SEMANTIC MAPS in MLexT

KATIA RAKHILINA

DARIA RYZHOVA

in collaboration
with
TATIANA
REZNIKOVA

Moscow lexical
typology group

Higher School of
Economics, Moscow

International Workshop
"Semantic maps: Where do we stand and where we are going?"
Liège, 26-28 of June, 2018

Vladimir Uspensky
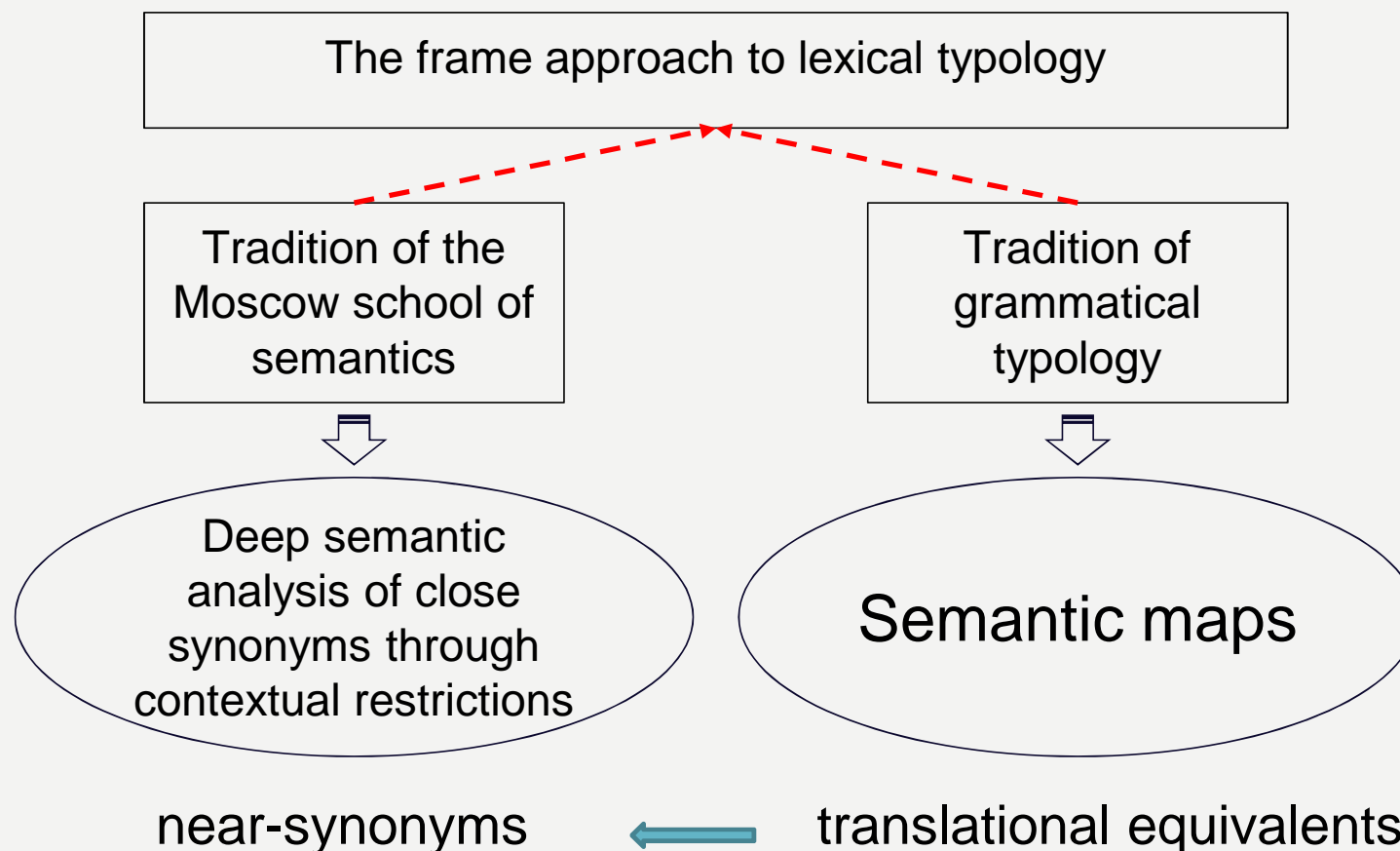# (27.11.1930 – 27.06.2018)

LEXICAL TYPOLOGY
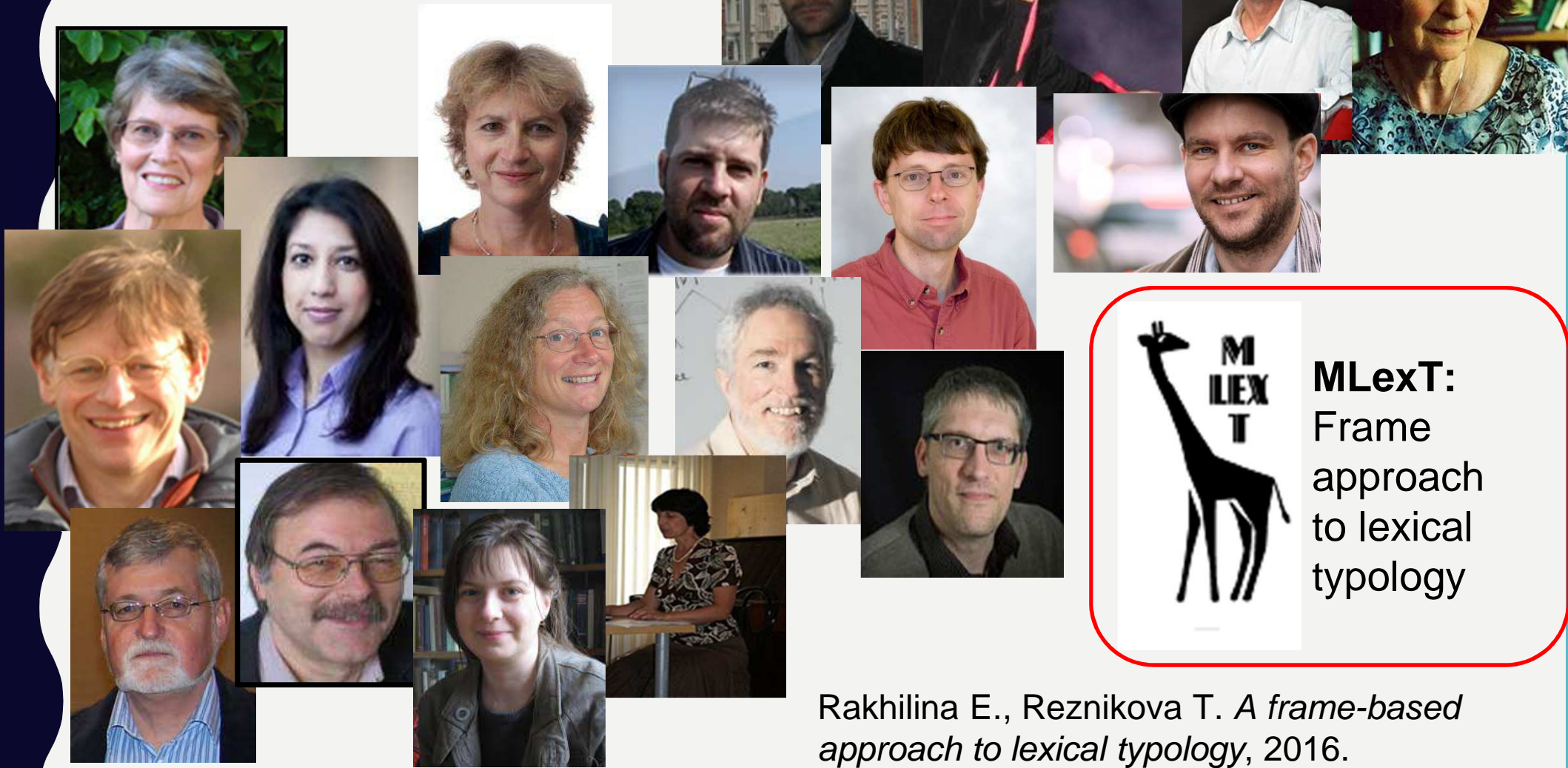
MLexT: Frame approach to lexical typology

Rakhilina E., Reznikova T. *A frame-based approach to lexical typology*, 2016.

OUTLINE

- MLexT: Frame approach to lexical typology
- General problems of semantic mapping:
  - Mapping of metaphorical meanings
  - Defining the boundaries of the semantic field

The frame approach brings together two traditions:

The frame approach to lexical typology

Tradition of the Moscow school of semantics

Tradition of grammatical typology

Deep semantic analysis of close synonyms through contextual restrictions

Semantic maps

near-synonyms ← translational equivalents

Data sources: dictionaries, corpora, field work, special questionnaires

(computational development of this methodology: Ryzhova & Obiedkov 2017, Ryzhova & Paperno 2017)

Our experience: lexical domains

- Verbs of aqua-motion
- Pain metaphors
- Metaphors of sound verbs
- Verbs of rotation
- Verbs of oscillation
- Cutting & breaking
- Sitting & standing
- Falling
- Physical qualities (sharp, blunt, wet, soft, hard, even, straight, smooth, slippery, empty, full, thick, thin, high, low, deep, shallow, heavy, tight, old, dense, clean, dirty…)
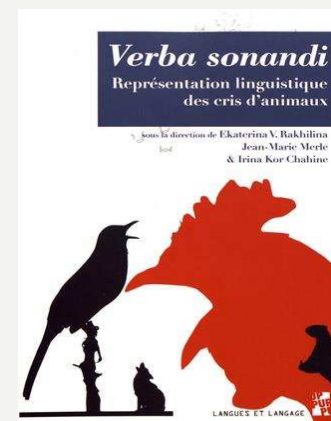
The central notion: frame

- Frame = an entry for typological **questionnaires**
- Frame = a node for **semantic maps**
- Frame = a **situation** typical for a certain semantic domain

- Fillmorean frame + taxonomic restrictions on the slots

Frames for verbs of motion: 'falling'

Determined mainly by the Trajector type

'falling from an elevated surface'

'falling: vertical objects'

'falling down: aircraft'

'slipping out of one's hands'

"reflexive motion": crashing down

'missing teeth'

'lizard losing its tail'

'pouring: liquids and substances'

'precipitations'

Frames: aqua-motion

'swim'

'sail'

'drift'

'float'

Frames for qualities: 'old'

Determined by the type of the quality bearer

'old person'

'old clothes'

'old (former) boss'

'old coins
(belonging to a
previous epoch)'

Frames for qualities: 'tight'

'taut pillow'

'hard / stiff keys or buttons'

'tightly stretched cloth'

'tight knot'

'taut / stiff rubber band'

Frame approach: two goals

- A list of frames for each lexical domain

- Patterns of their colexification

=> Cognitive strategies: combining different frames under the same lexeme
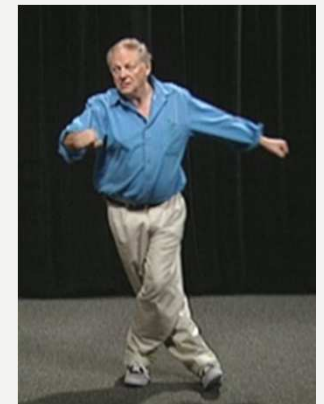
'Oscillation' (fragment of the domain)

'pendulum'　'tree'　'curtain in the wind' 'old fence'　'drunk person'

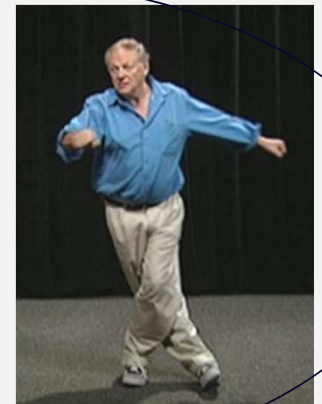# FRAMES IN CROSS-LINGUISTIC COMPARISON

Russian

kačat'sja

kolyxat'sja

šatat'sja

'pendulum'   'tree'   'curtain in the wind'   'old fence'   'drunk person'

FRAMES IN CROSS-LINGUISTIC COMPARISON

Nenets (Uralic)

púqla-

'curtain in the wind'

piŋker-

saqje-

mənc°ra-

'pendulum'

'tree'

'old fence'

'drunk person'

FRAMES IN CROSS-LINGUISTIC COMPARISON
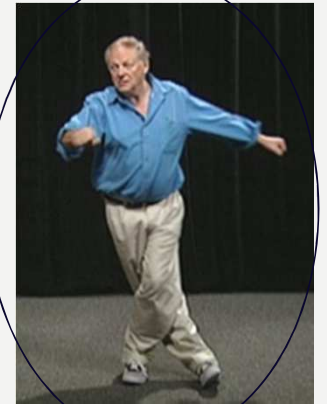
Japanese

yureru

nabiku

guratsuku

furatsuku
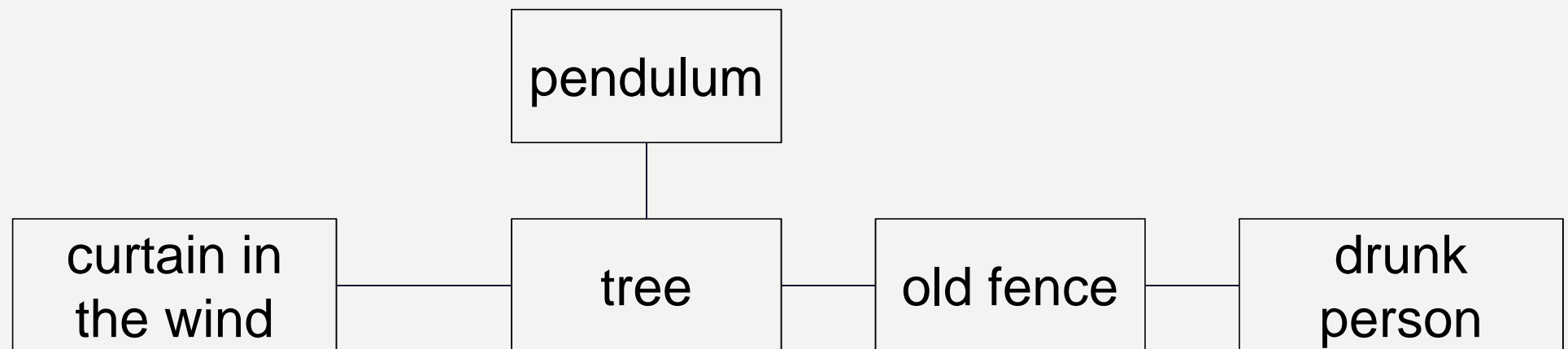
'pendulum' 'tree'

'curtain in the wind'

'old fence'

'drunk person'

Semantic maps

- Combinations of frames are not arbitrary, they are semantically motivated
- Not all combinations are possible
- We reflect the predicted constraints on **semantic maps**

```
                    ┌──────────────┐
                    │   pendulum   │
                    └──────┬───────┘
                           │
┌──────────────┐   ┌───────┴──────┐   ┌──────────────┐   ┌──────────────┐
│  curtain in  │───│     tree     │───│  old fence   │───│    drunk     │
│   the wind   │   │              │   │              │   │   person     │
└──────────────┘   └──────────────┘   └──────────────┘   └──────────────┘
```

The methodology of MLexT seems to be very close to François 2008 (who refers to dictionary meanings that are similar to frames) and CLICS, cf.:

For 'carry' (in the same way as MLexT for 'oscillation' / 'falling')
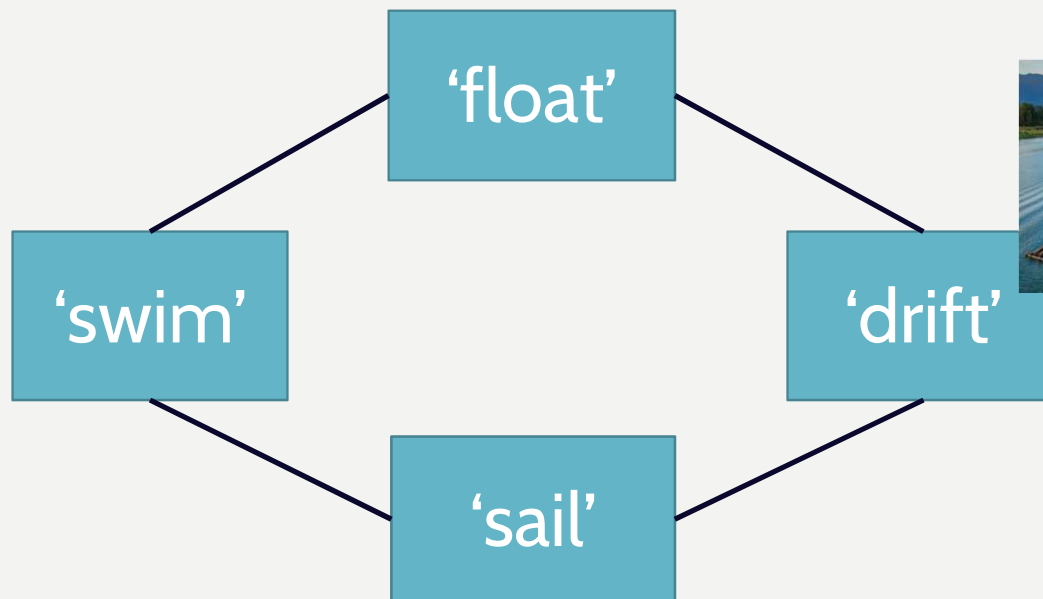CLICS distinguishes:
- carry in a hand
- on a shoulder
- under the arm
- on the head

Sometimes MLexT maps are quite close to the resultative graphs of CLICS (e.g. SWIM), but sometimes they are very different (e.g. FALL)
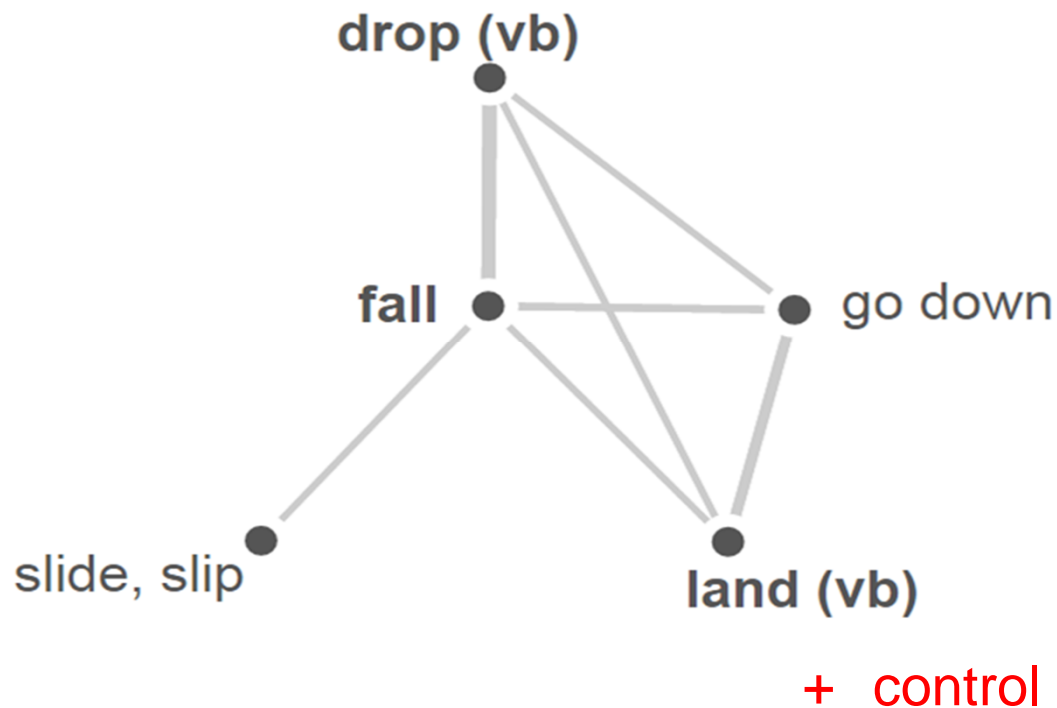
CLICS: 'swim'

MLexT: 'swim'

'float'

'swim'

'drift'
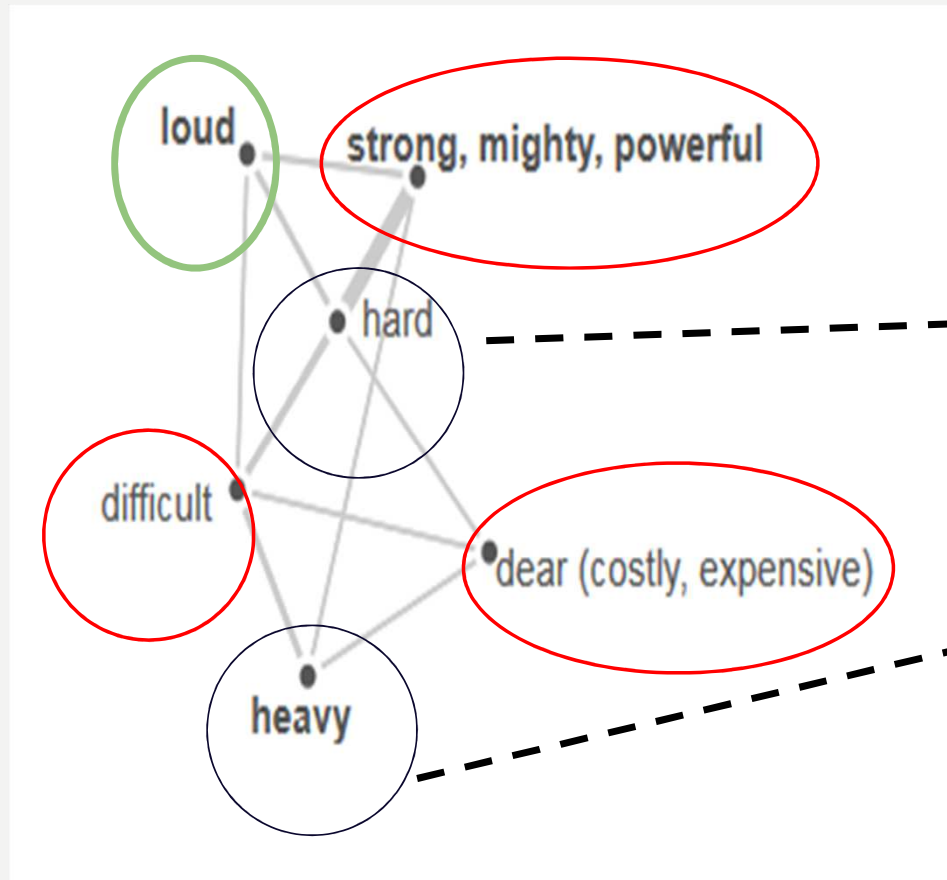
'sail'
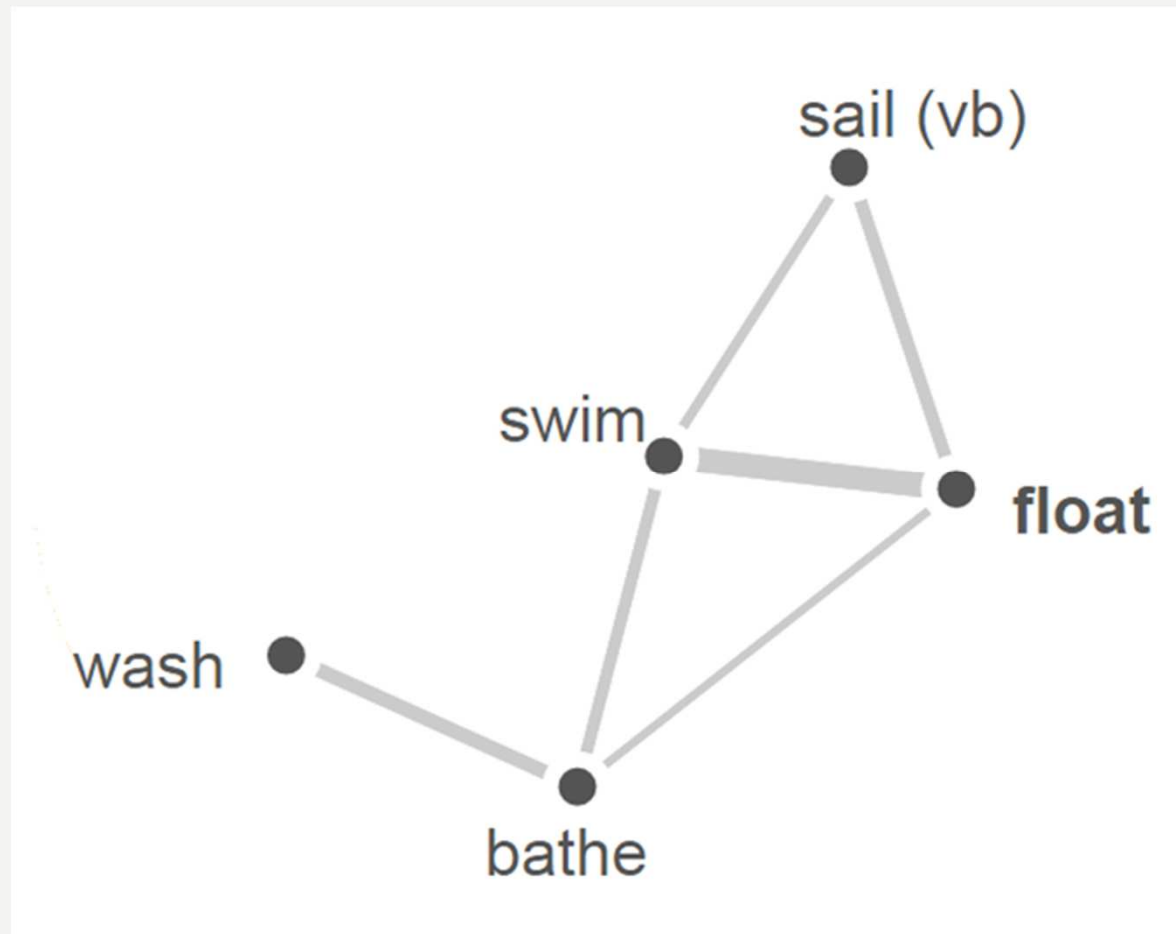
'X carried with the flow'

CLICS: 'fall'

- The overall structure resembles ours
- All concepts are equally important
- Except for 'land' which denotes controlled motion
- Overlooks the special cases: teeth, rain, snow, etc.
- Our system of frames is more elaborate

cf. HEAVY, which looks more fine-grained in the framework of CLICS

'heavy': CLICS & MLexT

'hard / stiff keys, pedals'

'heavy backpack'

'weighty stone'

Ryzhova D., Rakhilina E., Kholkina L. (2018). Approaching perceptual qualities: The case of HEAVY // L.J. Speed [et al.] (Eds.). Perception metaphor. John Benjamins Publishing Company.

CLICS includes cross-modal metaphors (audial modality) and abstract notions (difficult / strong / dear)

OUTLINE

- Frame approach
- General problems of semantic mapping:
  - Mapping of metaphorical meanings
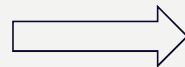 - Defining the boundaries of the field

METAPHORICAL MEANINGS in MLexT

- Metaphorical extensions evolve from particular frames (or a group of frames)

Some metaphors of oscillation

English, French, Italian, Finnish, Japanese

 ⟹ Choosing between two options

French: Je **balançais** entre deux avis

English: *I was **swinging** between two opinions*

Some metaphors of oscillation

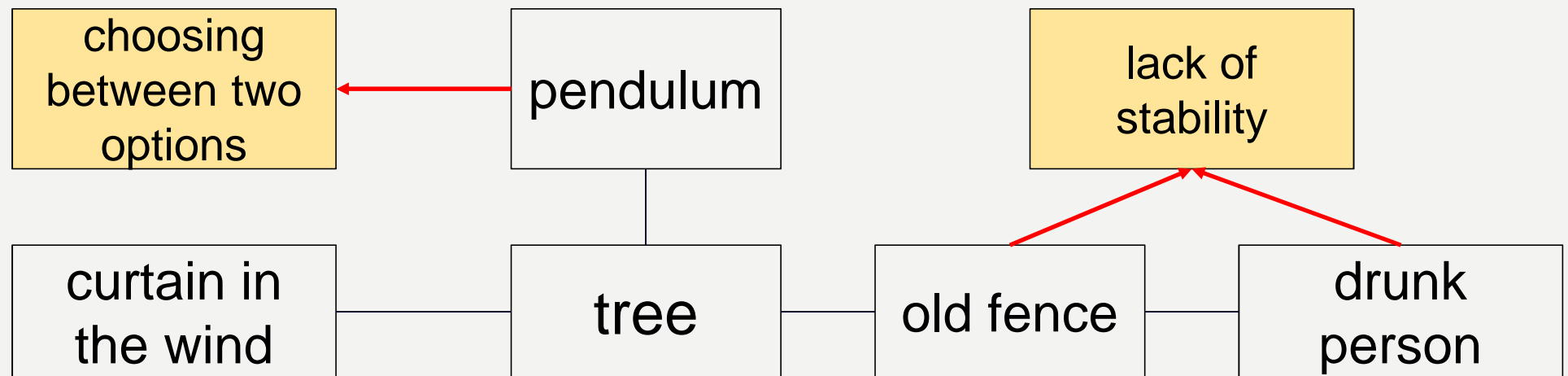- Russian, Czech, French, Finnish, Italian, German, Japanese, Hindi

  ⟹ Lack of stability

Italian: Sono vecchio ormai e la memoria mi **vacilla.**
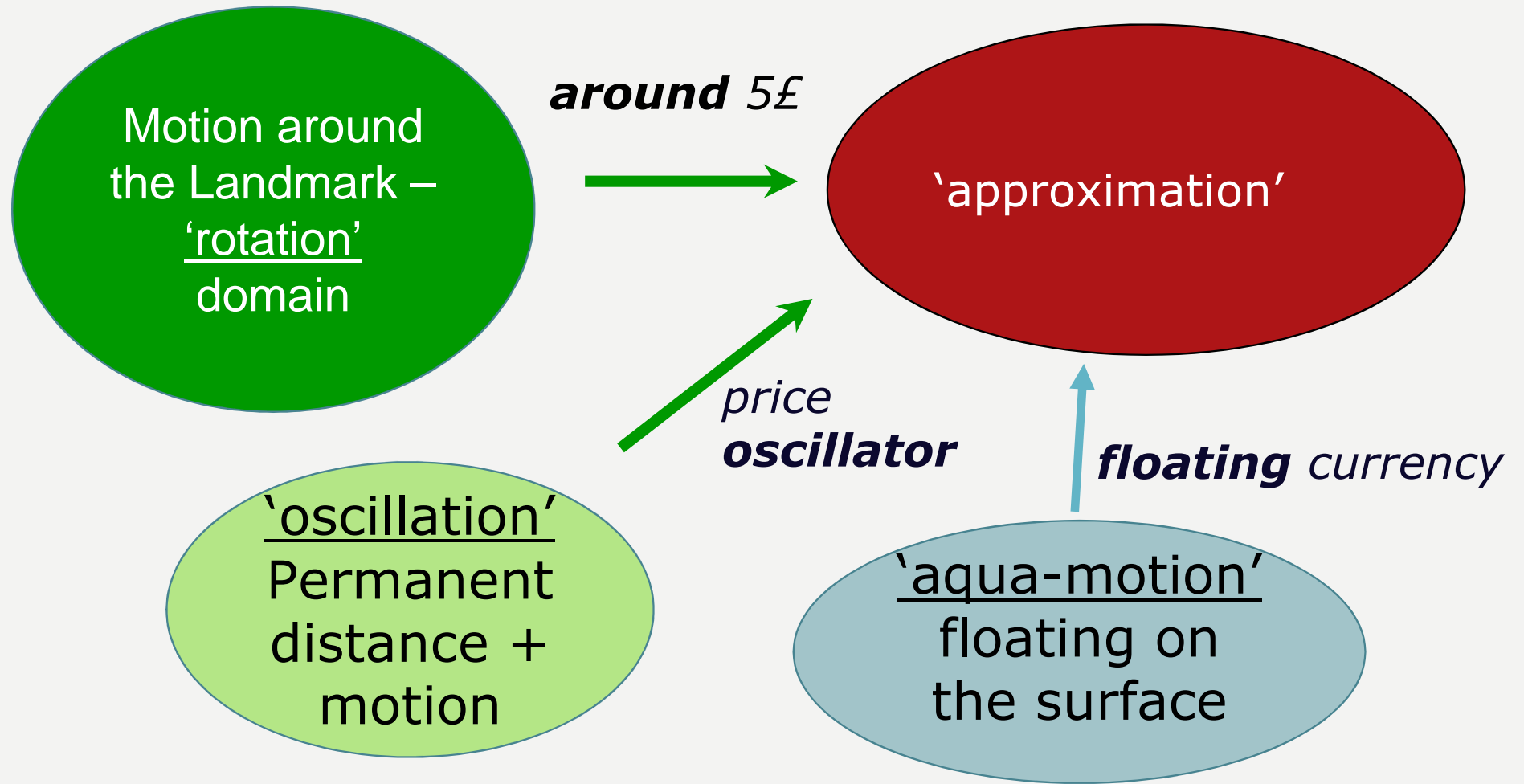'I am old, and my memory is **fading**'.

MLexT

distinguishes between a synchronic network of frames and diachronic metaphorical extensions.
Two-level maps: static & dynamic

NB! The arrows to the second level may come from outside the domain, cf. APPROXIMATION

approximation

It means that abstract meanings (=metaphorical extensions) may be linked to several unrelated semantic domains, cf.:

Metaphor of metaphors
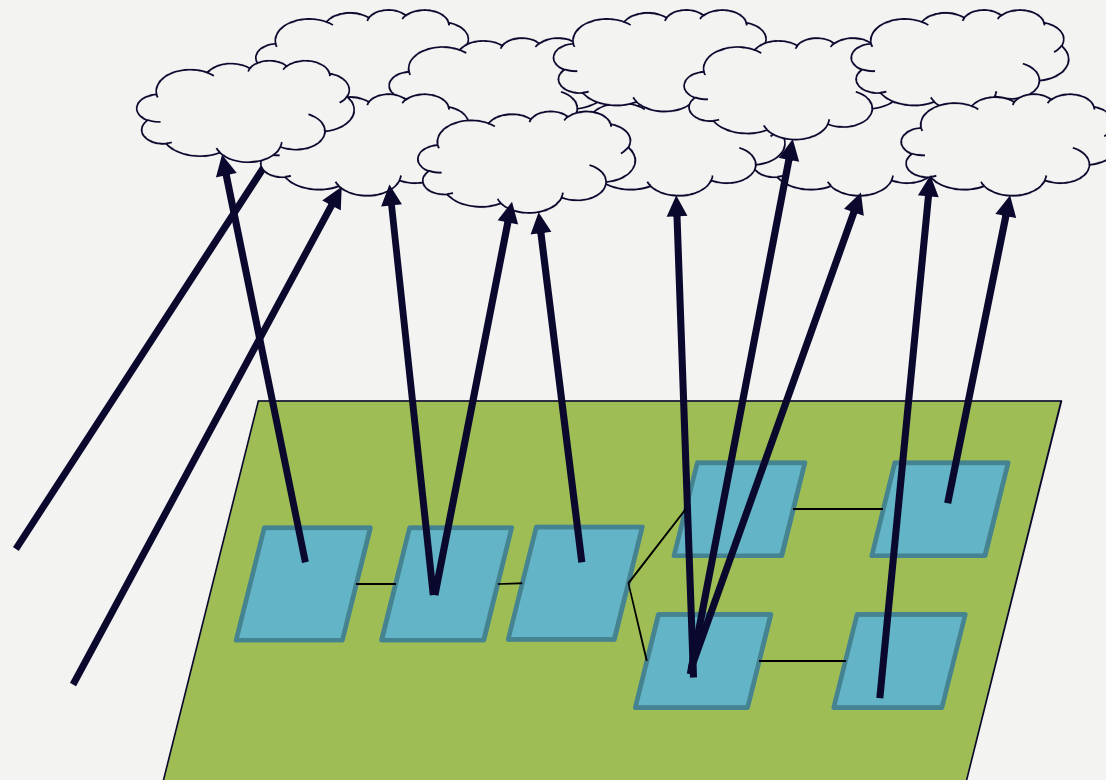
Metaphorical level

Non-metaphorical level

What about the physical domain?

OUTLINE

- Frame approach
- General problems of semantic mapping:
  - Mapping of metaphorical meanings
  - Defining the boundaries of the field

Semantic field as a linguistic metaphor

According to it, fields look more or less independent

They have boundaries which seem to be quite strict and prevent semantic domains from colexification

Our data: semantic fields do exist
'Rolling' & 'rotation' represent different fields

- Rotation in contact with the surface tend to require lexical markers that are different from those denoting ordinary types of rotation (rotation round the inner axis, rotation round the outer axis, turning, etc.),

cf. Eng. *rolling*, Rus. *katit'sja*, Jap. *korogaru*, Komi *typoon*, Mandarin *gǔn*, etc.

- Aghul (Dagestanian language):

All kinds of rotation verbs are derived from one and the same root *-dark-* with the help of different Locative preverbs (Super, Ante, In…)

Meanwhile, the verb of rolling *adaʕoas* (= rotation in contact with the surface) has a different root

(Krugljakova 2010)

Numerous of exceptions

- The field metaphor of semantics is largely a simplification. The notional boundaries could be quite transparent
- Even when meanings seem to be unrelated they could be colexified without any metaphorical shift.

Example 1. 'stretch' VS 'crawl'

Beserman verb ***kəstaš'kənə*** 'to stretch':

(5) *Kofta* ***kəstaš'ke.***

– The sweater stretches (when you put it on)

- also means 'to crawl' (about snakes or insects without legs):

(6) *Nomər / Ul'itka* ***kəstaš'ke.***

– 'A worm / *A snail crawls*'

Example 1. 'stretch' VS 'crawl'

When moving in this manner, worms and snakes seem to stretch their body. Thus, stretching is viewed as part of the situation of crawling.

Example 1. 'stretch' VS 'crawl'

When moving in this manner, worms and snakes seem to stretch their body. Thus, stretching is viewed as part of the situation of crawling.

If the manner of crawling is different, Beserman uses another verb semantically unrelated to stretching, namely, *mənənə* 'go' (about spiders, flies or crawling children), cf. Fillmore, Atkins 2000

Example 1. 'stretch' VS 'crawl'

When moving in this manner, worms and snakes seem to stretch their body. Thus, stretching is viewed as part of the situation of crawling.

If the manner of crawling is different, Beserman uses another verb semantically unrelated to stretching, namely, *mənənə* 'go' (about spiders, flies or crawling children), cf. Fillmore, Atkins 2000

Example 1. 'stretch' VS 'crawl'

When moving in this manner, worms and snakes seem to stretch their body. Thus, stretching is viewed as part of the situation of crawling.

If the manner of crawling is different, Beserman uses another verb semantically unrelated to stretching, namely, *mənənə* 'go' (about spiders, flies or crawling children), cf. Fillmore, Atkins 2000

⇨ Evidence supporting the linking of the concepts of stretching and crawling

What does it all have to do with semantic maps?

Example 2. 'tight' - 'hard' - 'heavy'

'keys, buttons'

French, Serbian: 'hard'

'taut / stiff rubber band'

'heavy backpack'

'surface, chair'

French:

- *Le truc qui te fait mal aux poignets, avec les touches dures*
'The thing that makes your writst ache, the one with the **stiff (lit.: hard) keys**.'

- *Pauline s'assit sur une chaise dure, sachant que sa mère serait fâchée qu'elle choisisse un fauteuil confortable.*
'Pauline sat on the **hard chair**, knowing that her mother would be angry if she had chosen the comfortable arm-chair.'

'tight' - 'hard' - 'heavy'

'taut / stiff rubber band' ——— 'keys, buttons' ——— 'backpack'

'hard surface / chair'

Japanese:

*Ashi ga warukute **omoi baggu** o mota-nai*
'[Her] legs are bad, and [she] does not carry **heavy bags**.'

*Sakamichi de jitensha no **pedaru** ga **omoi***
'When riding uphill, the **pedals are stiff** (lit. "heavy").'

'tight' - 'hard' - 'heavy'

Russian: 'tight'

'taut / stiff rubber band'

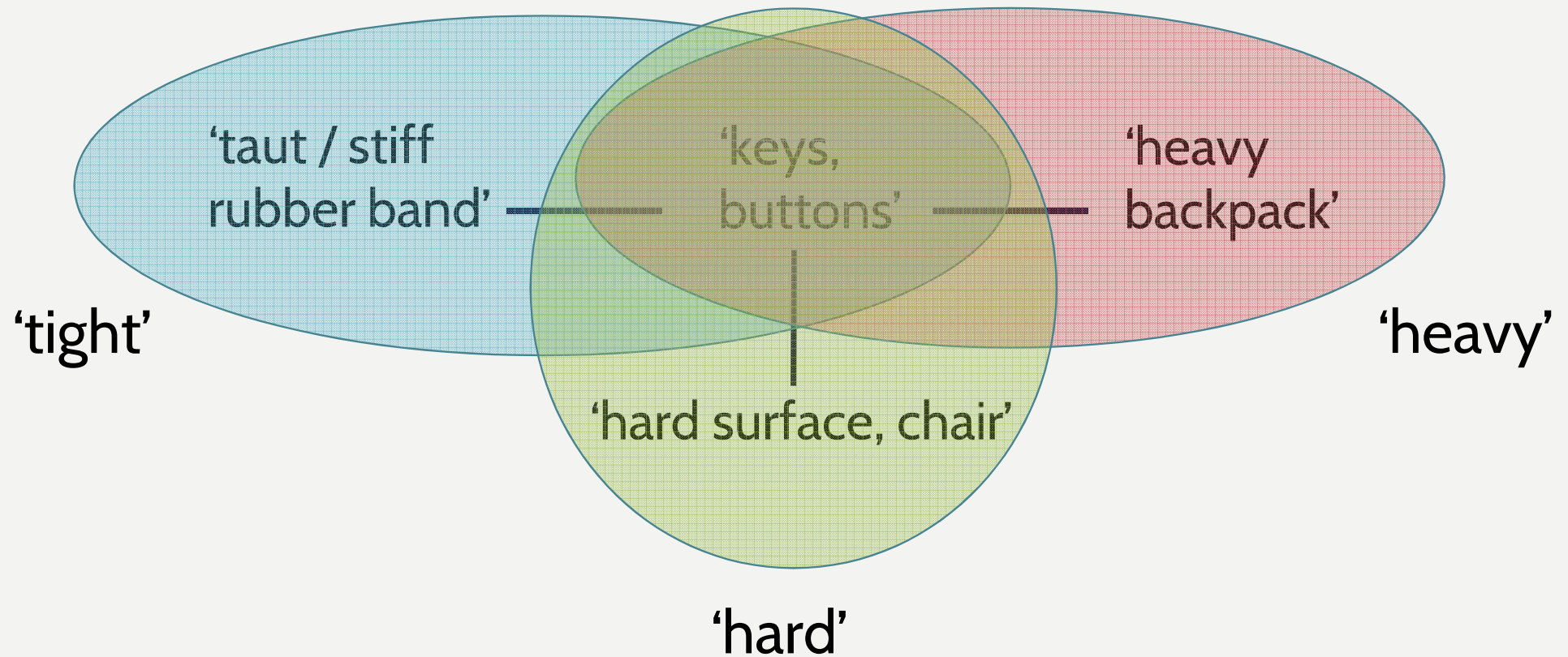'keys, buttons'

'heavy backpack'

'hard surface / chair'

tugaja knopka
'**stiff (lit. "tight") button**'

Plat'e s očen' ***tugoj rezinkoj*** *v pojase, kotoraja menja vsegda mučila.*
'The dress with a very **tight elastic waistband** which has always been a torture for me'.

'tight' - 'hard' - 'heavy'

'tight'

'taut / stiff rubber band'

'keys, buttons'

'heavy backpack'

'heavy'

'hard surface, chair'

'hard'

Example 3: 'thick'

| Dense sets (*forest*) | Thick substances (*porridge*) | | Thick layers (*book*) | Thick pivots (*stick*) |

Consistency | Size

Example 3: 'thick'

| Dense sets (*forest*) | Thick substances (*porridge*) | | Thick layers (*book*) | Thick pivots (*stick*) |

Russian: *gustoj* | *tolstyj*

Example 3: 'thick'

Example 3: 'thick'

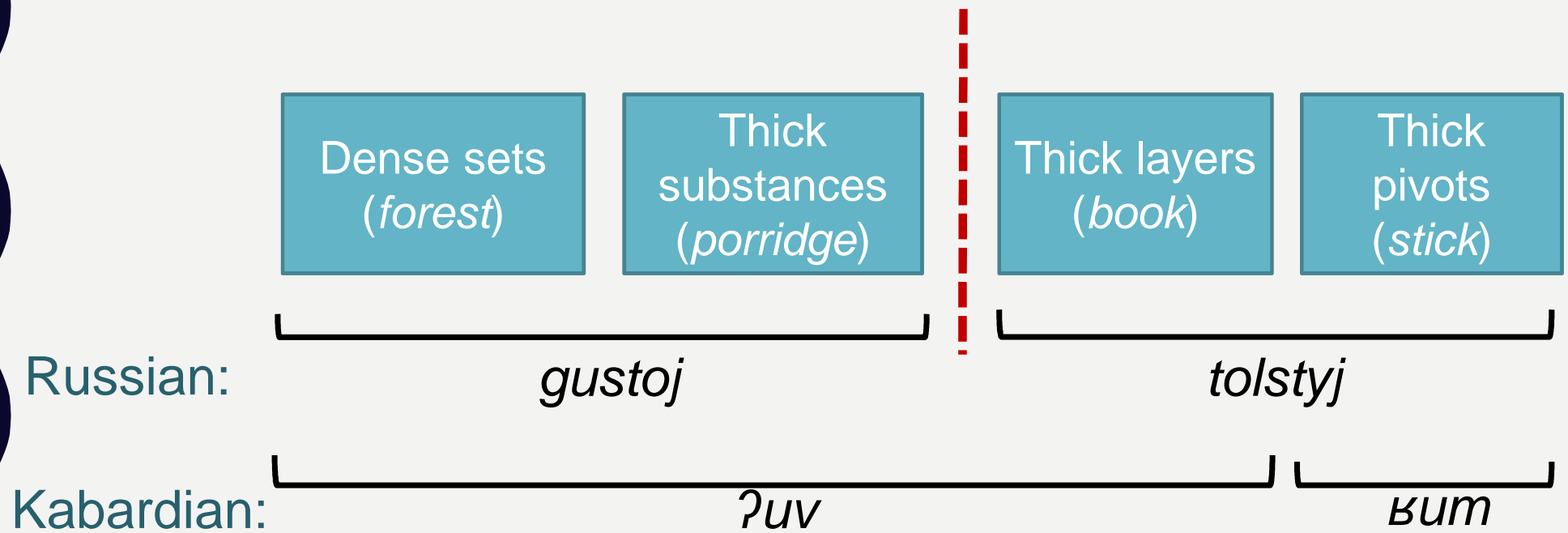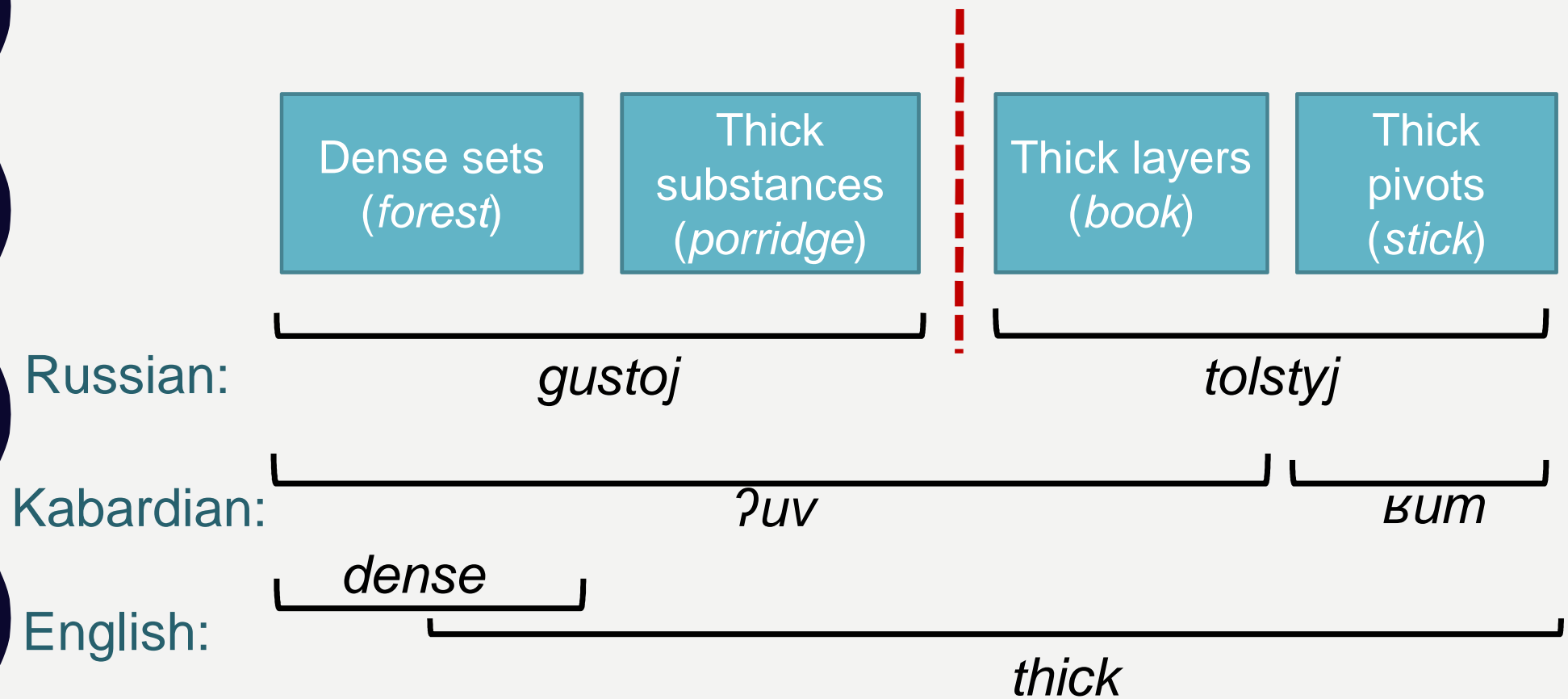| Dense sets (*forest*) | Thick substances (*porridge*) | Thick layers (*book*) | Thick pivots (*stick*) |

Russian: *gustoj* | *tolstyj*

Kabardian: *ʔuv* | *ʁut*

English: *dense* | *thick*

CONCLUSION: visualization of lexical semantics