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Launch of BivalTyp

Typological database of bivalent verbs and their encoding frames (www.bivaltyp.info)

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Preliminaries

Prominent role of valency for linguistic typology

- transitivity
- alignment
- voice and related phenomena: passive, reflexive, …

Preliminaries

Typology is mainly focused on major clause types

- monovalent: ‘sleep’, ‘run’, …
- transitive: ‘kill’, ‘break’, …
- ditransitive: ‘give’, …

Preliminaries

- All (?) languages have minor (a.k.a. non-canonical) valency patterns
- (Until recently) underrepresented in typological research
- Goal: to fill this gap for bivalent verbs

Preliminaries

- Why bivalent verbs?
  - they are especially prone to show deviant valency behaviour [Bickel et al. 2014]

(1) *The boy looked **at the clouds***

(2) ***Мне** нравится эта рубашка*

  - they often form relatively large classes, unlike non-canonical trivalent verbs

Project: goals

- Which factors determine valency class assignment in individual languages?
- To what extent are valency classes similar across languages?
- What is the role of genealogical and areal factors?

Project: major design features

- First-hand data
  - St. Petersburg-style typology

- Questionnaire with 130 verbs given in context
  - Wordlist-based approach: Nedjalkov 1969, Bossong 1998, Nichols et al. 2004, Nichols 2008, Malchukov & Comrie (eds.) 2015, etc.

Project: major design features

#21 (Peter was crossing the river in a boat)

‘Peter **reached** the bank’

X Y

#22 (The wall was covered with fresh paint)

‘Peter **touched** the wall’ (and got dirty)

X Y

=> Two pre-defined arguments (X, Y) for each predicate

Project: major design features

- The valency of a verb = “the list of its arguments with their coding properties”

- Coding properties
  - flagging (cases & adpositions)
  - indexing (agreement, cross-referencing)
  - word order (rarely)

Malchukov and the Leipzig Valency Classes Project team, 2015: 30

Project: major design features

- Problem: coding devices (e.g. ‘Instrumental case’, ‘post-verbal agreement slot’, etc.) are language specific
- How to typologize behavior of verbs like ‘be afraid’, ‘follow’, ‘listen’, ‘touch’, etc.?
- Solution: use the lexical lists as a *tertium comparationis* = set partition variable

Project: major design features

Eastern Armenian

#	Predicate	Translation	Valency Class
…			
21	reach	*Petros-ə hasav ap'-i-n* Petros[**NOM**]-DEF reach:AOR:**3SG** bank-**DAT**-DEF 'P. reached the bank'	**NOM_DAT**
22	touch	*Petros-ə dipav pat-i-n* Petros[**NOM**]-DEF touch:AOR:**3SG** wall-**DAT**-DEF 'Petros touched the wall'	**NOM_DAT**
53	attack	*Arǰ-ə harjakvec' jknors-i vra* bear[**NOM**]-DEF attack:AOR:**3SG** fisherman-**DAT** **on** 'A bear attacked a fisherman'	**NOM_DATvra**

=> Eastern Armenian equivalents of 'reach' and 'touch' belong to the same class; the equivalent of 'attack' is different

Project: a brief history

- 2010: first version of the questionnaire
- Laboratory for the typological study of languages, Institute for Linguistic Studies, RAS
- Team members

Sergey Dmitrenko
Dmitry Gerasimov
Maria Kholodilova
Viktor Khrakovskij
Elena Kordi
Olga Kuznecova
Daria Mischenko
Arseniy Vydrin
Natalia Zaika

Project: a brief history

- 2009-2013: two consecutive grants from the Russian Foundation for Humanities

- 2010-present: collection and annotation of data contributed by a large group of supportive language experts without whose help the project would have never got of the ground

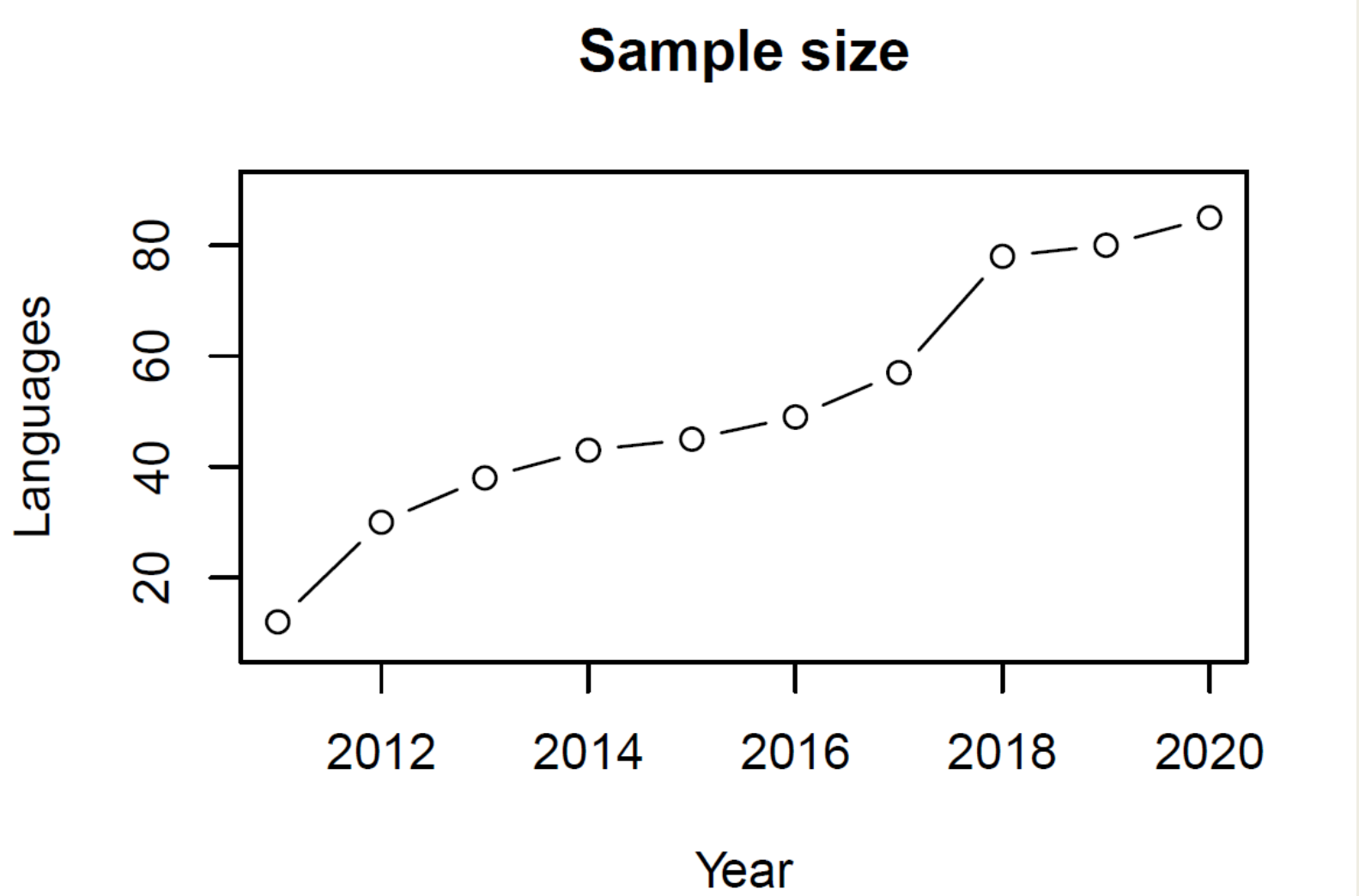
- **Further contributions are very welcome!**

Project: a brief history

- A big big **THANK YOU** to language experts

Anna Alexandrova, Ekaterina Aplonova, Peter Arkadiev, David Avellan-Hultman, Aleksandra Azargaeva, Mislav Benić, Sandra Birzer, Alena Blinova, Nadezhda Bulatova, Denis Creissels, Michael Daniel, Varvara Diveeva, Sergey Dmitrenko, Vladimir Fedorov, Timothy Feist, Dmitry Gerasimov, Elena Gorbova, Olga Gorickaja, Ingunn Hreinberg Indriðadóttir, Ildar Ibragimov, Emil Ingelsten, Vasilisa Kagirova, Maria Khazhomia, Maria Kholodilova, Mikhail Knyazev, Elena Kolpachkova, Daria (Suetina) Konior, Yukari Konuma, Elena Kordi, Richard Kowalik, Kirill Kozhanov, Irina Külmoja, Olga Kuznecova, Timur Maisak, Anastasia (Borisovna) Makarova, Anastasia (Leonidovna) Makarova, Ramazan Mamedshaxov, Solmaz Merdanova, Stepan Mikhajlov, Daria Mischenko, Zarina Molochieva, George Moroz, Rasul Mutalov, Galina Nekrasova, Johanna Nichols, Dmitry Nikolaev, Ajtalina Nogovitsyna, Sofia Oskolskaya, Maria Ovsjannikova, Elena Perekhvalskaja, Natalia Perkova, Krasimira Petrova, Inna Popova, Maria Pupynina, Neige Rochant, Alexander Rostovtsev-Popiel, Sergey Say, Ekaterina Sergeeva, Ksenia Shagal, Mayya Shlyakhter, Ksenia Studenikina, Evgenija Teplukhina, Mladen Uhlik, Anastasia Vasilisina, Arseniy Vydrin, Natalia Zaika, Andreja Žele, Ekaterina Zheltova, Vasilisa Zhigulskaja, Anastasia Zhuk

Project: a brief history



Project: a brief history

- 2018: edited volume (in Russian)

Project: a brief history

- 2020: Building the web-site

https://www.bivaltyp.info/

- All credit for this phase goes to Dmitry Nikolaev

Intermission

a virtual tour of BivalTyp [www.bivaltyp.info]

Potential applications

- transitivity ratio of verbs
- (dis)similarity distances between verbs
- typologically informed analysis of language-specific valency class systems
- transitivity profiles for languages
- (dis)similarity distances between languages
- comparison with genealogical and areal data
- comparison with structural data: case, WO, etc.
- predictability of valency patterns
- and many more

Transitivity ratio of verbs

- Tsunoda's implicational transitivity hierarchy

  1a) direct effect (*kill, break* subtype) >

  1b) direct effect (*hit, shoot* subtype) >

  2a) perception (*see* subtype) >

  2b) perception (*look* subtype) >

  3) pursuit (*search, wait*) >

  4) knowledge (*know, understand, remember, forget*) >

  5) feeling (*love, like, want, need*) >

  6) possession (have) [Tsunoda 1981, modified in 1985].

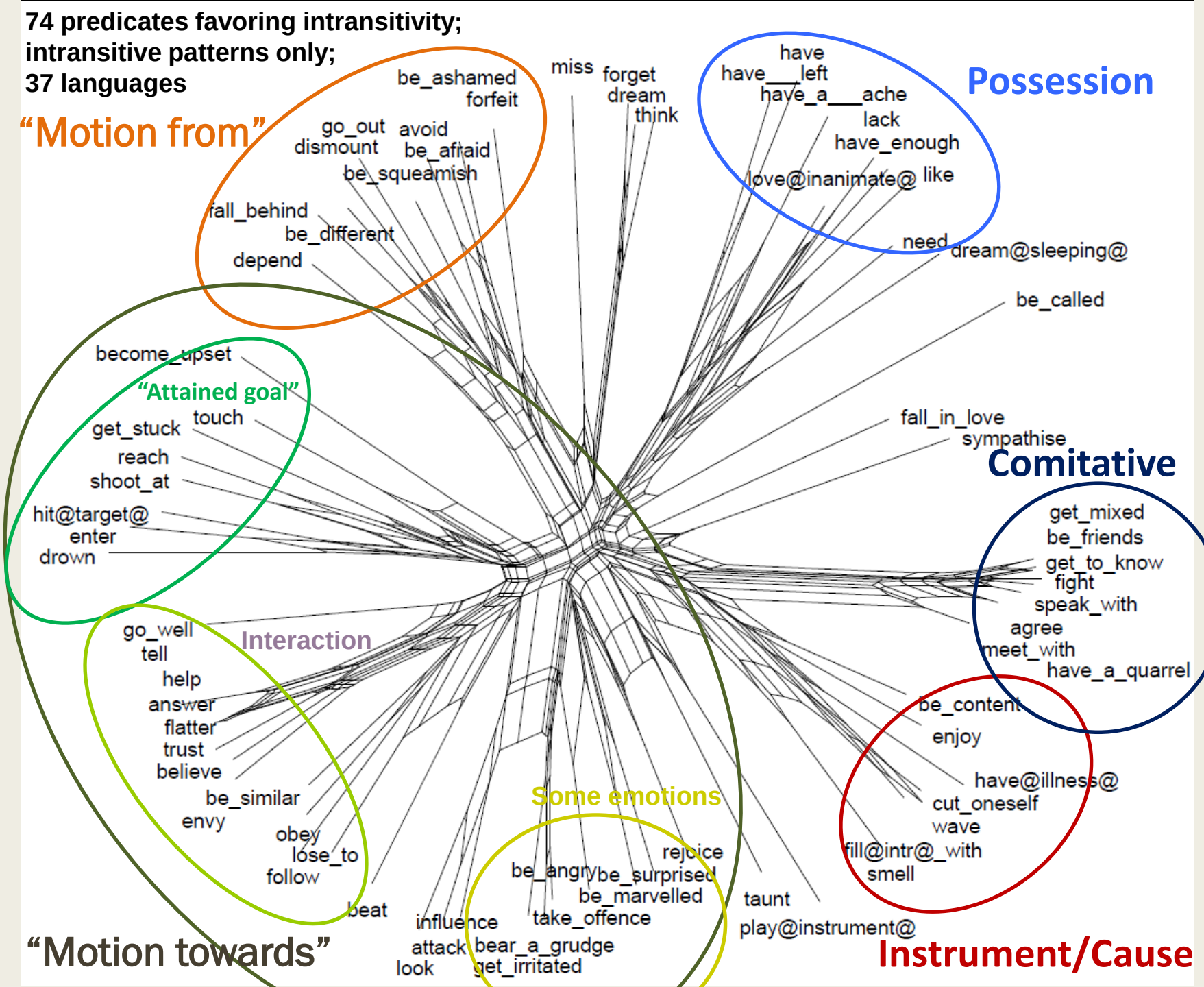
- Only partially supported by the data from BivalTyp, see next slide

Transitivity ratio of verbs

1a) direct effect	break	1,00
1b) direct effect	hit	0,77
	shoot	0,25
2a) perception	see	0,88
	hear	0,86
2b) perception	look	0,30
	listen	0,67
3) pursuit	search	0,81
	wait	0,65
4) knowledge	know	0,88
	understand	0,84
	remember	0,71
	forget	0,41
5) feeling	love	0,76
	like	0,22
	need	0,25
6) possession	have	0,40

(Dis)similarity distances between verbs

- Which verbs tend to pattern together?
- Distance metric D (V1, V2) = the ratio of languages where the two verbs V1 and V2 belong to different classes
- NeighborNet visualization of the distance matrix

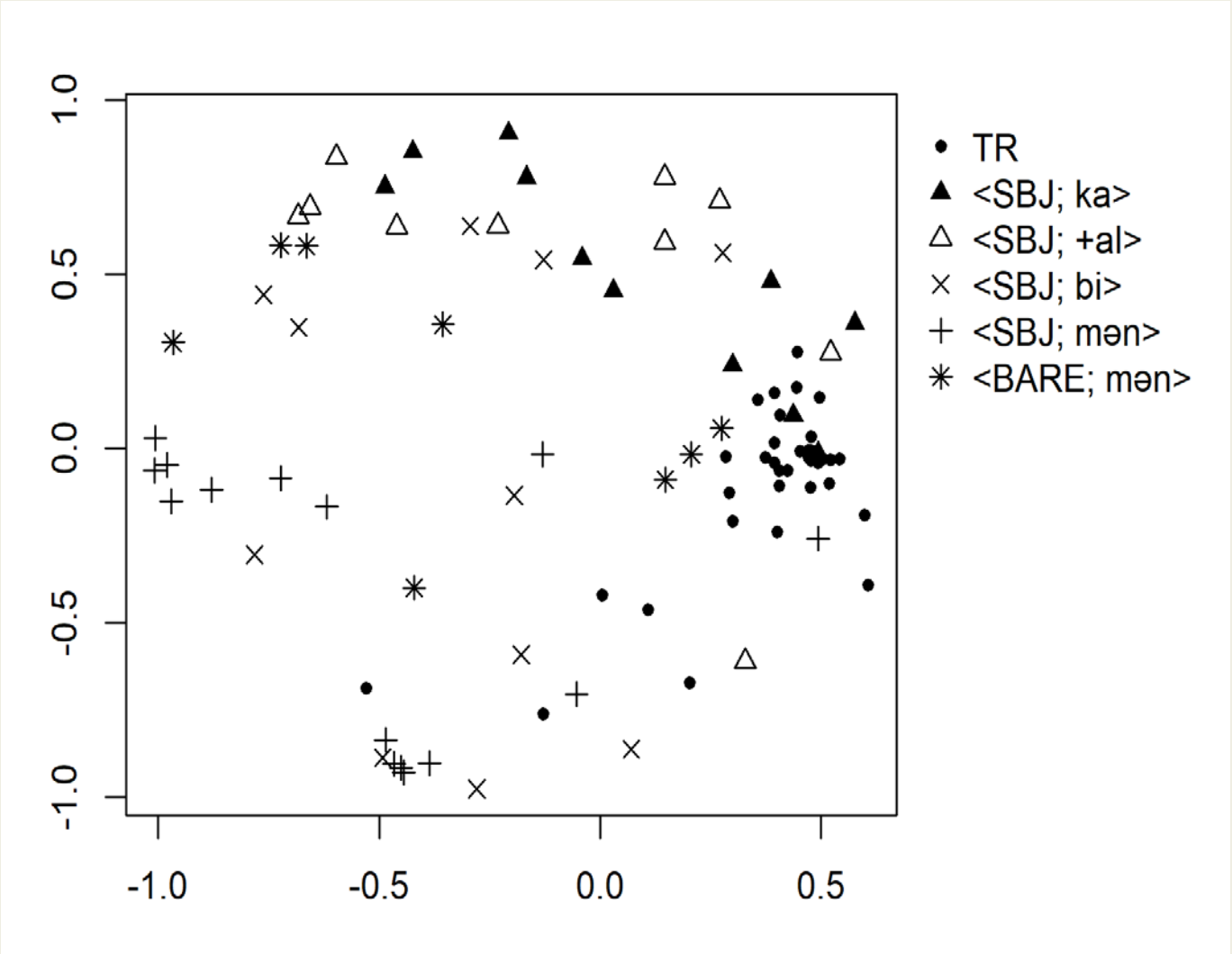

74 predicates favoring intransitivity;
intransitive patterns only;
37 languages
“Motion from”
be_ashamed
forfeit
go_out
dismount
avoid
be_afraid
be_squeamish
fall_behind
be_different
depend
miss
forget
dream
think
have
have___left
have_a___ache
lack
have_enough
love@inanimate@
like
Possession
need
dream@sleeping@
be_called
become_upset
“Attained goal”
get_stuck
touch
reach
shoot_at
hit@target@
enter
drown
fall_in_love
sympathise
Comitative
get_mixed
be_friends
get_to_know
fight
speak_with
agree
meet_with
have_a_quarrel
go_well
tell
help
answer
flatter
trust
believe
be_similar
envy
obey
lose_to
follow
Interaction
Some emotions
be_content
enjoy
have@illness@
cut_oneself
wave
fill@intr@_with
smell
rejoice
be_angry
be_surprised
be_marvelled
take_offence
taunt
play@instrument@
beat
influence
attack
look
bear_a_grudge
get_irritated
“Motion towards”
Instrument/Cause

Typologically informed analysis of language-specific valency class systems

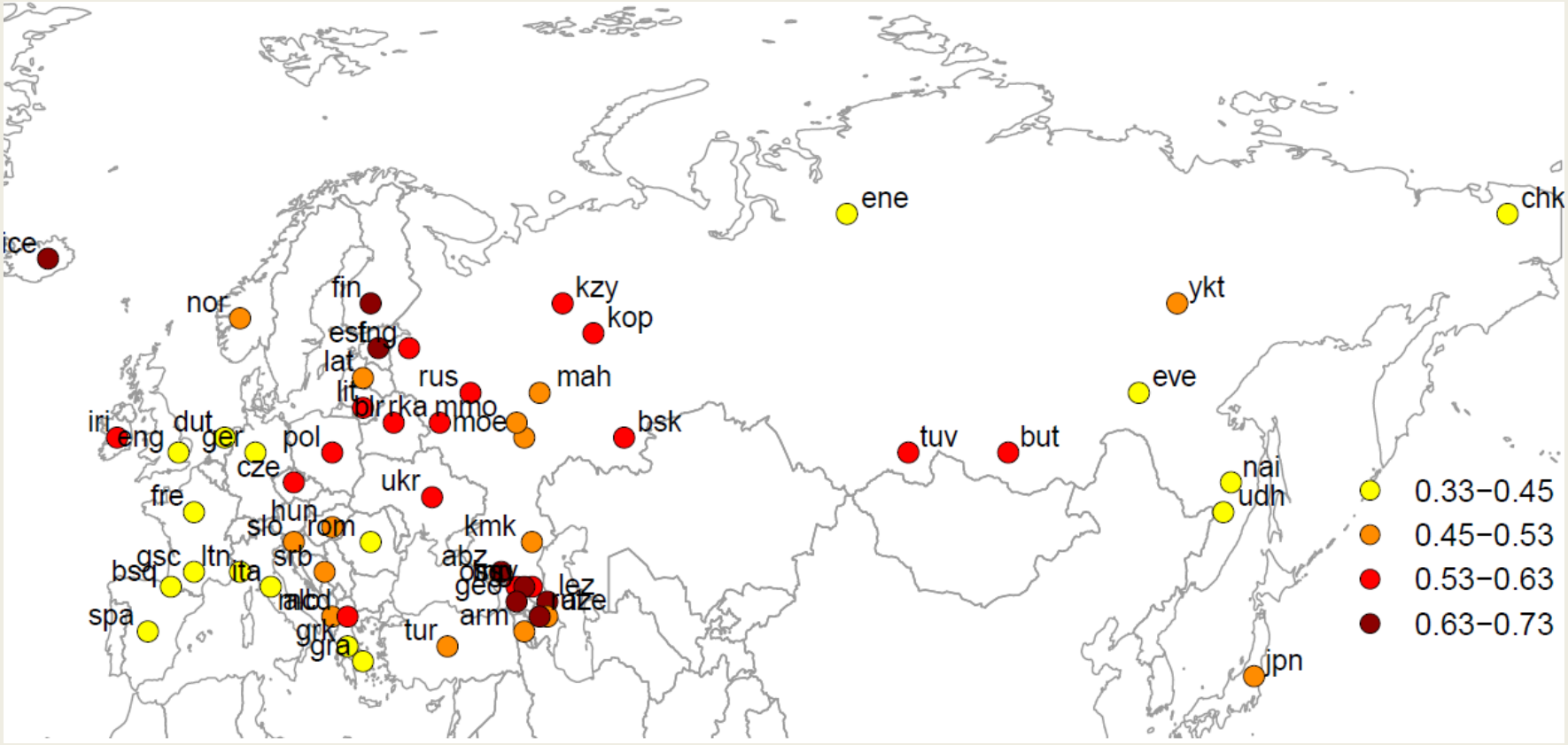
- E.g., build a distance matrix of verbs based on their typological behaviour

- And explore the ways in which individual language's valency classes carve out sections of that space

Basic valency classes in North Eastern Neo-Aramaic against a typological background (MDS-visualization)



The ratio of intransitive verbs

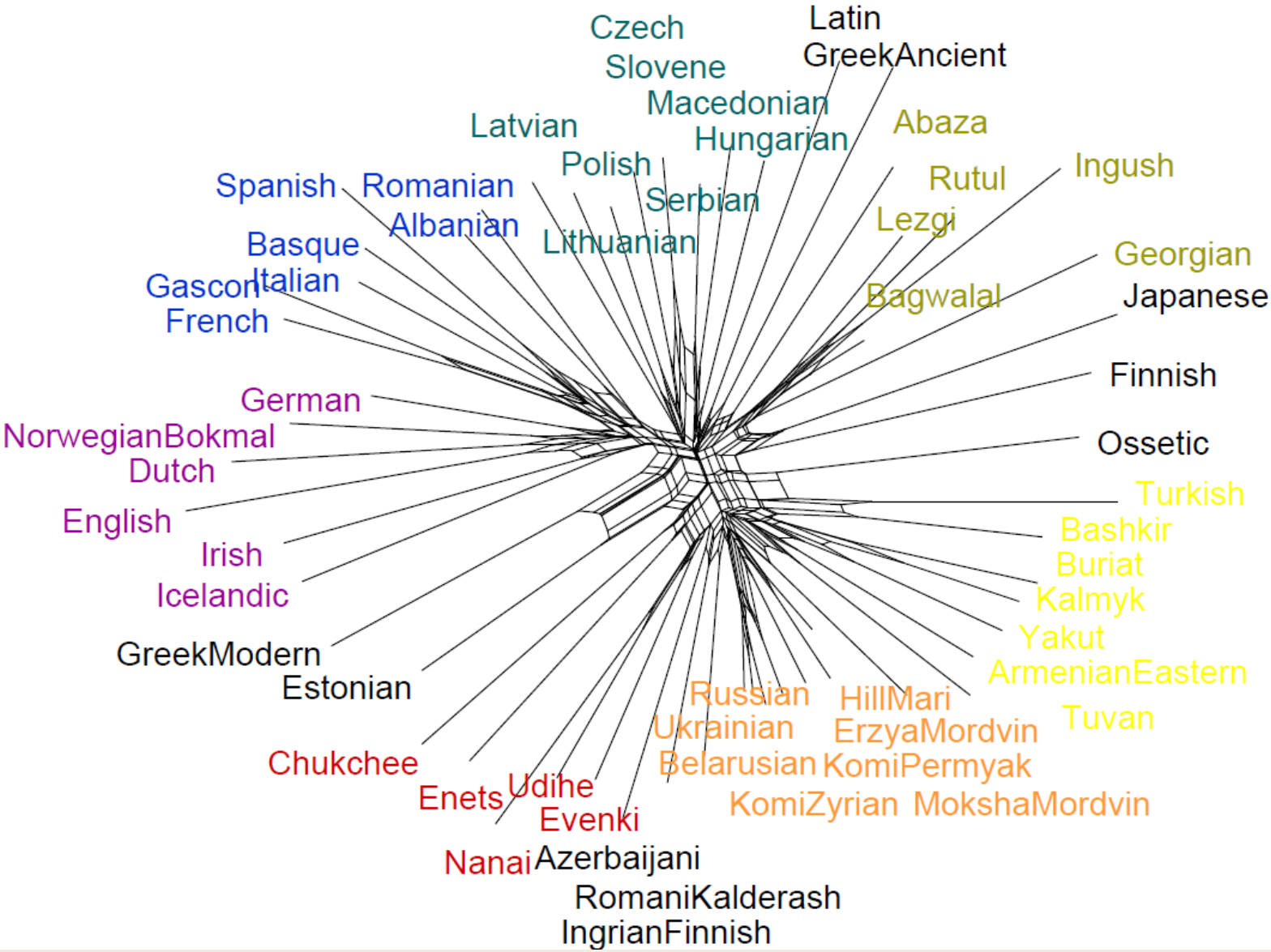


(Dis)similarity distances between languages

- DistValPat: a dissimilarity metric based on Mutual Information

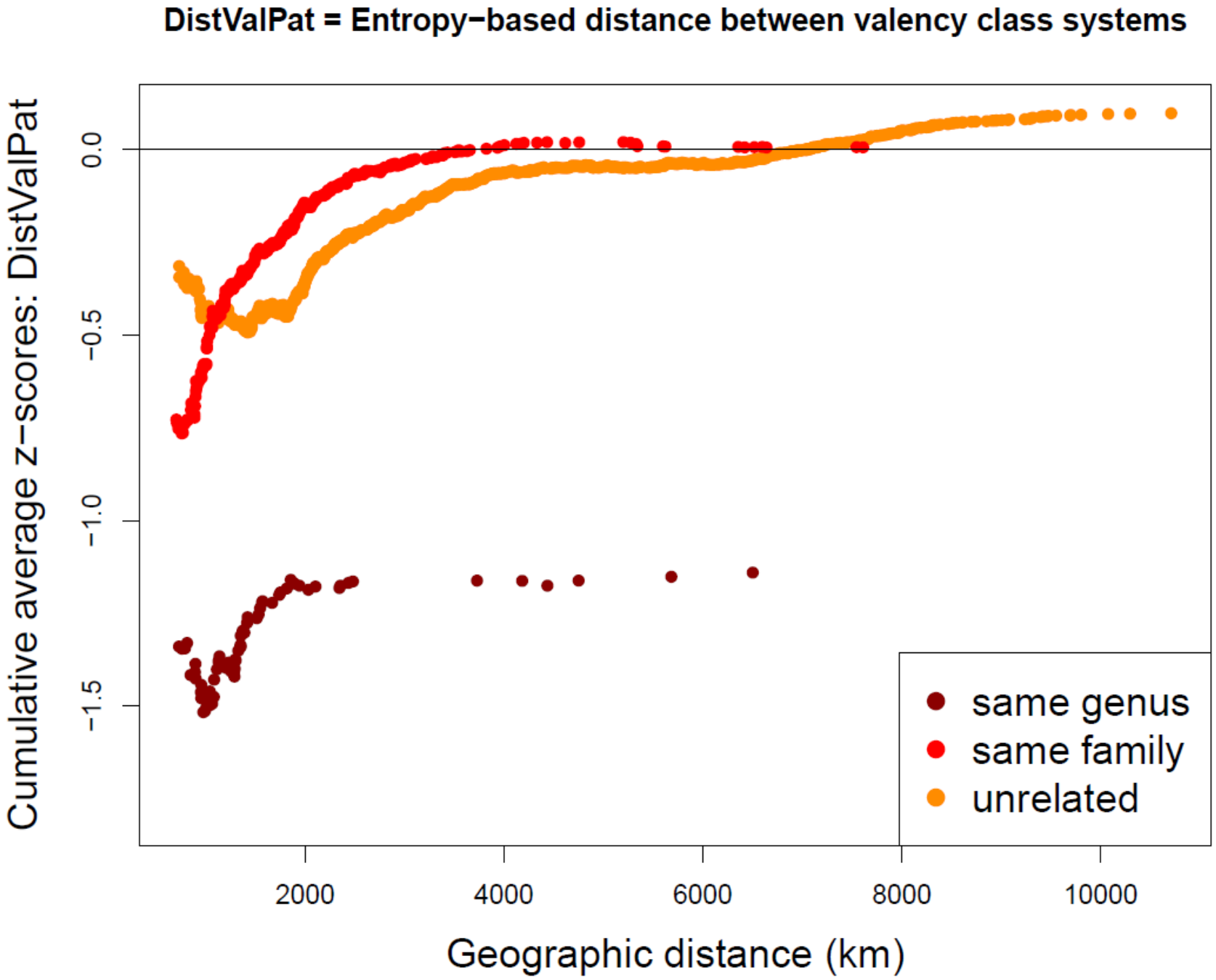
  - Captures dissimilarities between the ways in which the verbal lexicon is partitioned into valency classes

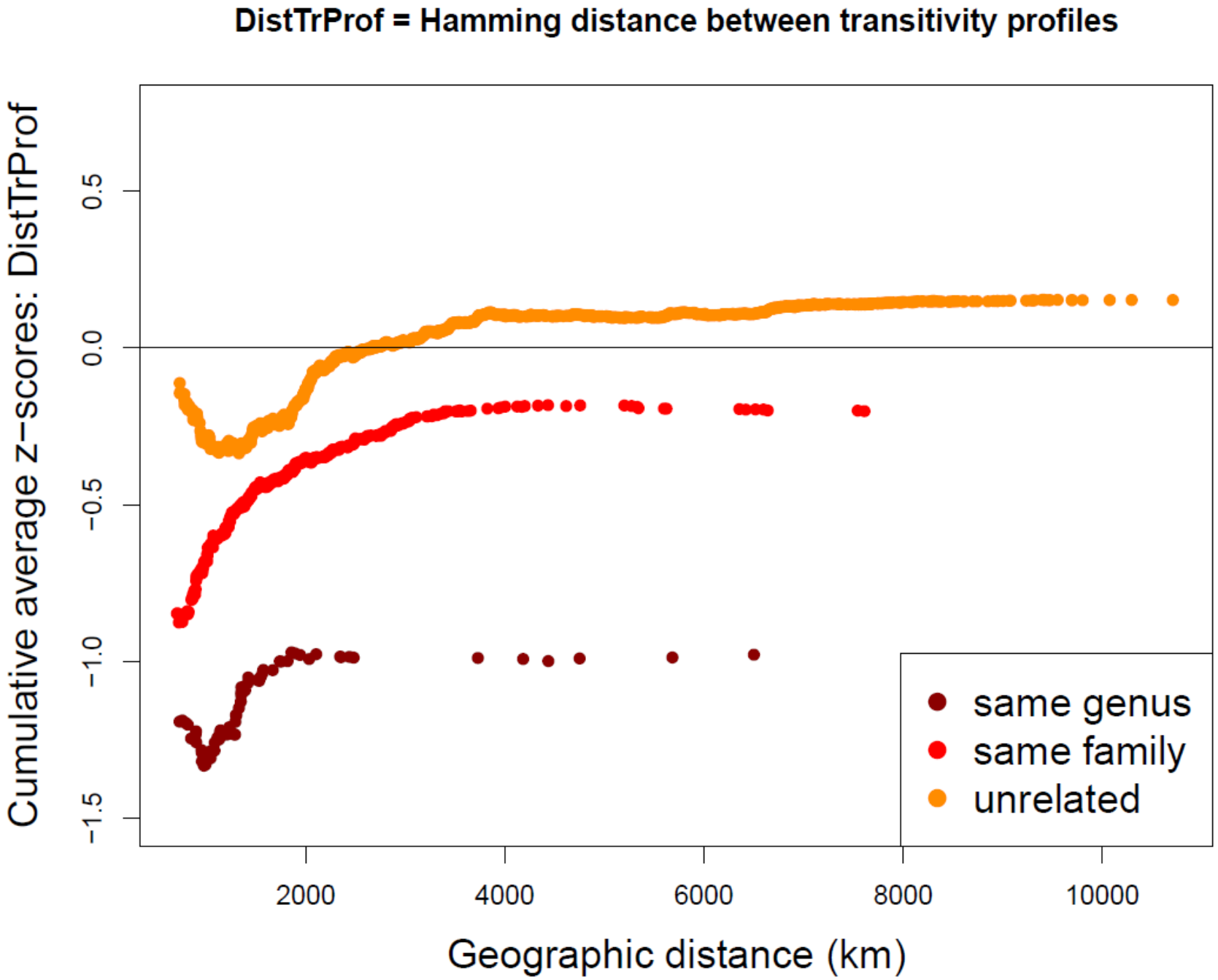
Neighbornet visualization based on DistValPat



Comparison with genealogical and areal data

- Similarities in valency class organization, including minor classes
  - no family-level genetic effects
  - strong areal effects
- Similarities in transitivity profiles:
  - family-deep genealogical effects
  - no large-scale areal effects


DistValPat = Entropy−based distance between valency class systems
Cumulative average z−scores: DistValPat
0.0
−0.5
−1.0
−1.5
2000
4000
6000
8000
10000
Geographic distance (km)
same genus
same family
unrelated


DistTrProf = Hamming distance between transitivity profiles
Cumulative average z−scores: DistTrProf
0.5
0.0
−0.5
−1.0
−1.5
2000
4000
6000
8000
10000
Geographic distance (km)
same genus
same family
unrelated

THANK YOU!

References

- Bickel, Balthasar, Taras Zakharko, Lennart Bierkandt & Alena Witzlack-Makarevich, 2014. Semantic role clustering: An empirical assessment of semantic role types in non-default case assignment. Studies in language, 38 (3). Advances in research in semantic roles. 485-511.
- Bossong, Georg. 1998. Le marquage de l'expérient dans les langues d'Europe'. In: Feuillet (ed.). Actance et valence dans les langues de l'Europe. Berlin: Mouton de Gruyter. 259–94.
- Haspelmath, Martin. 1993. More on the typology of inchoative / causative verb alternations. In: Comrie, Bernard & Maria Polinsky (eds.) *Causatives and Transitivity.* Amsterdam: Benjamins. 87–120.
- Nedjalkov, V.P. 1969. Nekotorye verojatnostnye universalii v glagolnom slovoobrazovanii. In: F. Vardul' (ed.). Jazykovye universalii i lingvisticheskaja tipologija. Moscow: Nauka. 106-114.
- Nichols, Johanna. 2008. Why are stative-active languages rare in Eurasia? Typological perspective on split subject marking. In Mark Donohue and Søren Wichmann (eds). The Typology of Semantic Alignment Systems, 121-139. Oxford: Oxford University Press.
- Nichols, Johanna, David A. Peterson & Jonathan Barnes. 2004. Transitivizing and detransitivizing languages. *Linguistic Typology* 8: 149–211.
- Tsunoda, T. 1981. Split case-marking patterns in verb-types and tense / aspect / mood // Linguistics. Vol. 19. P. 389–438.
- Tsunoda, Tasaku. 1985. Remarks on transitivity. *Journal of Linguistics* 21. 385–396.