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How to distinguish semantically close cases : A case study on Mordvin illative and lative

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HOW TO DISTINGUISH BETWEEN SEMANTICALLY CLOSE CASES

A case study on Mordvin illative and lative

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Faculty of Arts



- Mordvin languages (Erzya and Moksha) have two spatial cases expressing GOAL of an action
- The variation has been explained in various ways
 - Lative is not a case, but a derivational affix (e. g. Wiedemann 1865) or an allomorph of illative (e. g. GMJa 1962)
 - The difference between illative and lative lies in the meanings/semantic roles they convey (e. g. GMJa 1980; Bartens 1996; EK 2000; MK 2000)
 - In addition to the meanings the difference has something to do with the properties of the landmark noun (e. g. Ahlquist 1861; Alhoniemi 1985; EMJa 2018; Erkkilä 2019)
- In this paper I will explore different parameters that affect the choice between GOALcases in Mordvin languages



MORDVIN SPATIAL CASE SYSTEM

- Productive inflection makes a four-way distinction
 - In content nouns GOAL-marking varies between two cases
 - Relational nouns inflect according to one of the case series according to their lexical preference

| Content nouns | |
|---------------|-----------------|
| LOCATION | inessive |
| SOURCE | elative |
| GOAL | illative/lative |
| PATH | prolative |
| | |

| Relational r | nouns | |
|--------------|----------|-------------------------|
| LOCATION | inessive | locative |
| SOURCE | elative | ablative (partitive) |
| GOAL | illative | lative |
| PATH | prola | ative |



- Conceptualization of situations
 - Based on generalizations made from recurring events and general world knowledge
 - Categorized based on similarities with previous situations
- Relations expressed by cases and relational nouns
 - Relation between trajector and landmark
 - Trajector = entity that is located
 - Landmark = entity in relation to which trajector is related
 - Can be situated in various cognitive domains (e. g. spatial, temporal, causal)



- Meanings of cases
 - One case can have several meanings
 - Different meanings are activated in different contexts
 - Meanings have proto-scenes (schematic "skeletons" abstracted from actual situatons)
 - Proto-scenes (and meanings) are differentiated by a functional element (an element in the protoscene which when changed changes the whole proto-scene)
- Relational nouns (postpositions/adverbs)
 - Focus the attention to some part of the landmark noun
 - Difference between inflected content nouns and relational noun constructions it that of conceptualization and scope of attention, not one of meaning → content nouns and relationa nouns can be studied together

THEORETICAL BACKGROUND (PROPERTIES OF THE LANDMARK NOUN)

- The properties of the landmark noun have been proven meaningful in studies of cognitive psychology
 - Humans have pre-linguistic spatial prototypes which help the categorization of entities (Azañón 2020)
 - The shape of the landmark noun affects the acceptance of spatial expressions containing *über* 'above' and *unter* 'below' in German (Kluth et. al. 2019)
 - The size of the landmark affects the acceptance of the use of *near* in spatial descriptions (Carlson & Covey 2005)



- 200 examples of both illative and lative in Erzya and Moksha
 - Data includes both content nouns and relational nouns that have productive inflection (I. e. no lexicalized forms)
- MokshEr corpus (University of Turku)
 - Standard literary language
 - Mostly newspaper texts and prose



MEANINGS OF GOAL-CASES IN MORDVIN LANGUAGES

| meaning | conextual variant | Erzya | | Moksha | |
|-----------|-------------------|-------|------|--------|------|
| | (submeaning) | ill. | lat. | ill. | lat. |
| TARGET | TARGET | Х | Х | Х | Х |
| | PATH | Х | Х | Х | Х |
| | COGNITIVE | Х | Х | Х | |
| | APPEARING | Х | | Х | |
| | MEASURE | | | Х | |
| DIRECTION | DIRECTION | Х | Х | Х | Х |
| | PATH | Х | Х | Х | Х |
| | COGNITIVE | | Х | | Х |
| STAYING | | Х | | Х | Х |
| PLACE | | Х | Х | Х | Х |
| LOCATION | | Х | Х | Х | Х |
| TEMPORAL | | Х | Х | Х | Х |
| RESULT | | Х | | Х | Х |
| REASON | | Х | Х | Х | Х |
| PART | | | | Х | |

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CLASSIFICATION OF LANDMARK NOUNS

- Spatial landmarks
 - Functionally 2-dimensional or 3-dimensional •
 - Bounded or unbounded •
- Other landmarks •
 - Objects, institutions, abstract entities, temporal entities •
- Examples

| bounded 2D | bounded 3D | unbounded 2D | unbounded 3D | object | institution | abstract | temporal |
|---|-------------------------------|----------------------------|------------------------------------|----------------------------|-----------------------------------|---------------------------|-----------------------------------|
| <i>kalməlanga</i> 'graveyard' (M) | <i>vel'e</i> 'village' (E) | <i>moda</i> 'earth' (E) | <i>meńel'</i> 'sky, heaven' (E) | <i>šufta</i> 'tree' (M) | <i>mil'ićija</i> 'militia' (E) | <i>t'ev</i> 'work' (M) | <i>il'äd'</i> 'evening' (M) |
| HELSINGIN YLIOPIST HELSINGFORS UNIVI UNIVERSITY OF HELS | O ERSITET SINKI Fac | ulty of Arts | | How to distingu | ish between semantically clo | se cases / Riku Erkkilä | 9 |

CLASSIFICATION OF LANDMARK NOUNS (CONT.)

- Prototypicality of the landmark noun as a representative of its category
 - A four-point scale for spatial landmarks
 - No prototypicality assessment for objects, institutions, abstract entities, and temporal entities
- Examples (bounded 2D, Moksha)

| prototypical | less prototypical | less unprototypical | unprototypical |
|---------------------------------|-------------------|------------------------|---------------------|
| <i>šra langa</i> 'top of table' | šama 'face' | ulav 'load' | <i>iŕd'əz</i> 'rib' |



RESULTS (LANDMARK TYPE; ERZYA)

| ill | target (target) | 7 | 9 | 21 | 5 | 15 | 0 | 27 | 0 | 84 |
|-----|---|--|---|---|---|--|--|---|--|--|
| | target (path) | 11 | 4 | 3 | 3 | 1 | 4 | 13 | 0 | 39 |
| | target (cognitive/communication) | 1 | 0 | 4 | 3 | 8 | 0 | 4 | 1 | 21 |
| | target (appearing) | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 |
| | target (measure) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | direction (direction) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | direction (path) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | | | | | | | | | | |
| | direction (cognitive/communication) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | staying | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 4 |
| | place | 6 | 1 | 6 | 0 | 1 | 0 | 0 | 0 | 14 |
| | location | 3 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 7 |
| | temporal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 |
| | result | 1 | 1 | 0 | 0 | 2 | 0 | 3 | 0 | 7 |
| | reason | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 6 |
| | part | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | total | 30 | 17 | 38 | 11 | 28 | 5 | 62 | 9 | 200 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | bounded 3D unbounde | d 3D bounded | 2D unbounded 2D | D object | institution | abstract | time | total | |
| lat | target (target) | bounded 3D unbounde 6 | d 3D bounded 14 | 2D unbounded 2E 1 | D object 3 | institution 0 | abstract 6 | time 0 | total 0 | 30 |
| lat | target (target) target (path) | bounded 3D unbounde 6 21 | d 3D bounded 1 14 14 | 2D unbounded 2E 1 2 | D object 3 2 | institution 0 0 | abstract 6 6 | time 0 0 | total 0 0 | 30 45 |
| lat | target (target) target (path) target (cognitive/communication) | bounded 3D unbounde 6 21 1 | d 3D bounded . 14 14 0 | 2D unbounded 2E 1 2 0 | D object 3 2 0 | institution 0 0 0 | abstract 6 6 0 | time 0 0 0 | total 0 0 0 | 30 45 1 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) | bounded 3D unbounde 6 21 1 0 | d 3D bounded . 14 14 0 0 | 2D unbounded 2E 1 2 0 0 | D object 3 2 0 0 | institution 0 0 0 0 0 | abstract 6 6 0 0 | time 0 0 0 0 | total 0 0 0 0 | 30 45 1 0 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) | bounded 3D unbounde 6 21 1 0 0 | d 3D bounded . 14 14 0 0 0 | 2D unbounded 2E 1 2 0 0 0 0 | D object 3 2 0 0 0 | institution 0 0 0 0 0 0 | abstract 6 6 0 0 0 | time 0 0 0 0 0 0 | total 0 0 0 0 0 0 | 30 45 1 0 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) | bounded 3D unbounde 6 21 1 0 0 2 | d 3D bounded . 14 14 0 0 0 16 | 2D unbounded 2E 1 2 0 0 0 0 0 0 | D object 3 2 0 0 0 0 1 | institution 0 0 0 0 0 1 | abstract 6 0 0 0 0 0 | time 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 | 30 45 1 0 0 20 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) | bounded 3D unbounde 6 21 1 0 0 2 29 | d 3D bounded . 14 14 0 0 0 16 41 | 2D unbounded 2E 1 2 0 0 0 0 0 2 | D object 3 2 0 0 0 1 3 | institution 0 0 0 0 0 1 1 | abstract 6 0 0 0 0 0 3 | time 0 0 0 0 0 0 1 | total 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) | bounded 3D unbounde 6 21 1 0 0 2 2 29 | d 3D bounded 14 14 0 0 0 16 41 | 2D unbounded 2D 1 2 0 0 0 0 0 2 | D object 3 2 0 0 0 1 3 | institution 0 0 0 0 0 1 1 | abstract 6 0 0 0 0 0 3 | time 0 0 0 0 0 0 1 | total 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) | bounded 3D unbounde 6 21 1 0 0 2 2 29 0 | d 3D bounded 14 14 0 0 0 16 41 12 | 2D unbounded 2E 1 2 0 0 0 0 2 0 | D object 3 2 0 0 0 1 3 0 | institution 0 0 0 0 0 1 1 1 0 | abstract 6 0 0 0 0 0 3 0 0 | time 0 0 0 0 0 0 1 1 | total 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying | bounded 3D unbounde 6 21 1 0 0 2 29 0 0 0 | d 3D bounded 14 14 0 0 16 41 12 0 | 2D unbounded 2E 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 1 1 1 0 0 0 | abstract 6 0 0 0 0 0 3 3 0 0 0 | time 0 0 0 0 0 0 1 1 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying place | bounded 3D unbounde 6 21 1 0 0 2 29 0 0 0 1 | d 3D bounded 14 14 0 0 16 41 12 0 3 | 2D unbounded 2E 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 1 1 1 0 0 0 0 0 0 | abstract 6 0 0 0 0 0 3 3 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 1 1 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying place location | bounded 3D unbounde 6 21 1 0 0 2 29 0 0 0 1 0 | d 3D bounded 14 14 0 0 0 16 41 12 0 3 3 | 2D unbounded 2E 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 1 3 0 0 0 0 1 3 0 0 1 1 1 | institution 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 | abstract 6 0 0 0 0 0 3 3 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (cognitive/communication) staying place location temporal | bounded 3D unbounde 6 21 1 0 0 2 29 0 0 0 1 1 0 0 0 | d 3D bounded 14 14 0 0 0 16 41 12 0 3 3 0 | 2D unbounded 2E 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 1 3 0 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 | abstract 6 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 4 4 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (cognitive/communication) staying place location temporal result | bounded 3D unbounde 6 21 1 0 0 2 29 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | d 3D bounded 14 14 0 0 0 16 41 12 0 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | 2D unbounded 2E 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 1 3 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 | abstract 6 6 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 4 4 1 0 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (cognitive/communication) direction (cognitive/communication) staying place location temporal result reason | bounded 3D unbounde 6 21 1 0 0 2 29 0 0 1 0 0 1 0 0 1 0 1 1 0 1 0 1 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | d 3D bounded 14 14 0 0 0 16 41 12 0 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | 2D unbounded 2E 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 1 3 0 0 0 0 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 | abstract 6 6 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 4 4 1 0 3 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (cognitive/communication) direction (cognitive/communication) staying place location temporal result reason part | bounded 3D unbounde 6 21 1 0 0 2 29 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | d 3D bounded 14 14 0 0 0 16 41 12 0 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | 2D unbounded 2D 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 0 1 3 0 0 0 1 0 0 1 0 0 1 0 1 0 1 0 1 0 1 0 1 0 0 1 1 0 0 1 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 | abstract 6 6 0 0 0 0 3 3 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 0 20 80 12 0 4 4 4 1 0 3 3 0 |



RESULTS (LANDMARK TYPE; ERZYA)

| ill | target (target) | 7 | 9 | 21 | 5 | 15 | 0 | 27 | 0 | 84 |
|-----|--|---|--|---|--|--|--|---|--|--|
| | target (path) | 11 | 4 | 3 | 3 | 1 | 4 | 13 | 0 | 39 |
| | target (cognitive/communication) | 1 | 0 | 4 | 3 | 8 | 0 | 4 | 1 | 21 |
| | target (appearing) | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 |
| | target (measure) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | direction (direction) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | direction (path) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | | | | | | | | | | |
| | direction (cognitive/communication) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | staying | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 4 |
| | place | 6 | 1 | 6 | 0 | 1 | 0 | 0 | 0 | 14 |
| | location | 3 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 7 |
| | temporal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 |
| | result | 1 | 1 | 0 | 0 | 2 | 0 | 3 | 0 | 7 |
| | reason | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 6 |
| | part | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | total | 30 | 17 | 38 | 11 | 28 | 5 | 62 | 9 | 200 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | bounded 3D unbo | unded 3D bounded 2 | 2D unbounded 2 | D object | institution | n abstract | time | total | |
| lat | target (target) | bounded 3D unbounded 6 | unded 3D bounded 2 14 | 2D unbounded 2 1 | D object 3 | institution 0 | n abstract 6 | time 0 | total 0 | 30 |
| lat | target (target) target (path) | bounded 3D unbounded 6 21 | unded 3D bounded 2 14 14 | 2D unbounded 2 1 2 | D object 3 2 | institution 0 0 | n abstract 6 6 | time 0 0 | total 0 0 | 30 45 |
| lat | target (target) target (path) target (cognitive/communication) | bounded 3D unbounded 3D 00000000000000000000000000000000000 | unded 3D bounded 2 14 14 0 | 2D unbounded 2 1 2 0 | D object 3 2 0 | institution 0 0 0 | n abstract 6 6 0 | time 0 0 0 | total 0 0 0 | 30 45 1 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) | bounded 3D unbou 6 21 1 0 | unded 3D bounded 2 14 14 0 0 | 2D unbounded 21 1 2 0 0 | D object 3 2 0 0 | institution 0 0 0 0 0 | n abstract 6 6 0 0 0 | time 0 0 0 0 0 | total 0 0 0 0 | 30 45 1 0 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) | bounded 3D unbou 6 21 1 0 0 | unded 3D bounded 3 14 14 0 0 0 0 | 2D unbounded 20 1 2 0 0 0 0 | D object 3 2 0 0 0 0 0 | institution 0 0 0 0 0 0 | n abstract 6 6 0 0 0 0 | time 0 0 0 0 0 0 | total 0 0 0 0 0 0 | 30 45 1 0 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) | bounded 3D unbou 6 21 1 0 0 2 | unded 3D bounded 3 14 14 0 0 0 0 16 | 2D unbounded 20 1 2 0 0 0 0 0 0 0 0 | D object 3 2 0 0 0 0 1 | institution 0 0 0 0 0 1 | n abstract 6 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 | 30 45 1 0 0 20 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) | bounded 3D unbou 6 21 1 0 0 2 2 29 | unded 3D bounded 3 14 14 0 0 0 16 41 | 2D unbounded 20 1 2 0 0 0 0 0 2 | D object 3 2 0 0 0 0 1 3 | institution 0 0 0 0 0 1 1 | n abstract 6 0 0 0 0 0 3 | time 0 0 0 0 0 0 0 1 | total 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) | bounded 3D unbou 6 21 1 0 0 2 29 | unded 3D bounded 3 14 14 0 0 0 16 41 | 2D unbounded 21 1 2 0 0 0 0 0 2 | D object 3 2 0 0 0 1 3 | institution 0 0 0 0 1 1 | n abstract 6 0 0 0 0 0 3 | time 0 0 0 0 0 0 1 | total 0 0 0 0 0 0 0 | 30 45 1 0 20 80 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) | bounded 3D unbou 6 21 1 0 0 2 29 0 | unded 3D bounded 3 14 14 0 0 0 16 41 12 | 2D unbounded 20 1 2 0 0 0 0 2 0 | D object 3 2 0 0 0 1 3 0 | institution 0 0 0 0 1 1 1 0 | n abstract 6 0 0 0 0 3 0 | time 0 0 0 0 0 0 1 0 | total 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying | bounded 3D unbou 6 21 1 0 0 2 29 0 0 0 | unded 3D bounded 3 14 14 0 0 0 16 41 12 0 | 2D unbounded 2 1 2 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 1 1 1 0 0 | n abstract 6 0 0 0 0 3 3 0 0 0 0 3 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 1 1 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying place | bounded 3D unbou 6 21 1 0 0 2 29 0 0 0 1 | unded 3D bounded 3 14 14 0 0 0 16 41 12 0 3 | 2D unbounded 21 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 0 1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 0 1 1 1 0 0 0 0 0 | n abstract 6 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 1 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying place location | bounded 3D unbou 6 21 1 0 0 2 29 0 0 0 1 1 0 | unded 3D bounded 3 14 14 0 0 0 16 41 12 0 3 3 | 2D unbounded 21 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 0 1 3 0 0 0 0 1 1 1 | institution 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 | n abstract 6 0 0 0 0 0 3 3 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 4 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying place location temporal | bounded 3D unbou 6 21 1 0 0 2 29 0 0 0 1 1 0 0 0 | unded 3D bounded 3 14 14 0 0 0 16 41 12 0 3 3 0 | 2D unbounded 20 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 1 1 3 0 0 0 0 1 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 | n abstract 6 0 0 0 0 0 3 3 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 4 4 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying place location temporal result | bounded 3D unbou 6 21 1 0 0 2 29 0 0 0 1 1 0 0 0 0 0 0 0 0 | unded 3D bounded 3 14 14 0 0 0 16 41 12 0 3 3 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | 2D unbounded 21 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 0 1 3 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 | n abstract 6 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 4 4 1 0 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying place location temporal result reason | bounded 3D unbou 6 21 1 0 0 2 29 0 0 0 1 1 0 0 0 0 1 1 0 1 | unded 3D bounded 3 14 14 0 0 16 41 12 0 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | 2D unbounded 21 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 1 3 0 0 0 0 0 1 0 0 1 0 0 1 1 0 0 1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 | institution 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 | n abstract 6 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 4 4 1 0 3 |
| lat | target (target) target (path) target (cognitive/communication) target (appearing) target (measure) direction (direction) direction (path) direction (cognitive/communication) staying place location temporal result reason part | bounded 3D unbou 6 21 1 0 0 2 29 0 0 1 0 1 0 0 1 0 0 1 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 1 0 | unded 3D bounded 3 14 14 0 0 0 16 41 12 0 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | 2D unbounded 21 1 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 | D object 3 2 0 0 0 1 3 0 0 0 0 1 0 0 1 0 1 0 1 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | institution 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 | n abstract 6 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0 | time 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 45 1 0 20 80 12 0 4 4 4 1 0 3 0 |



RESULTS (LANDMARK TYPE; MOKSHA)

| 1 | target (target) | 7 | 9 | 19 | 2 | 16 | 2 | 18 | 0 | 73 |
|----|-------------------------------------|-------------------------|------------|--------------|--------|-------------|----------|--------|-------|-----|
| | target (path) | 4 | 6 | 8 | 1 | 0 | 0 | 12 | 1 | 32 |
| | target (cognitive/communication) | 1 | 3 | 3 | 0 | 22 | 0 | 1 | 0 | 30 |
| | target (appearing) | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 |
| | target (measure) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| | direction (direction) | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0 | 7 |
| | direction (path) | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 4 |
| | | | | | | | | | | |
| | direction (cognitive/communication) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | staying | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 5 |
| | place | 7 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 11 |
| | location | 1 | 1 | 2 | 1 | 3 | 0 | 6 | 0 | 14 |
| | temporal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 9 |
| | result | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| | reason | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 4 |
| | part | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| | total | 21 | 23 | 39 | 7 | 44 | 2 | 54 | 10 | 200 |
| | | | | | | | | | | |
| | | bounded 3D unbounded 3D | bounded 2D | unbounded 2D | object | institution | abstract | time | total | |
| at | target (target) | 21 | 6 | 2 | 0 | 0 | 14 | 2 | 0 | 45 |
| | target (path) | 24 | 7 | 2 | 4 | 0 | 7 | 1 | 0 | 45 |
| | target (cognitive/communication) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | target (appearing) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | target (measure) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | direction (direction) | 6 | 13 | 0 | 0 | 0 | 3 | 0 | 0 | 22 |
| | direction (path) | 26 | 22 | 3 | 2 | 0 | 6 | 1 | 0 | 60 |
| | | | | | | | | | | |
| | direction (cognitive/communication) | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| | staying | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| | place | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| | location | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| | temporal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| | result | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 1 |
| | reason | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| | part | 0 | 0 | 0 | 0 | 0 | 0 | 1 0 | 0 | 0 |



RESULTS (LANDMARK TYPE; MOKSHA)

| II | target (target) | 7 | 9 | 19 | 2 | 16 | 2 | 18 | 0 | 73 |
|----|-------------------------------------|------------------------|------------|--------------|-----------|------------|------------|--------|--------|--------|
| | target (path) | 4 | 6 | 8 | 1 | 0 | 0 | 12 | 1 | 32 |
| | target (cognitive/communication) | 1 | 3 | 3 | 0 | 22 | 0 | 1 | 0 | 30 |
| | target (appearing) | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 |
| | target (measure) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| | direction (direction) | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0 | 7 |
| | direction (path) | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 4 |
| | | | | | | | | | | |
| | direction (cognitive/communication) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | staying | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 5 |
| | place | 7 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 11 |
| | location | 1 | 1 | 2 | 1 | 3 | 0 | 6 | 0 | 14 |
| | temporal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 9 |
| | result | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| | reason | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 4 |
| | part | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| | total | 21 | 23 | 39 | 7 | 44 | 2 | 54 | 10 | 200 |
| | | | | | | | | | | |
| | | bounded 3D unbounded 3 | 3D bounded | 2D unbounded | 2D object | institutio | n abstract | time | total | |
| at | target (target) | 21 | 6 | 2 | 0 | 0 | 14 | 2 | 0 | 45 |
| | target (path) | 24 | 7 | 2 | 4 | 0 | 7 | 1 | 0 | 45 |
| | target (cognitive/communication) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | target (appearing) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | target (measure) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | direction (direction) | 6 | 13 | 0 | 0 | 0 | 3 | 0 | 0 | 22 |
| | direction (path) | 26 | 22 | 3 | 2 | 0 | 6 | 1 | 0 | 60 |
| | | | | | | | | | | |
| | direction (cognitive/communication) | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| | staying | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| | place | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| | location | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| | temporal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| | result | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| | | | | | | | | | | |
| | reason | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| | reason part | 0 | 0 | 0 0 | 0 0 | 0 | 0 | 1 0 | 0 0 | 1 0 |



RESULTS (LANDMARK PROTOTYPICALITY; ERZYA)

| ill | prototypical | 14 | 3 | 8 | 3 | 4 | 0 | 0 | 0 | 32 |
|-----|--|-------------------------------|--------------------------------|-----------------------------|-----------------------------|------------------------------|----------------------------------|--------------------------------|---------------------------------|-------------------------------------|
| | less prototypical | 6 | 6 | 20 | 5 | 12 | 0 | 0 | 0 | 49 |
| | less unprototypical | 8 | 3 | 8 | 2 | 5 | 0 | 0 | 0 | 26 |
| | unprototypical | 2 | 5 | 2 | 1 | 7 | 0 | 0 | 0 | 17 |
| | N/A | 0 | 0 | 0 | 0 | 0 | 5 | 62 | 9 | 76 |
| | total | 30 | 17 | 38 | 11 | 28 | 5 | 62 | 9 | 200 |
| | | bounded | unbounded | bounded | unbounded | | | | | |
| | | | | | | | | | | |
| | | 3D | 3D | 2D | 2D | object | institution | abstract | time t | total |
| lat | prototypical | 3D 27 | 3D 6 | 2D 3 | 2D 5 | object 0 | institution 0 | abstract 0 | time 1 0 | total 41 |
| lat | prototypical less prototypical | 3D 27 26 | 3D 6 15 | 2D 3 2 | 2D 5 5 | object 0 0 | institution 0 0 | abstract 0 0 | time f 0 0 | total 41 48 |
| lat | prototypical less prototypical less unprototypical | 3D 27 26 8 | 3D 6 15 60 | 2D 3 2 0 | 2D 5 5 | object 0 0 2 | institution 0 0 | abstract 0 0 | time t 0 0 0 | total 41 48 71 |
| lat | prototypical less prototypical less unprototypical unprototypical | 3D 27 26 8 0 | 3D 6 15 60 22 | 2D 3 2 0 0 | 2D 5 5 1 0 | object 0 0 2 0 | institution 0 0 0 0 | abstract 0 0 0 0 | time t 0 0 0 0 | total 41 48 71 22 |
| lat | prototypical less prototypical less unprototypical unprototypical N/A | 3D 27 26 8 0 0 | 3D 6 15 60 22 0 | 2D 3 2 0 0 0 | 2D 5 5 1 0 0 | object 0 0 2 0 0 | institution 0 0 0 15 | abstract 0 0 0 0 2 | time 1 0 0 0 0 1 | total 41 48 71 22 18 |



RESULTS (LANDMARK PROTOTYPICALITY; ERZYA)

| ill | prototypical | 14 | 3 | 8 | 3 | 4 | 0 | 0 | 0 | 32 |
|-----|--|--------------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------------|----------------------------------|--------------------------------|---------------------------------|-------------------------------------|
| | less prototypical | 6 | 6 | 20 | 5 | 12 | 0 | 0 | 0 | 49 |
| | less | | | | | | | | | |
| | unprototypical | 8 | 3 | 8 | 2 | 5 | 0 | 0 | 0 | 26 |
| | unprototypical | 2 | 5 | 2 | 1 | 7 | 0 | 0 | 0 | 17 |
| | N/A | 0 | 0 | 0 | 0 | 0 | 5 | 62 | 9 | 76 |
| | total | 30 | 17 | 38 | 11 | 28 | 5 | 62 | 9 | 200 |
| | | bounded | unbounded | bounded | unbounded | | | | | |
| | | | | | | | | | | |
| | | 3D | 3D | 2D | 2D | object | institution | abstract | time | total |
| lat | prototypical | 3D 27 | 3D 6 | 2D 3 | 2D 5 | object 0 | institution 0 | abstract 0 | time 0 | total 41 |
| lat | prototypical less prototypical | 3D 27 26 | 3D 6 15 | 2D 3 2 | 2D 5 5 | object 0 0 | institution 0 0 | abstract 0 0 | time 0 0 | total 41 48 |
| lat | prototypical less prototypical less | 3D 27 26 | 3D 6 15 | 2D 3 2 | 2D 5 5 | object 0 0 | institution 0 0 | abstract 0 0 | time 0 0 | total 41 48 |
| lat | prototypical less prototypical less unprototypical | 3D 27 26 8 | 3D 6 15 60 | 2D 3 2 0 | 2D 5 5 | object 0 0 2 | institution 0 0 | abstract 0 0 | time 0 0 0 | total 41 48 71 |
| lat | prototypical less prototypical less unprototypical unprototypical | 3D 27 26 8 0 | 3D 6 15 60 22 | 2D 3 2 0 0 | 2D 5 5 1 0 | object 0 0 2 0 | institution 0 0 0 0 | abstract 0 0 0 0 | time 0 0 0 0 | total 41 48 71 22 |
| lat | prototypical less prototypical less unprototypical unprototypical N/A | 3D 27 26 8 0 | 3D 6 15 60 22 0 | 2D 3 2 0 0 0 | 2D 5 5 1 0 0 | object 0 0 2 0 0 | institution 0 0 0 15 | abstract 0 0 0 0 2 | time 0 0 0 0 0 1 | total 41 48 71 22 18 |



RESULTS (LANDMARK PROTOTYPICALITY; MOKSHA)

| ill | prototypical | 8 | 2 | 12 | 3 | 8 | 0 | 0 | 0 | 33 |
|-----|--|-------------------------------|-------------------------------|--------------------------|--------------------------|---------------------------------|----------------------------------|-------------------------------------|---------------------------------|------------------------------------|
| | less prototypical | 4 | 6 | 13 | 4 | 24 | 0 | 0 | 0 | 51 |
| | less unprototypical | 9 | 12 | 12 | 0 | 7 | 0 | 0 | 0 | 40 |
| | unprototypical | 0 | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 10 |
| | N/A | 0 | 0 | 0 | 0 | 0 | 2 | 54 | 10 | 66 |
| | total | 21 | 23 | 39 | 7 | 44 | 2 | 54 | 10 | 200 |
| | | bounded | unbounded | bounded | unbounded | | | | | |
| | | 3D | 3D | 2D | 2D | object | institution | abstract | time t | otal |
| lat | prototypical | 3D 31 | 3D 9 | 2D 3 | 2D 0 | object 0 | institution 0 | abstract 0 | time t 0 | otal 43 |
| lat | prototypical less prototypical | 3D 31 49 | 3D 9 19 | 2D 3 | 2D 0 4 | object 0 0 | institution 0 0 | abstract 0 0 | time t 0 0 | otal 43 75 |
| lat | prototypical less prototypical less unprototypical | 3D 31 49 7 | 3D 9 19 23 | 2D 3 3 | 2D 0 4 | object 0 0 0 | institution 0 0 | abstract 0 0 0 | time t 0 0 | otal 43 75 33 |
| lat | prototypical less prototypical less unprototypical unprototypical | 3D 31 49 7 0 | 3D 9 19 23 7 | 2D 3 3 1 0 | 2D 0 4 2 2 0 | object 0 0 0 0 | institution 0 0 0 0 | abstract 0 0 0 0 0 | time t 0 0 0 0 | total 43 75 33 7 |
| lat | prototypical less prototypical less unprototypical unprototypical N/A | 3D 31 49 7 0 0 | 3D 9 19 23 7 0 | 2D 3 3 1 0 0 | 2D 0 4 2 0 0 | object 0 0 0 0 0 | institution 0 0 0 33 | abstract 0 0 0 0 0 7 | time t 0 0 0 0 2 | total 43 75 33 7 42 |

RESULTS (LANDMARK PROTOTYPICALITY; MOKSHA)

| ill | prototypical | 8 | 2 | 12 | 3 | 8 | 0 | 0 | 0 | 33 |
|-----|--|-------------------------|-------------------------|-----------------------|-----------------------|-----------------------|-------------------|-----------------------|------------------|---------------------------|
| | less prototypical | 4 | 6 | 13 | 4 | 24 | 0 | 0 | 0 | 51 |
| | less unprototypical | 9 | 12 | 12 | 0 | 7 | 0 | 0 | 0 | 40 |
| | unprototypical | 0 | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 10 |
| | N/A | 0 | 0 | 0 | 0 | 0 | 2 | 54 | 10 | 66 |
| | total | 21 | 23 | 39 | 7 | 44 | 2 | 54 | 10 | 200 |
| | | bounded 3D | unbounded 3D | bounded 2D | unbounded 2D | object | institution | abstract | time t | otal |
| lat | | | | | | | | | | |
| lat | prototypical | 31 | 9 | 3 | 0 | 0 | 0 | 0 | 0 | 43 |
| lat | prototypical less prototypical | 31 49 | 9 19 | 3 | 0 4 | 0 0 | 0 | 0 0 | 0 0 | 43 75 |
| lat | prototypical less prototypical less unprototypical | 31 49 7 | 9 19 23 | 3 3 1 | 0 4 2 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 43 75 33 |
| lat | prototypical less prototypical less unprototypical unprototypical | 31 49 7 0 | 9 19 23 7 | 3 3 1 0 | 0 4 2 0 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 | 43 75 33 7 |
| lat | prototypical less prototypical less unprototypical unprototypical N/A | 31 49 7 0 0 | 9 19 23 7 0 | 3 3 1 0 0 | 0 4 2 0 0 | 0 0 0 0 0 | 0 0 0 33 | 0 0 0 0 7 | 0 0 0 2 | 43 75 33 7 42 |



- Illative and lative in Mordvin languages are two different cases with variation of usen on different levels
 - Differences in the attested meanings of illative and lative within and between Mordvin languages
 - The landmark type seems to affect the choice of GOAL-case
 - The prototypicality of the landmark seems to affect the choice of GOAL-case
- The exact reason for this, and the interaction between the parameters should be studied further



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