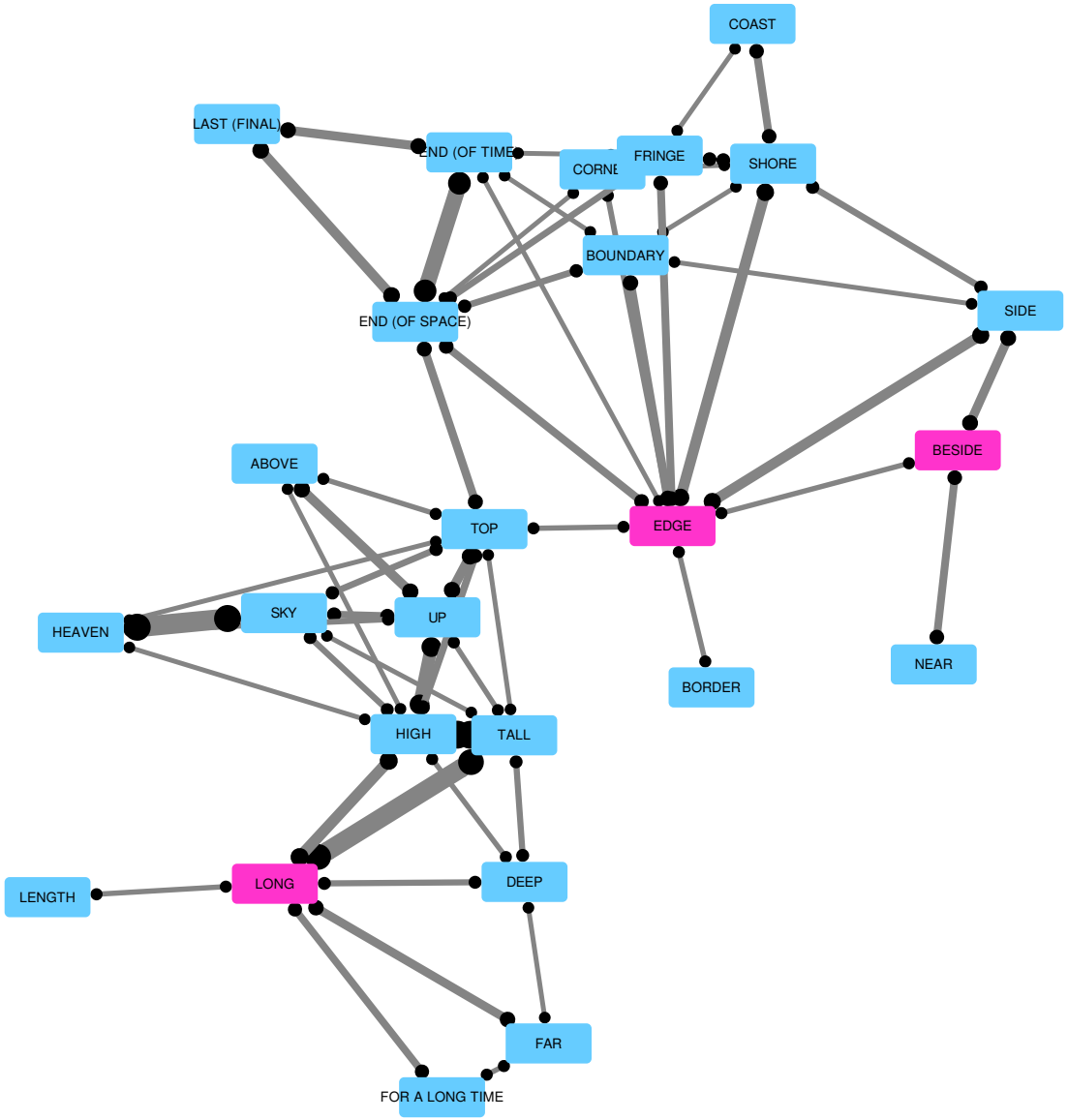
- By improving our insights into graph theory and available algorithms, we can now enhance the analysis of the networks. *Articulation points*, for example, show key players in a network which connect between different communities.

New Methods


FEEL
SNIFF
SMELL (PERCEIVE)
SUGAR CANE
SMELL (STINK)
FRAGRANT
SUGAR
SWEET
BEESWAX
BEE
HONEY
STINKING
WINE
MEAD
BEEHIVE
WASP
ALCOHOL (FERMENTED DRINK)
DRINK
BEVERAGE
BEER

New Methods


COAST
LAST (FINAL)
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CLICS 2.0 DEMO

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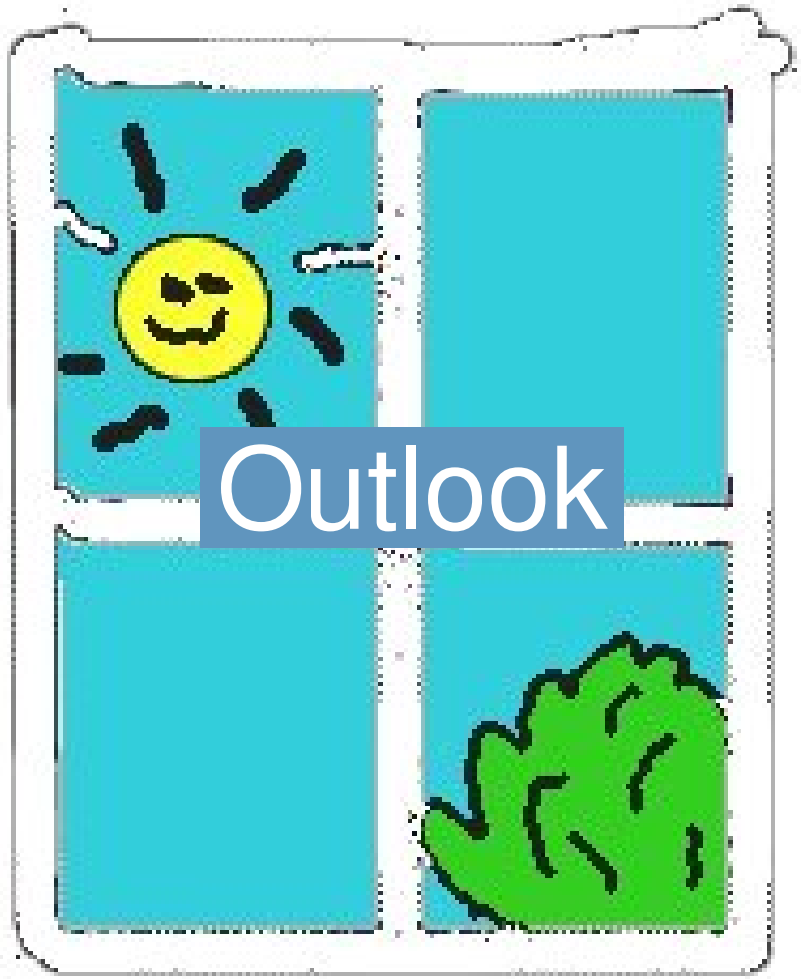
- But we would argue that it is better to publish the next version a bit later rather than publishing a version that we will need to update immediately after we first published it.
- If we can learn one thing from CLICS 1.0, it is that we need to keep the code and the data in a state that we can easily curate them. We hope we will achieve this with CLICS 2.0.

Outlook



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- But we hope that we are on the right track by now, and that won't disappoint those who came to like the Cross-Linguistic Colexification Database.
- CLICS 2.0 won't be perfect, but it will be entertaining and hopefully very interesting for our colleagues working on historical linguistics and lexical typology.

Thanks for your attention!