Spatial markers in
South Asian languages

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This work was conducted at University of Konstanz, Germany.

Presentation Plan

- Background
  - Semantics
  - Polysemy
  - Representation of Spatial markers

- A study of South Asian spatial markers
  - Saptial Usages of Spatial markers
  - Non Saptial Usages of Spatial markers

- Axial Parts, Origin of Case markers

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Background

- Semantics
- Polysemy
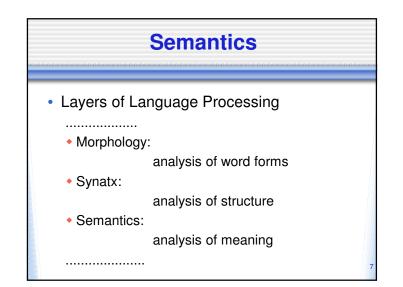- Representation of Spatial Markers

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Personal Motivation:

Machine Translation Problem

- There is no 1-1 mapping between spatial markers of two languages.

- Urdu *sE* is used for different English prepositions in the following examples.

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English prepositions mapped to Urdu *sE*

- He came *from* Karachi.

- He passed *through* the garden.

- He opened the door *with* the key.

- The door was opened *by* him.

- He asked *me* a question.

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Urdu *sE* and its equivalents

	Nepali (IA)	Pashto (Ir)	Manipuri (TB)
Source of Motion	baaTa (Abl)	na (Abl)	dagi (Abl)
Causee	baaTa (Abl)	pa (Loc-Inst)	daa (Loc-Dat)
Stimulus (fear)	dekhi (Abl)	na (Abl)	Ø (Nom)
Manner		pa (Loc-Inst)	naa (Inst)
Reason	le (Inst)		naa (Inst)
Instrument	le (Inst)	pa (Loc-Inst)	naa (Inst)
Reciprocal Obj (fight)	sanga (Com)	sara (Com)	gaa (Com)
Emotion Obj (love)	sanga (Com)	sara (Com)	Ø (Nom)

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Semantics

- Layers of Language Processing
  ....
  - Morphology:
    analysis of word forms
  - Synatx:
    analysis of structure
  - Semantics:
    analysis of meaning
  ....

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Semantics

- Synatx: unacceptable
  She see a men.

- Synatx: acceptable
  She sees a man.
  She sees the men.

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Semantics

- Syntax: acceptable

  Colorless green ideas sleep furiously.

  However, the sentence is (usually) not acceptable semantically.

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Semantics

- We need structures to model sentences, phrases and words.

- The spatial markers 'in', 'on', *par*, *sE* etc. are not mere atomic labels, but they are modeled by using complex structures.
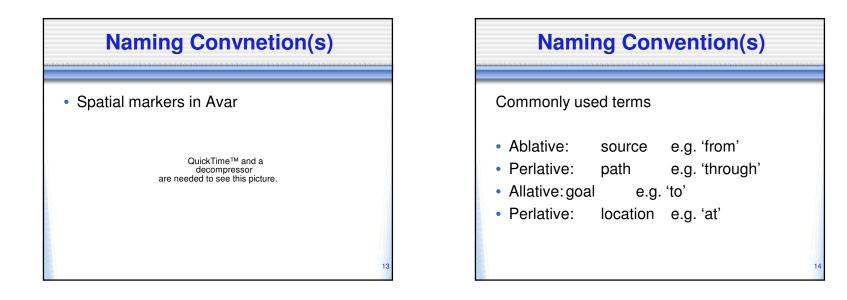
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Polysemy

- It is the capacity for a word to have multiple related meanings.
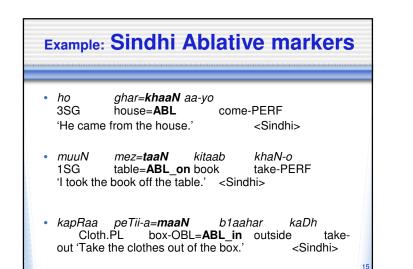
  e.g. crane (a bird, a machine)

- It is distinct from **homonymy**, in which the multiple meanings of a word my be unconnected or unrelated.

  e.g. bark (dog's, wood's)

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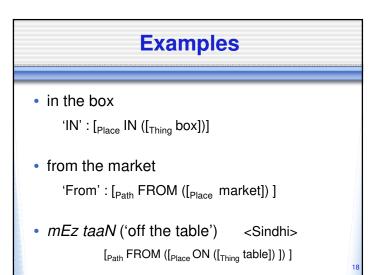
Representation of Spatial Markers

Naming Convnetion(s)

- Spatial markers in Avar

QuickTime™ and a
decompressor
are needed to see this picture.

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Naming Convention(s)

Commonly used terms

- Ablative: source   e.g. 'from'
- Perlative: path   e.g. 'through'
- Allative: goal   e.g. 'to'
- Perlative: location   e.g. 'at'

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Example: Sindhi Ablative markers

- *ho   ghar=**khaaN** aa-yo*
  3SG   house=**ABL**   come-PERF
  'He came from the house.'   <Sindhi>

- *muuN   mez=**taaN**   kitaab   khaN-o*
  1SG   table=**ABL_on** book   take-PERF
  'I took the book off the table.'   <Sindhi>

- *kapRaa   peTii-a=**maaN**   b1aahar   kaDh*
      Cloth.PL   box-OBL=**ABL_in** outside   take-
  out 'Take the clothes out of the box.'   <Sindhi>

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Some Models for Spatial Markers

- Jackendoff (1990)

- Kracht (2002)

- Ostler (1979)

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Jackendoff (1990)

- Conceptual Structures
  - 'IN' : [$_{Place}$ IN ([$_{Thing}$])]
  - 'From' : [$_{Path}$ FROM ([$_{Place/Thing}$])]
  - 'Through' : [$_{Path}$ VIA ([$_{Place/Thing}$])]
  - 'To' : [$_{Path}$ TO ([$_{Place/Thing}$])]

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Examples

- in the box
  'IN' : [$_{Place}$ IN ([$_{Thing}$ box])]

- from the market
  'From' : [$_{Path}$ FROM ([$_{Place}$ market])]

- *mEz taaN* ('off the table')   <Sindhi>
  [$_{Path}$ FROM ([$_{Place}$ ON ([$_{Thing}$ table])])]
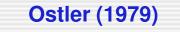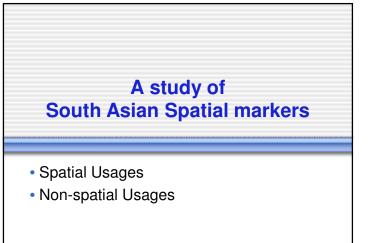
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Kracht (2002)

- Locative expressions have two layers: **configuration** and **mode**.

- The **configuration** is the way in which several objects are positioned with respect to each other.
  - Examples are: 'at', 'in', 'on', 'between', 'in front' etc.

- The **mode** describes the way in which an object moves with respect to the named configuration.

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Modes for spatial markers

- **coinitial** (object moves away from location) e.g. 'from'

- **transitional** (object enters and leaves the location) e.g. 'through'

- **cofinal** (object reaches the location) e.g. 'to'

- **static** (object is at the location) e.g. 'at', 'in'

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Ostler (1979)

- Binary features for case linking for Sanskrit.

- Features (source and goal)
  - source   : [+source,-goal]
  - path   : [+source,+goal]
  - location/goal   : [-source,+goal]
  - theme   : [-source,-goal]

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A study of South Asian Spatial markers

- Spatial Usages
- Non-spatial Usages

PhD Dissertation

- Dissertation Title: *Spatial Expressions and Case in South Asian languages*.

- Supervisor: Miriam Butt

- Major work was done as part of the project A-24 "The role of semantic fields in the development of postpositions and case markers" of SFB 471 at Universitaet Konstanz.
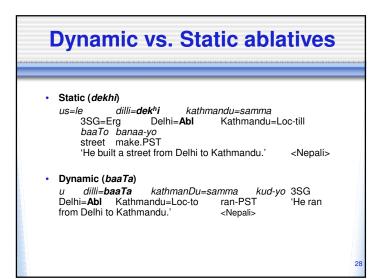
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Dissertation Questions

- **Question 1:** Did many case markers originate from spatial terms?
- **Question 2:** Can a model be proposed that explains different spatial usages of the same form?
- **Question 3:** Why is a core spatial marker used for non-spatial usages? What is the relation between the spatial features of markers and the semantic features for the marked entity?
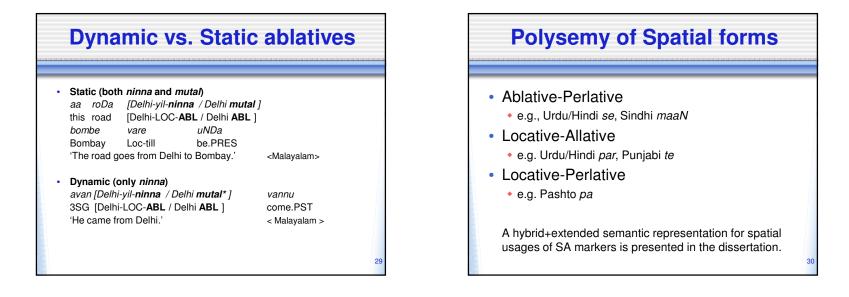
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Languages Surveyed

- Indo-Aryan
  - Haryani, Nepali, Punjabi, Saraiki, Sindhi, Urdu/Hindi
  - Old Urdu/Hindi, Sanskrit
- Indo-Iranian
  - Balochi, Pashto
- Tibeto-Burman
  - Manipuri
- Dravidian
  - Malayalam

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Issues related to Spatial Usages

- Fine Grained differences between spatial markers

- Polysemy of spatial forms

- *Axial Part (Raza 2011)*

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Fine Grained Differences in Spatial markers

- Ablative of Sindhi, Punjabi, Saraiki etc.

  (Sindhi example is presented earlier)

- Dynamic vs. Static Ablative markers

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Dynamic vs. Static ablatives

- **Static (*dekhi*)**
  us=le   dilli=dek^{h}i   kathmandu=samma
    3SG=Erg   Delhi=**Abl**   Kathmandu=Loc-till
  baaTo   banaa-yo
  street   make.PST
  'He built a street from Delhi to Kathmandu.'   <Nepali>

- **Dynamic (*baaTa*)**
  u   dilli=baaTa   kathmanDu=samma   kud-yo 3SG
  Delhi=**Abl**   Kathmandu=Loc-to   ran-PST   'He ran
  from Delhi to Kathmandu.'   <Nepali>

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Dynamic vs. Static ablatives

- **Static (both *ninna* and *mutal*)**
  *aa   roDa   [Delhi-yil-**ninna** / Delhi **mutal**]*
  this   road   [Delhi-LOC-**ABL** / Delhi **ABL**]
  bombe   vare   uNDa
  Bombay   Loc-till   be.PRES
  'The road goes from Delhi to Bombay.'   <Malayalam>

- **Dynamic (only *ninna*)**
  *avan [Delhi-yil-**ninna** / Delhi **mutal***]   vannu*
  3SG [Delhi-LOC-**ABL** / Delhi **ABL**]   come.PST
  'He came from Delhi.'   < Malayalam >

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Polysemy of Spatial forms

- Ablative-Perlative
  - e.g., Urdu/Hindi *se*, Sindhi *maaN*
- Locative-Allative
  - e.g. Urdu/Hindi *par*, Punjabi *te*
- Locative-Perlative
  - e.g. Pashto *pa*

A hybrid+extended semantic representation for spatial usages of SA markers is presented in the dissertation.

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Axial Part

- Another kind of Spatial markers

- [[mEz sE] [2 fit] **Upar**]

- Extension of the proposed semantic representation to deal with Axial Part postpositions of Urdu.
  (Raza & Ahmed 2011, Raza 2011)

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Non-Spatial Usages of Spatial markers

- Non-Canonical Second Argument (NCSA)

- Instrument marker

- Addressee marker

Are these examples of Polysemy or Homonymy?   32

Non Canonical Marking

- In Urdu/Hindi and many other South Asian languages,
  - Canonical Subject is marked with nominative or ergative.
  - Canonical Object is marked with nominative or accusative.

- Subject can also be marked non-canonically by dative, genitive, ablative/instrumental and locative. (Mohanan 1994, Butt and King 2005)

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Non-Canonical Second Argument (NCSA)

- **Canonical Object (2nd Argument)**
  zaahid=ne   ghar(=ko)   taamiir   kiyaa
  Zahid=ERG house**(=ACC)** construction   do.PERF 'Zahid built a/the house.'   <Urdu/Hindi>

- **Non Canonical Second Argument**
  zaahid=ne jamiil=par   bʰarosaa   kiyaa
  Zahid=ERG Jameel=**LOC-on** trust do.PERF
  'Zahid trusted Jameel.'   <Urdu/Hindi>

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Classes of South Asian NCSA

	Examples	Subject Marking	2nd Arg. Marking	Semantic Feature
I	fear	canonical, dative	ablative	source
II	resign	canonical	ablative	source
III	trust, suspect	canonical, dative	locative, dative	default goal/ specialized goal
IV	attack, govern	canonical	locative, dative	default goal/ specialized goal
V	love, hate	canonical, dative	comitative	involved
VI	fight, marry	canonical	comitative	involved

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Proposed Semantic reasons for NCSA

- High and Low Transitivity
  (e.g. Hoper and Thompson, Tsunoda, Malchukov)
- Event Structure Approach
  (e.g. Levin, Ramchand)
- Localist (oriented) Approach
  (e.g. Jackendoff, Ostler, Butt)
- Thematic Roles and Lexical Entailments
  (e.g. Dowty style features)
- Linking Theories

However, no single approach completely explains the reason of NCO marking and the choice of particular case marker.

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Marking on the addressee

	Say to	Ask (a question)
Punjabi	DAT/ACC	ABL,DAT/ACC
Nepali	DAT/ACC	COM
Manipuri	LOC/DAT	LOC/DAT
Sindhi	DAT/ACC	ABL
Balochi	DAT/ACC	ABL
Pashto	ALL	ABL
Malayalam	COM	COM
Urdu/Hindi	ABL/INST/COM	ABL/INST/COM

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Marking on the addressee

- As the addressee of the verbs 'tell'/'ask' is a kind of recipient, it is marked with dative marker by most of the languages.

- The other languages mark it with the comitative marker and treat these verbs similar to the verbs of class V in which the second argument is attached/involved in the action.

- The addressee of the verb 'ask' is the potential source of reply, hence it is marked with the ablative marker by some languages.

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Marking on the Instrument

- Sindhi, Saraiki, Punjabi and Balochi use the same form to mark **comitative, (locative) and instrument** usages.
- This is because of the *companion metaphor* (Lakoff and Johnson 1980).

- Urdu/Hindi, Pashto, Torwali, Sanskrit and Pali use the same form to mark **perlative and instrument** usages.
- These languages use the *instrument as path metaphor*.

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Spatial markers for non-spatial usages

- The choice of spatial marker for a non-canonical usage depends on the spatial features of that marker.

- Different languages select different semantic properties to select a case marker.

- Less prototypical objects are marked by spatial markers. Different languages select different features to decide whether an argument is less prototypical or not.

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Axial Part

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- [[mEz sE] [2 fit] **Upar**]

- Extension of the proposed semantic representation to deal with Axial Part postpositions of Urdu.
(Raza & Ahmed 2011, Raza 2011)

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