# Neighbourhood Dispute: Affix Order Reversal in Kiranti

Eva Zimmermann
Eva.Zimmermann@uni-leipzig.de

## 1. The Phenomenon: Affix order reversal

(1) *Affix Order in Athpare* (Ebert, 1997*b*)

a. a-lem-i-t-ŋa
2-beat-1/2PL.A-NPST-1
'You beat us (excl)' (2s–1pe)

b. lem-na-t
beat-1.A-NPST
'You beat us (excl)' (2s–1pe)

c. lem-ci-t-ŋa
beat-NSG-NPST-1
'He beat us two (excl.)' (3s–1de)

d. lem-u-m-ci-t-ŋa
beat-3.P-1/2PL.A-NSG-NPST-1
'We (excl) beat them' (1pe–3Nsg)

*Accounts for determining affix order*

1. a **template** determines the ordering: affixes are arbitrarily marked for a slot position on the template (e.g. Stump (2006) for an overview)

(2) *Suffix Slots in Athpare* (Ebert, 1997*b*)

| | | | | |
|---|---|---|---|---|
| -u | -m | -ci | -t | -ŋa |
| | | -i | | |
| | | -na | | |

2. **precedence constraints** of the form 'affix X must precede affix Y' determine affix order in an optimality-theoretic system (Paster, 2006; Caballero, 2008)

(3) *Ranking of precedence constraints*

| | U > M | M > CI | CI > T | T > ŋA |
|---|---|---|---|---|
| ☞ a. -u-m-ci-t-ŋa | | | | |
| b. -m-u-ci-t-ŋa | *! | * | | |
| c. -u-m-t-ci-ŋa | | | *! | * |
| d. -u-m-ci-ŋa-t | | | | *! |

3. the order follows from **local bigram constraints** X-Y that penalize every instance where X is not *immediately* followed by Y. (Ryan and Schuh, under preparation; Ryan, 2010)

   - apparently quite similar to the precedence account, but: the constraints refer to *adjacency*

(4) *Ranking of local bigram constraints*

| | | U-M | M-CI | CI-T | T-ŋA | M-U | CI-M | T-CI | ... |
|---|---|---|---|---|---|---|---|---|---|
| ☞ a. | -u-m-ci-t-ŋa | | | | | * | * | * | |
| b. | -m-u-ci-t-ŋa | *! | * | | | | * | * | |
| c. | -u-m-t-ci-ŋa | | *! | * | * | * | * | | |
| d. | -u-m-ci-ŋa-t | | | *! | * | * | * | * | |
| | ... | | | | | | | | |

4. is derived by the ranking of **morpheme alignment constraints** $\Sigma \leftrightarrows X$ demanding that a morpheme realizing category X must be aligned to the edge of the stem (Hargus and Tuttle, 1997; Trommer, 2001, 2003*b*)

(5) *Ranking of Align constraints*

| | | $\Sigma \leftrightarrows$ P | $\Sigma \leftrightarrows$ A | $\Sigma \leftrightarrows$ N | $\Sigma \leftrightarrows$ Tns | $\Sigma \leftrightarrows$ Ps |
|---|---|---|---|---|---|---|
| ☞ a. | -u-m-ci-t-ŋa | | * | *** | *** | ***** |
| b. | -m-u-ci-t-ŋa | *! | | ** | *** | **** |
| c. | -u-m-t-ci-ŋa | | * | ****! | ** | **** |
| | ... | | | | | |

- the last option is apparently the most general account since the hierarchy only refers to general morpho-syntactic categories and not to specific affixes
- whether an affix realizes agent or patient features is therefore irrelevant, only the category it realizes is important
- the order of morphemes in Athpare follows from the **hierarchy**: P(ATENT CASE) ≫ A(GENT CASE) ≫ N(UMBER) ≫ T(E)NS(E) ≫ P(ER)S(ON)

*But what about this?*

(6) *More affix order in Athpare* (Ebert, 1997*a*)

a. a-lem-ŋa-t
   2-beat-**1-NPst**
   'You beat me' (2s–1sg)

✱ **person** suffix /-ŋa/ **precedes tense** suffix /-t/ ? ✱

**Main claim**
The affix order in different Kiranti languages generally reflects a **hierarchy of ranked morpho-syntactic features**. Departures of this order always refer to the concept of morphological prominence of categories. These generalizations are best captured in an OT-system that derives the order of affixes from violable constraints, more concretely from the interaction of standard ALIGN constraints and prominence-constraints for morpho-syntactic categories.

## 2. Affix Order in OT: Background Assumptions

- morphemes are **underspecified** for morpho-syntactic features (central assumption in realizational theories as Distributed Morphology, Halle and Marantz (1993))
- the order of morphemes is calculated in a **parallel fashion**
  - in the following, it is only taken for granted that all morphemes and their meaning are visible at the same time
  - this remains agnostic about the whether insertion/realization of features and the ordering of the exponents is calculated at the same time (Trommer, 2003*a*)

### 2.1. Morpheme Alignment constraints

- hierarchy-governed order implemented in an optimality-theoretic system of **ranked** ALIGN **constraints** (McCarthy and Prince, 1993; Trommer, 2003*b*) demanding that (classes of) features must be adjacent to their stem, cf. (7)[1]
- since the affixes in question are suffixes, ALIGN demands in these cases adjacency to the right edge of the stem
- whereas 'feature class' means a **morpho-syntactic category**:

| | |
|---|---|
| A | AGENT CASE |
| N | NUMBER |
| P | PATENT CASE |
| PS | PERSON |
| TNS | TENSE |

(7) *Align Constraints for Morpheme Ordering*
$\Sigma \leftarrow\!\dashv X$
Assign a violation mark for every morpheme that intervenes between a marker realizing a morphological feature class X and the right edge of the stem.

### 2.2. Prominence constraints

- in addition, several constraints refer to the concept of **prominence**
- it refers to the prominence of certain categories that is achieved through affixation and unifies two concepts, both more or less morphological:
  - prominence by position (e.g. 'edge prominence' in Yu (2003))

[1] Alternatively, the ALIGN constraint could refer to prosodic categories, as ALIGN (X, LEFT; PRWD, RIGHT).

  - prominence by case (e.g. the 'discourse prominence' of the case bearing argument (de Hoop and Malchukov, 2008))

- these constraints are positive or negative, i.e. they either demand that a certain category must be marked prominently or penalize instances where a morpho-syntactic category is marked prominently

## 3. Athpare

- spoken in the southeastern Kiranti area with approximately 2.000 speakers (1995)
- all data is from Ebert (1997*b*)

### 3.1. The phenomenon

(8) *(relevant) morphemes in Athpare*

| | | | |
|---|---|---|---|
| -u | ↔ | [P,−1,−2,+3] | **P** |
| -i | ↔ | [A,+pl,−sg,+2] / __ [+1,+sg] | |
| -m | ↔ | [A,+pl,−sg,−3] / __ [+3] | **A** |
| -na | ↔ | [A,+1,−2] / __ [+2] | |
| -ci | ↔ | [−sg] | **N** |
| -t | ↔ | [−past] | **Tns** |
| -ŋa | ↔ | [+1,−2] | **Ps** |

(9) P ≫ A ≫ N ≫ Tns ≫ Ps

➡ **The Mystery**: the position of /-ŋa/ and /-t/ in some 1sgP forms in the non-past

(10) *Reordering in Athpare*

| | 1sg | expected from the hierarchy in (9) |
|---|---|---|
| 2s | -ŋa-t | *-t-ŋa |
| 2d | -ci-t-ŋa | |
| 2pl | -i-t-ŋa | |
| 3s | -ŋa-t | *-t-ŋa |
| 3d | -ci-t-ŋa | |
| 3pl | -ŋa-t | *-t-ŋa |

➡ **Generalization**: whenever /-t/ and /-ŋa/ are the only suffixes that are attached to the stem, they appear in an order that is unexpected from the general hierarchy. This reordering ensures that the tense morpheme is never adjacent to the stem.

### 3.2. Analysis

- the ranking of Align constraints in (11) predicts the expected order of morphemes in Athpare
- the tense morpheme /-t/, however, underlies an additional negative prominence constraint (11) demanding that it must never occur in a prominent position

- this derives the fact that /-ŋa/ and /-t/ switch their position in order to avoid a situation where the tense marker directly follows the stem as can be seen in (13) (irrelevant constraints omitted)

(11) $\Sigma \leftleftarrows \text{P} \gg \Sigma \leftleftarrows \text{A} \gg \Sigma \leftleftarrows \text{N} \gg \Sigma \leftleftarrows \text{Tns} \gg \Sigma \leftleftarrows \text{Ps}$

(12) *PROMTENSE
Assign a violation mark for every morphemes realizing tense features that is adjacent to the stem.

(13) *Athpare Morpheme 'Reordering'*

| | | *PROMTENSE | $\Sigma \leftleftarrows$ N | $\Sigma \leftleftarrows$ Tns | $\Sigma \leftleftarrows$ Ps |
|---|---|---|---|---|---|
| I. 3s-1de: | -t [Tns] -ci [N] -ŋa [Ps] | | | | |
| a. | -t [Tns] -ci [N] -ŋa [Ps] | *! | * | | ** |
| b. | -ŋa [Ps] -t [Tns] -ci [N] | | *!* | * | |
| c. | -ci [N] -ŋa [Ps] -t [Tns] | | | **! | * |
| ☞ d. | -ci [N] -t [Tns] -ŋa [Ps] | | | * | ** |
| II. 2s-1s: | -t [Tns] -ŋa [Ps] | | | | |
| a. | -t [Tns] -ŋa [Ps] | *! | | | * |
| ☞ b. | -ŋa [Ps] -t [Tns] | | | * | |

### 3.3. Discussion and further prediction

- this reordering can only be found in the presence of /-ŋa/ – a straightforward prediction of the system since /-ŋa/ is the only person morpheme and only those are expected to occur after /-t/
(and leaves it adjacent to the stem in the absence of any other markers)

- the assumption that *PROMTENSE is high-ranked predicts some repair in contexts where /-t/ is the only marker that is attached to a stem, i.e. in a context where no other marker could intervene between /-t/ and the stem

- this prediction is borne out: in some contexts where no other agreement marker is expected to occur, /-t/ cannot surface neither and the default tense marker /-yuk/ appears

(14) *Insertion of /-yuk/ avoids stem-adjacent /-t/*

| | 1pi | 2s | 2d |
|---|---|---|---|
| 3s | a-Σ-**yuk** | m-a-Σ-**yuk** | m-a-Σ-ci-t |
| 3d | a-Σ-ci-t | m-a-Σ-**yuk** | m-a-Σ-ci-t |
| 3pl | a-Σ-**yuk** | m-a-Σ-**yuk** | m-a-Σ-ci-t |

## 4. Limbu and agent prominence

- a language of Eastern Nepal with approximately 334.000 speakers (2001)
- all data is from van Driem (1987)

### 4.1. The phenomenon

(15) *Affix order in Limbu*

a. hu-u-ŋ
teach-3P-1SG.A
'I teach him' (1sg–3sg)

b. hu-nɛ-si-ge
teach-2.P-NSG-1.EXCL
'We (two) teach you' (1Ns–2)

c. hu-u-m-si-ge
teach-3.P-NSG.A-NSG-1.EXCL
'We (excl.) teach them' (1pe–3Ns)

(16) *(relevant) morphemes in Limbu*

| | | | |
|---|---|---|---|
| nɛ- | ↔ | [P,−1,+2] / __ +1 | **P** |
| u- | ↔ | [P,+3] | |
| ŋ- | ↔ | [A,+sg,+1,−2] | **A** |
| m- | ↔ | [A,−pl] / __ +3 | |
| si- | ↔ | [−sg] | **N** |
| ge- | ↔ | [+1,−2] | **Ps** |

(17) P ≫ A ≫ N ≫ Ps

➡ **The Mystery**: the position of /-si/ in forms where a dual agent acts upon a third person

(18) *Reordering in Limbu*

| | 3sg | 3d/3pl | Expected from the hierarchy in (18) | |
|---|---|---|---|---|
| 1sg | -u-ŋ | -u-si-ŋ | | |
| 1de | -si-u-ge | -si-u-si-ge | *-u-si-ge | *-u-si-si-ge |
| 1di | -si-u | -si-u-si | *-u-si | *-u-si-si |
| 2sg | -u | -u-si | | |
| 2d | -si-u | -si-u-si | *-u-si | *-u-si-si |

➡ **Generalization**: /-si/ occurs next to the stem and before /-u/ when it marks the number of an agent in the absence of any other marker that realizes agent features.

### 4.2. Analysis

- the morphemes in Limbu are ordered according to the hierarchy (17) which follows from the ranking of ALIGN constraints in (19)

(19) $\Sigma \leftleftarrows P \gg \Sigma \leftleftarrows A \gg \Sigma \leftleftarrows N \gg \Sigma \leftleftarrows Ps$

- the prominence constraint in (20) is ranked above these ALIGN constraints and demands that in cases where no case-marker for the agent is present, some marker realizing agent features must appear adjacent to the stem

(20) PROMAGENT!
Assign a violation mark for every agent that is not marked prominently.
Whereas an argument is marked prominently iff
a. a case-marked affix realizes the argument, or
b. a marker realizing some of its features is adjacent to the stem.

- it triggers reordering of /-si/ and /-u/ in the contexts where a dual agent acts upon a third person patent (21):
  - whenever no agent case marker and no marker realizing agent features is present, a violation of PROMAGENT! is unavoidable and the ALIGN-constraints determine the ordering as in (21-a) where /-si/ marks non-singularity of the patent
  - but if /-si/ realizes agent features (21-b), satisfaction of PROMAGENT! is possible if the number marker appears adjacent to the stem
- this presupposes that the morphology can still 'see' which features originated from agreement with the agent

(21) *Limbu morpheme reordering si ↔ u*

| | PROMAGENT! | Σ ⇚ P | Σ ⇚ N | Σ ⇚ Ps |
|---|---|---|---|---|
| I. 2s–3Ns: -u [P,Ps] -si [N] | | | | |
| a. -si [N] -u [P,Ps] | * | *! | | * |
| ☞ c. -u [P,Ps] -si [N] | * | | * | |
| II. 2d–3s: -u [P,Ps] -si [N] | | | | |
| ☞ a. -si [N] -u [P,Ps] | | *! | | * |
| c. -u [P,Ps] -si [N] | *! | | * | |

### 4.3. Discussion and further predictions

- this pattern of reordering of /-si/ (and its cognates) in contexts where it marks agent number in the absence of agent-case markers can be found in various other Kiranti languages[2]
- in some other languages, however, another pattern arises: if /-si/ realizes agent number in the absence of realized agent-case, **all potentially intervening markers are absent**

[2]E.g. Bantawa (Doornenbal, 2009), Belhare (Bickel, 2003, 1998) or Yakkha (Schackow, 2010).

(22) *Affix order in Chamling* (Ebert, 1997*a*)

a. lod-u-m-ci-ka
tell-3.P-1/2PL.A-1.EXCL
'We (excl) tell them' (1pe–3d/p)

(23) P ≫ A ≫ N ≫ Ps

(24) *Avoidance of a non-prominent agent in Chamling*

| | 3s | 3d/p | Expected from the morphemes feature specification |
|---|---|---|---|
| 1de | -ci-ka | -ci-ka | *-u-ci-ka |
| 1pe | -u-m-ka | -u-m-ka | |
| 1de | -ci | -ci | *-u-ci |
| 1pe | -u-m | -u-m | |
| 2s | -u | -u-ci | |
| 2d | -ci | -ci | *-u-ci |
| 2p | -u-m | -u-m-ci | |

- if /-u/ is the same 3.P-marker as in Limbu (and in many Kiranti languages generally), its absence in dual–3 contexts is unexpected
- and if Chamling were due to the same ranking as Limbu we would expect reordering between /-u/ and /-ci/ as e.g. */-ci-u-m-ka/ for 1pe–3s
- but if the language is due to high-ranked PROMAGENT!, the non-existence of the marker is expected as an alternative repair strategy to avoid its violation
- these different repairs to avoid a non-prominent agent are summarized in (25)

(25)

| | e.g. 1di-3s | excluded from PROMAGENT! | repair |
|---|---|---|---|
| Chamling | Σ-ci | *Σ-u-ci | ➡ non-insertion of /-u/ |
| Limbu | Σ-si-u | *Σ-u-si | ➡ reordering of /-u/ and /-si/ |

- this is a straightforward prediction from an optimality-theoretic system where realization and order of morphemes is calculated at the same time and PARSE constraints ensure the realization of morpho-syntactic features (Trommer, 2003*a*)
- if the constraint demanding that all patent case features PARSE-P must be realized is ranked below Σ ⇚ P, /-u/ is rather not inserted than realized in a position that is not adjacent to the stem
- (note that all other PARSE-constraints are generally taken to be undominated)
- this can be seen in (26):
  - /-ci/ appears after /-u/ if the dual marker realizes patent features (26-a) and agent prominence is impossible to achieve
  - but /-u/ is not realized at all if /-ci/ realizes agent features and could therefore ensure agent prominence if it is appears adjacent to the stem (26-I)

(26) *Order and non-realization of /-u/ in Chamling*

| | PROMAGENT! | Σ ⇇ P | PARSE-P | Σ ⇇ N | Σ ⇇ Ps |
|---|---|---|---|---|---|
| I. 2s–3Ns: -u [P,Ps] -ci [N] | | | | | |
| a. -ci [N] -u [P,Ps] | * | *! | | | * |
| b. -ci [N] | * | | *! | | * |
| ☞ c. -u [P,Ps] -ci [N] | * | | | * | |
| II. 2d–3s: -u [P,Ps] -ci [N] | | | | | |
| a. -ci [N] -u [P,Ps] | | *! | | | * |
| ☞ b. -ci [N] | | | * | | |
| c. -u [P,Ps] -ci [N] | *! | | | * | |

## 5. Concluding discussion

- this analysis is based on insights from alignment-based accounts for affix order (Trommer, 2003*b*; Kim, 2010) that allows to derive affix order from independent principles: the language-specific hierarchy of morpho-syntactic features
- some possible alternatives:
  - templates – arbitrary and without any independent motivation
  - the precedence account in Ryan (2010)
    1. is superior to other models of arbitrary ordering like precedence accounts (Paster, 2006) since it is able to derive context-sensitive reordering
    2. but is highly problematic from a viewpoint of economy: it necessarily involves morpheme-specific ordering constraints for every pair of morphemes that are ever adjacent in a string where hierarchy-based alternatives only assume one hierarchy of morpho-syntactic features (Noyer, 1992; Trommer, 2006)
- the fact that it is an OT-system naturally predicts departures from the expected order
- and even more it predicts different possible repair strategies for one and the same marked configuration in different languages – exactly what we found in the Kiranti languages
- these intervening factors leading to an 'order reversal' were taken to refer to the concept of morphological prominence

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