

# Leipzig Spring School on Linguistic Diversity

## Competing Motivations and the Typology of Case-Marking

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### Fluid differential case marking and bidirectional optimization

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[based on H. de Hoop & A. Malchukov. "On fluid differential case marking: A bidirectional OT approach". *Lingua* 117 (2007) 1636–1656.]



# Differential case marking in Hindi

- DSM with transitive subjects: A take ERG in the context of perfective verbs; but NOM in the context of imperfective.

Hindi (Mohanan 1990: 94)

*Raam-ne ek bakraa / ek bakre-ko bec-aa*

Raam-erg one goat.nom / one goat-acc sell-pfv.sg.m

'He sold a goat / the goat'

*Raam ek bakraa / ek bakre-ko bec-taa hae*

Raam.nom one goat.nom/ one goat-acc sell-ipfv.sg.m be.prs.3sg

'Raam sells a goat / the goat'

# DSM in Hindi: unidirectional approach

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- OT syntax maps meanings to forms (meaning to form optimization)
- **OT syntactic approach to DSM in Hindi (de Hoop & Narasimhan 2005):**
  - Subject qualify as strong (A) if the verb is transitive and perfective, and weak (a) if the verb is imperfective
  - Constraint ranking: Identify-A >> { Economy; Distinguishability}

# Case marking of strong and weak subjects in Hindi

## Case marking of strong *As* in Hindi (the verb is perfective)

Input: A	Identify-A	Economy	Distinguishability
[∅]	*		
☞ [ERG]		*	

## Case marking of weak *as* in Hindi (the verb is imperfective)

Input: a	Identify-A	Economy	Distinguishability
☞ [∅]			*
[ERG]		*	

# Bidirectional OT

- **Different direction of optimization:**
  - OT syntax (Aissen 2003, etc): comparing (morpho)syntactic outputs given semantic input
  - OT semantics (Hendriks and de Hoop 2001): evaluating interpretations given (morpho)syntactic input.
- **Bidirectional OT (biOT) combines OT syntax and OT semantics (Blutner 2000)**
  - In Blutner's (2000) framework a form-meaning pair  $\langle f, m \rangle$  is called *super-optimal* if and only if there is no other super-optimal pair  $\langle f', m \rangle$  such that  $\langle f', m \rangle$  is more harmonic than  $\langle f, m \rangle$  and there is no other super-optimal pair  $\langle f, m' \rangle$  such that  $\langle f, m' \rangle$  is more harmonic than  $\langle f, m \rangle$ .

## Bidirectional OT: DSM with transitive verbs in Hindi

- **Bidirectional OT analysis of DSM: The pairs  $[\emptyset, a]$  and  $[ne, A]$  are superoptimal under the constraint ranking: Identify-A  $\gg$  Economy  $\gg$  Distinguishability**

Subject	Identify-A	Economy	Distinguishability
✌ $[\emptyset, a]$			*
$[\text{ERG}, a]$	*	*	
$[\emptyset, A]$	*		
✌ $[\text{ERG}, A]$		*	

- **NB the bidirectional tableau here is actually equivalent to two OT syntactic tableaux (above).**
- **In some other case however the equivalence is lost.**

# DSM in Hindi: intransitive verbs

- Subjects of intransitive verbs are mostly nominative irrespective of perfectivity and agentivity of the subject.

Mohan            ghar bhaag-aa  
Mohan(nom) home run-pfv.sg.m.  
"Mohan ran home."

- For a minor class of verbs such as 'shout/scream' they can be either nominative or ergative depending on volitionality

*Raam-ne            jorse    cillaayaa*  
Raam-ERG loudly shouted  
'Raam shouted loudly (volitionally)'  
*Raam    jorse    cillaayaa*  
Raam(NOM) loudly shouted  
'Raam screamed loudly'

# DSM in Hindi: volitionality

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- **OT-syntactic analysis (de Hoop and Narasimhan 2005): two constraints**
  - erg/vol (an Identify constraint) and \*erg (an Economy constraint)
    - erg/vol: Ergative case ↔ volitional subjects.
    - \*erg: No ergative case marking.

# DSM in Hindi: OT syntactic approach

- For majority of intransitive verbs in Hindi the ranking of the two relevant constraints must be  $*erg \gg erg/vol$ .

<b>Input: volitional subject</b>	<b>*erg</b>	<b>erg/vol</b>
<b>+ ERGATIVE</b>	<b>*!</b>	
<b>☞ - ERGATIVE</b>		<b>*</b>

# A problem for OT syntactic approach

- However, a small class of intransitive verbs, as illustrated above, would suggest the reverse ranking, namely  $\text{erg/vol} \gg * \text{erg}$ .

Hypothetical reranking: Case on volitional subject of 'shout' in Hindi



<b>Input: volitional subject</b>	<b>erg/vol</b>	<b>*erg</b>
<b>☞ + ERGATIVE</b>		<b>*</b>
<b>- ERGATIVE</b>	<b>*!</b>	

However, if we permit constraint reranking, OT loses its explanatory power.

## A bidirectional approach to fluid DSM in Hindi

- **BiOT provides a natural account for cases of “fluid” case alternations with scream/shout-verbs, without taking recourse to constraint reranking.**

### Case on intransitive subject of ‘shout’ in Hindi

Subject of intransitive verb such as ‘shout’ in Hindi	*erg	vol-erg
 - ERGATIVE, - VOLITIONAL		
- ERGATIVE, + VOLITIONAL		*
+ ERGATIVE, - VOLITIONAL	*	
 + ERGATIVE, + VOLITIONAL	*	

## A bidirectional approach to fluid DSM in Hindi

- There are two super-optimal pairs in the tableau above, namely  $\langle -\text{ERGATIVE}, -\text{VOLITIONAL} \rangle$  and  $\langle +\text{ERGATIVE}, +\text{VOLITIONAL} \rangle$ . Note that from a unidirectional OT syntactic perspective ergative is not an optimal form, not even for a volitional intransitive subject, as it violates the higher ranked constraint \*erg (see tableau above).
- Whenever we encounter a pattern in language where *in the same context* two forms are available as well as two meanings, this pattern is open for bidirectional optimization.

# Fluid differential object marking in Finnish and Russian

- In Finnish the partitive case used for 'unbounded' predicates (imperfective and/or taking indefinite O), the accusative/genitive case for 'bounded' predicates (Kiparsky 1998).

Anne rakensi taloa.

Anne built house.PART

"Anne was building a/the house."

Anne rakensi talon

Anne built house.ACC

"Anne built a/the house."

## Tableau 15: Case on transitive object in Finnish

Object of transitive verb in Finnish	*acc	acc/bound
✌ -ACCUSATIVE, -BOUNDED		
-ACCUSATIVE, +BOUNDED		*
+ACCUSATIVE, -BOUNDED	*	*
✌ +ACCUSATIVE, +BOUNDED	*	

This analysis correctly predicts that ACC is associated with bounded events, PART with unbounded ones.



## Interaction of object case and aspect in Russian

- In Russian there is also an object case alternation, between accusative and genitive case, associated with a (partly) similar meaning alternation as in Finnish.

On vypil vodu.  
he drank.PFV water-ACC  
'He drank the water'

On vypil vody.  
he drank.PFV water-GEN  
'He drank some water'

## Case on perfective transitive object in Russian

Object of transitive verb in Russian	*gen	unbound-gen
 -GENITIVE, +BOUNDED		
-GENITIVE, -BOUNDED		*
+GENITIVE, +BOUNDED	*	
 +GENITIVE, -BOUNDED	*	

- Again this analysis correctly predicts that ACC is associated with bounded bounded/telic events, while GEN is associated with unbounded/atelic events.

# Case on imperfective transitive object in Russian

- Interestingly in the context of imperfective verb, the O can be only in the accusative:

On        pil                        vodu (\*vody).  
he        drank.PFV                water-ACC (water-GEN)  
'He drank the water'

NB this is unexpected given that ACC is rather associated with unbounded events (in perfective contexts), and represents – seemingly – an opposite pattern from Finnish.

Note however a concomitant distinction between Finnish and Russian: Russian has verbal aspect, Finnish does not.

# Case marking of object of imperfective predicate in Russian

- Bidirectional optimization becomes superfluous (as only the unbounded interpretation is available in imperfective contexts)
- Thus a shift to OT syntactic perspective correctly yields ACC as the optimal output under the same constraint ranking

Input: object of unbounded predicate	*gen	unbound-gen
+ GENITIVE	*!	
☞ - GENITIVE		*

Thus, bidirectional optimization can account for fluid case marking while keeping the constraint ranking of the language intact