# Encoding of spatial relations: *motion, direction, and location in Lalo*

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## 1. Introduction

1.1 About the Lalo language: distribution, genetic affiliation, and previous work and current research

1.2 Spatial frames of reference, research question, and the main point

Analysis of linguistic data shows that Lalo spatial relations are encoded by locational nouns, spatial demonstratives, locative particles, directional particles, motion verbs, and serial verb constructions that contain motion verbs.

## 2. Locational nouns and spatial demonstratives

2.1 Locational nouns by the absolute frame of reference

*Table 2 Some Lalo locational nouns by the absolute frame of reference*

2.2 Locational nouns by the relative frame of reference

*Table 3 Examples of Lalo locational nouns that indicate spaces by the relative frame of reference*

2.3 Spatial demonstratives

*Figure 6 Lalo spatial demonstratives*

Lalo has five demonstratives that indicate the relative spaces in the physical surroundings of the speaker.

/tʂu$^{55}$/ "this space", indicates the space in which the speaker is standing;

/nu$^{55}$/ "the pointed space", indicates the space to which the speaker pointed in the vicinity;

/gu$^{33}$/ "that space", the further horizontal space identified by the speaker;

/nu$^{33}$/ "the upper space", the further upper vertical space identified by the speaker;

and /dʐy$^{33}$/ "that lower space", the further lower vertical space identified by the speaker.

All those spaces are defined by the relative frame of reference in speaker-centered perspective.

## 3. Locative

3.1 Locative particles

Lalo locative particles encode the location of a focused object by the reference object, this is the intrinsic frame of reference. The locative particles are post-nominal or postpositional.

*Table 4 Locative particles and locative phrases in Lalo*

3.2 The derivation of locative particle in Lalo

The locative particles are derivative from either the existential verb /khɯ$^{55}$/ "nest" or verbs of placing, including /di$^{55}$/ "sit, place oneself", /tha$^{33}$/ "make sth. attached to sth", /khu$^{31}$/ "place sth. under sth.", khu̱$^{33}$ "place sth. above sth.", and ta$^{31}$ "put, place".

And some locative particles are compounds of a body part noun and a derivational particle.

*Table 5 Derivation of locative particle in Lalo*

## 4. Direction

### 4.1 Directional particles

Lalo has seven particles that respectively encode the directions of "up", "down", "toward", "away from", "out", "in(to)", and mutual direction. All those particles are post-verbal.

*Table 6 Directional particles in Lalo*

### 4.2 The derivation of directional particle in Lalo

In Lalo, directional particle /ti$^{33}$/ "up" is the causative of motion verb /di̠$^{33}$/ "go up"; /tɕy$^{33}$/ "in(to)" is that of /dʐy$^{33}$/ "go in(to)"; and /kɑ$^{53}$/ "toward" is that of /gɑ$^{33}$/ "move centripetally". And /tɕi$^{33}$/ is the causative of existential verb /dʐi̠$^{33}$/ "exist, stay". /thi̠$^{31}$/ "outward" is the same as locative /thi̠$^{31}$/ "on"; /ki$^{55}$/ is the unaspirated counterpart of the locative /khi$^{55}$/ "with"; and the reciprocal /di$^{31}$ hi$^{33}$/ is composed of the locative /di$^{31}$/ "in" and psych-verb /hi$^{33}$/ "feel".

In particular, the directional particles derivative from motion verbs can be optionally used after their respective derivational verbs; e.g. di̠$^{31}$/di̠$^{33}$ ti$^{33}$ "go up"; dʐy$^{33}$/dʐy$^{33}$ tɕy$^{33}$ "go in(to)"; gɑ$^{33}$ kɑ$^{53}$ "Come together!" (Imperative).

*Table 7 Derivation of directional particle in Lalo*

## 5. Motion verbs and the related serial verb constructions

### 5.1 Motion verbs

*Table 7 Examples of Lalo motion verbs*

### 5.2 Serial verb construction containing motion verb

*Table 8 Examples of Lalo serial verb construction containing motion verb*

## 6. A discussion on the grammaticalization of spatial concept in Lalo

### 6.1 Patterns of grammaticalizing Lalo verbs into locative particles and/or directional particles (*Table 9*)

Lexical causativization and the grammaticalization of spatial concept in Lalo

About 40 pairs of simplex or stative verb and causative verb are found in Lalo

Phonological correspondence patterns Lalo simplex or stative /causative verb-pairs (Table 10).

*Table 10 Examples of Lalo simplex or stative /causative verb-pairs*

### 6.2 From locative particle to directional particle

(1) locative /thi̠$^{31}$/"on" as used as directional /thi̠$^{31}$/ "out", e.g.

    a. a$^{55}$ʂa$^{55}$ tsɿ$^{55}$tsɿ$^{33}$ thi̠$^{31}$ ta$^{31}$ lɑ$^{31}$. "The maize is on the desk."

      maize   desk  LOC  put  ASP

    b. a$^{55}$ʂa$^{55}$     ga$^{55}$ty$^{55}$ ɕi$^{55}$  lo$^{33}$    thi̠$^{31}$   pɛ$^{55}$a$^{55}$. "The maize was thrown out to the yard."

      maize        yard      throw  DIR   ASP

(2) from locative /khi$^{55}$/ "with" to directional /ki$^{55}$/ "away from" (the aspirated to the unaspirated)

    a. ŋɑ$^{55}$    a$^{55}$sa$^{33}$  khi$^{55}$   dʐi$^{33}$ lɑ$^{31}$. "I'm staying with A'sa".

     1SL   Name   LOC    stay ASP

    b. a$^{55}$lu$^{31}$ a$^{55}$sa$^{33}$ di$^{31}$ dɛ$^{31}$  ki$^{55}$ ua$^{53}$. "A'lu stroke A'sa."

     Name Name   P strike DIR EVI

### 6.3 From verb to locative particle and then to patient marker

Lalo verb di$^{55}$ "sit, place oneself" to locative di$^{31}$ "in (tree, etc.)", which is also used as patient marker, e.g.

    (1) a$^{55}$nɛ$^{53}$ i$^{55}$by$^{55}$ ku$^{55}$ di$^{55}$ lɑ$^{31}$. "The kid is sitting in the straw rain cape."

       kid    cape LOC  sit  ASP

(2) a$^{55}$ŋa$^{33}$ sʅ$^{33}$dzʅ$^{55}$ di$^{31}$ na$^{31}$ la$^{31}$. "The bird is resting in the tree."

    bird     tree    LOC    rest    ASP

(3) la$^{33}$ɕɛ$^{55}$ a$^{55}$ŋa$^{33}$ di$^{31}$ thʉ$^{55}$ dza$^{31}$ la$^{31}$. "The snake is trapping and killing the bird."

    snake     bird    P    trap    eat    ASP


## 6.4 From motion verbs to aspect markers

In addition, most Lalo aspect markers are derivative from motion verbs, especially from the motion verb /la$^{55}$/ that means "come" in English.

*Table 11 Lalo aspect markers derivative from motion verbs*


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