The sloped world(s) of the Reta language: Grammaticalised expressions of elevation on a micro, meso and macro level

Jeroen Willemsen
Aarhus University, Denmark
jeroen@cc.au.dk

Abstract

Reta, an endangered Timor-Alor-Pantar language of Eastern Indonesia, has grammaticalised the expression of elevation in both a set of motion verbs like 'come up, go down' and a set of so-called spatially marked terms, which includes both demonstrative determiners like 'that high yonder' and verbs like 'be down yonder'. Spoken in an extremely sloped environment, Reta has a plethora of spatially marked terms.

The Reta system of spatial marking fits the concept of a *semplate* (Levinson & Burenhult 2009) well, as the notion of a slope is reflected in unrelated sets of lexemes: spatially marked terms see a three-way distinction between LOW, LEVEL and HIGH as expressed by spatial formatives (*po, mo* and *to* respectively), and this distinction emerges in motion verbs as well. Crucially, the slope as a semplate is not restricted to the immediate environment Reta is spoken in, but is reflected in the grammar on three different levels. On the MICRO-level, which is represented by the village itself and the slope on which it is located, elevation is calculated based on a vertical axis running from the summit to the seaside. On the MESO-level, which is roughly represented by the Alor-Pantar archipelago as a whole, elevation is calculated based on compass points. On the MACRO-level, which is represented by earth in its entirety, any location outside the MESO-level is expressed by a LOW term.

While an overview of elevational systems in Alor-Pantar languages does exist (Schapper 2017*a*), the only dedicated investigation into the elevational system of any individual Alor-Pantar language is Steinhauer's (1977; 1991) descriptions of Blagar motion verbs and elevational terms, and Williams' (2016) account of place reference and location formulation in Kula. This paper adds to the literature by providing a description of the Reta system of elevational marking based on primary fieldwork. It will become apparent that the relative size of the Reta elevational system is due to (i) the inclusion of certain lexemes in the elevational system absent in most other languages, such as *sub'ang* 'as high as' (e.g. *posub'ang* 'as high as that down yonder') and (ii) the inclusion of an extra dimension not otherwise attested in Alor-Pantar languages, namely an AXAL-NONAXAL distinction, e.g. *pogoa* 'down yonder (speaker is located on vertical axis)' vs. *pagoa* 'down yonder (speaker is **not** located on vertical axis)'.

Reta spatially marked terms, like those found in other Alor-Pantar languages (Schapper 2017*a*: 242), mainly express 'global elevation' as opposed to 'geophysical elevation' (roughly projecting search domains based on elevation as opposed to search domains based on features of the geophysical environment, see Burenhult 2008: 110-1). It will however also be demonstrated that geophysical elevation also forms a component of the system: experimental field data show that horizontal motion towards or away from the summit may also be described using HIGH and LOW terms respectively.

1 Introduction[1]

This paper deals with the way in which knowledge of spatial relations is reflected in the grammar of Reta, a Papuan language of the Timor-Alor-Pantar stock spoken in the montane Alor region in Eastern Indonesia. More specifically, it is concerned with the way in which the concept of elevation is reflected in the use of spatially marked terms such as *poomi* 'down yonder', as well as motion verbs such as *mida* 'go up' or *ja* 'come down'. Further, it aims to demonstrate in what ways elevation as a linguistic notion is grounded in the geophysical environment surrounding Reta's speaker community.

The notion of elevation sees a three-way distinction between HIGH, LEVEL and LOW, and these three categories map onto two etymologically unrelated sets of lexemes. Firstly, there is a large paradigm of so-called spatially marked terms that are characterised by spatial formatives which overtly express elevation. Secondly, there is a class of motion verbs which do not take such spatial formatives, but which inherently encode elevation as well as movement towards or away from the Deictic Centre. Consider the following three examples:[2]

(1) a. *nang* *too-mi* *mida*
1SG.NOM HI-in go.HI
'I'm going up yonder.'

b. *nang* *moo-mi* *va*
1SG.NOM LVL-in go.LVL
'I'm going yonder.'

c. *nang* *poo-mi* *'i*
1SG.NOM LO-in go.LO
'I'm going down yonder.'

Each of these examples contains a verb that is spatially marked by means of an spatial formative; *too-* for HIGH, *moo-* for LEVEL and *poo-* for LOW—underlyingly *to-*, *mo-* and *po-* respectively—and a motion verb that encodes the corresponding movement. In Levinson & Burenhult's (2009) terms, elevational marking thus forms an underlying semantic template which organises two lexical sets from different form classes and from different semantic fields, or *semplate.*

This semplate is visualised in the figure below. The sloped sheet on the bottom represents the underlying template, and is a schematic representation of the sloped environment in which Reta is spoken. The two layers above it are the manifestations of this template in the use of spatially marked terms and motion verbs respectively. This paper explores in detail both of

[1] Various people contributed to the completion of this paper. I would firstly like to thank the editors for the opportunity to publish my research. I would further like to thank George Saad, Yonatan Goldshtein and two anonymous reviewers for their comments on an earlier version of this paper. I am most indebted, however, to my main consultants Joi Fransis Dakamoly and Paulus Hinadonu for their tireless enthusiasm in teaching me the system of Reta spatial marking, and the perilous but exciting hikes that facilitated this. I would lastly like to express my gratitude to the ever-welcoming Reta community for their hospitality. The usual disclaimers apply.

[2] Glosses and notational conventions used throughout this paper: 1 = 1st person, 2 = 2nd person, 3 = 3rd person, ACC = accusative, ANA = anaphoric determiner, AXL = axal, DL = dual, DVRB = deverbal suffix, FOC = focus particle, HI = high, LO = low, LVL = level, M = Malay loan, NEG = negator, NAXL = non-axal, NOM = nominative, NPROX = non-proximal, NVIS = non-visible, PL = plural, POSS = possessive, PROSP = prospective, PROX = proximal, VIS = visible, UNIV = universal quantifier, <'> = /ʔ/, <b'> = /ɓ/, <v> = /b͡v/, vowel digraphs are phonemic long vowels.

these layers, as well as the interaction between them. It will be shown that the underlying template operates on three different geographical levels—a local MICRO-level, a wider MESO-level encompassing roughly the archipelago Reta is spoken in, and a MACRO-level which encompasses earth in its entirety—and that the specific mapping of elevation onto the two layers of spatially marked terms varies between these levels.

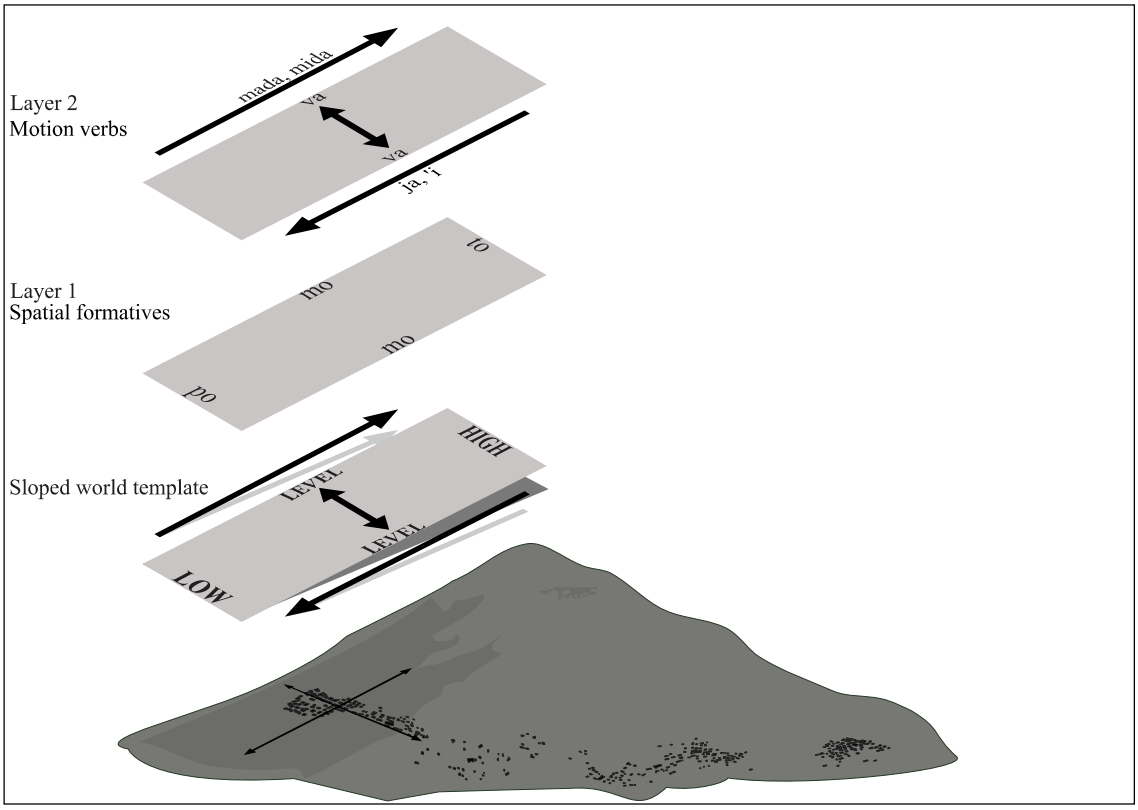


Figure 1. *The Reta semplate for the expression of elevation.*

This paper is organised as follows. Section 2 provides a brief introduction to Reta and provides a number of grammatical preliminaries that serve as a basis for the rest of this paper. Section 3 deals with the components that make up the semplate, discussing in detail the system of spatial marking by means of motion verbs on the one hand, and spatially marked terms on the other. Section 4 then focuses on the three different geographical levels on which the semplate is reflected in Reta grammar and how these differ. Section 5, lastly, provides a summary.

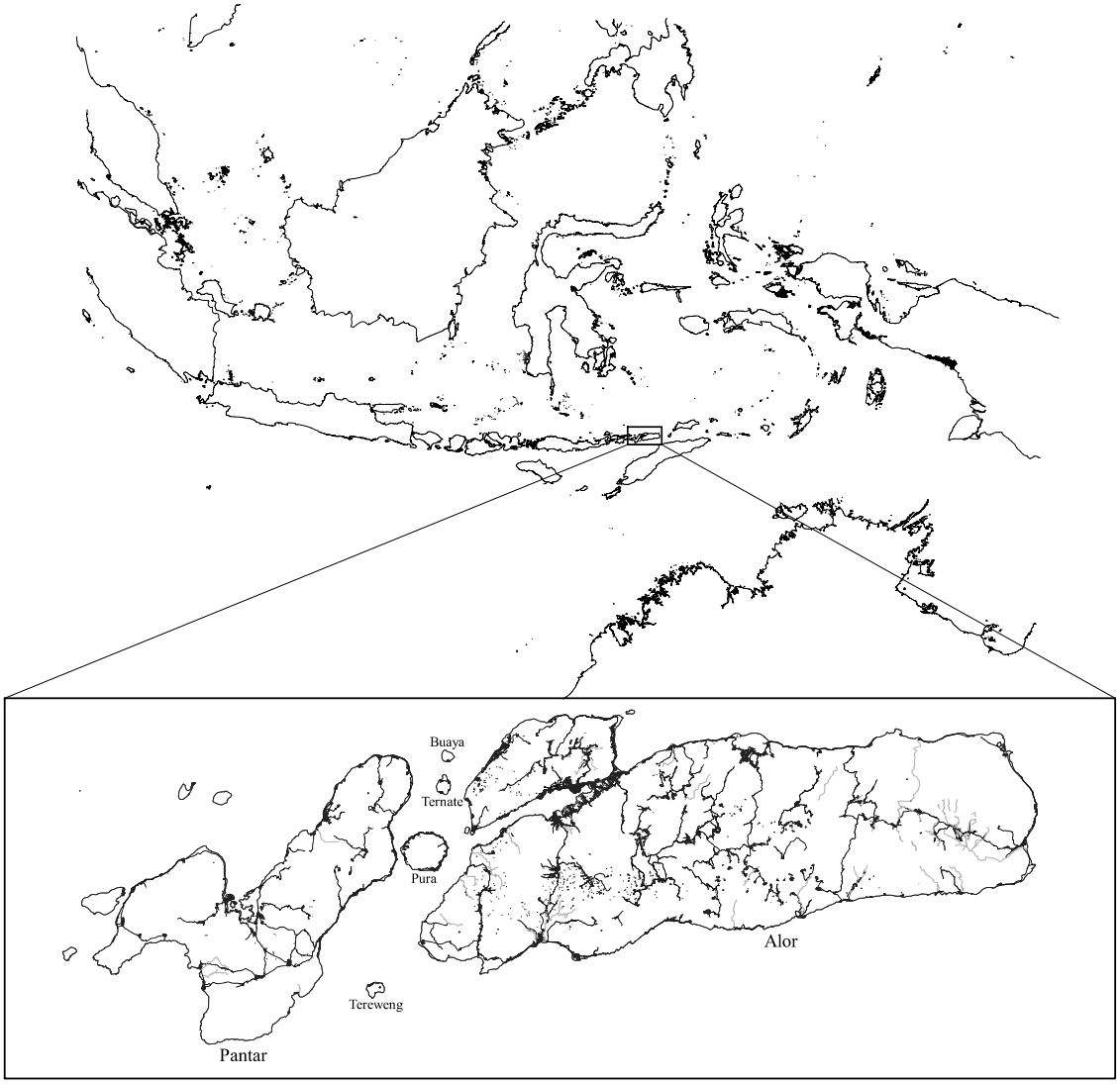
2 The linguistic scene

This section provides an introduction to the Reta language. Since more detailed descriptions are either available elsewhere or in progress,[3] this section will focus on those preliminaries relevant to the current topic, in particular the geographical side of the linguistic scene, as well

[3] At present, the following literature about Reta is available. Stokhof (1975), Robinson (2010) and Willemsen (2016, 2018) are word lists, Willemsen & Hjorth Miltersen (accepted) provides a description of Reta phonaesthemic alternations, Willemsen (in press) is a grammar sketch, and Willemsen & Brink Siem (submitted) is a description of Reta phonetics and phonology. Reta is also briefly discussed in island context in Nash et al. (2020). A full grammatical description (Willemsen, forthcoming) and a dictionary are currently in progress.

as a number of grammatical preliminaries that facilitate contextualisation of the system of elevational marking as well as spatial marking in general.

Reta (sometimes spelled Retta, ISO 639-3 code: *ret*) is a Timor-Alor-Pantar language spoken in East Nusa Tenggara, Indonesia by 2000-3000 speakers. The Timor-Alor-Pantar (henceforth TAP) languages are a Papuan language family comprising around 30 languages, and constitute the westernmost Papuan 'outliers' (Schapper 2017*b*: 2). The majority of TAP languages are spoken in the Alor archipelago (see Map 1), i.e. the islands of Alor and Pantar and the islets in between them, while three are spoken on the island of Timor, as well as one (Oirata) on the island of Kisar.

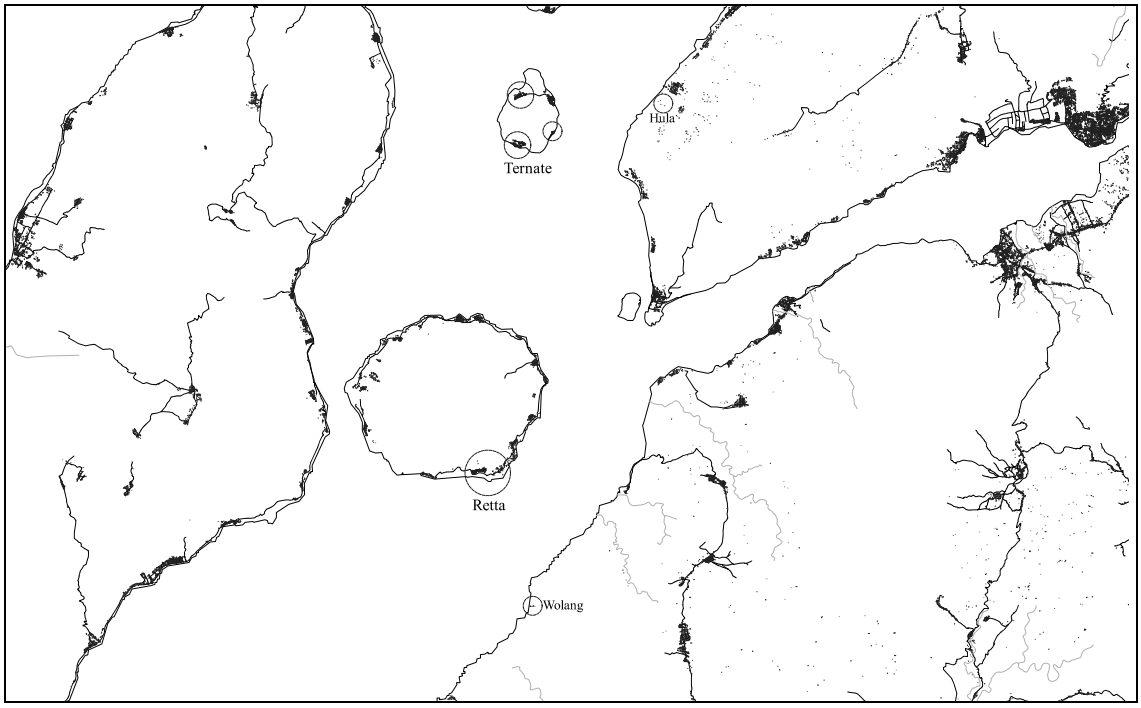


Map 1. *The Alor-Pantar archipelago and its location within Indonesia.*

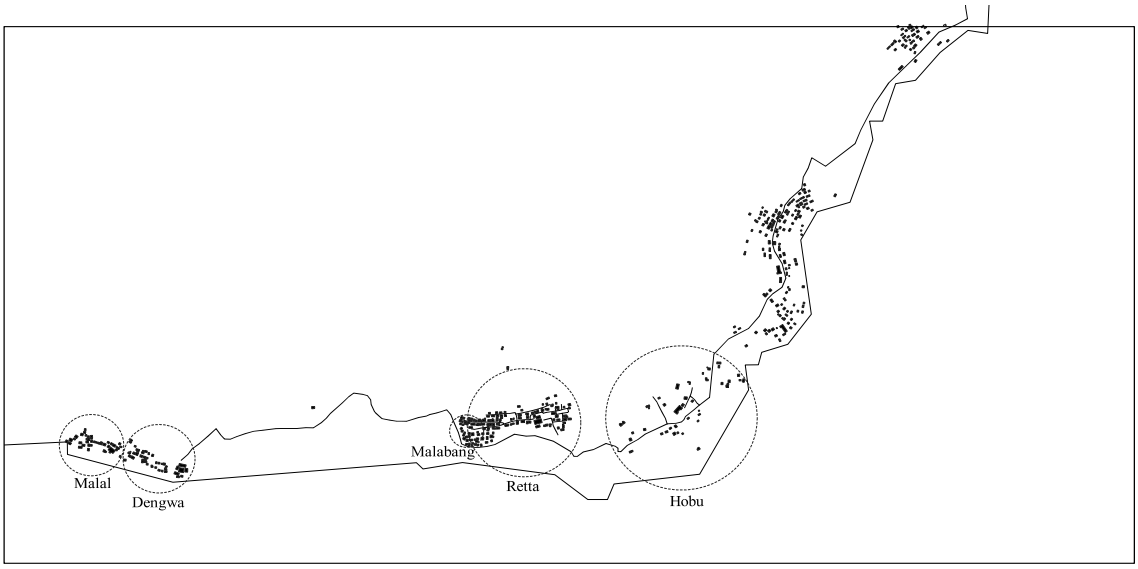
Reta is primarily spoken on the islets of Pura and Ternate[4] in the Pantar Strait dividing Alor and Pantar, as well as in two settlements on the west coast of Alor (see Map 2). The village of

[4] Not to be confused with the island of Ternate in the Northern Moluccas, after which it was in fact named.

Retta on Pura constitutes the oldest Reta-speaking settlement.[5] The three settlements on Ternate are around a century old, and were established by emigrants from Pura. The Wolang settlement (Reta *ualbur* or *volang*) is another offshoot from Retta established in the 1970s, and the Hula settlement is an offshoot from the easternmost settlement on Ternate established in the early 2000s.



Map 2. *The primary Reta-speaking communities in the Pantar Strait.*



Map 3. *The Reta-speaking hamlets in Southern Pura.*

[5] Retta is the official nomenclature for the village. In this paper, Retta refers to the village, and Reta to the language. There are no geminate consonants in Reta, and <tt> does not reflect a difference in pronunciation.

The present paper is based on data from Reta as spoken in Southern Pura, a *desa* 'administrative village complex' comprising a number of villages or hamlets (Map 3). (Pura itself is a volcano, 1015m high, with various villages scattered around the coastline, most of which are Blagar-speaking.) Most Reta-speaker speakers live in the village of Retta (Reta *lelang avehang*), which is composed of five hamlets, each with their own clan, and it is adjacent to the hamlet of Malabang (Reta *maal 'abang*). Both Retta and Malabang are located around 120m above sea level. In the west of the *desa*, there are two primarily Blagar-speaking hamlets called Dengwa (Reta *dengva*) and Malal (Reta *malagal*), located roughly at sea level. Hobu (Reta *hoobu*), lastly, is a recent offshoot village located at around 100m above sea level. The territory of Southern Pura goes up to the summit, and virtually any movement inland corresponds to upward movement, whereas movement towards the seaside is almost always down.

Grammatically, Reta is a verb-final language in which grammatical relations are distinguished through a combination of word order, pronominal case and verbal prefixation. In unmarked constructions, the direct object directly precedes the verb, and the pronominal system distinguishes between nominative pronouns, which are used for the expression of subject referents, and accusative pronouns, which have a variety of functions, chief among which the expression of object referents and focalised subject referents. Transitive verbs are roughly split between those that take a person-prefix indexing the direct object, and those that do not. Those that do not take a person prefix are preceded by an accusative pronoun, or a full noun or NP expressing the object referent, as shown in (2), whereas those that do take a person prefix always index the direct object referent, even when this referent is also expressed by a full noun or NP (3).

(2) a. *nang* *geng* *hab'aa*
1SG.NOM 3SG.ACC hit
'I hit him.'

b. *nang* *ga-hial* *hab'aa*
1SG.NOM 3SG.POSS-wife hit
'I hit his wife.'

(3) a. *nang* *ga-taa*
1SG.NOM 3SG-shoot
'I shot him.'

b. *nang* *ga-jobal* *ga-taa*
1SG.NOM 3SG.POSS-dog 3SG-shoot
'I shot his dog.'

Verbal predicates are primarily formed by verbs and their arguments as well as adverbs. Adverbs are of minor relevance to the current discussion, but it is important to note that complex predicates typically comprise serialised verbs. That is, notions such as direction, aspect and the introduction of additional clausal participants such as locations and comitatives are expressed by sequences of verbs, each of which is fully lexical and able to head a predicate on its own. Particularly relevant here are the expression of direction and the introduction of locative participants. Direction is expressed by a set of intransitive motion verbs such as *hela* 'descend' and *mida* 'go up', whereas locative participants are expressed by a set of transitive locative verbs like *mi* 'in, at' and *taang* 'on'.[6] This is exemplified in the examples (4)-(5) below. In (4), direction is expressed by the verb *hela* 'descend', which modifies the main verb *mugu* 'fall' for direction. In (5), a locative participant *'ee 'adi* 'this house' is introduced by *mi* 'in, at', modifying the main verb *miha* 'sit, stay'.

[6] Note that both motion verbs and locative verbs are fully lexical verbs which may head a predicate on their own.

(4) *gang* ***mugu*** ***hela***
3SG.NOM fall descend
'He fell down.'

(5) *nang* *'ee* *'adi* ***mi*** ***miha***
1SG.NOM house PROX in sit
'I live in this house.'

Recall that in (2)-(3) it was shown that some transitive verbs take a person prefix indexing the object, while some do not. In (5), *mi* 'in, at' is an example of a transitive verb that does not take a person prefix. It does however belong to the set of *spatially marked verbs*—which, together with a set of spatially marked demonstratives, represent the class of *spatially marked terms*. Spatially marked verbs comprise a number of paradigms which, rather than index a direct object, index a location, called a Figure here, by means of a prefix. Such prefixes are called *spatial formatives*, and they mark a three-way distinction between HIGH, LEVEL and LOW Figures, all of which are DISTAL (and paradigmatically opposed to those expressing PROXIMAL and NON-PROXIMAL Figures). Two examples are given below. In (6), *mi* 'in, at', rather than take a direct object, is inflected with the formative *moo-*, expressing a LEVEL Figure. Further, the entire inflected form *moomi* 'yonder' modifies the motion verb *va* 'go.LVL', which expresses a LEVEL Path. In (7), *mi* 'in, at' is inflected by *too-*, expressing a HIGH Figure, and it modifies the HIGH motion verb *mida*.

(6) *nang* ***moo-mi*** ***va***
1SG.NOM LVL-in go.LVL
'I'm going yonder.'

(7) *nang* ***too-mi*** ***mida***
1SG.NOM HI-in go.HI
'I'm going up there.'

It is important to note here that the motion verbs, in this case *va* 'go.LVL' and *mida* 'go.HI', express Paths with the same elevational value as the spatially marked verbs *moomi* 'yonder' and *toomi* 'up yonder', i.e. their respective elevational values map onto one another. In fact, the sets of spatially marked verbs and the motion verbs, while etymologically unrelated to one another, are both organised based on a distinction between HIGH, LEVEL and LOW, and, in Levinson & Burenhult's (2009) terms, constitute a semplate, as was visualised in Figure 1 above. The following section will describe the behaviour of both these sets in more detail.

3 Reta and its system of spatial marking

This section discusses the expression of spatial relations by means of motion verbs and spatially marked terms. Before delving into the particulars, however, a number of terminological and theoretical preliminaries should be dealt with.

First off, *motion verbs* are intransitive verbs that combine a component of movement with regard to a Deictic Centre, i.e. towards it, away from it or neither, with a component of elevation, i.e. up, down, level or neutral, to express a Path. They contrast with *spatially marked terms*, which are divided into (i) a set of determiners, and (ii) various sets of transitive verbs

which, rather than inflect for the person and number of the object, inflect for location by means of a set of spatial formatives to express a Figure.[7] The spatial formatives are affixes that overtly encode a five-way distinction between PROXIMAL and NON-PROXIMAL locations on the one hand, and the DISTAL locations HIGH, LEVEL and LOW on the other—i.e. the distinctions contained within the semplate are expressed overtly in only one of its layers (see Levinson & Burenhult 2009: 164). The DISTAL locations can be defined as follows:

HIGH (glossed as HI) refers to a Figure or Path upward of the Deictic Centre

LEVEL (glossed as LVL) refers to a Figure or Path level with the Deictic Centre

LOW (glossed as LO) refers to a Figure or Path downward of the Deictic Centre

These are paradigmatically opposed to the PROXIMAL and NON-PROXIMAL spatial relations, though only in the paradigms of spatially marked terms (there are no specialised motion verbs for these spatial relations). More specifically, a PROXIMAL (glossed as PROX) term expresses a Figure that corresponds to the location of the speaker or both interlocutors, and a NON-PROXIMAL (glossed as NPROX) term expresses a Figure that does not correspond to the location of the speaker, which is typically the location of the addressee or some other, indeterminate location. Both PROXIMAL and NON-PROXIMAL have non-spatial uses, i.e. they may encode 'psychological' or discursive distance. They are shown here to expose the entire system of spatial marking, but, since they less relevant to the topic at hand, are not dealt with in detail.

The notions of Figure, Path and Deictic Centre mentioned above constitute components of a spatial relation expressed by motion verbs and spatially marked terms. The notions of Figure and Path are defined here as follows. A Figure is the demonstrative referent of a spatially marked term or any other type of locative expression (see Burenhult 2008: 107), whereas a Path is the demonstrative referent of a motion verb, i.e. the trajectory of a moving entity. Both the Figure and the Path are calculated from the Deictic Centre. The Deictic Centre can be seen as a particular type of Ground (see Levinson 2003: 69-71; Burenhult 2008: 104 and references therein), and can be defined as a location in space that constitutes the origin of the coordinate system and the viewpoint from which the location of a demonstrative referent is calculated.

The coordinate system itself is the space within which spatial notions are calculated based on some kind of asymmetry. In the case of the PROXIMAL and NON-PROXIMAL categories, this asymmetry is internal to the speaker-addressee dyad, but in the case of the DISTAL spatial notions HIGH, LEVEL and LOW, it is based on spatial coordinates outside of this dyad. More specifically, the spatial coordinates are fixed geographical bearings that form the basis for the vertical HIGH-LOW axis and the horizontal axis perpendicular to it. The coordinate system is typically based on the Southern Pura slope—in which case the spatial coordinates are represented by a vertical axis between the summit and the seaside, and a horizontal axis perpendicular to it—but it may also be based on the wider archipelago or earth in its entirety (see Section 4).

[7] Spatially marked verbs are roughly synonymous with what Burenhult (2008: 101-1) calls *demonstratives*, i.e. "any member of a closed grammatical class that serve to narrow the contextually relevant search domain of the locational relativisation of the referent". However, in Reta these are all verbal as they can head a predicate on their own, and some of the spatially marked verbs, chief among which the three 'equally'-sets, do not appear to have as their primary function the narrowing down of a search domain.

The Deictic Centre typically coincides with the Ground, i.e. a reference object in relation to which the location of a Figure or Path is calculated (Talmy 1983: 232). However, in some cases the Ground may be detached from the Deictic Centre, which is the case in relative frames of reference, e.g. 'the stone's LOW side (said from above the stone)', which is discussed in Section 3.3. Further, whereas the Deictic Centre is identical to both interlocutors in expressing a Figure —for instance, a HIGH Figure must be located upward of both the speaker and the addressee, and both interlocutors are located at the Deictic Centre from which its elevation is calculated—motion verbs may also be used when there is an asymmetry between the Deictic Centre and the location of the addressee. For example, a HIGH Path towards the Deictic Centre ('come up') may apply to an entity moving upward towards both interlocutors, but it may also apply to the addressee moving upward toward the speaker.

Figure 2 exemplifies the expression of a Figure, i.e. the demonstrative referent of a spatially marked term, in this case HIGH. The slope represents the coordinate system, the Deictic Centre, which is also the Ground, is what the HIGH location of the Figure is calculated from with respect to the axes that make up the spatial coordinates.

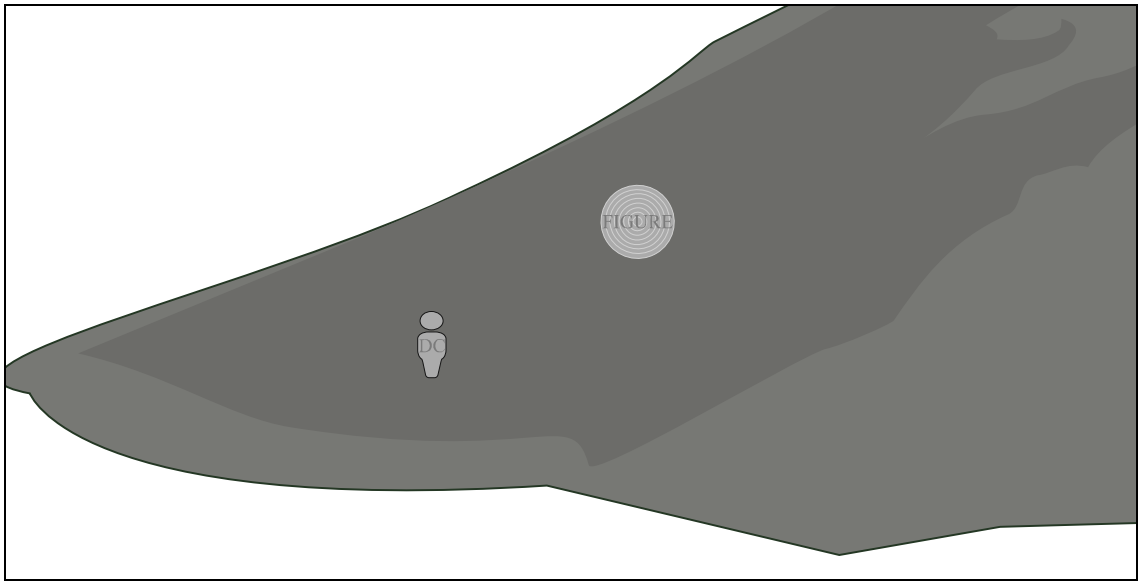


Figure 2. *A Deictic Centre and a HIGH Figure as expressed by a spatially marked term.*

Motion verbs differ from spatially marked terms in expressing a Path rather than a Figure, which can be defined as the trajectory of a moving object in relation to the Deictic Centre. In other words, motion verbs express direction. This is visualised for the HIGH motion verb *mida* 'go.HI' in Figure 3 below.

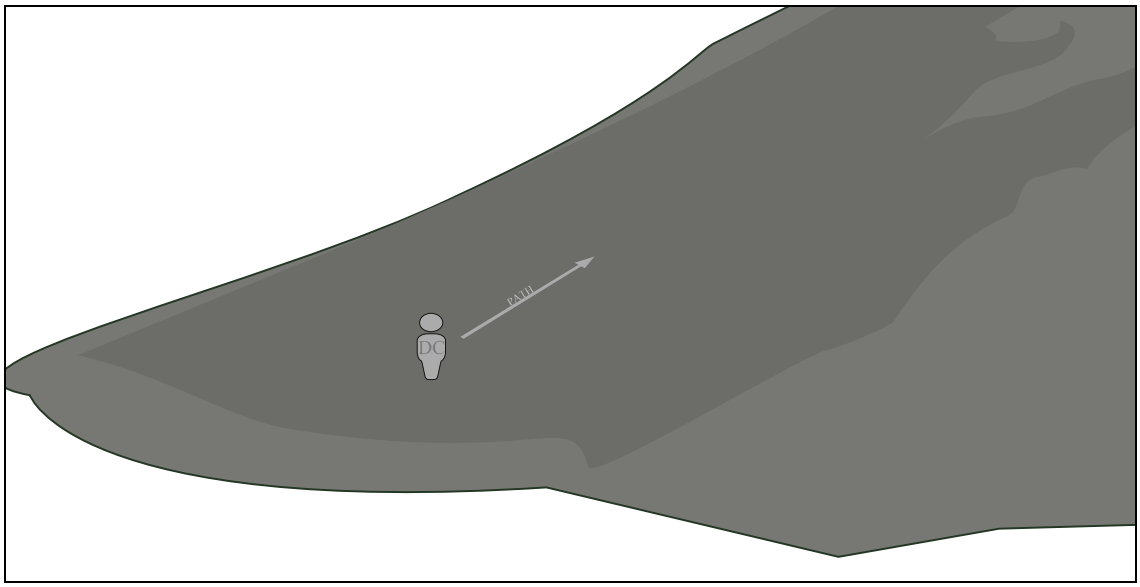


Figure 3. *A Deictic Centre and a* HIGH *Path as expressed by a* HIGH *motion verb 'go.HI'.*

The expression of both a Path and a Figure requires the serialisation of a locative verb, such as a spatially marked verb,[8] with a motion verb. This is shown in (8), where the spatially marked verb *toomi* modifies the main verb *mida*, and both a HIGH Path and a HIGH Figure are expressed, as visualised in Figure 4.

(8) *nang* ***too-mi*** ***mida***
1SG.NOM HI-in go.HI
'I'm going up yonder.'

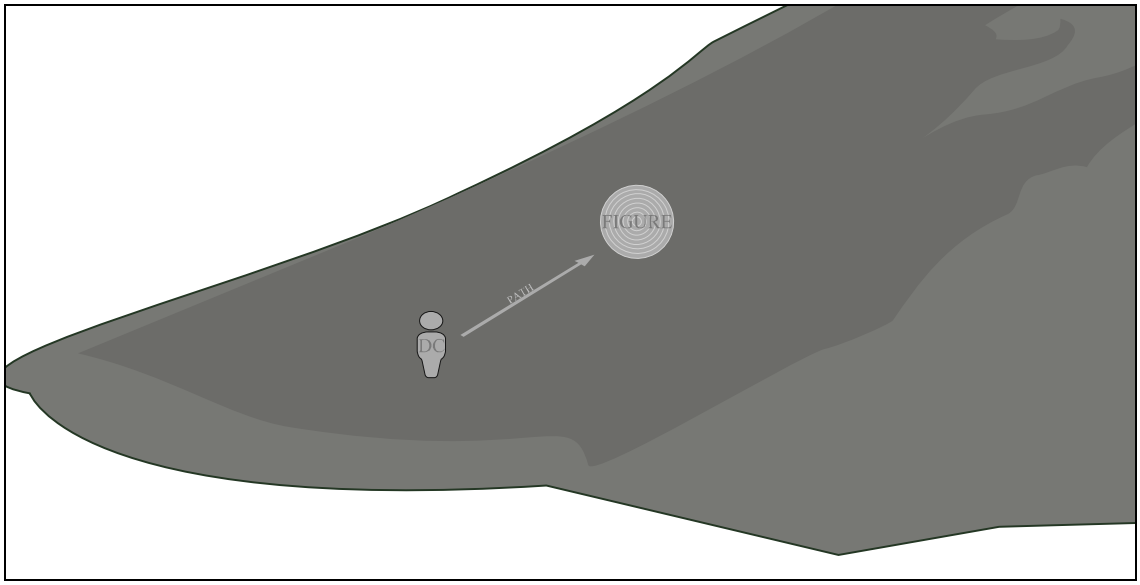


Figure 4. *A Deictic Centre and a* HIGH *Figure and Path.*

This brings us to the particulars of the notion of elevation. Elevation with respect to a Deictic Centre is a broad notion that includes both physical elevation and elevation as manifested in

[8] Recall that Reta also has a class of transitive locative verbs like *taang* 'on' that do not take spatial formatives. Since these do not express elevation, however, they are not discussed in any depth here.

the geophysical environment. Following Burenhult (2008: 110-1), the former is termed *global elevation* here, and the latter *geophysical elevation*. Global elevation involves an asymmetry between the Deictic Centre and a Figure that is based on verticality to some extent (e.g. up there, down below, etc.). Geophysical elevation involves an asymmetry between the Deictic Centre and a Figure that is manifested in features of the geophysical environment (e.g. slopes, rivers, etc.), and which generally does not include a vertical dimension like global elevation does.[9]

In Reta, both these notions are relevant for the system of elevational marking. For example, a HIGH element may express a Figure or Path which is physically located above the Deictic Centre—either by virtue of being located uphill or otherwise, e.g. a bird flying—which corresponds to global elevation. It may however also express a Figure or Path located nearer to the summit than the Deictic Centre without necessarily involving physical elevation, which corresponds to geophysical elevation. In other words, a spatial configuration involving a vertical axis may likewise be subject to elevational marking if relative proximity to the summit—or, conversely, the seaside—plays a role in narrowing down the search domain of the Figure or Path.

Consider the example in (9). This is a response to one of Levinson's (2001) motion verb stimuli (ComeGoPath, clip 13), in which a ball rolls from away from the viewer, in a straight line and with no hint of elevation, and stops near a wooden box. The consultant and myself were facing the sea at the moment of speech, and the ball effectively rolled towards the seaside, hence the speaker uses the LOW motion verb *'i* 'go.LO' to describe the ball's motion. I repeated this experiment with the same speaker a few days later, and made sure both the consultant and myself were facing the summit. The response to the stimulus on this occasion is given in (10), where the speaker uses the HIGH motion verb *mida* 'go.HI' rather than LOW *'i*, i.e. the ball rolls towards the summit from the point-of-view of the speaker.[10] This is thus an instance of geophysical elevation, because it is manifested in features of the geophysical environment without involving an asymmetry based on physical elevation. It should however be kept in mind that the geophysical elevation mentioned is only a minor component of the system of spatial marking; when speakers are in an environment in which the same spatial coordinates (i.e. the axes based on the summit and the seaside) are lacking, the same spatially marked terms may be used to express spatial relations based on global elevation (see Schapper 2017*a*: 242).

(9) *sanempa b'enang koola **'i** piti g-aabung jia*
ball ANA roll go.LO chest 3SG-close placed
'That ball rolls down to near the chest (said facing south).'

(10) *sanempa b'enang koola **mida** piti 'anga g-aabung jia*
ball ANA roll go.HI chest NPROX 3SG-close placed
'That ball rolls up to near the chest (said facing north).'

Having dealt with the basics of elevational marking in Reta, I will now turn to a discussion of the lexemes that comprise the slope semplate. Motion verbs are first discussed in Section 3.1 , followed by spatially marked verbs in Section 3.2. Section 3.3, lastly, provides a discussion of

[9] Burenhult (2008: 110-1) also distinguishes a system that strictly encodes verticality, which is not relevant here.
[10] The determiner *'anga* serves as an optional definiteness marker here, and does not encode any physical location.

elevational marking in a relative frame of reference, in which both motion verbs and spatially marked verbs play a role.

3.1 Motion verbs

Motion verbs are intransitive verbs that combine a component of elevation—i.e. HIGH, LEVEL, LOW or NEUTRAL—with a component of movement relative to a Deictic Centre, i.e. towards, away from or neutral with regard to it. These components together make up the Path, i.e. the trajectory of motion calculated from the Deictic Centre. Unlike Figures, which are expressed by spatially marked verbs (see section 3.2), the Deictic Centre of a motion verb need not coincide with the location of both interlocutors. For example, the addressee may move up toward the speaker, or some moving entity may move up toward both interlocutors. This is essentially a matter of the coordinate system being superimposed on the speaker-addressee dyad, and will not be dealt with further here.

Table 1. *Reta motion verbs*.

	FROM DC	TO DC	NEUTRAL
LVL	*va* 'go.LVL'	*ma* 'come.LVL'	-
HI	*mida* 'go.HI'	*mada* 'come.HI'	*mada* 'ascend'
LO	*'i* 'go.LO'	*ja* 'come.LO'	*hela* 'descend'
NEUTRAL	*jema* 'go'	*'adu* 'arrive'	-

As Table 1 shows, most motion verbs express elevation, but the NEUTRAL verbs *jema* 'go' and *'adu* 'arrive' are elevationally neutral. These are used when elevation is either irrelevant or cannot be determined, e.g. because the travelling distance is too great for elevation to be relevant (11),[11] or because the Path itself is unknown (12). They are also different from the other motion verbs in focusing on the Deictic Centre as a static point of departure or arrival: *'adu* 'arrive' signifies that movement has reached completion at the Deictic Centre, and *jema* 'go' signifies that movement has started there. The other six motion verbs all combine a component of movement relative to a Deictic Centre with a component of elevation, and are neutral with regard to the starting point or endpoint of movement.

(11) *nang* *kupang* ***mi jema***
2SG.NOM K. in go
'I'm going to Kupang.'

(12) *ang* *ta'ang* ***mi jema****?*
2SG.NOM which in go
'Where are you going?'

Further, most motion verbs express movement relative to the Deictic Centre, i.e. towards or away from it, but two verbs are neutral in this respect. Firstly, the LOW verb *hela* 'descend' is used to express general descent in which the Deictic Centre does not play any role, e.g. *mugu hela* 'fall down'. Moreover, whereas other motion verbs such as *mida* 'go up' express global

[11] Kupang is the capital of the province of Nusa Tenggara Timur. It is not visible from Pura, and it can only be reached by ferry (~16 hours) or by plane (~1 hour) from the town of Kalabahi.

and geophysical elevation—i.e. diagonal motion along the slope, or motion to or from the seaside or summit, see Figure 5—*hela* may be used for strictly vertical, downward motion as in *'ai hela* 'it's raining (lit. rain descends)', or particularly steep downward motion. It is also often used for Paths into and out of certain spatial containers, such as movement out of a house,[12] or down from a tree. The HIGH verb *mada* 'ascend' has the opposite function, i.e. it expresses ascent without the Deictic Centre playing any role (e.g. plants growing, smoke rising) as well as vertical or steep upward motion. It is however also polysemous with *mada* 'come up', i.e. no formal distinction is made between 'ascend' and 'come up'.

As was briefly discussed above, motion verbs may enter into a serial verb construction with a spatially marked verb or some other locative verb like *taang* 'on' or *dumang* 'under'. In such cases, both a Path and a Figure are expressed—the Path by the motion verb, and the Figure, which constitutes the goal of the Path, by a spatially marked verb and its formative, or a locative verb and its object—and these map onto one another in elevational terms. For example, in (13) the LEVEL Path of the motion verb *va* 'go.LVL' matches the LEVEL Figure of the spatially marked verb *moomi* 'yonder'. Similarly, in (14) the HIGH Path of the motion verb *mida* 'go.HI' matches the HIGH Figure *kalambahami* 'in Kalabahi'. The fact that *kalambahami* indeed expresses a HIGH Figure is evidenced by the construction in (15), where it expresses a static location and is accompanied by a HIGH existential verb *to'e* 'be high yonder'.

(13) *ang* ***moo-mi*** ***va***
2SG.NOM LVL-in go.LVL
'You go yonder.'

(14) *nang* ***kalambaha=mi*** ***mida***
1SG.NOM K.=in go.HI
'I'm going up to Kalabahi.'

(15) *gang* ***to-'e*** ***kalambaha=mi***
3SG.NOM HI-be K.=in
'He's up in Kalabahi.'

However, the elevation of the Path expressed by motion verbs only maps onto that of the Figure expressed by spatially marked verbs or locative verbs within certain geographical boundaries. For example, *kalambahami* 'in Kalabahi' in (14)-(15) is classified as HIGH because it is located upstream of the Pantar Strait (see Map 2). Other locations, however, may be so distant that the axis which runs along the Pantar Strait becomes irrelevant, Kupang in (11) being an example. These are all encoded as LOW, but no LOW motion verb may be used to express a Path towards them—rather, such a Path is expressed by an elevationally neutral motion verb like *jema* 'go'. We will return to this in Section 4, where it will be argued that the calculation of elevation takes place on three separate geographical levels.

[12] Motion into and out of a house is elevational because houses used to be built on poles. Nowadays, houses are made of stone, and while most are LEVEL with the ground physically, they are still treated as HIGH linguistically.

3.2 Spatially marked terms: verbs and determiners

Spatially marked terms all share in common the fact that they take spatial formatives. They are divided into a set of demonstrative determiners on the one hand,[13] and nine sets of verbs on the other. The paradigms for the spatially marked verbs are laid out in Table 2, and the demonstrative determiners in Table 3.

Table 2. *Reta spatially marked verbs.*

	'be'	'along, follow'	'in, at'		'near, via, side'		'equally'		
			NVIS	VIS	AXL	NAXL	'much'	'large'	'high'
	1	2	3	4	5	6	7	8	9
LVL	*mo'e*	*moogooni*	*moomi*	*'adimoo*	*mogoa*	*magoa*	*monoang*	*movaang*	*mosub'ang*
HI	*to'e*	*toogooni*	*toomi*	*'aditoo*	*togoa*	*tagoa*	*tonoang*	*tovaang*	*tosub'ang*
LO	*po'e*	*poogooni*	*poomi*	*'adipoo*	*pogoa*	*pagoa*	*ponoang*	*povaang*	*posub'ang*
NPROX	*a'e*	*agani*	*'angami*	*'adia*	*agoa*		*anoang*	*avaang*	*asub'ang*
PROX	*gi'e*	*giani*	*'adimi*	*'adii*	*gigoa*		*ginoang*	*givaang*	*gisub'ang*

Table 3. *Reta demonstrative determiners.*

LVL	*momo*
HI	*toto*
LO	*popo*
NPROX	*'anga*
PROX	*'adi*

The spatially marked verbs all have in common the ability to function as the head of a verbal predicate. The spatial marking in these paradigms revolves around a set of five spatial formatives, with some variation between sets: *gi-* expressing PROXIMAL, *a-* expressing NON-PROXIMAL, and *mo-*, *to-*, and *po-* expressing LEVEL, HIGH and LOW Figures respectively, the *o-* vowel of which surfaces as long *oo* in some sets. These formatives are prefixing in almost all cases, though in the VISUAL 'in, at'-set in column 4 they attach to the right of the base *'adi*, which is also a PROXIMAL determiner (see Table 3). Spatially marked verbs are the result of re-iterations of combinations of spatial formatives and other lexemes, resulting in a rather large paradigm of verbs that effectively inflect for location. Some such verbs may take a nominal complement rather than a spatial formative. These are *mi* 'in, at' in column 3, *goa* 'near', via, side' in columns 5 and 6, and the lexemes belonging to the 'equally'-sets in columns 7 to 9.

The demonstrative determiners, by contrast, occur in the nominal domain. They are subject to the same calculations as spatially marked verbs, but they express nominal rather than locative referents, and they can be used either adnominally or pronominally.

The PROXIMAL and NON-PROXIMAL variants of both the spatially marked verbs and the demonstrative determiners occur with the greatest frequency, the latter in particular. They differ from the DISTAL variants (i.e. HIGH, LOW and LEVEL) in being spatial-anchored but not distance-anchored. More specifically, they correspond to a so-called 'here-space' and 'there-

[13] There is also a single anaphoric determiner *b'enang* '(the one) mentioned', which can only be used adnominally. This will not be further discussed here. See Willemsen (in press) for more information on this determiner.

space' (Enfield 2003), i.e. rather than being calculated based on physical distance, they are subject to a binary opposition 'here' vs. 'not here'. When a demonstrative referent is located within the here-space of both the speaker and the addressee, or within the here-space of the speaker alone, a PROXIMAL term is used. When a referent is located within the here-space of neither interlocutor in particular (though not DISTAL), or within the here-space of the addressee but not the speaker's, a NON-PROXIMAL variant is generally used. This use of spatially marked terms is also extended from a spatial to a discursive application: newly established referents as well as referents that under immediate observation are psychologically still 'with the speaker' and are usually marked as PROXIMAL, whereas established referents have already been conveyed to the hearer, and are most often marked as NON-PROXIMAL.

By contrast, the HIGH, LOW and LEVEL terms are distance-anchored in the sense that they express Figures that are physically neither close to the speaker nor to the addressee, i.e. their use can only be explained in terms of spatial orientation. In fact, the spatial relation between a given Figure and the Deictic Centre must be identical for both interlocutors for a DISTAL term to be used. This is visualised in the two figures below. Both these figures include two interlocutors, Speaker and Addressee, as well as a Figure. In Figure 5, the Figure is DISTAL, in this case HIGH, for both interlocutors, hence the speaker would use a HIGH term.

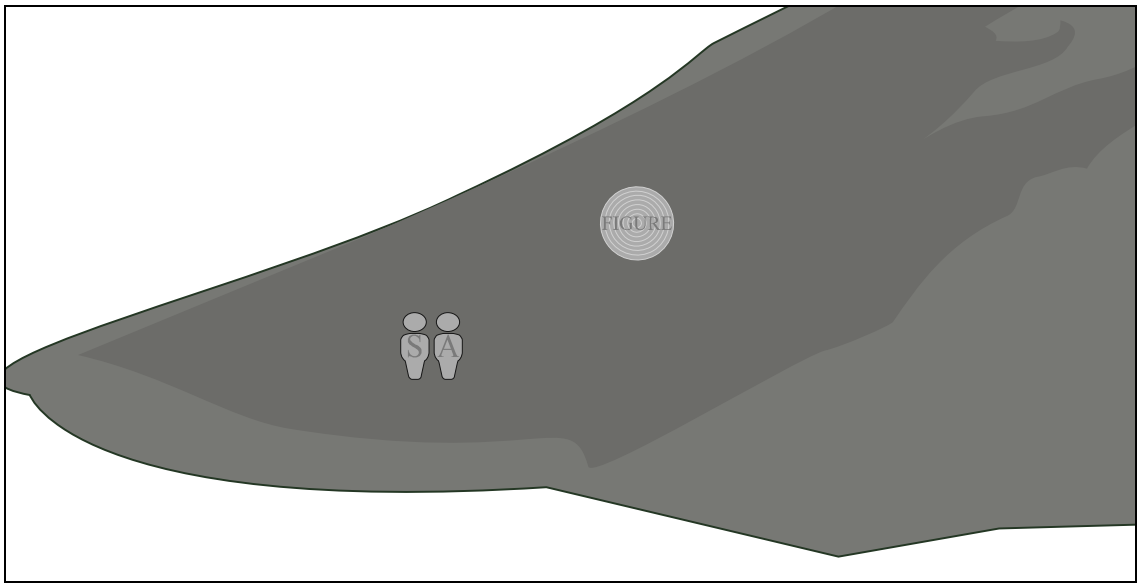


Figure 5. *The Figure is expressed by a HIGH term.*

By contrast, in Figure 6 the Figure is only HIGH for the Speaker but is close to the Addressee, hence the Speaker would use a NON-PROXIMAL term to express the Figure, the reason being that the Figure is included in the Addressee's here-space but not the here-space of the speaker themselves. As a result of this, from the viewpoint of the Addressee, the Figure would be expressed as PROXIMAL.

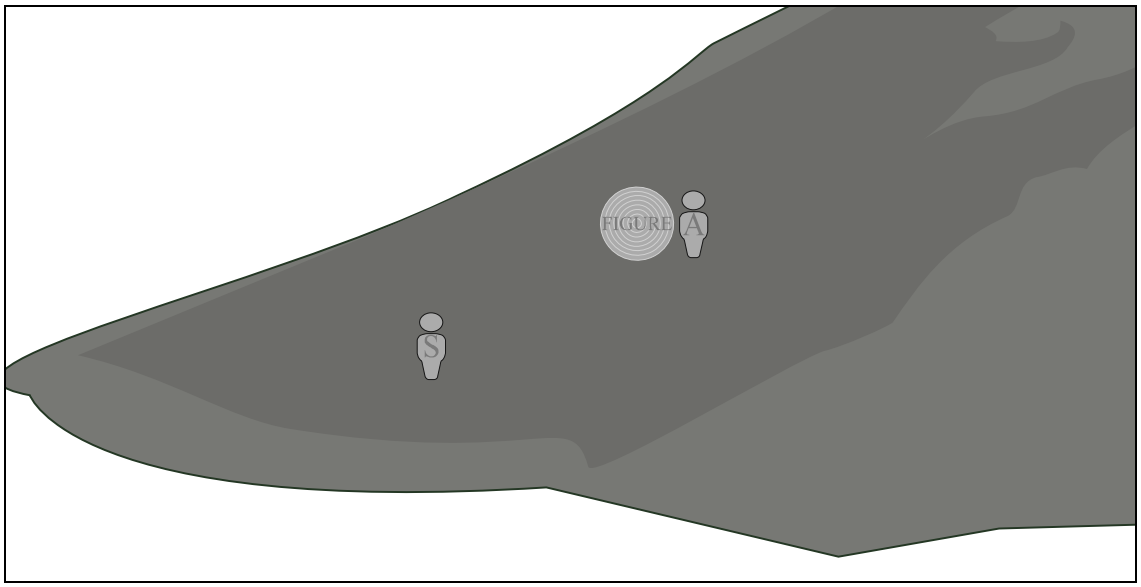


Figure 6. *The Figure is expressed by a* NON-PROXIMAL *term.*

Having established the fundamentals of spatially marked terms, the following subsections deal with the particulars of each individual set. Sections 3.2.1 to 3.2.5 discuss the spatially marked verbs, and Section 3.2.6 is devoted to a brief discussion of demonstrative determiners.

3.2.1 The existential set

This set comprises a set of existential verbs, or 'be'-verbs. They emphasise existence rather than location, and the Figure they express is undefined in terms of spatial boundaries, shape, visibility, etc. Their base *-'e* 'be' is a bound root that cannot occur without a spatial formative. Existential verbs are frequently followed by a predicate expressing a location, which is most often the 'in, at'-set in column 3, or a locative verb such as *mi* 'in, at' or *taang* 'on' and its object. In (16), for instance, the LEVEL existential verb *mo'e* 'be yonder' is followed by a locative predicate *maal 'abang mi* 'in Malabang'.

(16) *namol 'anga* ***mo-'e*** ***maal 'abang*** ***mi***
child NPROX LVL-be M. in
'The child is yonder in Malabang.'

They may however also be followed by other types of predicates. When they are followed by a non-motion verb expressing some kind of action, they generally denote a static location at which this action is performed. This is shown in (17), where the LEVEL existential verb *mo'e* 'be yonder' enters into a serial verb construction with *miha* 'sit, stay'.

(17) *ni-vaa* ***mo-'e*** ***miha***
1.POSS-mother LVL-be sit
'Mother is sat yonder.'

When preceding a motion verb, both a Figure and a Path are expressed, and the existential verb also emphasises the fact that movement is either on-going or of some duration, as in (18).

(18) *gi-b-ala=pi* ***mo-'e*** ***va***
3PL-DL-with=UNIV LVL-be go.LVL
'The both of them were going yonder.'

3.2.2 The 'along, follow'-set

The 'along, follow'-set in column 2 has as a recurring base *ani*, which in other contexts is an intransitive verb meaning 'such, like that' or 'later'. It expresses a one-dimensional Figure with some length. Since the Figure consists of a single line, this set is most often found in serial verb constructions with motion verbs expressing a Path, as in (19). Further, it is incompatible with verbs which express events in a static location, like *miha* 'sit' in (17), e.g. **moogooni miha*.

(19) *eng* ***moo-gooni*** ***va,*** *neng* ***gi-ani*** ***va***
2SG.ACC LVL-along go.LVL 1SG.ACC PROX-along go.LVL
'You go along yonder way, I go along this way.'

The 'along, follow'-set may be used spatially as in (19), but it is often used non-spatially—'to be like, to be in accordance with'. Its non-spatial use is mainly attested with PROXIMAL and NON-PROXIMAL spatial formatives used discursively, but is not restricted to them. This is shown in the two examples below. In (20) *agani* 'like that' expresses a non-spatial Figure, and in the—admittedly awkward—example in (21), it is shown that the set can express non-spatial Figures with elevational spatial formatives too.

(20) ***a-gani*** *'iba se,* *nang* *boo hula* *holong* *ba* *naga*
NPROX-along but 1SG.NOM want retreat FOC NEG
'(It's) like that, but I don't want to lose (this battle).'

(21) *'ee* ***poo-gooni*** *neng* *ba* *gene*
house LO-follow 1SG.ACC FOC make
'A house like that down there, I made.'

3.2.3 The 'in, at' sets

The two 'in, at'-sets do not have an etymologically closer relation to each other than to the other sets, but they fulfil similar functions, because they expresses a so-called *regional* location (Svorou 1994: 235), i.e. a Figure within which some entity may be contained, but the dimensionality, orientation or shape of this Figure are not being specified and are not relevant. They differ, however, in the visibility of the expressed Figure: whereas the NON-VISIBLE-set in column 3 is neutral with regard to visibility, the VISIBLE-set in column 4 is associated with explicitly visible, known or otherwise accessible Figures.

The first of these sets has as a recurring base *mi*, which is synchronically also a transitive verb meaning 'in, at'. In the PROXIMAL-NONPROXIMAL domain, it combines with *'adi* and *'anga*, which are synchronically also free-standing determiners, and in the elevational domain it combines with the formatives *poo-*, *moo-* and *too-*. Apart from these determiners and formatives, it may also simply host a nominal object.

(22) a. *ni-vaa* ***po-'e*** ***poo-mi***
1.POSS-mother LO-be LO-in
'Mother is down there.'

b. *ni-vaa* ***po-'e*** *i-'ee* ***mi***
1.POSS-mother LO-be 2PL.POSS-house in
'Mother is at your house (down there).'

The VISIBLE set has as its recurring base *'adi*, which in other contexts is a PROXIMAL determiner (see Section 3.2.6). This set explicitly marks the Figure as visible, known or otherwise accessible, and its use is often accompanied by a pointing gesture.[14] Example (23) shows the difference between these two sets. Note that both examples also include a determiner *popo* 'that high yonder', which marks the NP as definite.

(23) a. *vaal* ***poo-mi*** ***popo*** *b'uhi*
stone LO-in LO lift
'Lift that stone down there (stone may be known/visible or not).'

b. *vaal* ***'adi-poo*** ***popo*** *b'uhi*
stone yonder.LO.VIS LO lift
'Lift that stone down there (stone is known or visible).'

Serialisation of the 'in, at'-sets with a motion verb results in the expression of both a Figure and a Path, as shown for *toomi* 'up yonder' in (24).

(24) *nang* ***too-mi*** ***mida***
1SG.NOM HI-in go.HI
'I'm going up yonder.'

3.2.4 The 'near, via, side'-sets

The 'near, via, side'-sets in columns 5 and 6 are have as their recurrent base *goa* 'near, via, side', which is also a relational noun and a transitive verb in other contexts, and which has a variety of alternative translations, such as 'around' and 'pass', among others. Used as a spatially marked verb, it expresses an approximate Figure that is spatially undefined (25). When followed by a motion verb, both this Figure and a Path are expressed (26).

(25) *geng* ***mo-goa*** *miha*
3SG.ACC LVL-near sit
'He's sat over there / on yonder side.'

(26) *gang* ***po-goa*** ***'i***
3SG.NOM LO-via go.LO
'He's going downward yonder / passing down yonder.'

These sets are divided into an AXAL and a NON-AXAL subset. The difference between these is that the AXAL subset is used when the speaker themselves is located on the relevant axis,

[14] In my data, the NON-VISIBLE *mi*-based set occurs overwhelmingly more often than the VISIBLE *'adi*-based set. The primary reason appears to be that it is much less marked, but a contributing factor is undoubtedly the nature of my data. The bulk of my corpus is composed of free narratives and responses to linguistic stimuli that do not lend themselves to the expression of elevationally marked Figures as explicitly visible.

whereas the NON-AXAL subset is used when the speaker is removed from this axis. The use of the AXAL *pogoa* 'via/pass down yonder' in example (26), for example, implies that the speaker is situated above the Figure it expresses. Using a NON-AXAL form like *pagoa* rather than *pogoa* would imply that this Figure is situated in a downhill position relative to some other spatial reference point, but that the speaker themselves is removed from this axis.

Consider Figure 7 below. From viewpoint A, the Figure is AXAL and HIGH, and is expressed by *togoa* 'via/pass/near high yonder', because the line that can be drawn between this viewpoint and the Figure is located right on the vertical axis between the seaside and the summit. Likewise, from viewpoint B the Figure is AXAL and LEVEL, and is expressed by *mogoa* 'via/pass/near yonder', because the line between the viewpoint and the Figure is horizontal. However, if the Figure's location is calculated from viewpoint A with viewpoint B as a spatial reference point, NON-AXAL *magoa* is used rather than *mogoa*. That is, the Figure is LEVEL with regard to viewpoint B, but with viewpoint A itself removed from the horizontal axis. Likewise, if the Figure's location is calculated from viewpoint B with viewpoint A as a spatial reference point, NON-AXAL *tagoa* is used rathern than *togoa*, i.e. HIGH with regard to viewpoint A, but with viewpoint B removed from the vertical axis.

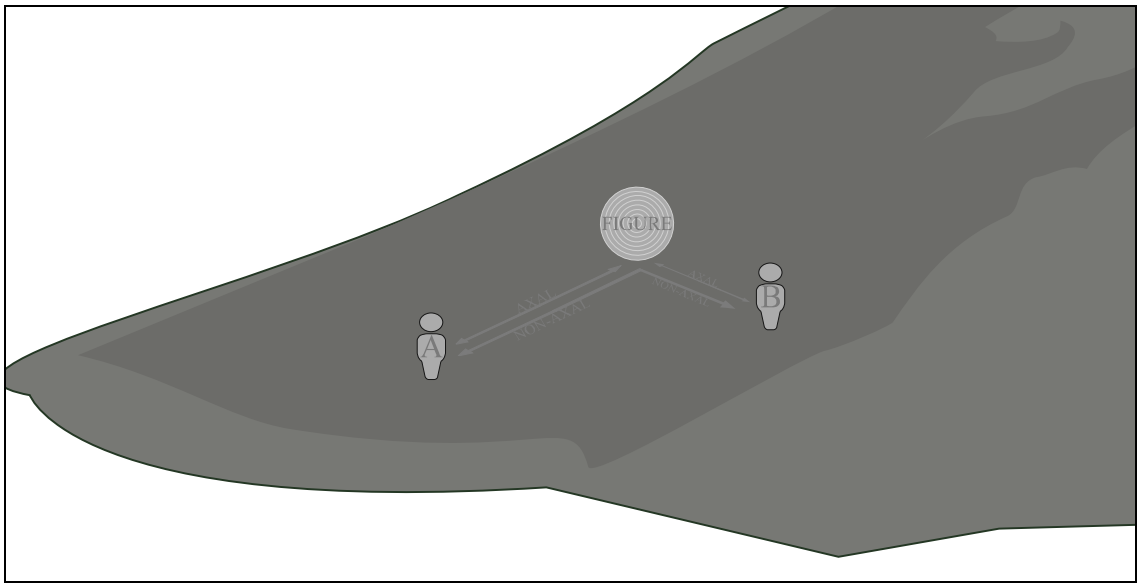


Figure 7. *AXAL-HIGH (A), AXAL-LEVEL (B) and NON-AXAL expression of a Figure.*

The NON-AXAL variants are thus used in situations where there is some axal asymmetry between a viewpoint and some spatial reference point. This asymmetry may correspond to the respective viewpoints of two interlocutors—e.g. when someone at viewpoint A were referring to the Figure to someone at viewpoint B—but it may also correspond to two viewpoints in different contexts. For example, a narrative told at viewpoint B about some occurrence at viewpoint A may likewise include NON-AXAL terms to express a Figure. This is the case in the following excerpt of a spontaneous conversation between three consultants. This construction was uttered from the easternmost hamlet of the Retta village (named Moding) and recounts a previous situation in which the speaker was located at a more central hamlet from which he went up to a shed. The spatial relation between this shed and the speaker was AXAL at the place and time

of occurrence, but at the time (27) was uttered, the speaker was removed this axis, and uses NON-AXAL *tagoa*.

(27) *nang* *mida* *to-'e* ***ta-goa*** *nagatang* *boola* *nena…*
1SG.NOM go.HI HI-be HI.NAXL-side almost want ehm
amsal *ga-meelang* *'anga*
A. 3SG.POSS-shed NPROX
'I went up until high yonder side, (I was) nearly gonna eh.. (at) Amsal's shed.'

Both the AXAL and NON-AXAL subsets are often used spatial marking in a relative frame of reference, which we will return to in Section 3.3.

3.2.5 The 'equally'-sets

The verbs in the 'equally'-sets in columns 7 to 9 in Table 2, i.e. *noang* 'as much as', *vaang* 'as large as' and *sub'ang* 'as high as' constitute outliers among the spatially marked verbs, as they are not locative in the sense that their spatial formatives express a locative Figure. Rather, they appear to express a nominal Figure, i.e. they behave like demonstrative determiners rather than demonstratives. As a result, the expression of both a Figure and a Path that results from serialisation with a motion verb is unavailable for these sets. They can take a nominal or pronominal object such as *geng* '3SG.ACC' or *momo* 'that yonder', but may also take a spatial formative, which serves to identify the object referent in spatial terms. All three verbs have an extremely low text frequency in my data. An example with *vaang* 'as large as' is given in (28).

(28) *geng* *'anga* ***po-vaang***
3SG.ACC NPROX LO-as.large.as
'He there, he's as large as that down there.'

3.2.6 Demonstrative determiners

Contrary to the verbs discussed in the previous section, the demonstrative determiners occur in the nominal domain. They express a nominal rather than a locative Figure (e.g. English *that* as opposed to *there*). They all have a reduced form: the elevationally marked determiners often surface as *mo*, *to* and *po* respectively. Further, the PROXIMAL and NON-PROXIMAL determiners regularly surface as *'ang* and *'ading* respectively.

Demonstrative determiners are subject to the same calculations as the spatially marked verbs described in the previous subsections—i.e. they are dependent on the Deictic Centre within the wider coordinate system as well as the physical location of the Figure—but they express nominal rather than locative Figures. They may be used adnominally, as in (29), or pronominally, as in (30).

(29) *ging* *'abang* ***toto*** *mi* *miha*
water village HI in sit
'They lived in that village up there.'

(30) ***momo*** *ka* *manusia* *ba* *doo*
LVL NEG human.M FOC PROSP
'That over there isn't human yet.'

3.3 Spatial marking in a relative frame of reference

In the previous section we saw that DISTAL spatially marked terms and their spatial formatives express a Figure relative to a Deictic Centre. This Deictic Centre typically coincides with the viewpoint of the speaker, and the location of the Figure as encoded by the spatially marked term and its formative is dependent on the location of the Deictic Centre within the coordinate system, i.e. the environment within which elevational marking is relevant and which contains the axes based on which it is calculated.

However, a Figure may also be located in relation to secondary object which is removed from the viewpoint of the speaker. In such cases its encoded location is still based on the coordinate system and the speaker's location within it, e.g. 'on the LOW side of the stone (said from above the stone)'. The primary difference with absolute reference is that the coordinate system that surrounds the Deictic Centre is now mapped onto a secondary Deictic Centre (see Levinson 2003: 39, 43-7), so that the object the location of a Figure is calculated from now also has a HIGH, LOW and LEVEL side. Importantly, there is now also an asymmetry between the Deictic Centre, i.e. the viewpoint of the speaker, and the Ground, i.e. the secondary object.

To express such Figures, nominalisations of spatially marked verbs and motion verbs are used. More specifically, the DISTAL variants of the *goa*-set (see Section 3.2.4), both AXAL and NON-AXAL, may be possessivised by means of a possessive prefix co-referential with the Ground. Further, motion verbs are possessivised in the same fashion, in which case they obligatorily take a deverbal suffix, and form a phrase with *goa* 'side'.

Let me illustrate this with a number of examples, all of which involve the Ground *vaal* 'stone'. In (31), *pogoa* '(on) low yonder side' is possessivised with the prefix *ga-*, which is co-referential with *vaal*, i.e. literally 'the stone's low-yonder-side'. As in other situations, the use of the spatial formative is dependent on the position of the speaker—that is, even though the Figure and the Ground would be identical (the Figure still being LOW and the Ground still being the stone), (31) could not be uttered if the speaker were below the stone or removed from the vertical axis altogether.

(31) *vaal* ***ga-po-goa***
stone 3SG.POSS-LO-side
'the lower side of the stone (said from above the stone)'

In (32), the motion verb *ja* 'come.LO' is possessivised in the same fashion and takes the deverbal suffix *-(na)ng* to nominalise it. This construction, literally 'the stone's coming-down-side', could not be used if the speaker were situated above the stone, as *ja* expresses movement towards the Deictic Centre, which in this case translates as a Figure's LOW side facing the speaker. Unlike similar constructions involving spatial formatives like (31), however, which require the speaker to be located on the correct part of the axis, nominalisations of motion verbs may also be used when the speaker is removed from the axis, i.e. they only require that the Figure encoded by the motion verb-based term is not opposite the speaker.

(32) *vaal* ***ga-ja-nang*** ***goa***
stone 3SG.POSS-come.LO-DVRB side
'the lower side of the stone (said from below the stone or removed from height axis)'

In the case of (32), this would mean the speaker is located above the stone, because the semantics of *ja* 'come.LO' require the LOW side of the Figure to 'face' the speaker. Should the speaker be situated above the stone, the motion verb *'i* 'go.LO' would be used instead of *ja*, i.e. *vaal ga'inang goa* 'lit. the stone's going-down-side'.

As all such constructions with nominalised motion verbs, (32) may alternatively be realised as in (33), which is a construction composed of the verb *-daang* 'face, toward' and a motion verb nominalised with a deverbal suffix. This variant literally translates as 'the coming-down facing the stone'. No denotational difference between these constructions has been identified.

(33) *vaal* ***ga-daang ja-nang***
stone 3SG-face come.LO-DVRB
'the lower side of the stone (said from below the stone or removed from height axis)'

Three viewpoints are relevant for the expression of Figures based on a Ground removed from the Deictic Centre, namely above, below and level with the secondary object, which is visualised in Figure 8. From each of these Deictic Centres, four Figures can be calculated based on the Ground.[15] The different expressions of these four Figures are laid out in Table 4 below.

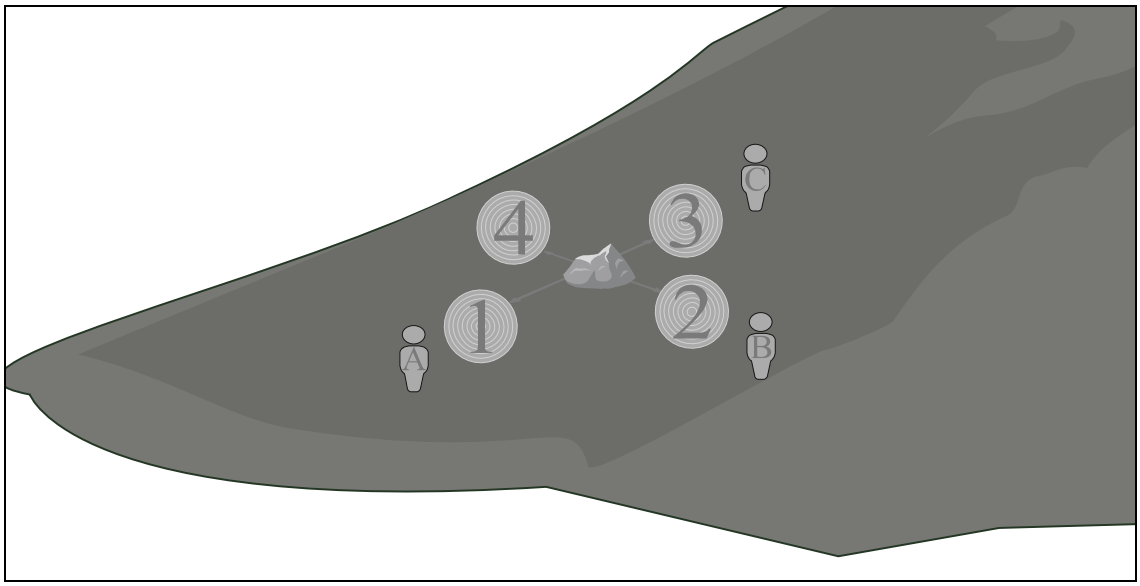


Figure 8. *Figures (1–4) relative to a Ground ( ) from three Deictic Centres (A–C).*

[15] Note that a fourth viewpoint D facing Figure 4 and the Ground is not necessary; from viewpoint B, Figure 2 and 4 are expressed differently, but from a putative viewpoint D, B's Figure 2 would be expressed like Figure 4, and B's Figure 4 like Figure 2.

Table 4. *Terms for Figures relative to a Ground from the three Deictic Centres in Figure 8.*†

DEICTIC CENTRE	FIGURE 1	FIGURE 2	FIGURE 3	FIGURE 4
A	**-**	***ga-ma-goa***	***ga-to-goa***	***ga-ma-goa***
		3SG-LVL.NAXL side	**3SG-LVL side**	**3SG-LVL.NAXL side**
	ga-ja-nang goa	-	*ga-mida-ng goa*	-
	3SG-come.LO-DVRB side		3SG-go.HI-DVRB side	
	ga-daang ja-nang		*ga-daang mida-ng*	
	3SG-face come.LO-DVRB		3SG-face go.HI-DVRB	
B	***ga-pa-goa***	**-**	***ga-ta-goa***	***ga-mo-goa***
	3SG-LO.NAXL side		**3SG-HI.NAXL side**	**3SG-LVL side**
	ga-'i-nang goa	*ga-ma-nang goa*	*ga-mida-ng goa*	*ga-va-nang goa*
	3SG-go.LO-DVRB side	3SG-come.LVL-DVRB side	3SG-go.HI-DVRB side	3SG-go.LVL-DVRB side
	ga-daang 'i-nang	*ga-daang ma-nang*	*ga-daang mida-ng*	*ga-daang va-nang*
	3SG-face go.LO-DVRB	3SG-face come.LVL-DVRB	3SG-face go.HI-DVRB	3SG-face go.LVL-DVRB
C	***ga-po-goa***	***ga-ma-goa***	**-**	***ga-ma-goa***
	3SG-LO side	**3SG-LVL.NAXL side**		**3SG-LVL.NAXL side**
	ga-'i-nang goa	-	*ga-mada-ng goa*	-
	3SG-go.LO-DVRB side		3SG-come.HI-DVRB side	
	ga-daang 'i-nang		*ga-daang mada-ng*	
	3SG-face go.LO-DVRB		3SG-face come.HI-DVRB	

† Terms based on spatial formatives are in **bold**, terms based on motion verbs are in regular font.

As the table shows, when the Figure is located in between the Deictic Centre and the Ground (A-3, B-4, C-1), it may be expressed by a formative-based term like *gatogoa* 'its high side' or a motion verb-based term like *ga'inang goa* 'its going-down-side'.[16] This option is also available when the Figure is *not* located in between the Deictic Centre and the Ground (B1, B3), the requirements being that the Ground is not behind the Figure as seen from the Deictic Centre (which excludes A1, B2, C3) and that the Figure is either HIGH or LOW, not LEVEL (which excludes A2, A4, C2, C4). In such cases, if the Figure is expressed by spatial formative-based term, this term must be NON-AXAL. For B1, for example, the Figure is not located in between the Deictic Centre and the Ground, but B as a Deictic Centre is not part of the HIGH-LOW axis either, hence NON-AXAL *gapagoa* 'its low side' is used. Further, the Ground is not behind the Figure in the case of B1, and the Figure is LOW, not LEVEL, hence the Figure may be expressed by means of a motion verb-based term as well.

For situations in which the spatial relation is likewise NON-AXAL but the Figure is LEVEL (A2, A4, C2, C4), only a NON-AXAL term is available. For example, for A2 only the NON-AXAL SPATIAL formative-based term *gamagoa* 'its yonder-side' is available, but the other logically possible LEVEL motion verb-based terms, *gamanang goa* 'its coming-side' and *gavanang goa* its going-side', are not available.

For those situations in which the Ground is behind the Figure as seen from the Deictic Centre (A1, B2, C3), no spatial formative-based term is available, and a motion verb-based term must be used. For example, A1 has the Figure in between the Ground and the Deictic

[16] According to my consultants, the difference between these variants is that motion verb-based terms like *ga'inang goa* and *gadaang 'inang* are used to express Figures with some distance from the Ground, whereas formative-based terms like *gapogoa* are not sensitive to this. Further, LOW motion verb-based terms have a variant based on *hela* 'descend', i.e. *gahelang goa* and *gadaang helang*, which is said to be used to express Figures removed from the Ground by a particularly steep surface. I have, however, no textual evidence to support this.

Centre, as a result of which only *gadaang janang* ‘the coming-down facing it’ and *gajanang goa* ‘its coming-down-side’ are available, not *gapogoa* ‘its low side’.

4 A sloped world on three different levels

In the previous section it was shown that the expression of elevation is grammaticalised in two sets of etymologically unrelated lexemes, namely motion verbs and spatially marked verbs. It was also shown that a number of spatial primitives are relevant for the expression of a Figure or Path. The location of the Figure or Path itself is calculated from the Ground, which—barring relative frames of reference and NON-AXAL terms—coincides with the location of the speaker, or Deictic Centre. Both the Figure/Path and the Deictic Centre are located within the boundaries of the coordinate system, which is represented by the geophysical area containing the spatial coordinates that serve as bearings for the calculation of elevation. In most of the examples given above, the coordinate system was represented by the Southern Pura slope housing the Reta speaker community, with a vertical axis running from the summit to the seaside, and a horizontal axis perpendicular to it. The HIGH and LOW spatial correlates associated with the vertical axis are calculated based on either global elevation, i.e. involving a spatial asymmetry based on a degree of verticality proper, or geophysical elevation, i.e. involving a spatial asymmetry based on features of the geophysical environment, which need not include verticality.

However, the coordinate system may also be represented by larger geographical environments, in which case not only the coordinate system itself is different from the Southern Pura slopes, but the spatial coordinates used to calculate elevation from the Deictic Centre are different as well. More specifically, three different levels can be identified. The level on which the Southern Pura slope serves as the coordinate system is the smallest level, and is termed the MICRO-level here. On a wider MESO-level, the coordinate system is roughly equivalent to the Alor-Pantar archipelago itself, with the spatial correlates of elevation being primarily based on compass points. On the MACRO-level, lastly, the coordinate system is equivalent to earth in its entirety, and any Figure outside of the Deictic Centre is expressed by a LOW term.[17]

The approximate geophysical area that represents the MICRO-level is given in Figure 9. It has a roughly triangular shape that coincides with the natural boundaries of the *desa* ‘administrative village complex’, with the highest spatial coordinate being the summit, and the lowest being the shore. The shore itself houses the village of Malal (Reta *malagal*) on the far west side, and the *jial geeng b'aal* harbour on the far east side. Being located roughly at sea level, the latter two are expressed by a LOW term as seen from the Retta village, which is represented by the centre on the map, and which is located some 120m above sea level. The offshoot village of Hobu (Reta *hoobu*) is located at around 100m above sea level and is expressed as LEVEL when seen from Retta. Of course, any physical location can serve as the Deictic Centre within this area, and the same spatial coordinates will apply regardless of the speaker’s location within it. For example, from Malal, Retta is HIGH, as is Hobu. And any location within a village or in between villages is subject to the same calculations; when the

[17] It is worth pointing out that the application of a semplate on different levels, or at least in different environments, is not a novel phenomenon per se (see e.g. Levinson & Burenhult 2009: 154-5 on Tzeltal).

speaker is located, say, in between Retta and the summit, any demonstrative referent located in between this Deictic Centre and Retta will be expressed by a LOW term, and any demonstrative referent located in between this Deictic Centre and the summit by a HIGH term.

Figure 9. *The MICRO-level.*[18]

A particularly interesting characteristic of the MICRO-level is the fact that LOW Paths to certain Figures may be expressed by the motion verb *hela* 'descend' (see Section 3.1). For example, from Retta, movement to Malal or the *jial geeng b'aal* harbour is expressed by *hela* 'descend' rather than *'i* 'go.LO', as is movement from the summit to any of the other four locations indicated on the map. The reason for this appears to lie in its semantics. Contrary to the other LOW motion verbs, *hela* is used to express Paths that run downward steeply or entirely vertically.[19] This notion indeed applies when calculating a Path between, say, Retta and Malal: seen from Retta, Malal is as far down as one can go, and the calculated Path as a whole is much steeper than the average LOW Path within any given village.

However, what counts as steep is also dependent on the location of the Deictic Centre and the Path's length, and, importantly, is calculated relative to what is **not** steep. Whereas downward movement from Retta to Malal counts as steep relative to downward movement within any given village, on a more local level too Paths may be calculated as relatively steep. For example, the Path down from a boulder or a raised bamboo platform is likewise expressed by *hela* descend', because it is relatively steep as compared to a LOW Path that runs along the 'natural' axis between the summit and the seaside. This is visualised in Figure 10, where the LOW Path from Deictic Centre A would be expressed by *hela* 'descend', and the LOW Path from Deictic Centre B by *'i* 'go.LO'.

[18] Place names in Reta: 1. *malagal* (roughly sea level), 2. *maluk* (1015m above sea level), 3. *hoobu* (roughly 100m above sea level), 4. *jial geeng b'aal* (a harbour, roughly sea level). The Retta village itself, i.e. the centre, is located around 120m above sea level.

[19] Recall that there is no such specialised HIGH motion verb, as *mada* 'come.HI' and *mada* 'ascend' are polysemous.

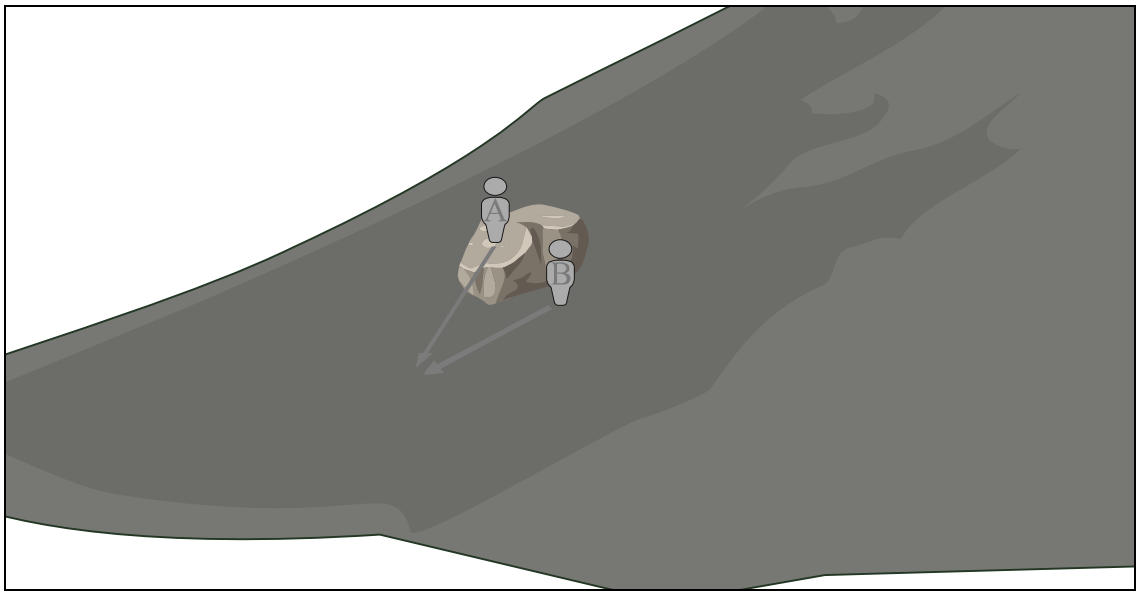


Figure 10. *Steep descent (A) and non-steep descent (B).*

One the MESO-level (Figure 11), the spatial coordinates of the slope are traded for compass points, and neither global nor geophysical elevation play a role in calculating the location of a Figure. The clearest exemplification of this can be found in Figure 9, where the *jial geeng b'aal* harbour (4) as a Figure is expressed by a LOW term from Retta, but the village cluster directly adjacent to it, Apuri, is expressed by a LEVEL term. This is clearly not grounded in elevation of any kind; Apuri, like the harbour, is located roughly at sea level. Furthermore, all other major villages on Pura are likewise expressed by a LEVEL term, despite the fact that most of them are located relatively close to their respective shores as compared to Retta.

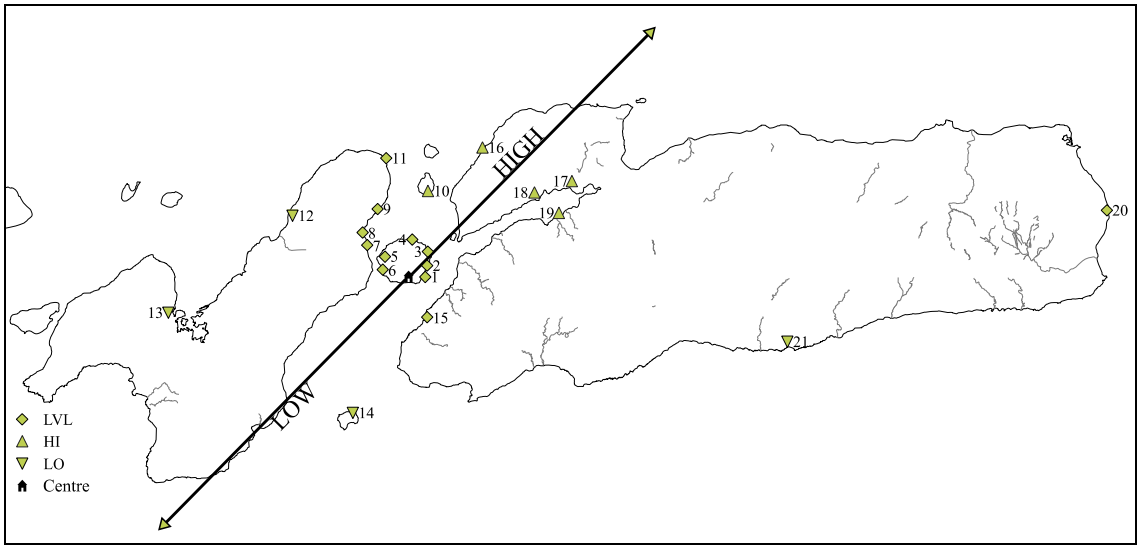


Figure 11. *The MESO-level.*[20]

[20] Place names in Reta: 1. *apuri*, 2. *biat goomi 'abang*, 3. *dengvalelang*, 4. *limal*, 5. *dolabang*, 6. *meelangvala*, 7. *'olijahi*, 8. *kunul goomi*, 9. *tuabang*, 10. *nuha* or *nubi tiadang*, 11. *muna*, 12. *kabir*, 13. *baranusa*, 14. *tab'elang*, 15. *ualbur* or *volang*, 16. *kokar*, 17. *kalambaha*, 18. *daloodul*, 19. *mooru*, 20. *kolana*, 21. *batulolong*.

As Figure 11 shows, all major villages on Pura (1-6) are expressed by a LEVEL term, as are some nearby villages on Pantar (7-9, 11) and the Retta offshoot village of Wolang (Reta *ualbur* or *volang*) in southwest Alor (15). Going up along the Pantar Strait, we find various locations expressed by a HIGH term, such as the island of Ternate (Reta *nuha*, 10) and various locations in or near Alor's Bird's Head (16-19). In the opposite direction, we find some locations expressed by a LOW term on Pantar's west coast (12-13).

While the Pantar Strait appears to provide the bearings for a HIGH-LOW axis based on which the elevation of Figures or the Paths towards them is calculated, direction of travel through this strait appears to be of little importance. For example, reaching Munaseli (Reta *muna*, 11) requires upstream travel to at least the same extent as reaching Ternate (10), yet Munaseli counts as LEVEL and Ternate as HIGH. Similarly, both Kolana (20) and Batulolong (21) are reached by travelling southward from Pura along Alor's south coast, yet Kolana is expressed by a LEVEL term and Batulolong by a LOW term.

It should be noted that in the analysis of the MESO-level provided here, the Deictic Centre is taken to be the Retta village. To some extent the expression of Figures in Figure 11 is independent of the speaker's specific location on the Southern Pura slope, which suggests that the Southern Pura slope can be taken as the Deictic Centre in its entirety. For example, Kalabahi as a Figure, or a Path towards it, is expressed by a HIGH term regardless of whether the speaker is in Retta, on the Pura summit, or otherwise. On the other hand, from the Pura summit, most places on Pura itself are expressed by a LOW term, which suggests that the speaker's location on the slope does matter within certain geographical boundaries (also see Steinhauer 1977: 40 on Blagar spatial marking). More research is needed to determine the ways in which locations within the MESO-level are expressed from Deictic Centres other than the Retta village.

The largest level, lastly, is the MACRO-level. It includes any Figure outside of the MESO-LEVEL, all of which are expressed by a LOW term, regardless of compass points. Figure 12 below shows a number of such locations, albeit mainly for expository purposes: the MACRO-level essentially represents earth in its entirety to the extent that it is not included in the MESO-level.

Grammatically, the MACRO-level is characterised by an asymmetry in the expression of elevation in Figures versus Paths: Figures, when expressed by spatially marked terms and their formatives, are consistently expressed as LOW, but Paths can only be expressed by an elevationally neutral motion verb, i.e. *'adu* 'arrive' or *jema* 'go' (see Section 3.1). This becomes apparent in the following two examples. In (34), a Path towards the Figure Denmark is expressed, but the neutral motion verb *jema* 'go' is used, and the use of the LOW motion verb *'i* 'go.LO' would be ungrammatical. Yet, Denmark is demonstrably a LOW location, as evidenced by the existential spatially marked verb *po'e* in (35).

(34) *ang* *bale* ***denmark*** ***mi*** ***jema****?*
2SG.NOM return D. in go
'Are you going back to Denmark?'

(35) *na-'ee* ***po-'e*** ***denmark*** ***mi***
1SG-house LO-be D. in
'My house is down in Denmark.'

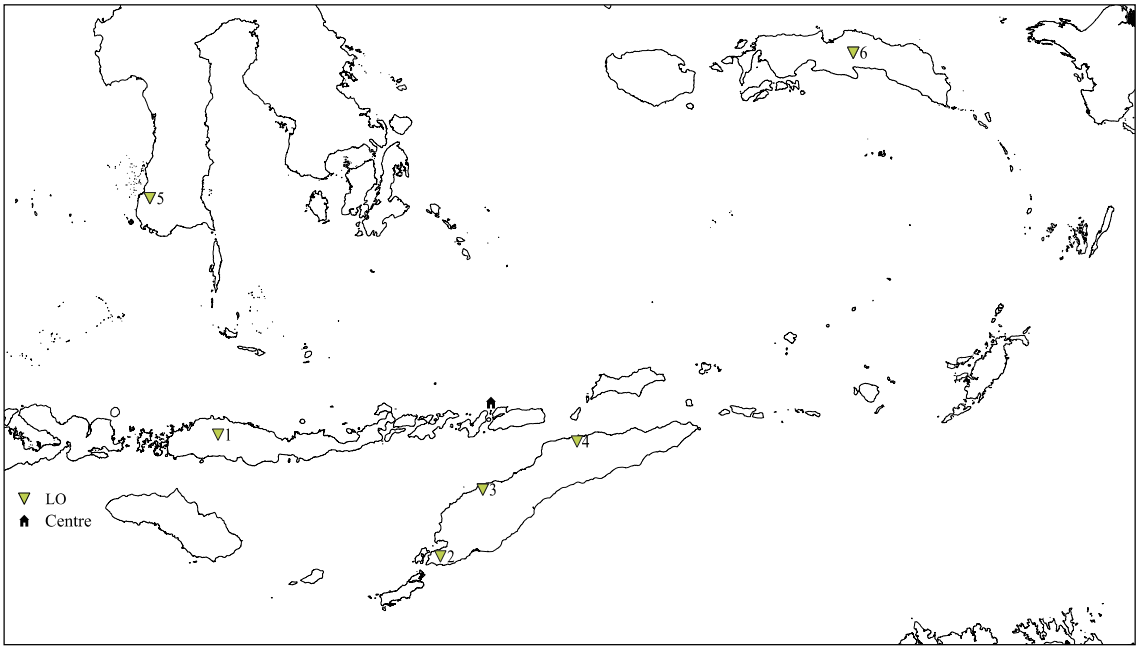


Figure 12. *Part of the* MACRO*-level.*[21]

What is of particular interest about the MACRO-level is that it is to some extent dependent on speakers' topographical knowledge what is included in it. Most speakers are unfamiliar with maps, and the majority of them are unaware of the specific locations of the places in Figure 12. Some of my consultants, however, did acquire such knowledge, and this may entail inclusion of some more distant locations in the MESO-level rather than the MACRO-level for them as speakers. For example, Maluku (6) is expressed with a LOW term by the majority of my consultants, suggesting it belongs to the MACRO-level, while some—especially younger—consultants express it with a HIGH term, reflecting its location in terms of compass points and treating it as belonging to the MESO-level.

The characteristics of these three levels are summarised in Table 5. On the MICRO-level, the coordinate system is represented by the Southern Pura slope, and the spatial coordinates relevant for calculating the elevation of a Figure or Path are elevation on the one hand, and proximity to the summit as opposed to the seaside on the other. On the MESO-level, the coordinate system is represented by roughly the Alor-Pantar archipelago, and the relevant spatial correlates are compass points. On the MACRO-level, lastly, the coordinate system is represented by earth in its entirety, the spatial correlate being distance. Figures are expressed by spatially marked verbs on all levels, but only on the MICRO-level and MESO-level are Paths expressed by elevational motion verbs.

Table 5. *Summary of the respective levels' characteristics*.

Level	**Coordinate system**	**Spatial coordinates**	**Path expressed by elevational motion verb?**
MICRO	Southern Pura slope	1. elevation 2. summit vs. seaside	Yes
MESO	Alor-Pantar archipelago	compass point	Yes
MACRO	Earth	extreme distance	No

[21] Place names in Reta: 1. *kedang*, 2. *kupang*, 3. *'oikusi*, 4. *parasa*, 5. *makansar*, 6. *maluku*.

5 Summary and remaining issues

This paper provided an overview of the system of spatial marking in Reta, with a particular focus on the expression of elevation. The extremely sloped environment in which Reta is spoken has resulted in the grammaticalisation of a plethora of spatially marked terms expressing elevation, but elevation is also expressed in the etymologically unrelated motion verbs, reflecting an underlying semantic template, or semplate, which organises two lexical sets from different form classes and from different semantic fields. It was shown that this semplate operates on three distinct levels, which differ with regard to the coordinate system based on which elevation is calculated, as well as the spatial coordinates that serve as bearings for the vertical HIGH-LOW axis and the horizontal axis perpendicular to it. It was further shown that the spatial frame of reference tends to be absolute, but that the semplate may likewise serve as the basis for relative frames of reference.

However, myriad questions remain unanswered. Firstly, I have only been able to scratch the surface with regard to the grammatical and semantic characteristics of the spatially marked terms. Not only are the distinctions between them often subtle, they may also be combined in serial verb constructions to create even finer distinctions. Secondly, while the basics of the AXAL-NONAXAL distinction are relatively clear at this stage, many of its particulars are still unknown. It is not entirely clear, for example, what distinctions in location between Deictic Centre and Ground are responsible for which NON-AXAL term is preferred, especially when the axis between either and the Figure is not strictly vertical or horizontal. Thirdly, and perhaps most importantly, in my description of the MESO-level I restricted myself to the Retta village as the Deictic Centre, from which all villages on Pura are expressed by a LEVEL term. When the summit serves as the Deictic Centre, however, these are all expressed as LOW. Documenting the expression of different Figures from various Deictic Centres outside of Retta would be able to shed more light on the distinction and overlap between the MICRO-level and the MESO-level.[22]

To this we might add the fact that, within Pura, I restricted myself to demonstrative referents represented by villages located near the seaside, and it is unknown how those located further up the mountain are expressed. It is likewise largely unknown what coordinate system is used in the absence of any visual spatial coordinates, such as in sea-faring. Lastly, while it is clear that global elevation is relevant in environments outside of the Southern Pura slope, e.g. in the city, it is not known whether geophysical elevation can be extrapolated to such environments—for example, whether horizontal movement towards the seaside counts as LOW for speakers in Kupang.

A more thorough investigation into these facets of Reta spatial marking would undoubtedly offer a fascinating insight into the sloped world which is so central to its speakers and their world view.

[22] Steinhauer (1977; 1991) did investigate the expression of Figures and Paths from various such locations for Blagar, and the system he describes (see especially Steinhauer 1991: 183-4) does show a number of distinctions unattested in the Reta system of spatial marking, such as the relevance of clockwise vs. counter-clockwise motion around the island, as well as mode of travel.

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