The ins and outs of *up* and *down*

Disentangling the nine geocentric space systems of Torres and Banks languages

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Abstract The seventeen languages spoken in the Torres and Banks Islands of northern Vanuatu commonly encode spatial relations by means of geocentric (absolute) systems of directionals. These systems all have in common a single cardinal axis oriented northwest–southeast, and at least a second topographical axis, contrasting inland–seawards. While this general profile is typical of Oceanic, a detailed comparison of the seventeen languages reveals their internal diversity, with as many as nine distinct geocentric systems represented in this small region. The aim of this study is to describe and analyse these nine systems, by examining the semantic connections between the space directionals that encode them. Adopting a canonical approach to cross-linguistic comparison, I show that each system is a variation between two equally simple canons, namely Gaua and Mwotlap. Finally, I reconstruct the historical development of these systems since Proto Oceanic: this reveals that Gaua is the most conservative of all systems, and Hiw the one which has been most affected by the accumulation of innovations.

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1 The geocentric use of directionals

1.1 Space strategies across languages

All known languages make use of spatial expressions in one form or another – that is, linguistic devices whose main function is to encode a direction or a location in the three-dimensional space. However, typological studies have revealed substantial cross-linguistic variation regarding the parameters that govern the internal organisation of spatial systems.

Figure 1 summarises the typology of linguistic space strategies as outlined by Levinson (1996b:359).[1]

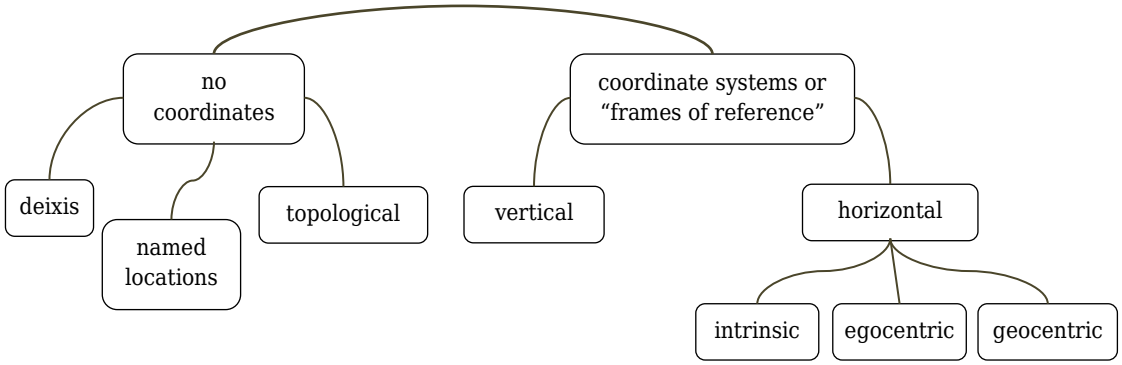


Figure 1 — A typology of space strategies (after Levinson 1996b:359)

While deictic or topological strategies (e.g. *in this house*; *close to the tree*), as well as vertical coordinates, appear to be encoded in all languages, cross-linguistic variation concerns mostly the strategies used on the horizontal plane. As Levinson (1996b, 2003) shows, languages can encode horizontal vectors by potentially resorting to three frames of reference:

- the INTRINSIC frame bases coordinates upon the spatial orientation of a ground object taken as reference: e.g. *the ball is in FRONT of the house* (where the ground object *house* is itself provided with a certain intrinsic orientation)
- the EGOCENTRIC (or "relative") frame defines coordinates relative to a ground object in its relationship to a human observer: e.g. *the ball is in FRONT of the tree* (where the 'front' of the tree is only defined by its position with respect to an observer)
- the GEOCENTRIC (or "absolute") frame of reference encodes directions based on a system of fixed coordinates which are defined externally, and do not depend on any particular anchor in the speech situation. In a sentence such as *my house is SOUTH of the river*, the direction of the 'south' vector is defined irrespective of the intrinsic orientation of the house, or of the location of an observer.

Crucially, several studies (Brown & Levinson 1992, 1993; Haviland 1993; Levinson 1996a-b, 2003; Pederson *et al.* 1998) have pointed out that these different frames of reference are diversely represented in the world's languages. English knows the three strategies, but uses the geocentric frame only for larger scales (e.g. *northern England*, *western suburbs*); for shorter distances, it can only employ the intrinsic and egocentric frames. By contrast, a language like Mopan Maya relies heavily on the intrinsic strategy (Pederson *et al.* 1998:572; Danziger 2011); and Tenejapan Tzeltal in Mexico (Brown & Levinson 1992) use a combination of intrinsic and geocentric reference, including for short distances.

[1] In this paper – starting with Figure 1 – I adopt Levinson's Frames of Reference approach, yet follow the now widespread habit of using more transparent labels than the ones he initially used. Thus, the frame he called *relative* is here labelled EGOCENTRIC (after Le Guen 2011a:274); and Levinson's *absolute* frame will be called GEOCENTRIC (Le Guen 2011a:275, 2011b:932 – see also Haviland 1993:5; de León 1994; Dasen & Mishra 2010).

1.2 Geocentric space reference in northern Vanuatu languages

The present study will describe and analyse the different systems of space reference found in the 17 Oceanic languages of the Torres and Banks Islands, in the northernmost part of the Vanuatu archipelago.

Even though these languages do have words for *right* and *left*, or *in front* and *behind*, these refer to sides of the body, and are never used to project coordinates so as to encode spatial location. Torres–Banks languages are in fact typologically quite extreme in making virtually no use either of the INTRINSIC frame of reference (as in **behind the house*), or the EGOCENTRIC one (as in **behind the tree*). Just like for most other Oceanic or Austronesian languages (Senft 1997, Palmer 2002),[2] the only acceptable strategy in northern Vanuatu, in order to locate a referent, is to employ GEOCENTRIC coordinates. This yields sentences such as (1), in Mwotlap (François 2003:420):[3]

(MTP.1) Kē mi-tig lō-tōti beg, ba lok ***hōw***.
3sg PFT-stand LOC-trunk breadfruit but side (west)
(liter.) 'She's standing at the breadfruit tree, on the western side.'
[situational equivalent of *She's standing behind the tree*.]

Unlike European languages, Oceanic languages employ their geocentric systems for any distance, and it is common to hear sentences such as this one, also in Mwotlap:

(MTP.2) na-bankēn mey hag tō lok ***hag***
ART-mug REL sit PRSTV side (east)
'the mug *on the east side* (of the table)'

Geocentric strategies in the world are often based on a simple system of four fixed cardinal quadrants such as *North–West–South–East* (see Haviland 1993 for Guugu Yimithirr), usually based on the path of the sun. By contrast, those found in Oceanic languages have only one cardinal axis oriented NW–SE; the latter is combined with a topographic axis *land–sea*, whose absolute orientation in compass terms varies with the shape of the shoreline (Palmer 2002, François 2004). Within the Oceanic family, we'll see that Torres and Banks languages can show even more complex mechanisms, involving paradigms of 3, 4, 5 or 6 geocentric directionals.

I will focus on one syntactic category that is found in all the languages under study, namely *space directionals*. As we will see in §2.3, these morphemes are pervasive in discourse. The vectors encoded by these directional paradigms are of three types:

- PARTICIPANT-oriented coordinates, glossed 'hither'–'thither' [→§2.4.1];
- TOPOLOGICAL coordinates, e.g. 'in'–'out', 'up'–'down' [→§2.4.2];
- GEOCENTRIC coordinates, e.g. 'uphill'–'downhill', 'southeast'–'northwest'… [→§2.4.3]

[2] Various publications have described the space systems of Oceanic languages: see papers in Senft (1997) or Bennardo (2002), as well as Ozanne-Rivierre (1999), François (2004), Cablitz (2006), Palmer (2007). Descriptions of space systems in languages of Vanuatu have been few so far, but include Hyslop (2002) on Northeast Ambae; François (2003) on Mwotlap; Paviour-Smith (2009) on Aulua; Johnson (2014) on Ske.

[3] All forms in this study are transcribed using the languages' practical orthographies, which are spelled out in an appendix (§7.2).

Crucially for this study, the directional particles that encode geocentric space reference always have other, non-geocentric meanings in the same language. The typical case is that a given directional encodes topological coordinates as well as geocentric ones, following non-trivial patterns of correspondences. For example, all languages express *northwest* as *down*; some languages encode *seawards* as *down*, others as *out*; and so on. Even though all northern Vanuatu systems share a number of general properties, the attested combinations define quite distinct systems of directionals.

In order to get a sense of this local diversity of geocentric systems, the paradigm of directionals in Dorig (Table 1) can be compared with the one in Hiw (Table 2).[4]

Table 1 — The directional system of Dorig (Gaua island)

Directional	*Participant-oriented*	*Topological*	*Geocentric*
ma	hither	—	—
āt	thither	—	—
vak	—	across	parallel to shore in any direction, for short distances
sag	—	up; in	landwards, inland, uphill; (long-distance) parallel to shore towards SE
ror	—	down; out	seawards, downhill; parallel to shore towards NW

Table 2 — The directional system of Hiw (Torres islands)

Directional	*Participant-oriented*	*Topological*	*Geocentric*
me	hither	—	—
vën	thither	—	(on land) parallel to shore towards SE
ag	—	—	landwards, inland; (navigational) towards SE
iy	—	in	—
rōw	—	out	seawards
vēn	—	up	uphill
uw	—	down	downhill; (any distance) towards NW

The geocentric directions can be plotted on a figure representing an island. In order to make systems comparable, I choose to represent all systems based on a single representation of the typical island landscape (see §2.1, 2.4.3). Figure 2 maps the geocentric directionals of Dorig, which also corresponds to that of other languages on Gaua island (Table 1); Figure 3 those of Hiw (Table 2). The geocentric meaning of each vector (last column of the tables) is symbolised by an arrow, and is therefore not repeated there; instead, each arrow is tagged with a gloss representing the *non-geocentric* meaning associated with the same term.[5] For example, the geocentric direction "*along the shore towards southeast, on land, for long distances*" is encoded in Dorig by a term that also means 'up', and in Hiw by a word that is otherwise best glossed 'thither'.

[4] Throughout this study, forms will be given using the local orthographies. The appendices provide a key to spelling and pronunciation (§7.2), as well as notes on the etymology of directionals (§7.3).

[5] The only case when this is not possible is with the form *ag* in Hiw and Lo-Toga, which is only used geocentrically (see §4.6, 4.7.1).

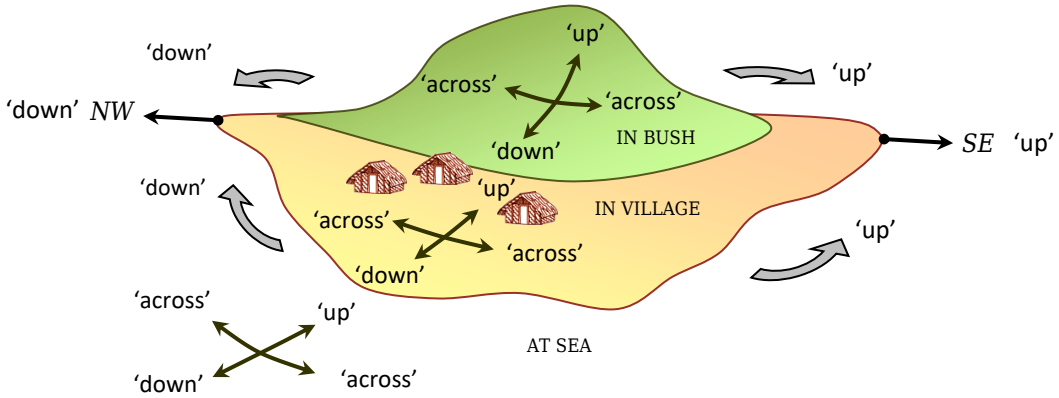


Figure 2 – The system of geocentric directionals in Dorig and other Gaua languages

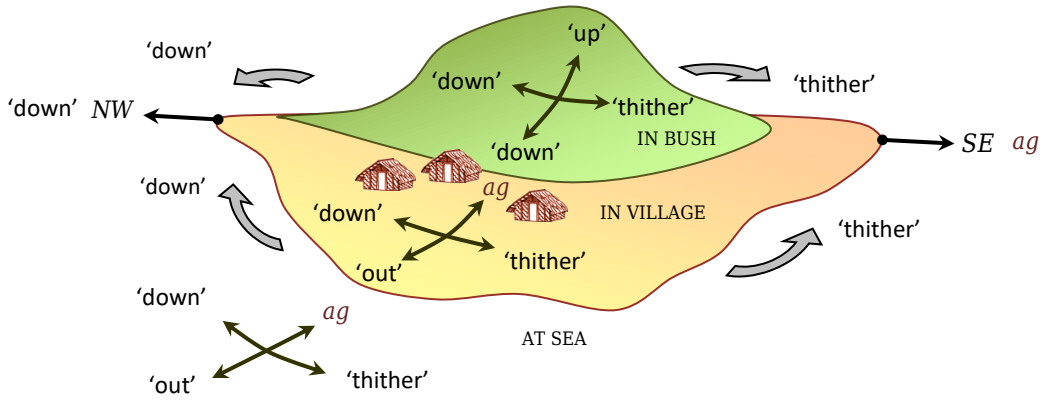


Figure 3 – The system of geocentric directionals in Hiw

These figures set the scene for the main point of this study, which is to analyse and understand the various patterns of correspondence found in these languages between geocentric and non-geocentric vectors.

1.3 Making sense of the diversity: synchrony and diachrony

Insofar as geocentric and non-geocentric meanings are mapped differently in Dorig and in Hiw, these two languages can be said to represent two structurally distinct systems. Out of seventeen languages spoken in the area, I have found that the various configurations of space directionals define a total of nine systems. In comparison with the stability of spatial systems found across entire regions like Europe, the diversity found in northern Vanuatu is impressive; it confirms a marked tendency towards linguistic divergence that can be otherwise observed in this language mosaic (François 2011, 2012). Of these nine systems, some – like the one used on Gaua – are relatively straightforward and easy to explain; others – like Hiw – can only be understood based on a complex investigation.

This article will unfold as follows. Section 2 will present the Torres and Banks Islands and introduce their systems of space directionals, by situating them in their social and linguistic context. The core of the study will consist in a description of directional paradigms in the area's 17 languages, which are all (except Mwotlap) documented here for the first time. The systematic comparison of these languages will highlight some properties which are shared throughout the region: in particular, section 3 will focus on the *northwest–southeast* cardinal

axis, and show that it is handled in similar ways, for long-distance reference, by all languages. Section 4, in turn, will uncover greater cross-linguistic diversity as it describes how directionals are used on the local scale, for shorter distances. I will show that the apparent profusion of modern space systems is better handled through a "canonical" approach in which the systems of Gaua and Mwotlap constitute two equally simple yet opposite canons, and all other systems form structural hybrids between these two poles.

While section 4 is to describe and compare geocentric systems from a synchronic point of view, the final discussion (Section 5) will recapitulate our findings from a historical perspective, and propose a unified scenario to account for the diversity attested today. The system of Gaua – one of our two canons – will be shown to be the most conservative of the ancestral system; as for other northern Vanuatu languages, they reflect the accumulation of several local innovations, which have diffused to various parts of the linguistic area. After reconstructing the individual innovations that led to modern systems, their projection on a map will reveal that they define coherent areas of linguistic diffusion, much in line with what we know of the region's historical dialectology.

2 Paradigms of directionals in Torres and Banks Islands

2.1 Northern Vanuatu landscapes

The Torres and Banks Islands are two small archipelagoes located in the northernmost part of Vanuatu, with a total land surface of 882 km² (see Map 1). Most islands are of volcanic origin,[6] with active volcanoes on Vanua Lava and Gaua. Their steep relief, covered in thick bush, rises up to relatively high cone-shaped summits, both in the Banks Islands – Vanua Lava (921 m), Merelava (833), Gaua (767), Ureparapara (764), Mota (411), Motalava (243) – and in the Torres Islands – Hiw (366), Tegua (300), Toga (240), Lo (115). Several of these mountainous islands are surrounded by a more or less broad band of coral reef. Due to a geological process of uplift (Ballu *et al.* 2011), some islands even include accreted coral as their terrain for a fair portion of their surface. The flat, horizontal shape of these coral-based areas contrasts with the steep slopes of the central mountains. This landscape can be represented in a stylised fashion, similar to the one given in Figures 2 and 3 above; throughout this study, this diagram will constitute a useful background for the comparison of geocentric systems.[7]

The 9400 inhabitants of the Torres–Banks islands (VNSO 2009) are distributed across twelve of these islands, and approximately fifty villages. Some villages, especially on the higher islands, are located inland, on the slopes of the mountains where the soil is most fertile. But the majority of the population reserves the uphill areas for their subsistence

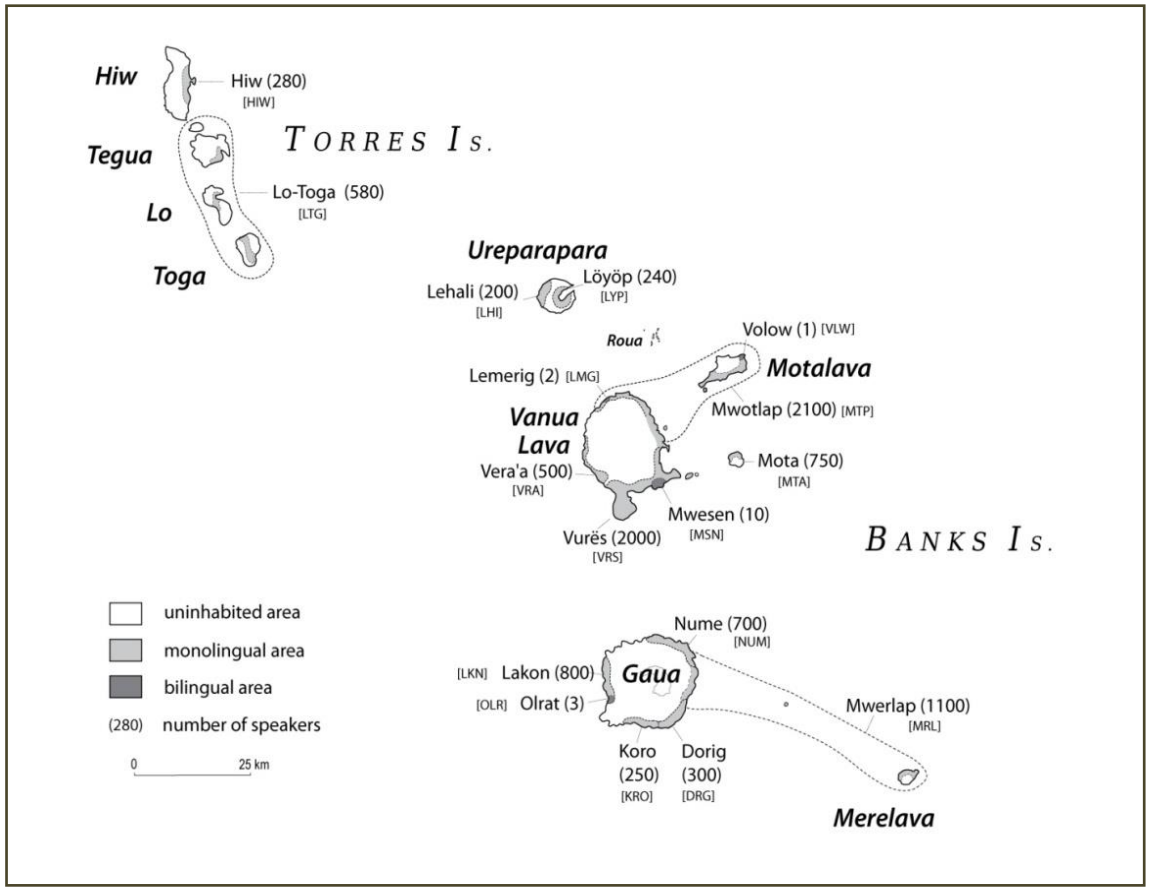
[6] The only non-volcanic islands of the area are a group of low coral atolls known as Roua, or Reef islands. Though once inhabited, they were abandoned by their population in the middle of the 20th century (François 2012:97). The absence of any modern population there – apart from occasional fishermen from the neighbouring islands – makes it difficult to study the way geocentric directionals would be (or used to be) employed on these atolls, despite the obvious interest of such questions (Palmer 2007).

[7] I will discuss these diagrams again in §2.4.3, and in fn.33 p.27.

gardens, and dwells in coastal areas – a convenient location where marine and land resources can easily be accessed. The last 150 years have seen a trend for the population to abandon inland hamlets, and settle in larger coastal villages (Vienne 1984:23; François 2012:96-99).

2.2 The languages of the Torres and Banks Islands

The Torres and Banks Islands are home to 17 different languages. The present study rests on primary data which I collected during a number of field trips in northern Vanuatu (since 1997 for the languages Mwotlap, Mwesen, Vurës; since 2003 for other languages).[8] Map 1 shows the territory covered by the various language communities; clearly, coastal villages are the dominant form of settlement. Each language is given an approximate number of speakers, as well as a three-letter abbreviation.



Map 1 – The 17 languages of northern Vanuatu (Torres and Banks Is)

These 17 languages are all Oceanic (Austronesian), and thus descend from Proto Oceanic. Together, these languages form the Torres–Banks "linkage" – that is, they are the modern descendants of what initially developed as a dialect continuum (François 2014; cf. Ross

[8] Throughout this study, I will indicate the source of my examples using simple conventions. Sentences taken from my 263 recorded texts will note the language, the story and the sentence number – e.g. [HIW.Meravtit.051]. Sentences obtained through elicitation refer to my field questionnaires – e.g. [LHI.d12:12]. Spontaneous speech heard during language immersion has a reference to my notebooks – e.g. [FP3-28b]. (My field notes are archived online, at http://www.odsas.net.)

1988). During the three millennia of their *in situ* development, the communalects have diverged so much as to lose mutual intelligibility. However, these processes of diversification have always gone along a tradition of egalitarian multilingualism and social contact (François 2012), in ways which favoured various forms of cultural and linguistic diffusion. This dialectic between divergence and convergence will be central to the historical discussion of this study, when I reconstruct a number of structural innovations related to geocentric systems, and map their patterns of diffusion across the area (see §5.4).

2.3 A special paradigm of space directionals

Oceanic languages in general vary as to whether they express directional meanings using motion verbs (e.g. 'go up', 'go down') or directional particles ('up', 'down'). Ross (2004, 2007: 269) suggests Proto Oceanic may have had lexemes with dual membership, e.g. **sipo* was both a verb 'go down' and a particle 'down'.

The languages of northern Vanuatu distinguish lexically between three word classes: they have directional verbs (e.g. Mwotlap *hēw* 'descend, go down'); directional adverbs (Mwotlap *tēqēl* 'downwards'); and a separate word class of directional particles (Mwotlap *hōw* 'down'). Although the three categories can perfectly combine in the same clause (e.g. *hēw tēqēl* ***hōw*** 'go down'), the default strategy is to encode vectors using just the directional particle (e.g. *van* ***hōw*** 'go down', with *van* 'go'). This study will occasionally mention directional adverbs (§2.4.2, 4.1.2), but its main focus will be the systems of directional particles – or "DIRECTIONALS" for short – as they have properties of their own.

Space directionals are pervasive in discourse, both in daily conversation and in narratives. To take the example of Mwotlap, a selection of 52 narratives from my transcribed corpus has 9936 clauses, and 89,386 words. In that corpus, I numbered the tokens of space directionals to be 7187 in total:[9] this may be interpreted by saying that 72.3 percent of clauses include a space directional; or that on average, a directional is present once every 12.4 words in connected speech.

Grammatically, directionals form a subset of the larger class of *locatives*. As such, the syntactic functions of Torres–Banks directionals may include that of locative predicate (of the type *She's* DOWN *in the cellar*), of verb modifier (*he walked* DOWN *to the lake* – see (3) below), and of NP modifier (*the people* DOWN *there* – see (4) below). While the morphosyntactic profile of directionals is generally parallel in all languages in the region, there are also some language-specific peculiarities which will be mentioned here when relevant.[10]

Semantically speaking, the primary function of directionals is to construct a spatial path or vector. Sometimes, this vector reflects the direction followed by (a participant in) the reported event itself – as is the case in (3), from the language Lehali:

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[9] Broken down to individual morphemes, the results are: *me* 'hither' 2136; *van* 'thither' 2583; *hag* 'up…' 719; *hōw* 'down…' 724; *hay* 'in…' 491; *yow* 'out…' 534. Note that these statistics do not distinguish between the geocentric and the non-geocentric uses of these space directionals when they are encoded by the same lexical form. Telling them apart in such a large corpus would be possible, yet would require a time-consuming analysis, carried out sentence by sentence.

[10] For example, the intricate morphology of directionals in Mwerlap will be described in an Appendix (§7.4).

(LHI.3)	Koyo	m-kal	***ila***	***ma***	l-eñ	ti	m-en	***how***,	ti	m-mutuy.			
	3du	PFT-cross	**in**	**hither**	in-house	then	PFT-lie	**down**	then	PFT-sleep			
	'They came (**in**) into the house, lay **down**, and fell asleep.'												[LHI.Stepmother.63]

In (3), the direction of the first motion event *kal* 'cross [threshold]' is encoded as 'inwards' (vector defined in topological, non-deictic terms) as well as 'hither' (vector defined in deictic terms). The second event *en* 'lie' is vectorised as a 'downward' movement.

These same directionals are also used to refer to static locations, in which case their role is to define a vector between the deictic centre ('origo') and that target location:

(LHI.4)	Qösö	lē-vno	***how***	e	tev	lavēt.
	HUM:PL	in-village	**down**	DX	IPFV	celebrate
	'People in the village **down** there are celebrating.'					[LHI.d12:12]

In (4), the directional *how* 'down' does not encode the direction of a motion event, but the orientation of the abstract vector that leads from the origo ('here') to the location referred to.

Whether directionals encode a motion path as in (3), or serve to identify a static location as in (4), their function is always to delineate a vector in a three-dimensional space.

2.4 The three semantic types of space directionals

Directional systems in northern Vanuatu are best divided into three types of coordinates: participant-oriented vs. topological vs. geocentric coordinates. I will describe them successively in this section, before I zoom in on the geocentric type.

2.4.1 Participant-oriented directionals

All 17 languages have a pair of directionals that can be conveniently glossed 'hither' and 'thither'. The forms are given in Table 3, with languages ranked geographically from northwest (Hiw) to southeast (Mwerlap).[11]

Table 3 — Pairs of participant-oriented directionals in Torres–Banks languages

	HIW	LTG	LHI	LYP	VLW	MTP	LMG	VRA	VRS	MSN	MTA	NUM	DRG	KRO	OLR	LKN	MRL
'hither'	**me**	**me**	**ma**	**me**	**me**	**me**	**me**	**ma**	**me**	**me**	**ma**	**ma**	**ma**	**ma**	**ma**	**ma**	**mē**
'thither'	**vën**	**vēn**	**van**	**van**	**va**	**van**	**wël**	**suwō**	**net**	**nat**	**at**	**at**	**āt**	**ät**	**at**	**at**	**ot**

The glosses 'hither' and 'thither' are but a convenient shortcut. To be more specific, the definition of these two directionals normally includes the reference to a *participant*, typically animate, which provides the target of the spatial vector. The pairs operate along a deictic divide that contrasts two general orientations, which may be labelled *egotropic*[12] vs. *allotropic*:

- gloss 'hither' = 'towards speaker': an *egotropic* direction, targeted towards the speaker, or a participant to which the speaker morally associates him- or herself.
- gloss 'thither' = 'towards non-speaker': an *allotropic* direction, targeted towards any participant that does not belong to the speaker's sphere.

[11] I thank Stefan Schnell (pers. com.) for confirming the Vera'a form for 'thither'.

[12] The term *egotropic* I am coining here ('motion directed towards *ego*') is distinct from the term *egocentric* we saw in §1.1 ('a set of spatial coordinates calculated on the basis of *ego*'s own position').

Ross (2007:269) reconstructs Proto Oceanic as a system with four distinct deictic verbs: 'come, towards speaker' (**mai*); 'go towards addressee' (**watu*); 'go to; away from speaker' (**lako*), and 'go away' (**pano*). Some of these etyma are reflected in the modern languages[13] (§4.7.2, §7.3.2), but the former four-member paradigm has been reduced to a binary contrast.

Participant-oriented vectors typically encode the directionality of a social event – e.g. transfer events like *give*, *show*, *speak*. They often translate in English as a dative, whether it is egotropic ('to me', 'to us') or allotropic ('to you', 'to her', 'to it'…). These words entail the instruction to retrieve a specific participant from the context, often without making it more explicit in the clause. Here are examples from Hiw and Dorig:

(HIW.5) R̄ōn̄ te ***me*** ne!
hear SUGG hither PROX
'Listen (to me)!' [LITER. Listen *hither*!] [HIW.d12:01]

(DRG.6) Vu! Na s-aqtē ***āt*** i tsi-k nēk s-gān ni?
god 1sg IRR-throw thither PERS same.sex.sibling-1sg 2sg IRR-eat 3sg
'Spirit! Shall I throw (you) my sister, so you can eat her?'
[LITER. Shall I throw my sister *thither*…?] [DRG.Daughters.30]

An important property of these participant-oriented directionals is that they come in complementary distribution with other types of directionals. François (2003) showed that Mwotlap has a consistent preference for the participant-oriented strategy whenever it is contextually available, i.e. whenever a given vector can be construed as oriented towards a specific participant: see *van* in (7). As for purely spatial directionals (either topological or geocentric), they are reserved for those vectors that are not directed towards any specific participant – like *hay* in (7').

(MTP.7) Hayveg ***van***.
enter thither
PARTICIPANT-ORIENTED STRATEGY:
'Go in! (towards him/her/them)' [suggests someone is inside]

(MTP.7') Hayveg ***hay***.
enter in
TOPOLOGICAL STRATEGY:
'Go in!' [suggests nobody is inside]

Participant-oriented directionals do not normally take up any geocentric meaning. One exception is Hiw (Table 2 p.140), in which *vën* means both 'thither' and 'southeast on land': I will explain this polysemy later in this paper (§4.7.2, 5.2.2). Otherwise, these participant-oriented directionals will not be discussed any further: they were presented here because they form part of the same closed set of directionals, and contrast paradigmatically with the purely spatial ones. The vast majority of geocentric directionals find their source in the *topological* domain.

[13] The entire area has kept reflexes of **mai* for 'hither'. As for 'thither', the first six languages (HIW to MTP) reflect **pano*; the last nine (VRS to MRL) reflect **watu*.

2.4.2 Topological directionals

The category of TOPOLOGICAL directionals deserves to be presented for itself, before we examine how they have also developed GEOCENTRIC uses.

As far as northern Vanuatu is concerned, the domain of topological directionals includes two pairs of vectors. The pair *in—out* is defined by reference to a closed shape interpreted as a container or enclosure: house, canoe, basket, pocket, etc. The second pair *up—down* is defined with reference to the vertical axis.[14] Table 4 provides the forms of the topological directionals for the 17 Torres–Banks languages.

Table 4 — Topological directionals in Torres–Banks languages

	HIW	LTG	LHI	LYP	VLW	MTP	LMG	VRA	VRS	MSN	MTA	NUM	DRG	KRO	OLR	LKN	MRL
'in'	**iy**	**il**	**ila**	**say**	**ha**	**hay**	**sar**	**sar**	**sar**	**sar**	**sage**	**sa**	**sag**	**sa**	**saa**	**hag/** roka	**sar**
'up'	**vēn**	**vin**	**vēn**	**sa**		**hag**	**sag**	**sag**	**siag**	**sag**							**seag**
'down'	**uw**	**iw**	**how**	**sōw**	**hō**	**hōw**	**sōw**	**suwō**	**sōw**	**sōw**	**swo**	**ror**	**ror**	**ror**	**roy**	**hōw/** rōkōw	**sōw**
'out'	**rōw**	**rōw**	**yow**	**yow**	**yo**	**yow**	**row**	**rōw**	**rōw**	**row**	**rowo**						**row**

Most of the systems have four topological directionals. Mwesen is such a language:

(MSN.8) E Qet ni le o gepen no, mop *kal* ***sag*** le ak.
PERS (hero) 3S:AO take ART sail DEF put upwards **up** LOC canoe
'Kpwet took the sail and put it **up** on the canoe.' [MSN.Qet.031]

(MSN.9) Me rov~rov o parpar, qēs ***sōw*** le qiti ak no.
PFT IPFV~raise ART axe smash **down** LOC head canoe DEF
'He raised his axe, and smashed it **down** onto the canoe's prow.' [MSN.Qet.085]

(MSN.10) Kal *telñor* ***sar*** le gemel, nē ni on le tenepa-n.
cross inwards **in** LOC dwelling 3sg 3S:AO lie LOC bed-3sg
'He walked **in**to his dwelling, and lay down on his bed.' [MSN.Varvang.50]

(MSN.11) Ni o—o~on le lo gemel, ni row *lō* ***row*** le sar.
3S:AO DUR~lie LOC inside dwelling 3S:AO rush outwards **out** LOC clearing
'He remained in his home for a while,
but suddenly rushed **out** to the frontyard.' [MSN.Varvang.47]

While this study focuses on the paradigm of directionals proper, these examples also give us the opportunity to notice, in passing, the optional presence of *verb-modifying adverbs* with similar semantics: *KAL sag* in (8); *TELÑOR sar* in (10); *LŌ row* in (11). The function of these adverbs is only to specify the path of a motion event, never to define a static location – contrary to directionals which can have both functions (§2.3). These verb modifiers are not

[14] In the terminology used by Levinson (1996b) and illustrated in Figure 1 above, the term "topological" only refers to the first of these pairs (*in—out*), whereas the vertical dimension is treated separately. However, the languages of northern Vanuatu treat the two pairs of directionals as members of a single subparadigm, and it is therefore legitimate to group them under a single category, for which the label 'topological' is well adapted. Levinson himself (1996b:360) acknowledges that "the VERTICAL dimension is special in various ways and is an angular specification that creeps into essentially nonangular TOPOLOGICAL specifications" (my emphasis).

attached to any spatial strategy in particular: for example, the one glossed ‘upwards’ (*kal* in Mwesen) can be used with a vertical meaning, but also with the geocentric functions attached to ‘up’, such as the cardinal ‘up’ pointing to southeast (§3.3). When adverbs and directionals are used in the same clause, the normal situation is for them to semantically align (‘outwards’ with ‘out’, ‘upwards’ with ‘up’…) with only a few exceptions (François 2003: 426). This observation will be useful later in this study, when directional adverbs meaning ‘crosswise’ help us confirm the semantics of the directional glossed ‘across’ in the languages of Gaua (§4.1.2).

As Table 4 shows, some languages have fewer than four topological directionals. In the case of Volow, a language variety very close to Mwotlap, the collapse between ‘in’ and ‘up’ seems to be due to a more general pattern of morphological truncation which has deleted the final consonants of all the directionals (**hōw* → *hō*; **yow* → *yo*; **van* → *va*). This has resulted in the loss of distinction between ‘in’ (**hay* → *ha*) and ‘up’ (**hag* → *ha*) – see also §4.4.1.

This accident of historical morphology in Volow contrasts with the situation in the five languages of Gaua, for which the colexification[15] is systematic, on the one hand, between ‘in’ and ‘up’; and on the other hand, between ‘out’ and ‘down’. Only the context makes it clear which of the two coordinate axes is being meant in a particular utterance. To take an example from Olrat, the directional *saa* corresponds to a vertical ‘upwards’ movement in (12) (cf. ‘lift’, ‘lintel’); but in (13), it means ‘(look) inwards’:

(OLR.12) Ni mō sēj rakat ni ***saa*** lē mataalol.
3sg PFT hang lift 3sg **up**/in LOC lintel
‘He hanged (the ogress) **up** above the doorway.’ [OLR.Ogress.082]

(OLR.13) Nōrō tē pipira ti nōtam, nōrō mō pipleñ ***saa*** lē vuvuy.
3du IPFV$_1$ play IPFV$_2$ outside 3du PFT peer up/**in** LOC house
‘As the two boys were playing outside, they looked **in**to the house.’ [OLR.Eel.36]

In a similar way, the reverse polysemy characterises the Lakon directional *hōw* ‘down/out’: in (14), it is used vertically to mean ‘down’, but in (15) it refers to an outward movement:

(LKN.14) Ni tē tärä rägä neñ tē sēv ***hōw*** lē tanē.
3sg SEQ chop tree DEF SEQ fall **down**/out LOC ground
‘He chopped the tree, which fell **down** on the ground.’ [LKN.d07:03]

(LKN.15) Ni ’n sapläg tōpō-n ni tē rowol ***hōw*** matum̄ä.
3sg PFT carry.child grandchild-3sg 3sg SEQ cross.door down/**out** frontyard
‘She took her grandchild in her arms and walked **out** to her frontyard.’ [LKN.d02:28]

This pattern of polysemy is also found in a number of other languages in the Oceanic family. For example, Ozanne-Rivierre (1997:86; 1999:79) reports that in languages of New Caledonia, “the up/down oriented axis is used to express (…) *inside the house* vs. *outside the house* and, when one is inside the house, *towards the interior of the house* vs. *towards the door*.” Historically, it is likely that these colexifications ‘up/in’ and ‘down/out’ were characte-

[15] The concept of *colexification* refers to the case when a language lexifies two or more senses with the same form (François 2008): for example, Olrat colexifies ‘up’ and ‘in’ using a single form *saa*. I will comment on this concept again in §2.4.5 below.

ristic of Proto Oceanic itself. Indeed, Ross (2007) does not reconstruct any form for '(go) in' or '(go) out', and states "It is reasonably clear that the 'inside'/'outside' opposition found in European languages did not occur in POc" (2007:255). I would reword this idea by saying that the contrast *inside—outside* did in fact exist for Proto Oceanic speakers (as witnessed with other parts of speech, e.g. **lalom* 'inside', **lua* 'outside': Ross 2007:235, 240), yet within the paradigm of *directionals*, the contrast was lexified using the same directionals as *up—down*, respectively ***sake*** '(go) up' and ***sipo*** '(go) down'.

As for the etyma **saro* 'in' and **rowo* 'out' which can be reconstructed for the Torres–Banks area (see §7.3), they do not seem to be attested anywhere else in Oceanic languages. All this suggests that the languages of Gaua, with their two-term system 'up/in' vs. 'down/out', may in fact be conservative of the system of Proto Oceanic – at least with respect to the topological subsystem of directionals.[16] The four-term systems showing separate lexification of 'in' and 'out', in turn, reflect a local innovation, which must have diffused across the whole Torres and Banks area, leaving Gaua untouched (§5.3.1).

Finally, Mota presents a hybrid and unusual situation. It shares with other Banks languages the innovative directional *rowo* 'out', yet it behaves like Gaua in lacking a specific directional for 'in', which it still colexifies with 'up':

(MTA.16) Tamate ilon ni me sarovag pata ***sage*** lele iw̃a.
ghost DEF 3sg PFT enter inwards up/**in** inside house
'The ghost came into the house.' [MTA.GhostSister.28]

This asymmetry in the topological domain will be reflected in the structure of Mota's geocentric system (§4.5.2).

More generally, the polysemies found in the topological system had some impact upon the semantics of the geocentric directionals from which they are derived. As we will see later, the lexical innovation whereby *in–out* directions came to be distinguished from *up–down*, was to be later harnessed in processes of relexification in the geocentric paradigm, as new distinctions were made possible (§4.2, §5.3.1).

2.4.3 Geocentric directionals

Northern Vanuatu languages resort to the geocentric strategy to encode horizontal vectors when the two other strategies (participant-oriented, or topological) are not contextually available. The principal axes found to operate in their geocentric domain include:

- a fixed cardinal axis oriented southeast–northwest
- a land–sea axis running orthogonal to the shore, employed on land or at sea
- an axis running parallel to the shore, whose general orientation (±90°) is either SE or NW
- an axis oriented *uphill* vs. *downhill*, and used in the higher areas of certain islands

On top of these geometric distinctions, some systems introduce lexical contrasts based on scale: for example, some have different directionals for 'towards SE' depending on distance.

These different vectors are not all encoded with separate forms, but show patterns of colexification, i.e. are grouped together under a single form. For example, we saw in §1.2 that

[16] Interestingly, we will see later that Gaua languages are also perfectly conservative when it comes to the geocentric subsystem of directionals (§5.1).

Dorig [Table 1] uses the same directional *sag* for 'in', 'inland' and 'parallel to shore, towards SE'; as for Hiw [Table 2], it lexifies differently 'in' (*iy*) from 'inland' (*ag*), but conflates lexically 'parallel to shore towards SE' with 'thither' (*vën*). In order to make these complex systems cross-linguistically comparable, I will follow a structural approach to polysemy (such as the one exposed in François 2008), and represent each potential vector as an atomic sense in an "etic grid"; this will enable us to observe how these senses are being grouped by each language, i.e. what are the *emic categories* created by each spatial system in this region.

Table 5 provides a synchronic overview of all directional systems in Torres and Banks Islands.[17] It contains the results of my empirical research, and the core of the present study.

All three domains of use are mentioned in the table: the rows numbered #1 and 2 reproduce the PARTICIPANT-ORIENTED directionals we saw above (see Table 3); those with shaded headings (#3, 7, 14, 18) correspond to the TOPOLOGICAL directions (§2.4.2); and all other rows correspond to the various GEOCENTRIC vectors which are lexified in these languages.[18] The rows are organised in such a manner that all the senses colexified in a given language should be adjacent in the table.[19]

For future reference, Figure 4 shows the correspondences between the different rows of Table 5 (number codes, marked with '#') and the vectors used on the graphic representation of directional systems (see Figures 2–3 p.141). Its objective is to facilitate the reading of Table 5, and associate each vector with the corresponding forms. For example, vector #5, "*inland (as used typically in the context of a coastal village)*", is lexified as shown in row #5 of Table 5: ***ag*** in Hiw, ***il*** in Lo-Toga, ***ila*** or ***la*** in Lehali, ***say*** in Löyöp, etc.

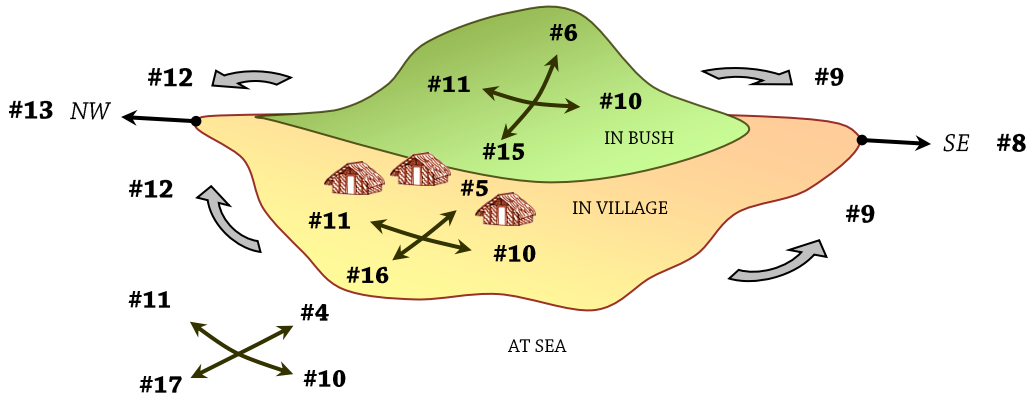

Figure 4 – An etic grid of spatial vectors relevant to the description of Torres–Banks geocentric systems (Number codes match the rows of Table 5).

[17] The first column indicates the system of Proto Oceanic, the common ancestor of the modern languages; it will be discussed later (§3.2, §5.1).

[18] The abbreviation "*// shore*" means 'parallel to the shore'.

[19] The only exceptions to this principle are: the row for 'thither', which shows certain polysemies in some languages (see §4.7.2); and the Hiw form *ag*, which is indeed idiosyncratic in its meaning (§4.7.3).

Table 5 – Systems of space directionals of Torres and Banks languages: the synchronic data
(Languages are ranked geographically from northwest to southeast)

	Proto Oceanic	*Hiw*	*Lo, Toga*	*Ureparapara*		*Motalava*		*Vanua Lava*				*Mota*	*Gaua*					*Mere-lava*
#	POc	HIW	LTG	LHI	LYP	VLW	MTP	LMG	VRA	VRS	MSN	MTA	NUM	DRG	KRO	OLR	LKN	MRL
1. *HITHER*	**mai*	me	me	ma	me	me	me	me	ma	me	me	ma	ma	ma	ma	ma	ma	mē
2. *THITHER*	(...)	vën	vēn	van	van	va	van	wël	suwō	net	nat	at	at	āt	ät	at	at	ot
3. ***IN***		**iy**																
4. *landwards (from sea)*		**ag**	**il**	(i)**la**	**say**		**hay**	**sar**	**sar**	**sar**	**sar**							**sar**
5. *inland (village)*															**sa ~ sag**		**hag ~** roka	
6. *uphill (bush)*	**sake*	**vēn**	**vin**	**vēn**		**ha**						**sage**	**sa**	**sag**		**saa**		
7. ***UP***																		**seag**
8. *towards SE (navig)*		**ag**			**sa**		**hag**	**sag**	**sag**	**siag**	**sag**							
9. *// shore to SE (far)*		**vën**	(i)**ag**	**ha**														
10. *// shore to SE (close)*								**wël**	**wōl**	**wōl**	**wol**							
11. *// shore to NW (close)*	**pano*											**vano**	**van**	**vak**	**vak**	**vak**	**päh**	**van**
12. *// shore to NW (far)*									*mul*									
13. *towards NW (navig)*		**uw**	**iw**	**how**	**sōw**	**hō**	**hōw**	**sōw**	**suwō**	**sōw**	**sōw**	**swo**						**sōw**
14. ***DOWN***																	**hōw ~** rōkōw	
15. *downhill (bush)*	**sipo*												**ror**	**ror**	**ror**	**roy**		
16. *seawards (village)*						**yo**	**yow**	**row**	**rōw**	**rōw**	**row**	**rowo**						**row**
17. *to ocean (from sea)*		**rōw**	**rōw**	**yow**	**yow**													
18. ***OUT***																		

2.4.4 Unity and diversity

It is not the case that these 17 languages define 17 different systems. The five languages of Gaua, for example, operate the same structural contrasts, regardless of whether the forms of their directionals are cognate or not. If one decides to distinguish directional systems on the basis of their structural contrasts rather than on the actual forms of their words, then one must conclude that the 17 languages of the Torres–Banks islands define a total of nine different systems of geocentric space reference.[20]

The present study intends to highlight and explain the structural diversity found in the region. The Torres and Banks languages alone constitute a microcosm of the diverse space systems that have been reported for the Oceanic family as a whole (Palmer 2002, François 2004). More cross-linguistic surveys would be welcome to assess whether any other area in the Pacific, or elsewhere, can be found to have so many distinct space configurations for such a small population.

That said, the various systems displayed in Table 5 also show a family resemblance, and one may be sensitive to the amount of characteristics that are shared by all these languages. This basic similarity is made clear by the possibility to chart all the systems on a single *etic grid* (the leftmost column of Table 5), and to represent them on the same background diagram (Figure 4). The profound unity of geocentric reference in the region will be particularly obvious in Section 3, as we examine the way geocentric reference works on the navigational scale.

2.4.5 On glossing and polysemy

In terms of glossing, these uninflected, usually monosyllabic directionals are appropriately rendered by English particles such as *up*, *down*, *in*, *out* – at least for their topological meanings.

Throughout this paper, interlinear glosses in example sentences will usually indicate a directional's "literal" or non-geocentric sense (e.g. 'up', 'out', 'across'…), even in those cases when it is used with a geocentric value. As for the geocentric meaning, it will be clarified in the free translation that follows. Here are examples from Dorig and Mwotlap:

(DRG.24) Nēk so sō *swēl* lala mlē ***ror*** le lam ni.
2sg POT$_1$ paddle downwards POT$_2$ also **down** LOC deep.sea INSTR
'You can even paddle it further *down* (=*oceanwards*)
towards the deep sea.' [DRG.d07:14]

(MTP.28) No m-et nō-mōmō ni-sey ***hay***, ni-sey ***yow***.
1sg PFT-see ART-fish 3sg-move.in.shoal **in** 3sg-move.in.shoal **out**
'I saw a shoal of fish moving *in (=landwards)*,
and suddenly moving *out (=oceanwards)*.' [BP5-34a]

This choice of presentation is partly motivated by the mere convenience of short glosses, to avoid cluttering the gloss line with such long strings as 'down/oceanwards' or 'in/landwards'. But the main motivation is the very point of this study, which is to observe the

[20] If one includes the directional *mul* which has been reported for the language Vera'a, the number of distinct geocentric systems might even rise to ten – see §4.4.2.2.

connections that languages draw between geocentric and non-geocentric meanings; the combination of literal glosses and free translations should help the reader see the patterns more readily than if each line of translation used only geocentric glosses.

This choice does not mean, however, that I believe ***yow*** in Mwotlap synchronically only means 'out', as though modern speakers just had to derive spontaneously its geocentric meaning 'oceanwards' from its literal, topological meaning. As the contrast between Dorig and Mwotlap shows, the link between a geocentric sense and a specific directional is conventionalised differently in each language, and non-predictable. Directionals like *ror* or *yow* form cases of POLYSEMY rather than monosemy: their geocentric and non-geocentric meanings are both language-specific, and are stored independently in the lexicon. Were it not for the purpose of this study, it would otherwise be legitimate to gloss *ror* in (24), and *yow* in (28), with the geocentric meaning they have in that context, namely 'oceanwards'.

The precise nature of the psychological link between topological and geocentric meanings is not a simple matter. Sometimes it is self-evident: for example, when Hiw uses *up* and *down* for *uphill* and *downhill* on the island's slopes (Figure 3 p.141), one could question whether it even makes sense here to distinguish topological (*up* on the vertical axis) from geocentric (*up* supposedly defined on the "horizontal" plane), since in this case they simply coincide. Such a configuration could be analysed as a case of monosemy.

But we'll also meet the reverse case, where the connection between the two meanings has clearly been lost in the minds of speakers. Thus, when Mwotlap speakers employ *up* on the horizontal plane for southeast directions parallel to the coast, they are evidently unable to draw any semantic link with their vertical *up*; for all purposes, they treat this case as they would mere homophones. That certain patterns of correspondences have become psychologically arbitrary can become manifest in speakers' errors or hesitations (§3.4.2), or in historical processes of lexical splits (§4.6, 5.3.2).

In sum, when the same directional encodes both geocentric and non-geocentric uses, it is sometimes difficult, not to say purely speculative, to decide whether we are dealing with a case of monosemy, polysemy or homophony. To avoid this problem – which is not essential to our investigation anyway – I prefer using the neutral concept of *colexification*, which is precisely agnostic in this respect (François 2008:166). Throughout this study, I will for example observe that a given directional form in a certain language "colexifies" (i.e. can correspond to) a number of different meanings, without needing to take sides on the cognitive relationship between these meanings.

3 The navigational scale and the NW–SE cardinal axis

3.1 Local scale vs. navigational scale

In accordance with earlier studies of similar Oceanic systems (Ozanne-Rivierre 1997; Hyslop 2002; Palmer 2002:128; François 2004; Ross 2007:229), it is necessary to draw a preliminary distinction between two scales of geocentric reference, as they typically involve distinct directional subsystems.

On the one hand, the LOCAL SCALE corresponds to those vectors, locations and directions, that belong within a radius of about 200 meters around the origo – most often in the setting

of the village. On the other hand, the NAVIGATIONAL SCALE corresponds to long-distance vectors, prototypically those defined at sea, or across islands.

This section focuses on the navigational scale, and in particular the use of the cardinal axis oriented NW–SE. The local scale will be the focus of section 4. As for the INTERMEDIATE SCALE – the one that involves, for example, the distances between two villages on the same island – it essentially pertains to the navigational domain, yet its anchoring on land entails some specific characteristics distinct from its use across islands; Section §3.4 will examine how languages adapt the cardinal axis to the shape of islands.

3.2 The navigational scale in Oceanic languages

Based on earlier scholarly work, François (2004) proposed a systematic comparison of sixteen Austronesian languages (including Mwotlap) and their space systems, and outlined their commonalities and differences; these will be summarised here.

Oceanic languages show remarkable consistency regarding the navigational scale. Virtually every Oceanic language employs a single cardinal axis that is oriented *northwest — southeast*. Everywhere, this single cardinal axis is lexified *up* (southeast) vs. *down* (northwest), using the terms used for vertical coordinates. Modern speakers are unable to explain the reason for such a pattern. Some scholars have suggested a possible connection with the rising and setting of the sun; however, both the orientation of the axis (SE–NW rather than E–W) and the semantics of the *up–down* contrast argue in favour of an alternate analysis in terms of winds (Ozanne-Rivierre 1997:85; François 2004:11). In the terminology of ancient Oceanic navigators, the difficulty of sailing against the southeast trade winds was assimilated to travelling 'upwards', as opposed to the easy 'downward' navigation that was done towards northwest, following the wind.[21] In other words, the vertical terms *up* and *down* in Oceanic languages were given the same semantic extension as the one found with English *upwind* and *downwind*. In the remainder of this paper, I will occasionally refer to the terms *up* and *down* of this cardinal axis using their English glosses *upwind* and *downwind* – even though the original connection with seafaring terminology has been forgotten by modern speakers.

Based on this observation of modern Oceanic languages, François (2004) reconstructed the space system of Proto Oceanic. As far as the navigational scale is concerned,[22] a single cardinal axis oriented NW–SE was lexified using the vertical terms **sipo* '(go) down' and **sake* '(go) up' – see Figure 5. In such a navigational system, the world is divided in two halves: with respect to any point in the South Pacific, all islands located in the northwest half will be located 'down', and those located southeast will be 'up'. This pair was possibly supple-

[21] The archaeologist Geoffrey Irwin has highlighted the key role played by the *upwind—downwind* contrast in the sailing strategies of the Lapita navigators who peopled the Pacific islands. In his view, they consistently favoured an "upwind trajectory" by sailing southeast, following the "northwesterly winds of the summer monsoon" (NW→SE); in case they became lost in the ocean, they always had the option of letting the prevailing trade winds (SE→NW) push them back to their point of origin, "downwind". "Evidently, the migration trajectory was against the trade winds. […] Lapita migrants did not know what land was to be found to the southeast; however, they would have known that, by searching in that direction using monsoonal westerlies, they would maximise their chances of returning safely with the trade winds" (Irwin 2006:72-73).

[22] The system of Proto Oceanic on land will be discussed in §5.1.

mented by the verb **pano* 'move in a transverse direction' (Ross 2007:279) for directions that were neither 'up' nor 'down'.

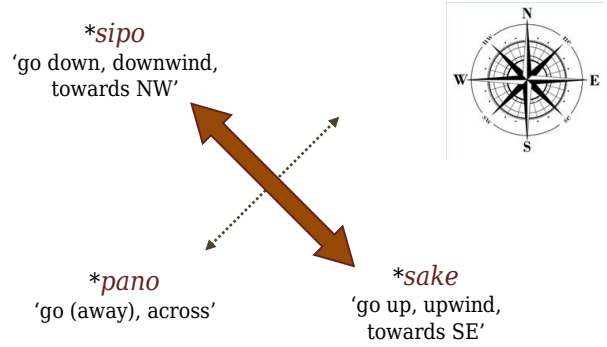

Figure 5 — The unique cardinal axis of Proto Oceanic (after François 2004:20)

3.3 The cardinal axis in northern Vanuatu

The 17 Torres and Banks languages have preserved the cardinal axis of their ancestors. Everywhere, it takes the form of a single axis oriented NW–SE, and lexified using the vertical directionals 'down' and 'up'.[23]

In order to limit the impact of a particular island's local topography, the best way to observe this cardinal axis is done by locating oneself on one island, and pointing towards other islands. Figure 6 illustrates the situation that obtains for a speaker of Löyöp on Ureparapara, with its pair of directionals *sa* 'up' vs. *sōw* 'down'.[24] The directional *sa* 'up' is used when pointing to any island located in the southeast half of the world; *sōw* 'down' when pointing northwest.

Occasionally, this NW–SE orientation of the cardinal axis shows up in the toponymy. Thus in the Hiw language (Torres Islands), the traditional name given to the Banks group is *Sag*, etymologically from POc **sake* 'up':

(HIW.17) Ne ya-ne pe "ne tapego te ***Sag***".
ART name-3sg FOC ART mat from Banks
'It is called the *mat from the Banks Islands*.' [HIW.Hades.48]

The very name of the island *Hiw* etymologically means 'down' (**hiw* < POc **sipo*). Indeed, from the perspective of the other islands with which Hiw people commonly interact, travelling to Hiw always means heading 'northwest', i.e. *down* on the cardinal axis.[25]

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[23] In one case, the semantic connection between 'up' and 'southeast' is only etymological: see §4.6, 5.3.2 for Lehali, Lo-Toga and Hiw.

[24] See similar maps in Hyslop (2002:49) for Ambae, François (2003:433) for Mwotlap.

[25] The languages of Vanikoro, an island of the Solomons located just north of Hiw, use their cardinal axis in much the same way as Torres–Banks languages (François 2009:117). In the main language Teanu, the term *Iura* – literally 'upwards' – designates the Torres–Banks group and the rest of Vanuatu further south. The capital Honiara, as well as other places located NW from Vanikoro, are located 'down' (*tev' tawo*).

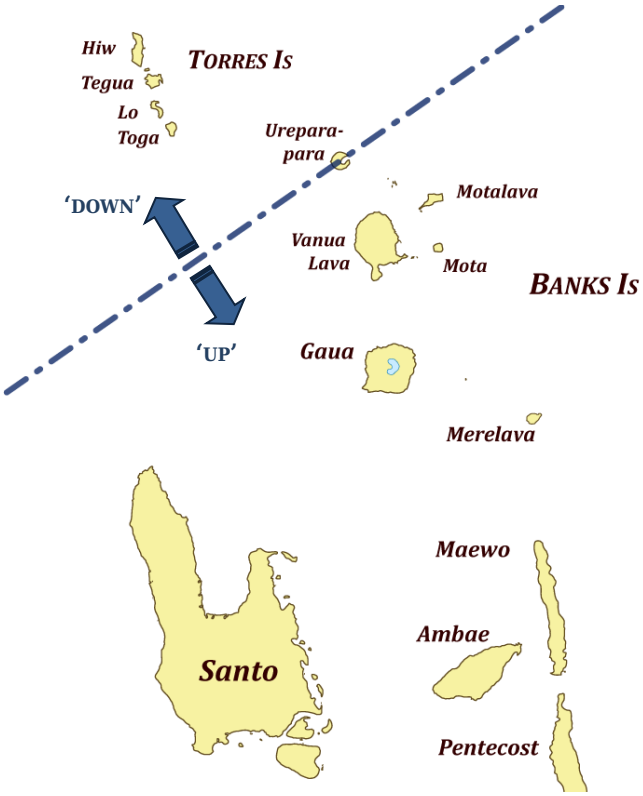


Figure 6 — The cardinal axis for referring across islands: 'up' and 'down' directions for a speaker located on the island of Ureparapara

One occasion when these cardinal directionals are mentioned is in traditional narratives. For example, the famous mythological hero Qat (cf. François 2013:220) left his home on Vanua Lava, and sailed *down* to Vava – the ancient name of the Torres Islands – where he bought the Night; then he sailed back *up* to his island. Likewise, the origin myth of the yam as it is told in the Torres Islands tells how it grew in Hiw, and how its creeper vine went *up* to the Banks, all the way *up* to Pentecost and Malakula in the south.

These narratives, combined with everyday conversation about people's travels, constitute the context in which knowledge of the *up–down* cardinal axis is transmitted from one generation to the next. Indeed, while scientific investigation can demonstrate the historical link between this axis and the main trade winds that used to be so significant to ancestral navigators, this association of directionals with winds has today been lost virtually everywhere in north Vanuatu, where long-distance voyaging practices have long gone out of use. Speakers on Motalava grow up in a social environment where the island of Gaua is always associated with the directional 'up' (***hag*** *Alkon*), and Ureparapara always with 'down' (***hōw*** *Nōybaybay*), following patterns of lexical collocation which are entrenched in discourse, and repeated as such. Knowledge of the most frequent collocations allows them to abstract away a general orientation of the *up—down* axis, without ever having to refer to the direction of the wind, the sun or any other bearing other than actual islands and places.

Like the European cardinal directions, the cardinal axis is unbounded. On the 'up' side are all the other islands to the south, including the towns of Santo and the capital Vila. Western countries – France, Britain, Australia, Japan… – are all located 'up' (Mwotlap *van* ***hag*** *Japan* 'travel *up* to Japan'), even when their actual location is northwest from Vanuatu. While this is

a paradox if one looks at a map, the explanation simply has to be sought in the geography as it is *perceived* by social actors. Indeed, the common experience of Torres–Banks people is that the only way to go to or come from these foreign countries involves a trip via the capital Port Vila, which is located south: anyone leaving the island in order to go abroad will first have to head south, i.e. 'up'. By contrast, the Solomon Islands – the only foreign country which can notoriously be reached by sea travel, heading northwest – will be located 'down' (e.g. Hiw *Take-siw-**uw*** 'the Solomons, LITER. the side that goes *down*'; Mwotlap *van **hōw** Bekyepnō* 'travel *down* to the Solomons').

3.4 Adapting the cardinal axis on land

The use of the cardinal axis at sea, or across different islands, is straightforward: everywhere, the axis is oriented NW–SE. Things become more intricate on land. Section 4 below will examine the different systems on the *local* scale, i.e. the directionals used for short distances (e.g. within a single village); as we'll see, some languages make use of the cardinal axis in that context, while others do not. But first I propose to discuss not the local scale, but the "*intermediate*" scale: namely, those directions that still involve long distances, yet take place within the same island.

Long-distance navigation within one island is expressed essentially using two axes. The most salient axis on land is the *land–sea* axis, a variable direction that radiates from the centre of the island, in all directions, towards the sea. If I am standing in an inland hamlet and I refer to a village down on the coast, chances are I will be using the directional for 'seawards' – either *out* or *down*, depending on the language – and vice versa. But villages on one island tend to be typically located on the same altitude, whether along the coast or on a plateau. In this case, the type of vectors needed to encode the direction from one village to another will involve vectors *parallel to the shore*, on what may be called the COASTAL AXIS. All Torres–Banks languages express these directions using the cardinal axis *up–down*. The corresponding forms can be seen in Table 5 (p.151), on rows #9 and #12. These can be compared, respectively, with rows #8 and #13: in almost all languages, the cardinal terms used for long distances on land are identical – not too surprisingly – to the ones used at sea.[26]

3.4.1 Skewing of cardinal directions on land

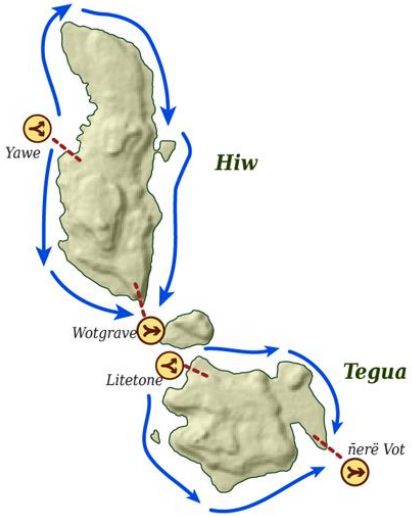
In principle, the cardinal axis on land should have the same orientation, in compass terms, as the NW–SE axis that is used *across* different islands (§3.3). However, one major difference is that, on land, spatial orientation is preempted by the contrast between *land* and *sea*: due to its high perceptual salience (Palmer 2002:114), the *land–sea* axis is always the primary axis of the orientation system. As for the cardinal axis, it only receives a secondary status on land (François 2004:12-14): its orientation is always redefined so as to run orthogonal to the main land–sea axis. For long distances, the *coastal axis* thus follows the definition in (18).

(18) COASTAL AXIS = cardinal axis NW–SE
± the amount of skewing (<90°) needed for it to run orthogonal to the land–sea axis, i.e., parallel to the shore.

[26] The only exception is Hiw, which has *ag* for cardinal SE across islands, but *vën* (lit. 'thither') for cardinal SE on land (see also Figure 3 p.5). I will come back to this complex system in §4.7.

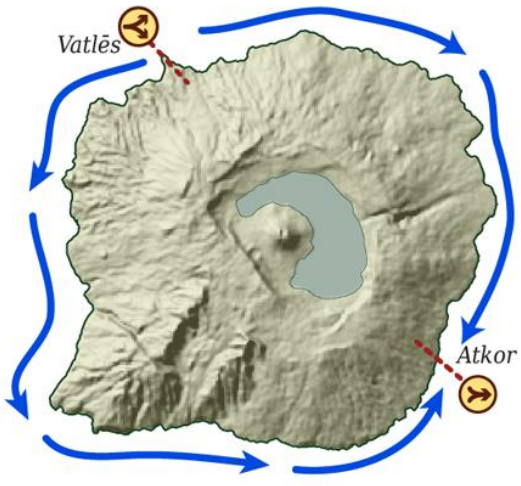
The necessary skewing explains why the directional 'up' can point due South in some points, due East in others, or even ENE or SWS elsewhere. The following maps indicate the orientation of the cardinal axis *up–down* on the eight main inhabited islands of the Torres and Banks area. All arrows point towards cardinal *up*; cardinal *down* is not indicated, as it simply corresponds to the reverse direction along the same arrows. The other symbols I use will be explained below.

Collecting this sort of navigational data often involved walking along the paths of each island, asking my companions for the directions of different villages from various points. I would also pay attention, in daily conversation, to the way people described their journeys or mentioned other villages, as in examples (4), (30), (35).



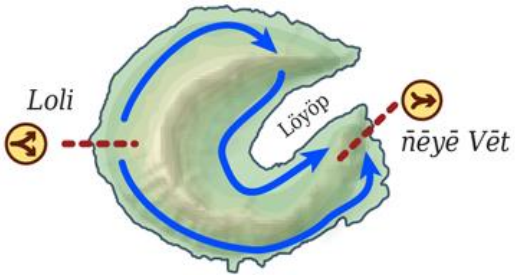
Map 2 – UP[wind] directions in **northern Torres Is**

Map 3 – UP[wind] directions in **southern Torres Is**

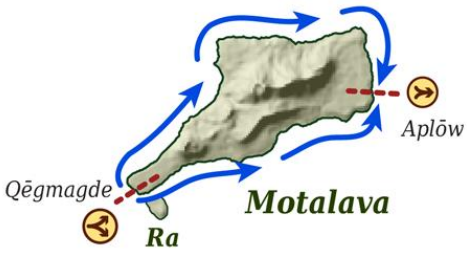


Map 4 – UP[wind] directions on **Gaua**

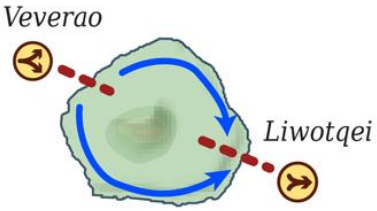
Map 5 – UP[wind] directions on **Vanua Lava**



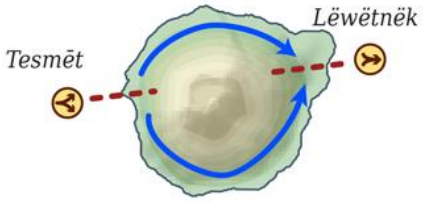
Map 6 – UP[wind] directions on **Ureparapara**



Map 7 – UP[wind] directions on **Motalava**



Map 8 – UP[wind] directions on **Mota**



Map 9 – UP[wind] directions on **Merelava**

3.4.2 The paradox of cardinal convergence and divergence

The maps above make use of two adhoc symbols:[27]

focus of convergence of two DOWN cardinal directions;
= focus of **divergence** of two UP directions

focus of **convergence** of two UP cardinal directions;
= focus of divergence of two DOWN directions

Figure 7 shows what a *focus of convergence* looks like on the ground: two directionals referring to the same cardinal coordinate (here *up* for 'southeast'), yet adapted so as to fit onto two different portions of the coast, converge at a particular point. Atkor on the island of Gaua, for example, is a place where two *up* directions converge; by the same token, it is also a place where two *down* directions diverge.

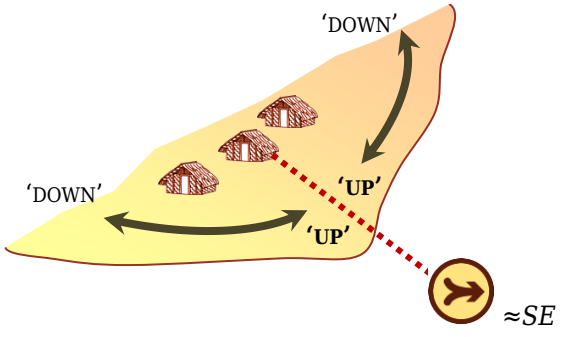


Figure 7 – A focus of cardinal convergence

[27] For the sake of consistency, I follow everywhere the arbitrary convention of choosing the UP direction as the reference. This is why the first of these two icons represents *divergence*, and the second one represents *convergence*.

The geographical nature of these foci of cardinal convergence is diverse: some refer to capes and promontories (e.g. *Wotgrave*, *Ñerë Vot*, *Ñēyē Vēt*, *Ñus Ñereqō*…), others to hamlets or villages (e.g. *Liwotqei*, *Tesmēt*, *Loli*, *Qēgmagde*, *Päk*…). As for their location, it follows a rule which is apparently simple, yet is often far from obvious for people on the ground. The default locations of the *down* focus and the *up* focus are, respectively, at the *northwest* and *southeast* tips of an island. This is typically true of round islands (Mota, Gaua, etc.), whose circular shape favours the default case. But if the geography of the island displays a prominent feature (cape, promontory) that is not exactly located on the NW–SE axis, then this feature tends to attract the focus of convergence, resulting in its apparent skewing with respect to compass terms. This is visible on Merelava, where the eastern cape of Lëwëtnëk skews the axis towards ENE; on Ureparapara, where the southeastern cape of Ñēyē Vēt has locally forced the cardinal axis almost into a NE direction; on Motalava, which is oriented WSW–ENE instead of NW–SE; and so on. The language Lo-Toga, which is spoken on two different islands, is well-behaved on the island of Lo, yet quite skewed on neighbouring Toga. In spite of the rotation observed, it can always be shown that the system's cardinal axis remains underlyingly NW–SE, even when it is oriented otherwise in the community's main territory (see François 2003:426-434 for Mwotlap). As a rule, the rotation of the axis never shifts more than 90° away from the underlying SW–NE cardinal axis.

The mechanism of these foci of convergence results logically from the combination of two elements: a single cardinal axis with a binary contrast *up–down*; and a principle specific to its use on land, whereby this axis must be redesigned so as to always run parallel to the shore. However, from the perspective of an individual walking along the coast, these points of cardinal convergence constitute paradoxes, as they entail that two opposite directions will make use of the very same cardinal directional. This is a paradox not only for outsiders, but also for the islanders themselves, who are sometimes confused, or amused, by these tipping points where both directions along the coast are 'up', instead of the normal situation in which one way is 'up' and the other way 'down'. The configuration would not be so unusual if we were dealing with VERTICAL *up* and *down*: indeed, someone on the top of a hill crest will have no difficulty realising that all directions radiating from that point are located 'down'. But in the case of CARDINAL *up* and *down*, it appears that modern speakers never draw any connection, even metaphorically, with verticality – as they would do if the island were somehow assigned a "conceptual slope" (Levinson 1996b:371) with a cardinally "highest" and "lowest" points. The connection that existed in the past – the metaphor behind *upwind* and *downwind* as used by ancestral sailors – has long fallen into oblivion. Moreover, some islands impose a cognitive dissociation between the abstract NW–SE cardinal axis of the navigational scale, and the direction of the cardinal axis when mapped onto the shoreline: for example, if Mwotlap speakers are asked to show the direction of *up* (*hag*), they will not point in the same direction if the question means 'on Motalava island' or 'between separate islands'.[28]

[28] Hyslop (2002:64) reports a similar mismatch for the island of Ambae further south (see Figure 6): "the absolute distinction made when describing motion within the island [is essentially SW vs. NE]. Note that the distinction made for travel between islands is on a different axis, with islands to the south and east distinguished from those in the north and west." While she describes this mismatch as "a curious variation in the division of absolute direction", I believe it reflects a situation very similar to the case of Motalava, with ultimately the same underlying NW–SE cardinal orientation. This is

This double dissociation (coastal ≠ cardinal ≠ vertical) means that modern speakers are often left with no clues for inferring how exactly they are supposed to use their coastal axis – in particular, where on the coast they are supposed to reverse the coastal directionals. Today, the mapping of cardinal *up* and *down* on flat terrain is perceived as an arbitrary convention which has lost any natural motivation, an arcane aspect of the language that is often commented upon, as it needs to be learnt on a case-by-case basis. Witness to this arbitrary nature are the many discussions I heard, during my surveys, among speakers who were disagreeing on which directional should be used on certain segments of the shoreline – typically, those located in unfamiliar areas of an island, where directions have to be extrapolated from more familiar settings. For instance, speakers of Vera'a or Vurës, who are used to locations on the west coast of Vanua Lava, are often puzzled when they have to adapt their systems to the east coast, upon visiting the administrative center of Sola. Younger speakers, accustomed to using 'up' (*siag*, *sag*) as they walk along the south coast in a counterclockwise direction (Map 5 p.158), spontaneously extend it to the eastern coast, until a more experienced speaker corrects them, and explains where the directions must be reversed.[29] I once heard a Mwesen speaker comment, with amusement, on the "strange" way in which some of his Vurës neighbours employed directionals on the east coast:

(MSN.19) I rate ta Vures nēr ga tul~tul ga mēnē sasa.
ART PL from Vurës 3pl STAT orientate~HAB STAT DIMIN strange
'Vurës people have a rather weird way of orientating themselves.'
(= of using their geocentric directionals) [EP1-23a]

The locations indicated on Maps 2 to 9 reflect my informants' conclusions after they would reach a consensus.

4 The local scale: Two canonical systems and their variations

Section 3 was concerned with the way in which the 17 Torres–Banks languages encode geocentric directions on the *navigational scale*, i.e. for space reference involving longer distances (rows #8–9, #12–13 in Table 5 p.151). In spite of apparent or superficial differences, the general observation was one of a profound homogeneity, as far as that scale is concerned, among all languages of the area. As we shall see now, the domain of the *local scale* presents much more cross-linguistic diversity, and defines nine different systems.

Languages differ in the way they lexify the land–sea axis (some use a contrast *up–down*, others a pair of directionals *in–out*), but also how they treat the coastal axis (some use the cardinal axis, others have a separate directional reserved for the local scale). Also, some

confirmed by the existence – apparent from her map of Ambae (2002:62) – of a focus of cardinal *up* convergence towards Lolosangga, on the middle of the eastern coast of the island.

[29] A handful of Austronesian languages have been reported to work around a "circular system", where directionals encode a *clockwise–counterclockwise* contrast (see Lichtenberk 1983 for Manam, Dixon 1988 for Boumaa Fijian). Such systems, which are rare (François 2004:15-16), are not found in northern Vanuatu.

languages have developed different subsystems depending on distance contrasts, or on location within the island – in the village vs. in the bush.

These systems will be described one after the other, in order of increasing complexity. The present section will start with Gaua (§4.1) and Mwotlap (§4.2), two equally simple yet quite distinct systems of the region. I will propose (§4.3) that Gaua and Mwotlap can be taken as two opposite "canons", with respect to which the more intricate space systems of northern Vanuatu can be described. Among these, Section 4.4 will examine Volow, southeast Vanua Lava, and Vera'a, three systems which are non-canonical mostly on their *coastal axis*. Section 4.5 will describe Löyöp, Mota and Mwerlap, three systems whose peculiarities lie mostly on the *land–sea axis*. Section 4.6 will describe the more complex system shared by Lehali and Lo-Toga, before Section 4.7 finally attempts to unravel the quirkiest of all languages in the region: Hiw.

The description will first adopt a synchronic point of view. It will be up to the final discussion of this study (Section 5) to propose a unifying diachronic hypothesis, so as to explain how such a diversity can have arisen historically.

4.1 Gaua languages: two *up–down* axes and a traverse

One of the two simplest systems of geocentric reference found in the Torres–Banks group is the one used on the island of Gaua – already mentioned briefly for Dorig (§1.3). As Table 5 showed, exactly the same structural organisation is found in the five indigenous[30] languages of this island: Nume, Dorig, Koro, Olrat, Lakon. The reader is referred to Figure 2 p.141 for a preliminary representation of the Gaua system, before I refine it below.

4.1.1 Two distinct up–down axes

An analysis of Figure 2 shows that Gaua languages use vertical directionals *up–down* for geocentric reference with two very different meanings.

First, these define the cardinal axis used on the navigational scale (§3.4), whether across islands (cf. rows #8, 13 in Table 5) or across distant villages spoken on the same island (rows #9, 12); this *up–down* pair originates historically in a contrast *upwind* vs. *downwind*. The same languages also use the vertical directionals on the local scale, both in the bush (rows #6, 15) or on the coastal area where most villages are (rows #5, 16); but this time, this encodes the land–sea axis. Here are some examples from Lakon and Nume:

(LKN.20) We gēē tē van *ajew* ***hag*** le vanō.
and 3pl SEQ go upwards up LOC village
'(They landed on the shore) and began to walk *up* towards the village.' [LKN.Qat:060]

(NUM.21) Bas nen, ni tov rev *tēqēl* wak ***ror*** le won.
end TOP 3sg SEQ pull downwards canoe down LOC sand
'Then he dragged the canoe *down* to the beach.' [NUM.d07:13]

In the language Lakon, the directionals *hag* vs. *hōw* have a free variant, respectively *roka* 'up' and *rōkōw* 'down':

[30] The community of about 400 Mwerlap speakers who have settled on Gaua use a different system, adapted from the one used on their home island: see §4.5.3.

(LKN.22) Nē ’n gih nē tē ol mē lē um̃ä ***rōkōw*** rek.
3sg PFT seize 3sg SEQ enter with.it LOC house down DIST
‘He grabbed (the knife) and brought it in that house *down* there.’ [LKN.d05:20]

(LKN.23) Magte neñ ēn hag suu *hōw*, ***roka*** neñ a Liwsal.
old.woman MED PFT sit downwards down up MED LOC Liwsal
‘The woman sat down in the river, *up* there[31] in Liwsal.’ [LKN.Origin.Lake.16]

The *up–down* pair not only encodes the direction from the hinterland to the coast (*uphill* vs. *downhill*), but also extends at sea along the same axis, to contrast ‘towards the island’ with ‘towards the open sea’ (rows #4, 17). Here is an example from Dorig:

(DRG.24) Nēk so sō *swēl* lala mlē ***ror*** le lam ni.
2sg POT_1 paddle downwards POT_2 also down LOC ocean INSTR
‘You can even paddle it further *down* (*oceanwards*) towards the deep sea.’ [DRG.d07:14]

Even though the latter vectors are necessarily horizontal, the use of vertical terms here is due to an extension of the declivity contrast to the flat plane of the lagoon, reflecting the overall continuity of the axis {heights→lowlands→shore→lagoon→ocean}. In fact, the whole Torres–Banks area behaves the same in this respect. In all languages, the directionals used in a coastal village can also function at sea: for someone on a canoe, paddling ‘up’ or ‘in’ involves coming closer to land, whereas paddling ‘down’ or ‘out’ means going further away towards the ocean. This pattern is visible from Table 5 p.151: in all languages, the directionals for ‘landwards’ and ‘oceanwards’ at sea (rows #4 and 17) are identical with those contrasting ‘inland’ and ‘seawards’ on land (rows #5 and 16).

The two *up–down* axes of Gaua languages run orthogonal to each other, and are obviously distinct. Occasionally, the polysemy may trigger some confusion: for example, *sō ror* ‘paddle down’ can mean ‘go out towards the ocean’ as in (24), but it can also mean ‘travel on a canoe towards northwest’ (cf. Figure 6 p.156).[32] The risk of confusion is somewhat limited by the fact that, in principle, the two *up–down* axes never really cross: the wind-based contrast belongs to the navigational scale, whereas the axis based on the declivity of the ground pertains to the local scale. For directions parallel to the shore involving short distances, Gaua languages never use their cardinal coordinates, but resort to an undifferentiated traverse axis.

4.1.2 The undifferentiated traverse axis

On Gaua, the coastal axis uses the same directional on both sides. This is visible from Table 5, which shows that Gaua languages use the same form for #10 ‘*parallel to the shore towards SE (close)*’ and #11 ‘*parallel to the shore towards NW (close)*’. I describe the axis as “undifferentiated”, using the term proposed by Palmer (2002:127): “a derived axis for which a language does not lexically distinguish the opposing directions”. In a way, this configura-

[31] Notice, in (23), the rare combination of two opposite directionals in the same clause: *hōw* referring to the motion of the event (‘sit down’), and is here used topologically; *roka* locates that event in the geography of the island (‘up there inland’), and is here used geocentrically.

[32] Systems involving two distinct *up–down* axes have been reported for other Oceanic languages (Hyslop 2002; Palmer 2002:128). This is in fact the system reconstructed for Proto Oceanic (§5.1).

tion whereby two opposite directions along the coast use the same directional is reminiscent of the cases of *cardinal convergence* we saw in §3.4.2. The difference is that foci of convergence constituted isolated exceptions within a more general rule of differentiation *up–down* on the navigational scale; whereas it is an inherent property of the traverse axis to be undifferentiated, wherever it is used on the island.

A convenient gloss for this directional is 'across', as it crosses the primary axis. Etymologically, some of these forms (Nume *van*, but also Mota *vano* or Mwerlap *van*) reflect a POc verb **pano* 'move in transverse direction' (cf. Figure 5 p.155); other forms (*vak*, *päh*) reflect local innovations (§7.3.3).

(DRG.25) Dār s-van *barbar* ***vak*** seg dār s-ñor ***vak*** sa?
1inc:du IRR-go crosswise across here 1inc:du IRR-sleep across there
'Why don't we walk (*across*) over there and have a nap?' [DRG.Heron.17]

(LKN.26) Miini neñ, tē van *päätäg* gēn ***päh***.
child that PRSTV go crosswise FOC:there across
'That child, there he is, heading over there (*along the beach*).' [LKN.d05:34]

Interestingly, the transverse directional is sometimes preceded by a spatial adverb (§2.4.2) which also has the meaning 'crosswise, orthogonally' (as in 'lie across the bed') – e.g. Dorig *barbar*, Lakon *päätäg*. This confirms the choice of glossing the directional 'across'.

The undifferentiated traverse axis is only used on the local scale, for distances shorter than about 100 or 200 m. For longer distances on land, directions parallel to the shore make use of the cardinal axis, as we saw in §3.4. At this scale, the coordinates on each side become differentiated again, in the form of another contrast *up–down*. This cardinal axis is typically used for distances across villages, out of sight, along the coast.

4.1.3 An emic view of the Gaua system

Figure 2 above represented the various vectors used in the languages of Gaua. The discussion has established that some of these vectors follow a single logic: for example, the use of *down* at sea ('towards deep sea') is merely an extension, on the horizontal plane, of the underlying meaning *down(hill)*. In other words, the vectors #15-16-17 of Figure 4, which are lexified separately in some other languages (§4.5), are colexified in the languages of Gaua, and treated as three instances of a single emic category. Put together, the various emic categories of Gaua directionals make up the system represented on Figure 8.[33]

[33] In order to facilitate comparison across systems, the figure will follow the arbitrary convention of always representing NW on the left and SE on the right: that is, it will always represent an island seen from its western coast, regardless of the actual location of the speech community under discussion. For example, Figure 8 gives a realistic account of the system used in the language of Lakon, because Lakon happens to be spoken on the western coast of Gaua (Map 1 p.7). As for Nume, which is primarily spoken on the northeast coast of the island, a realistic representation of the way in which it is used in its native area would normally require reversing Figure 8, with SE ('up') pointing left and NW ('down') pointing right. However, this increase in realistic accuracy may result in confusion for the comparison of similarities and differences across languages. I prefer to adopt everywhere a standardised view of a fictional island seen from its western coast, for all languages – even when their community is actually located on an eastern coast. One reason for considering this decision legitimate is the fact that language speakers are geographically mobile, and regularly adapt their own space

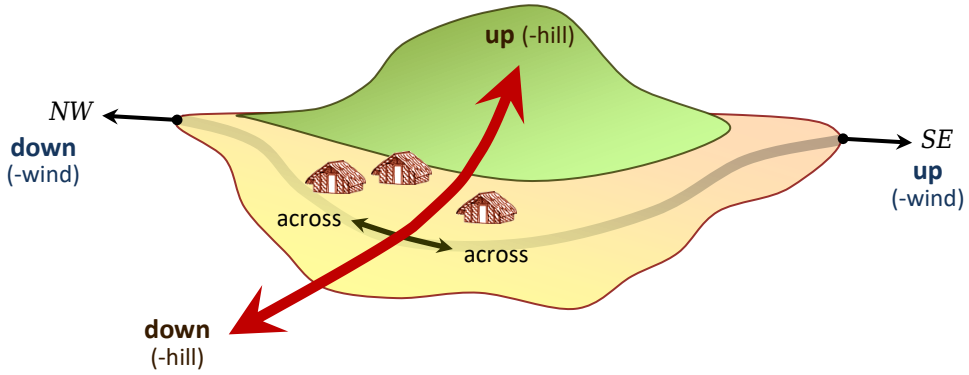


Figure 8 – The system of geocentric directionals in Gaua languages (emic representation)

In sum, the system used on Gaua involves only three axes: one cardinal axis *up(wind)–down(wind)*; one topographical axis *up(hill)–down(hill)*; and one undifferentiated traverse *across*.

4.2 Mwotlap: two axes, *up–down* vs. *in–out*

Compared to Gaua, Mwotlap shows quite a different configuration.[34] The only agreement between them – as well as all other languages of the region, for that matter – is the use of the *up–down* cardinal axis on the navigational scale (§3). But all other features are different.

First, the way Mwotlap encodes its coastal axis is not done with an undifferentiated traverse as on Gaua; it uses the cardinal axis *up–down* everywhere on land, not only for long distances across villages (§3.4), but even for short distances. Sentences like (1)-(2) above would be impossible in Gaua languages, yet are perfectly common in Mwotlap.

The second major difference between Mwotlap and Gaua is that the land–sea axis is never encoded by the vertical directionals *up–down*, but by a contrast between *in* and *out*, for which Mwotlap has separate forms (cf. Table 4 in §2.4.2). Sentence (27), from a traditional story, takes place as the main character Venventey, who lives on a coastal village, comes down to the beach to welcome his brother who's arriving on a canoe. Out of the six directionals used here, three encode the land–sea axis: first as Venventey walks down to the beach, second as they both carry the canoe to the beach, before finally walking up to the village:

(MTP.27) Kē ni-van ***yow*** tō ni-tēy *van* ni-siok nonon tō,
3sg AO-go **out** then AO-hold thither ART-canoe his then

kōyō hah kal ***hay*** tō, leveteg *van* lē-vēthiyle.
3du lift upwards **in** then put.down thither LOC-sand

Kōyō hatig *hag* tō, van ***hay*** l-ēm̄ ēgēn.
3du rise up then go **in** LOC-house now

'So he walked down to the shore [LITER. went ***out***], took hold of his canoe; they both carried it up ***in****(land)*, and put it down on the sand. Finally they left the place and walked ***in****(land)* towards their house.' [MTP.Venventey.WS.072]

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system to other environments, even outside their home village (cf. François 2003:428). In this sense, a representation such as Figure 8 portrays accurately any language, not just those that are typically spoken on a western coast.

[34] For a detailed description of Mwotlap's space system, see François (2003).

Contrary to Gaua languages, Mwotlap cannot use 'up' and 'down' here, but resorts to ***hay*** 'in' and ***yow*** 'out'. In encoding the land–sea axis with a contrast *in—out*, Mwotlap represents the whole island as an enclosure: walking away from the sea into the more bushy areas of the island is going 'in' (cf. Eng. ***in****land*) whereas walking away from the bush and towards the sea is equivalent to going 'out' (cf. Eng. ***out*** *to sea*). Mwotlap keeps the same contrast at sea. As long as a landmass is salient to the observer, the land–sea contrast will be encoded as *in—out* – even when referring to a shoal of fish in the water:

(MTP.28) No m-et nō-mōmō ni-sey ***hay***, ni-sey ***yow***.
1sg PFT-see ART-fish 3sg-move.in.shoal **in** 3sg-move.in.shoal **out**
'I saw a shoal of fish moving *in* (=*landwards*),
and suddenly moving *out* (=*oceanwards*).' [BP5-34a]

By comparison with the two *up–down* axes and the third traverse found in Gaua languages, a system like Mwotlap ultimately involves only two axes: one cardinal axis lexified *up—down*, employed everywhere on land for the coastal axis (see Map 7 p.159); one land–sea axis running orthogonal to it, lexified *in—out*. The Mwotlap system is represented in Figure 9. It is, arguably, the simplest system of all northern Vanuatu languages.

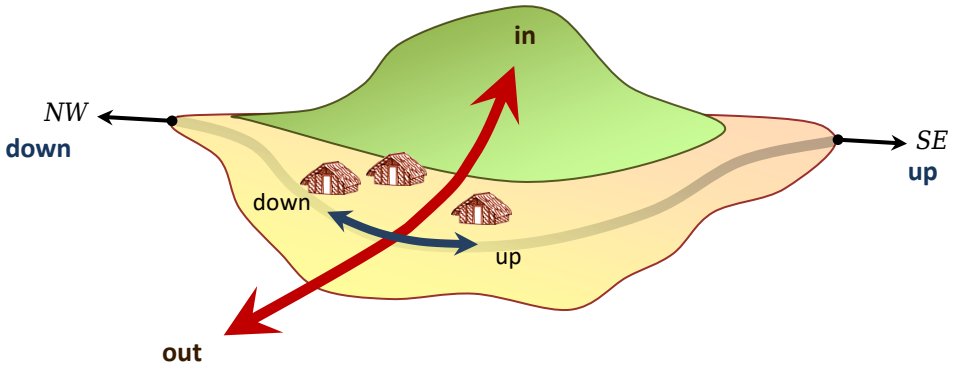

Figure 9 – The system of geocentric directionals in Mwotlap

4.3 Two canonical systems and a number of hybrids

I propose that the space systems of northern Vanuatu can be described by positing Gaua and Mwotlap as two opposite "canons",[35] each of which displays a coherent set of space-related properties. By comparison with these two canons, the other languages of the region present hybrid systems, i.e. systems which are closer to one of the two canons, yet deviate from it in ways that make it resemble the other canon.

For example, we will see that Mota has almost the same system as Gaua, except that it uses a directional 'out' when pointing seawards, in a way similar to Mwotlap. Symmetrically, Löyöp is almost like Mwotlap, except that it uses the *up—down* contrast (like Gaua) in the steeper areas of the island. Because the comparison between systems involves several parameters, it is not possible to rank them using a unidimensional scale, whereby languages

[35] While the term *canon* is ultimately inspired by Corbett's (2007) *canonical typology*, the sort of typology defined in this section does not claim universal scope, but is rather a case of (micro-) *areal typology*.

would simply placed in a linear order between the two poles Gaua and Mwotlap. Instead, each language deviates from the canons following a number of dimensions.

Derived from the data in Table 5 p.151, Table 6 lays out the relevant parameters whereby languages differ in their directional systems.

Table 6 — The systems of Gaua and Mwotlap constitute two canons; all other northern Vanuatu systems can be analysed as hybrid between these two.

System	COASTAL AXIS					LAND–SEA AXIS			
	navigational		local up–down		traverse	up–down		in–out	
	'up'	'down'	'up'	'down'	'across'	'up'	'down'	'in'	'out'
Gaua lgs	+	+	—	—	+	+	+	—	—
Mota	+	+	—	—	+	+	(+)	—	(+)
Mwerlap	+	+	—	—	+	(+)	(+)	(+)	(+)
Vera'a	+	+	—	—	—	—	—	+	+
Vanua Lava lgs	+	+	—	+	(+)	—	—	+	+
Hiw	—	+	—	+	(+)	(+)	(+)	—	(+)
Lehali, Lo-Toga	—	+	—	+	—	(+)	(+)	(+)	(+)
Löyöp	+	+	+	+	—	(+)	(+)	(+)	(+)
Volow	+	+	+	+	—	(+)	—	(+)	+
Mwotlap	+	+	+	+	—	—	—	+	+

From the first to the last column, the relevant parameters can be defined as follows:

1. for directions PARALLEL TO THE SHORELINE:
   - whether the navigational subsystem used for long distances on land (§3.4) employs the cardinal directionals 'up' [#9] and 'down' [#12];
   - whether the local subsystem used for short distances [#10, #11] employs those same cardinal directionals 'up'–'down', or an undifferentiated traverse;
2. for directions ORTHOGONAL TO THE SHORELINE:
   - whether the land–sea axis [#4–5–6] employs the vertical directionals *up–down* or *in–out*.

White cells refer to features closer to the Gaua canon; cells with darker shading refer to features closer to the Mwotlap canon. Cells with lighter shading, and with a sign "(+)" in brackets, indicate when the answer to these questions is not straightforward, or depends on certain conditions. For example, we'll see that Mota uses sometimes *down* when pointing to the sea, and sometimes *out*, depending on how steep the slope is. Likewise, the languages of Ureparapara and the Torres Islands encode the land–sea axis as *up–down* in the bush, but as *in–out* in the lower parts of the island. Other examples of hybrid configurations will be detailed below. In almost all cases – except for some peculiarities of Hiw – the languages of north Vanuatu can be shown to pattern partly like Gaua, and partly like Mwotlap.

4.4 Variations on the coastal axis

4.4.1 Volow: Accidental homophony

Volow is a communalect spoken on the eastern side of Motalava island, where Mwotlap is also spoken. Even though it is now quasi extinct, some valuable narratives were recorded in

1969 by the anthropologist Bernard Vienne with the late Wanhan, the last fluent speaker of the language; I transcribed them in 2003 with the help of Wanhan's son.

The data from Volow in Table 5 p.151 show a threefold organisation of geocentric directionals: the two forms ***hō*** 'down; northwest along the coast' and ***yo*** 'out; seawards' stand in contrast to a single polysemous directional ***ha*** 'up, southeast; in, inland'. The ambiguity of the latter form can be represented with a gloss 'up/in'. This pattern of colexification 'up/in' is also found in the Volow system of topological directionals (§2.4.2), and is therefore imported into the geocentric system. Figure 10 lays out the system of Volow.

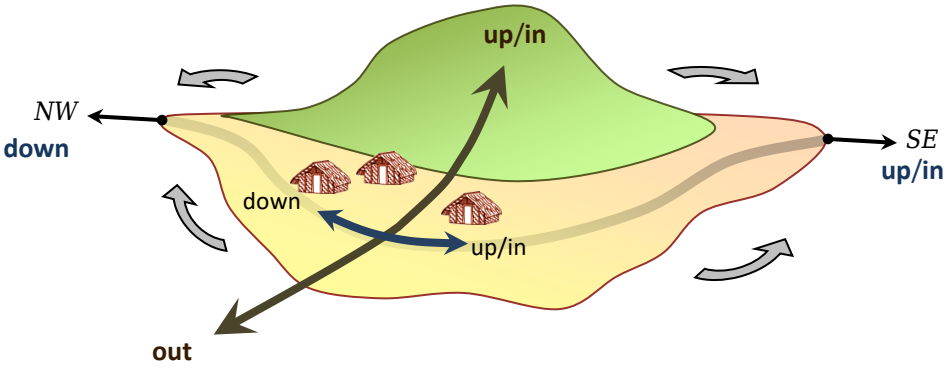

Figure 10 – The system of geocentric directionals in Volow

Those who can understand the Volow recordings today point out systematic correspondences between their ancestors' space system and that of the dominant language Mwotlap, which they have now shifted to, and which we used as our contact language. Thus, in spite of the apparent ambiguity of the two ***ha*** directionals in (29), these speakers can associate each token with the corresponding directional of Mwotlap. The first *ha* is here glossed 'in, inland' (MTP *hay*), and the second one is 'up, southeast' (MTP *hag*):

(VLW.29) N-tēq̄ē mine yiwes ***ha*** q̄e gēs, taval tō, teyeg ***ha***.
ART-garden my close ~~up~~/**in** FOC here beyond hill side **up**/~~in~~
'My garden is close this way (*inland*), it's on the other side of the hill, towards *southeast*.' [VLW.d01:16]

Considering how close Volow is from Mwotlap in all other respects (François 2014:182), it is likely that Volow once had the same four-member system as Mwotlap (see Figure 9 p.166). Simply, its directionals underwent the deletion of their last consonant (**hōw* → *hō*; **yow* → *yo*; **van* → *va*), which resulted in the accidental homophony of two directionals ***ha***, one meaning 'up, southeast' (< **hag*), the other meaning 'in, inland' (< **hay*).[36] Today, it is difficult to observe how modern Volow would have dealt with such a homophony. Due to its moribund status, the semi-speakers of Volow tend to simply map the distinctions made by Mwotlap onto their own system of directionals.

[36] The colexification of 'up' and 'in' in Volow was already mentioned as we examined the topological directionals (§2.4.2).

4.4.2 The languages of Vanua Lava

Vanua Lava is the largest and the highest of the Torres and Banks islands (§2.1). If one sets apart the relatively recent colonisation by Mwotlap speakers on its northeastern coast, the island is home to four distinct languages: Vurës, Vera'a, Mwesen and Lemerig. These share an identical system of space reference – with perhaps an extra twist for Vera'a (§4.4.2.2).

4.4.2.1 An asymmetry on the transversal axis

The system of Vanua Lava is identical to that of Mwotlap (Figure 9 p.166), except for a single vector: the one that points southeast for directions parallel to the shore, on the local scale. Long distances along that vector are encoded with cardinal 'up' (*siag* in Vurës, *sag* in other languages). However, unlike the canonical Mwotlap system which generalises this use of 'up[wind]' to all distances on land, Vanua Lava languages reserve it for long distances, and make use of a distinct directional for distances shorter than about 200 meters – see the forms in Table 5 p.151 (row #10).

The two following sentences, taken from narratives in Lemerig, illustrate the contrast between the two directionals pointing southeast along the coast: *sag* for long distances, *wël* for nearby locations.

(LMG.30) Ē Qet tär e 'og~'og ***sag*** sā Lēseper ow.
PERS (hero) 3pl DEF IPFV~stay up/SE:far FOC$_1$ L. FOC$_2$
'Kpwet was living over there (*southeast*) in Leseper.' [LMG.Qet.003]
[*story told in Lalñetak village on Vanua Lava, about 10 km north of Leseper*]

(LMG.31) Ti m-'är pa' ***wël*** kē ge mälägläg.
3sg PFT-stand hidden (SE:near) place STAT dark
'He stood hiding over there (*southeast*) in the dark.' [LMG.Rock.048]

Oddly enough, three languages (Lemerig, Vurës and Mwesen – see below for Vera'a) display this distance-based contrast only in one direction. As for the opposite direction, it employs the directional 'down' whatever the distance – just like Mwotlap. As an illustration, the following excerpt mentions the four directionals that constitute the local-scale subsystem of Lemerig: *wël*[37] 'parallel to the shore, SE side' – *sōw* 'down; parallel to the shore, NW side' – *sar* 'in; inland'; *row* 'out; seawards'. Notice here the absence of *sag* 'up'.

(LMG.32) Ti m-sëk. Sëk lu ***wël*** nē, sëk lu ***sōw*** nē,
3sg PFT-seek seek around (**SE:near**) there seek around (**down**/NW) there
sëk lu ***row*** nē, sëk lu ***sar*** nē — ti 'esgö' qäl'ä.
seek around **out** there seek around **in** there — 3sg find NEG
'So he began to search. He searched *southeast*, he searched *northwest*,
he searched *seawards*, he searched *inland* — but he couldn't find it.' [LMG.Qet.072]

The coastal axis of Lemerig is thus asymmetrical, because a pair of distinct terms used in one

[37] One peculiarity of Lemerig is that the directional *wël*, which here encodes a geocentric direction pointing southeast, is also used as a participant-based allotropic directional 'thither, towards non-speaker' (§2.4.1): the latter contrasts with *me* 'hither', and can point to any direction. By contrast, the cognate forms in the three other languages of Vanua Lava (*wōl*, *wol*) are restricted to their geocentric use.

direction (*wël* vs. *sag*) contrasts with a single term (*sōw*) on the opposite direction.

The system of Vanua Lava directionals is shown on Figure 11. The gloss 'across' given for the short-distance vector pointing southeast (#10) will be explained in §5.2.1.

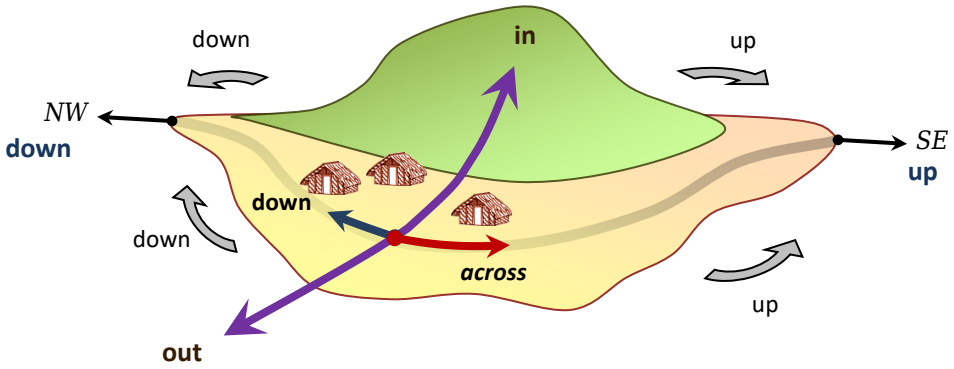

Figure 11 – The system of geocentric directionals in Vanua Lava languages

If we compare Figure 11 with Figures 8 and 9 above, it becomes clear that Vanua Lava can be described as a hybrid between the canonical systems of Gaua and Mwotlap.

4.4.2.2 The special case of Vera'a

I personally recorded the same system (Figure 11) for the four languages of Vanua Lava island, including Vera'a. My colleague Stefan Schnell (pers. com.) later told me that he noticed an extra directional for Vera'a, formally ***mul***, corresponding apparently to vector #11 '*parallel to the shore towards NW (close distances)*'. If this is the case, then Vera'a constitutes another geocentric configuration again, bringing the total number of space systems in northern Vanuatu to *ten* rather than nine – see Table 5 p.151.

The resulting system is shown in Figure 12. Following the principle of other figures, I propose to gloss each vector with the directional's original meaning in the same language: in this case, the vector #10 is glossed 'across' (*wōl*), and #11 is glossed 'back' (*mul*). Indeed, the form *mul* originates in the motion verb *mul(ō)* 'go back, return'.

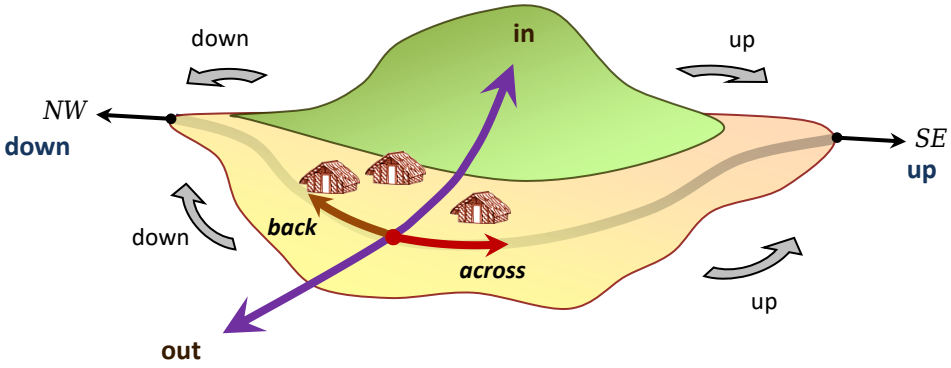

Figure 12 – The system of geocentric directionals in Vera'a (after Schnell, pers. com.)

Unfortunately, I have no example of this *mul* directional in my Vera'a corpus. A search through the 86-page collection of Vera'a texts published by Vorēs & Schnell (2012) found 73 instances of *suw(ō)* 'down, NW (remote)', 66 of *sag* 'up, SE (remote)'; 68 of *sar* 'in, inland', 44 of *rōw* 'out, seawards'; as well as 8 instances of *wōl* 'SE:near <*across*'. However, I found

zero instance of any directional of the form *mul* ('NW:near <*back*'). Based on the evidence available to me, I am thus unable to confirm the existence of a distinct geocentric system for Vera'a.

4.5 Variations on the land–sea axis

4.5.1 Löyöp: Depending on the slope

Löyöp, the language spoken on the eastern side of Ureparapara, shares with its neighbour Mwotlap the extension of the cardinal axis *up–down* on the coastal axis. Löyöp also aligns with Mwotlap – and with Vanua Lava languages – in using the two directionals *in–out* to encode the land–sea axis:

(LYP.33) Yege oñ e m-van me, m-van me, m-van me; m-ol kal
PL ship DEF PFT-go hither PFT-go hither PFT-go hither PFT-land upwards

say me, lilwon, m-qēt me. Kyeyjöl m-van ***yow***.
in hither on.beach PFT-complete hither 3trial PFT-go **out**

'The ships kept coming closer, closer, closer, until they landed [*in*] on the beach, one after the other. The three boys walked [*out*] (towards them).' [LYP.Pig.117]

However, contrary to its neighbours, Löyöp reserves these directionals *in–out* to the flatter parts of its island, namely the coastal villages and the sea. By contrast, it employs the vertical directionals *up–down* in the forest and steeper parts of the island, where the declivity of the ground is more salient. The following sentence, taken from a traditional narrative, shows how Löyöp can use its vertical directionals to lexify the *land–sea* axis. The story mentions a hamlet located in the mountain:

(LYP.34) Kyeyō m-yēm kal n-wutwut, van van van en:
3du PFT-climb upward ART-hill go go go TOP

kalō ***sa*** lipnō yo-yō.
arrive up in.village POSS-3du

'They climbed the hill all the way up, until they reached [*up*] their hamlet.' [LYP.Ogres.18]

Löyöp has thus preserved the possibility to use its vertical directionals on the land–sea axis, as soon as the declivity of the slope warrants it. This system is hybrid between the two canonical systems of Mwotlap and Gaua (§4.3): it resembles Mwotlap in the island's lower areas, yet is closer to Gaua in the heights. The system of Löyöp is represented on Figure 13.

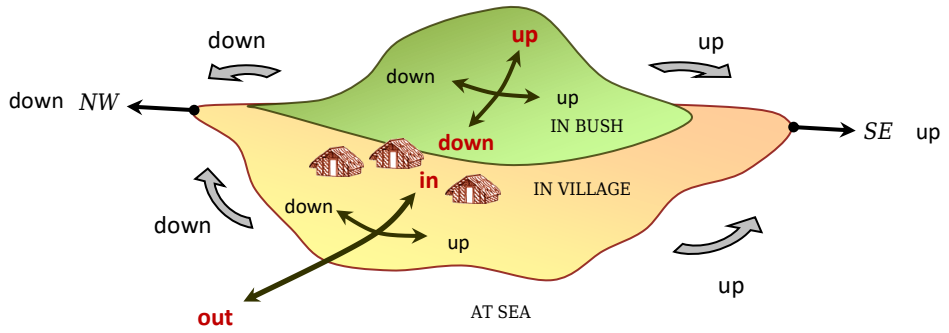

Figure 13 – The system of geocentric directionals in Löyöp

The other systems that remain to be presented in this section all form, in turn, variations of the Löyöp case. Whether it is Mota, Mwerlap, Lehali, Lo-Toga or Hiw, all the languages yet to be examined show a similar lexical split within the land–sea axis, where they employ sometimes the vertical directionals *up–down*, and sometimes the topological *in–out*.

4.5.2 Mota: An asymmetrical system

The small island of Mota, located east of Vanua Lava (see Map 1), uses a directional system that is essentially similar to the Gaua languages. Mota uses two *up–down* axes: one corresponding to the land–sea axis (but see below), and one for cardinal directions mapped onto the shoreline (§3.4). Sentence (35) illustrates a dialogue that would take place in a western village of the island, such as Veverao, pointing towards the southeastern hamlet Liwotqei (see Map 8 p.159):

(MTA.35)	Ka	va~va	i	vea?	—	Na	va~va	iake	***sage***	a	Liwotqei.
	2s:AO	IPFV~go	ALL	where		1s:AO	IPFV~go	here	up	LOC	(village)

'Where are you going? — I'm going *up* (southeast) to Liwotqei.' [FP1-40b]

On the local scale, the land–sea axis is crosscut by an undifferentiated transverse axis lexified *vano* 'across':

(MTA.36)	Na	va	gap	iake	***vano***.
	1s:AO	go	just	here	across

'I'm just going this way (level, parallel to shore).' [FP1-41b]

Mota shares with Löyöp a lexical split of the land–sea axis. In the higher parts of the island, the vertical directionals *up–down* are used; but the lower areas, namely the coastal village and the sea, employ different terms. One notable difference with Löyöp, though, is the asymmetry of Mota directionals. The lexical split concerns only the *seaward* direction, the one that runs from the island's top towards the ocean: it is encoded ***swo*** 'down' in the bush, and ***rowo*** 'out' elsewhere. Similarly, the directional used at sea, when pointing towards the ocean (#17), is never 'down' like in Gaua, but always *rowo* 'out'. As for the opposite direction *inland*, it is consistently lexified ***sage*** 'up' regardless of the slope, or of the location on the island. The system of Mota is represented in Figure 14.

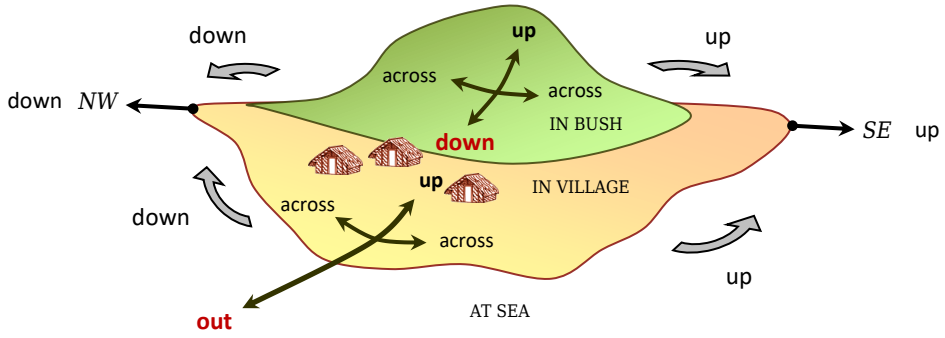

Figure 14 – The system of geocentric directionals in Mota

Example (37), taken from a narrative, illustrates the lexical split of the land–sea axis. After they finished carving their wooden canoe in the bush, the characters brought it *down* (#15) all the way to the beach; at which point they took it *out* (#16–17) to the ocean:

(MTA.37) Rave sur o nati aka ***swo***, me vega kalo
pull downwards ART small canoe down PFT climb upwards
i vawo nati aka, neira me va ***rowo*** ilo lama.
ALL top small canoe 3pl PFT go out ALL open.sea
'So they dragged their small canoe (*down*) to the shore, climbed upon it, and *out* they went into the ocean.' [MTA.Snake.34]

Keeping in mind the canonical analysis exposed in §4.3, one could say that Mota patterns everywhere like the canon Gaua, except for seawards directions on flat terrain (#16–17 vectors in Table 5 p.151), for which Mota follows the same strategy as the other canon Mwotlap.

One would expect that the directional 'out' should contrast with its antonym 'in', like in the symmetrical systems of Löyöp or Mwotlap; however, this is not what we find in Mota, where *sage* 'up' is used in all cases. The following examples, based on the kinetic presentative *veta* (+directional),[38] illustrate the asymmetry:[39]

(MTA.38) Nea ilunia veta ***sage***.
3sg there PRSTV up
a) ‹COASTAL› 'There he is, walking towards southeast (along the shore).'
b) ‹LAND–SEA› 'There he is, walking uphill (on a slope).'
c) ‹LAND–SEA› 'There he is, walking inland (on flat terrain).' [FP1-41b]

(MTA.38') Nea ilunia veta ***swo***.
3sg there PRSTV down
a) ‹COASTAL› 'There he is, walking towards northwest (along the shore).'
b) ‹LAND–SEA› 'There he is, walking seawards (on a slope).'

(MTA.38") Nea ilunia veta ***rowo***.
3sg there PRSTV out
‹LAND–SEA› 'There he is, walking seawards (on flat terrain).'

This asymmetry of geocentric directionals simply mirrors the same asymmetry in the *topological* domain: as we saw in §2.4.2 (Table 4), Mota has innovated a lexical contrast between 'down' (*swo*) and 'out' (*rowo*), but has kept the original polysemy of *sage* (<**sake*), which means both 'in' and 'up' – see (16) p.149.

4.5.3 Mwerlap: A distance-based lexical split

Mwerlap, the language spoken on Merelava island, can also be described as a hybrid between the two canons of Gaua and Mwotlap. Like Gaua, Mwerlap uses an undifferentiated traverse ('across') on the local scale, and sometimes encodes the land–sea axis as *up–down* (***seag–sōw***); however it shares with Mwotlap, at least in some cases, the lexification of that same land–sea axis as *in–out* (***sar–row***).

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[38] The *kinetic presentative* is a presentative particle that points to an individual in motion (e.g. person walking, ship sailing, etc.); it is always followed by a directional encoding the path of the motion. For a description in the neighbouring language Mwotlap, see François (2003:156-162).

[39] The asymmetry is reminiscent of the one we saw for Vanua Lava languages in §4.4.2.1; for the latter, it was a property of the coastal axis (Figure 11 p.33), whereas Mota is asymmetrical on the land–sea axis.

Based on these preliminary observations, one could propose to see Mwerlap simply as a variant of Löyöp. But such an analogy would fail to take into account an ingredient specific to Mwerlap: namely, that the variation is not based on the slope, but on physical distance. The pair of directionals *in–out* must be used for very local reference, within a radius of about 20 metres on each side; whereas *up–down* remain the relevant directionals for farther distances. The resulting system is represented in Figure 15.

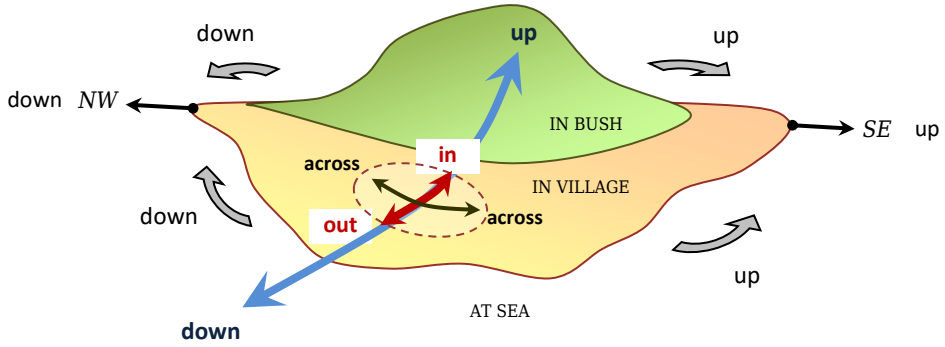

Figure 15 – The two nested subsystems of geocentric directionals in Mwerlap

Mwerlap thus involves two nested subsystems. On the one hand, long distances employ two distinct *up–down* axes (as in Gaua languages); on the other hand, short distances in the local setting resort to a different set of axes: *in–out* for the land–sea axis, and *across* for the traverse that crosscuts it. In terms of actual distances, estimates by my consultants mentioned a radius of about 20 m for *in–out*, but a longer array of perhaps 200 m each side for the use of *across*. In other words, the "local" subsystem is less of a circle than an ellipse or strip parallel to the shoreline.

Table 7 — The distance-based lexical split of Mwerlap directionals on the land–sea axis

SHORTER DISTANCES (<20 m)		LONGER DISTANCES (>20 m)	
(MRL.39a)	Pas ***ser***=*lēg* ! pass **in**=thither 'Pass (him) the ball inland!' [BP3-21a]	(MRL.39b)	Pas ***sege***=*lēg* ! pass **up**=thither 'Pass (him) the ball inland!'
(MRL.40a)	Pas ***ru***=*mē* ! pass **out**=hither 'Pass (me) the ball seawards!'	(MRL.40b)	Pas ***su***=*mē* ! pass **down**=hither 'Pass (me) the ball seawards!'

Sentences (39-40) in Table 7 exemplify the spatial configuration of Mwerlap. Such utterances can be heard during popular ball games such as soccer or volleyball. The forms of the morphemes themselves are explained in a separate Appendix (§7.4) on the morphology of Mwerlap directionals. What matters here is to illustrate the idiosyncratic organisation of Mwerlap geocentric directionals on the land–sea axis.

Despite its differences with Löyöp and Mota (compare Figure 15 with Figures 13 and 14), overall the system of Mwerlap can also be said to ultimately revolve around declivity, in its own particular way. Indeed, the island of Merelava is a very steep, conical volcano, so

relatively flat areas will always be narrow strips of gentle slope within a general shape of strong declivity.[40] In this regard, the *distance*-based system of Mwerlap bears some similarity with a *declivity*-based system such as that of Löyöp.

The manner in which Mwerlap structures its directionals based on distance is not found anywhere else in the area. While physical distance commonly results in different terms on the coastal axis (see §3.1), Mwerlap is the only language for which distance also governs the choice of directionals on the land–sea axis.

4.6 Lehali, Lo-Toga: a partial asymmetry

Even though they are spoken on three different islands, Lehali and Lo-Toga share the same geocentric system (henceforth the "LLT system"). At first glance, it can be seen as a variant of Löyöp (Figure 13 p.171): like Löyöp, the cardinal axis is used everywhere on land, for directions parallel to the coast; like Löyöp, the land–sea axis shows a lexical split between two strategies depending on the location on the island: *in–out* directionals are used on lower areas of the island, and *up–down* in the steeper parts.

However, compared with Löyöp, the LLT system has a peculiarity: its directional 'south-east' has lost any formal connection with the vertical axis. The vertical *up* of the topological domain (#7: LHI *vēn*, LTG *vin*) can only be used geocentrically to encode 'uphill' when one is in the bush [#6]. While all other Banks languages also use *up* for 'southeast' on the cardinal axis, the modern LLT system makes use of a separate directional, for all distances, on all scales [#8, 9, 10]. Considered in a purely synchronic perspective, this directional (LHI ***ha***, LTG ***ag*** ~ *iag*) has no other meaning than this geocentric one, and can only be glossed 'south-east'. Among all Torres–Banks languages, this is the only case of a directional that is purely geocentric, and doesn't also have a non-geocentric meaning in synchrony (cf. fn.5 p.140). Oddly enough, this lexical dissociation of the cardinal axis with verticality has only disrupted the link between 'southeast' and 'up'; in the other direction, the form for 'down' (#14: LHI ***how***, LTG ***iw*** ~ *w'*) still colexifies today 'downhill' [#15] and 'northwest' on all scales [#11, 12, 13].

The asymmetrical configuration of the modern LLT system is represented in Figure 16.

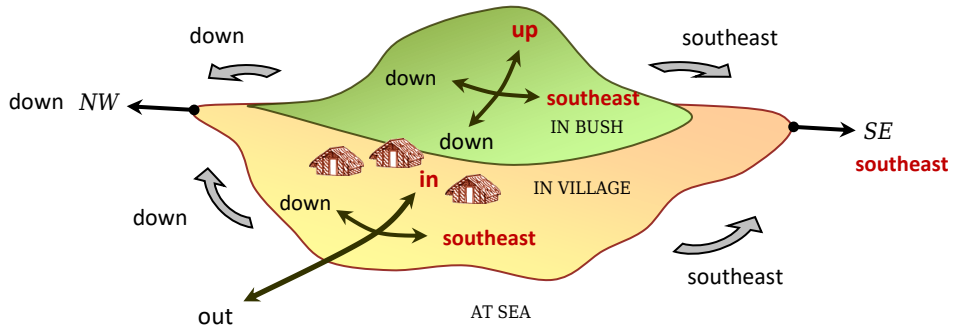

Figure 16 – The system of geocentric directionals in Lehali and Lo-Toga

[40] The colony of Mwerlap speakers who have established themselves on the east coast of Gaua island use the same system as on their home island of Merelava.

The following Lo-Toga examples illustrate the LLT system. Pointing 'inland' from a location at sea, or on the flatter parts of the island, involves the directional ***il*** 'in'. When it has its geocentric meaning, the directional is often better translated using adverbial locative phrases in English (such as 'on the beach', 'ashore', etc.):

(LTG.41)

Pahwëne	nihe	ge=	vēn	***il***	*me*,	Merawehih	v=***il***	hag.
then	3pl	AO:pl=	go	**in**	hither	(hero)	IPFV=**in**	sit

Ni=	itë	nihe	ge=	rōw	***il***	*me*,	nie	ni=	vē	***rōw***	*me*
AO:3s=	see	3pl	AO:pl=	rush	**in**	hither	3sg	AO:3s=	go	**out**	hither

ni=	ere	teletale	n=ēke.
AO:3s=	smash:SG	in.pieces	ART=boat

'As they were *coming* ***in*** (= paddling closer to the island), Merawehih was waiting ***in*** (= on the beach). As soon as he saw them landing ***in*** (= ashore), he *came* ***out*** (= walked down towards them), and suddenly smashed their boat into pieces.'

[LTG.Merawehih.053]

But the *inland* direction is encoded with ***vin*** 'up' if it points to the bushy areas of the island:

(LTG.42)

Ne=lete	mi	kemor	na	in	revtë,	vet	ne	***vin***	in.
ART=garden	POSS	1ex:du	STAT	lie	close	place	REL	**up**	lie

'Our garden is very close, this way *up*(*hill*).' [LTG.d01:15]

In this context, the opposite term is not *rōw* ('out') any more, but ***iw*** 'down':

(LTG.43)

Kemë	ve=toge	deh=***vin***,	pa	heqere	ha	ve=toge	dih=***iw***.
1ex:pl	IPFV=stay	side=**up**	but	HUM:PL	other	IPFV=stay	side=**down**

'We live *uphill*, but there are other people who live *downhill*.' [FP1-13a]

When the directional ***iw*** 'down' means 'downhill' (*land–sea* axis) it contrasts with ***vin*** 'up, uphill', as in (43). Yet when it takes its cardinal meaning 'northwest < downwind', it contrasts with *(i)****ag*** 'southeast', whose meaning is purely geocentric:

(LTG.44)

N=ēñwe	mēhe	ve=tu	vet	ne	v=***ag***	in,
ART=house	their	IPFV=stand	place	REL	IPFV=**southeast**	lie

si	vet	ne	***w***'	in?
or	place	REL	**down**	lie

'Is their house located on the southeast side, or the northwest side?' [FP1-13a]

The same situation, *mutatis mutandis*, prevails for the language Lehali.

This asymmetrical configuration of the LLT system needs to be accounted for. In the historical discussion below, I will explain it as a lexical split among vectors formerly lexified as 'up' – itself the result of a lexical innovation affecting the verb 'go up' (§5.3.2). A similar process took place in the neighbouring language Hiw, yet with further intricacies again.

4.7 The puzzle of Hiw

4.7.1 A quirky system

The most intricate of all geocentric systems found in Torres–Banks languages is no doubt the one used on Hiw, the northernmost island of Vanuatu. It stands out, to begin with, if one considers its organisation in Table 5 p.151. Hiw is the only language of the whole area that has a directional 'in' distinct from 'up', yet never uses it for any geocentric vector. It is the only language in which the cardinal directional for 'southeast' used on land for long distances

(#9 *vën*, originally 'thither') differs from the one used across islands (*ag* #8). Besides, this directional ***ag***, which is only used geocentrically, shows an odd pattern of colexification between #8 'southeast (across islands)' and #4–5 'inland (on flat terrain)' which is found nowhere else, and can hardly be given a simple gloss. All these oddities constitute puzzles that need to be solved.

The geocentric system of Hiw is represented in Figure 17, reproduced from Figure 3 p.141. Notice that the directional ***ag*** appears twice, and has no label: it can neither be associated with a non-geocentric function, nor can it receive any simple gloss.

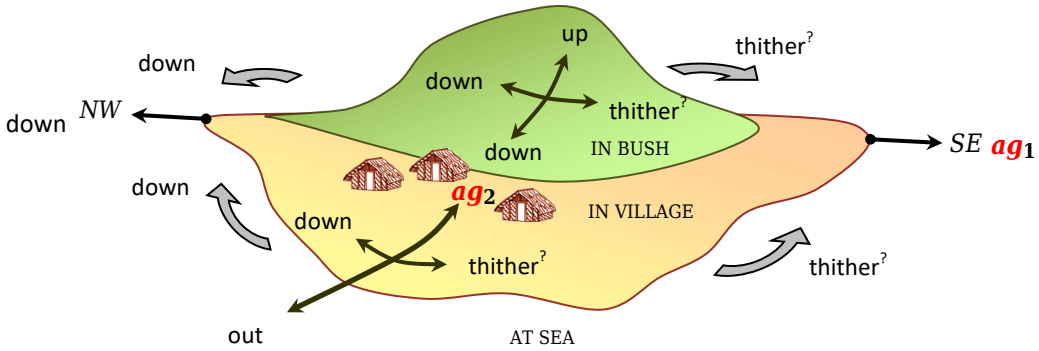

Figure 17 – The system of geocentric directionals in Hiw

The impression of oddity left by the Hiw system depends, of course, on the point of comparison. For example, Hiw has very little in common with the languages of Gaua (§1.2, 4.1): except for the use of *down* for 'northwest' and 'downhill', everything else is different. The difference becomes less extreme if Hiw is compared with its immediate neighbours, such as Lo-Toga or Löyöp. In the historical discussion (§5), I will argue that the system of Hiw, aberrant as it is in synchrony, can be accounted for by reconstructing a number of innovations, most of which also took place in other northern Vanuatu languages.

4.7.2 Colexification between 'thither' and 'southeast'

Figure 17 tentatively assigned to vectors #9–10 a label 'thither'. This is justified by the principle underlying these representations (§1.2), which consists in linking a geocentric directional with the non-geocentric meaning it also has in the same language, considered in synchrony. That said, the semantic connection is far from clear, and still needs to be explained. The present section will first establish that polysemy of ***vën***, based on evidence from my corpus; the explanation will be given in the historical discussion (§5.2.2).

4.7.2.1 /Vën/ as a participant-oriented directional

Vën exists in Hiw as a participant-oriented directional (§2.4.1; row #2 in Table 5). Its meaning is allotropic, i.e. it is semantically directed at a participant outside the speaker's sphere, and typically translates 'to you/him/them…'. In (45), *vën* gives the instruction to retrieve a participant from the context, namely the mother. Had nobody been in the pit, the speaker would have resorted to a non-personal strategy such as *uw* 'down'. (See also the pair of sentences (7)-(7') above):

(HIW.45) Sörörö giy ne=qeřoñ tën, giy tëvëkqö, řе= suř i řakña-se
3du dig ART=hole ground dig deep AO:du= install DOM mother-3NSG

uw yōne. Viye nön řakña-se yite, ne= gengon,
down inside take:PL POSS mother-3NSG firewood ART= food

viye ***vën*** eyö qeřoñ tën.
take:PL **thither** LOC hole ground

'The [brothers] dug a pit in the ground, a deep pit, and installed their mother [*down*] inside. They gathered firewood for her as well as food, and brought it all *to her* [LITER. took it *thither*] in the pit.' [HIW.Brothers.07]

In this deictic use, *vën* 'thither' contrasts with *me* 'hither':

(HIW.46) Viye që ***me*** ti noke! Noke viye ***vën*** ti ne= sōgë =kye on gon.
take:PL SUGG hither DAT 1sg 1sg take:PL thither DAT ART= pig =my SBJN eat

'Give [the scraps] to me! I'll give them to my pig for food.' [HIW.d09:41]

Despite their phonetic similarity, *vën* [βen] 'thither' and *vēn* [βɪn] 'up' are two distinct directionals. Both are found in (47), where a motion is first described in topological terms ('climb up') and then explicitly anchored to a participant ('climb towards him'):

(HIW.47) Nine yō ne=megoye kkë in ***vēn*** sag.
3sg see ART=child small DEF **up** sit

Nine vēn ***vēn***, vēn wate ***vën***.
3sg climb **up** climb reach **thither**

'He saw the small boy sitting *up* (in the tree).
So he climbed *up*, he climbed all the way (*to him*).' [HIW.Music.19]

This allotropic use of *vën* may correspond to any vector in spatial terms.

4.7.2.2 /Vën/ on the coastal axis

The same form ***vën*** is also found with a geocentric meaning, in which case it constructs a vector parallel to the coast, specifically oriented southeast (#9-10 in Figure 4 p.150).

(HIW.48) N=ēñwe =ma owëte ***vën*** taqe.
ART=house =1ex:pl PRSTV (southeast) stoop

'Our house is over there *this way* (southeast).' [EP2-17b]

(HIW.49) Sörörö tō *vēn* ñwë ne, řе= tō wōywōy vaviyi ***vën***.
3du go:NPL up like this AO:du= go:NPL crosswise side (southeast)

'They walked uphill like this, and then veered towards southeast.' [FG2-14b]

In this geocentric sense, *vën* contrasts with *uw* 'down; northwest':

(HIW.50) Ike tati sesö ***uw***! Ike sö ***vën*** ti ne= Yugemëne.
2sg NEG paddle:RED down 2sg paddle (southeast) DAT ART= (village)

'Don't paddle NW! You should paddle SE, towards Yugemëne.' [FG2-14b]

Note that *vën* is used for any southeast vector on the local scale, whether in the village (48), in the higher areas of the island (49) or on the sea along the coast (50).

Considering the contrast with *uw* 'down', and the observation that southeast is encoded as 'up' in all other northern Vanuatu languages, the Hiw strategy is puzzling. The phonetic closeness of this [βen] with the vertical 'up' [βɪn], which some younger speakers initially

described as mere homophones, confused the picture even more in the earlier phases of my exploration. However, elder speakers confirmed that the directional used for southeast on land was distinct from 'up', and instead homophonous with 'thither'.

The only way to interpret this synchronic configuration, in my view, is by analysing it as an *etymological doublet*. This will be the object of the historical discussion in §5.2.2.

4.7.3 Colexification between 'southeast' and 'inland'

The second puzzle of modern Hiw is its directional ***ag***. It does not come with a gloss in Figure 17, because the term is only ever used with a geocentric meaning, and is found nowhere else in the language. Admittedly, the same could be said of the homophonous directional *ag* in the language Lo-Toga (or *ha* in Lehali); yet the latter was provided with a specific gloss 'southeast' in Figure 16, because its synchronic semantics were clear enough.

The reason why Hiw *ag* cannot be given any consistent glossing is because it colexifies two directions which have nothing in common: on the one hand, *ag* encodes 'southeast' for long-distance navigation across islands (vector #8 in Figure 4 p.150); on the other hand, it is the directional used on the land–sea axis on flat terrain, i.e. #4 'landwards' at sea, or #5 'inland' in a village. There is no reason why these two directions should be merged, as their underlying definition is quite distinct, and they seldom align. From a strictly synchronic point of view, the only reasonable decision is to posit two homophones: ***ag***$_1$ 'southeast on the navigational axis' (#8), and ***ag***$_2$ 'inland, on flat terrain' (#4–5).

The navigational ***ag***$_1$ contrasts with *uw* 'down > downwind, northwest'; it is illustrated in (51). Even though this *ag* differs in synchrony from the directional *vēn* 'up', it follows the logics of the 'up(wind)' directional described for other languages (Figure 6 p.156):

(HIW.51) Kema peon vën vaviyi ***ag*** Gawe.
1ex:pl FUT go side (navig:SE) Gaua
'We'll be travelling southeast, to Gaua.' [FG3-39b]

The second directional ***ag***$_2$ 'inland' is illustrated in (52).[41]

(HIW.52) Vë—n vën, se= vën ***ag*** net-venyö kkë.
go:DUR go 3pl:AO= go:PL (**inland**) DIMIN-island small

Se= yë ***ag***: ne=tayö ñot v= ***ag*** tu.
3pl:AO= look (**inland**) ART=person INDF IPFV= (**inland**) stand

"Tekñwa, pa yē v= ***ag*** tu rë?"
people but who IPFV= (**inland**) stand DIST

'After a while, they came closer (*landwards*) to a small islet.
They looked (*inland*): someone was standing there (*on the shore*).
"Hey guys, who's that standing over there (*inland*)?"' [HIW.Meravtit.111]

The opposite of this *ag*$_2$ is ***rōw*** 'out':

(HIW.53) Sise vën se=rav ne=wake kkë =sa, on rav wate ***rōw*** yö pēgone.
3pl go:PL 3pl:AO=drag ART=boat small =their SBJN drag reach **out** LOC sea
'They dragged their canoe all the way *down* [LITER. *out*] to the sea.' [HIW.Meravtit.051]

[41] The sentence is taken from the Hiw version of a story which I also recorded in other languages. It may be compared with the parallel passage in Lo-Toga, (LTG.41) above.

In the steeper areas of the bush, 'inland' is encoded ***vēn***, which also means 'up':

(HIW.54) Ne= sov =en ye ***vēn*** es~os rë?
ART= smoke =POSS who **up** IPFV~smoke DISTAL
'Whose smoke is smoking over there *inland* [LITER. *up*]?' [FP3-28b]

This is parallel to the use of Lo-Toga *vin* in examples (42) and (43) above.

A strictly synchronic approach to Hiw would have a hard time explaining why the same directional ***ag*** is used for these two very different geocentric functions – respectively ***ag***$_1$ #8 'southeast (across islands)' and ***ag***$_2$ #4–5 'landwards (at sea) ~ inland (on flat terrain)'. This puzzle will be solved in the next section, where I will show we are dealing here, again, with an etymological doublet (§5.3.2).

5 Historical interpretation: A layering of innovations

The central section of this study detailed the nine systems of geocentric directionals found in the 17 Torres and Banks languages, considered synchronically. While their general architecture is similar across languages, the various configurations attested also reveal a degree of diversity which still needs to be accounted for.

Knowing that these languages descend from a common ancestor, how can we explain this amount of historical divergence in such a small area? Previous publications have already reported on the extreme linguistic diversification of this language group, whether in the phonological, lexical or grammatical domains (François 2005, 2011, 2012). What these studies showed was that the modern diversity reflects the accumulation of individual innovations which can often be identified using the Comparative Method. Each of these innovations emerged locally and diffused to a different portion of the Torres–Banks archipelago, with isoglosses often forming intersecting patterns (François 2014).

As far as space directionals are concerned, the question that arises is whether the attested array of geocentric systems can be broken down to individual innovations, that could be identified in the modern languages. Can the canonical approach adopted in §4.3 help reconstruct the history of these nine systems? Could a diachronic analysis shed light on unsolved problems, such as the puzzling system of Hiw? This is the object of this final section.

5.1 Identifying the point of departure

Faced with the mosaic of modern systems, there is no obvious way of identifying which system is innovative or conservative. Luckily, this becomes possible if we complement our northern Vanuatu data with our knowledge of Oceanic languages outside the area, and what can be reconstructed of their common ancestor, Proto Oceanic (François 2004).

POc's geocentric system was reconstructed not only for the navigational scale (§3.2), but also for the *local scale*. The etymological forms for the directionals are the same as the ones given earlier (Figure 5 p.155): **sake* 'up', **sipo* 'down', **pano* 'across, in transverse direction'. Their spatial configuration is given in Figure 18.

Structurally speaking, the system reconstructed for POc is identical with the one that is still employed today in the languages of Gaua (Figure 8 p.165): two *up—down* axes (*upwind–downwind*, *uphill–downhill*) plus an undifferentiated traverse. The system of Gaua, which served as one of two "canons" in our synchronic analysis, has preserved the same structural

contrasts as its remote ancestor: it is thus the most conservative of the whole Torres–Banks area, in the GEOCENTRIC as much as the TOPOLOGICAL domain (§2.4.2).[42] In comparison with the conservative languages of Gaua, the remaining geocentric systems of Torres and Banks Islands result from an accumulation of innovations, which can now be unravelled successively.

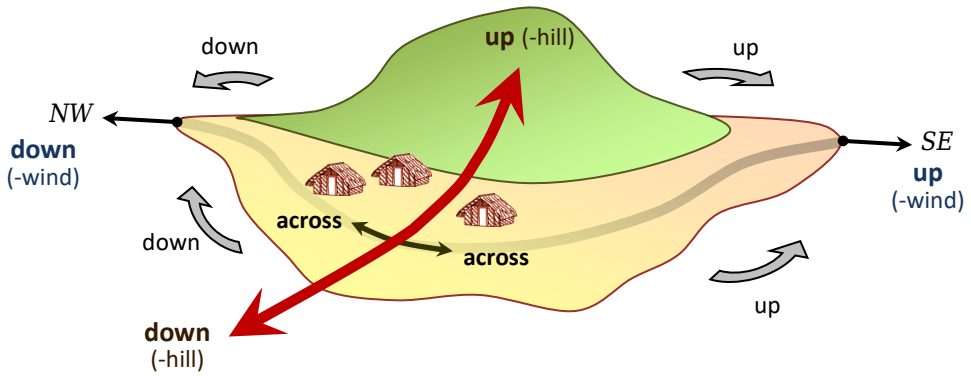

Figure 18 – The system of geocentric directionals reconstructed for Proto Oceanic, the ancestor of all Torres–Banks languages (after François 2004)

5.2 Innovations affecting the coastal axis

A fair part of the differences found across northern Vanuatu systems revolve around one important innovation: the loss of the undifferentiated traverse axis ('across' – see §4.1.2), and its replacement by the cardinal axis.

As was made clear in the canonical approach (Table 6 p.167), the generalisation of the cardinal axis *up—down* to all distances on land was complete in some languages, but only partial in others. One language which brought this innovation to its logical completion is Mwotlap (§4.2): the undifferentiated traverse was lost there leaving no trace, and cardinal *up* and *down* are now used everywhere on land, whatever the distance. Other languages in the same case are Volow, Löyöp, Lehali and Lo-Toga.[43] The rationale for this innovation was the functional advantage of the cardinal axis. Indeed, the inherited traverse axis had one communicative weakness: that of being undifferentiated, and thus prone to ambiguities. Every time the sole use of 'across' on the local scale would have been ambiguous, it was tempting to make the most of the cardinal axis – already used for larger distances anyway – for the sake

[42] The only notable innovations of Gaua languages took place in the *lexification* of these categories. While all languages reflect **sake* 'up' (> *sa*, *saa*, *hag*...), four languages of Gaua went through the relexification of their word for 'down': **sipo* was replaced by another lexeme **roro* (> NUM/DRG/KRO *ror*, OLR *roy*), whose original meaning can be reconstructed as 'go deep, sink; be deep, be low' (François 2010:139). This is one example where languages can prove conservative in their structures, even though the lexical material used to lexify them may itself have gone through local innovations (François 2010, 2011:226). See also the Appendix (§7.3).

[43] In Table 5 p.14, this innovation is manifest by the colexification of vectors #8–9–10 for *up*, and of #11–12–13 for *down*. Lehali and Lo-Toga historically took part in that expansion of cardinal *up* on land, but the connection with *up* was later blurred by a lexical innovation (see §5.3.2).

of disambiguation (François 2004:25). This is how the cardinal axis came to be generalised on land to all scales.

Crucially, this innovation didn't need to happen on both sides: any change that would result in the differentiation of the two sides would have been sufficient for this purpose. And indeed, some languages – those of Vanua Lava on the one hand, and Hiw on the other hand – went through a similar process of extending the cardinal axis on land, yet for some reason, only did so on the *northwest* (*down*) side; as for short distances in the *southeast* direction, they kept a trace of the former traverse axis.

5.2.1 The memory of the lost traverse in Vanua Lava

This is how, in my view, one can explain the asymmetry of the Vanua Lava system (Figure 11 p.170), which shows a distance-based contrast between short and long distances, only on the southeast side of the local scale: e.g. Lemerig has *wël* for #10 but *sag* for #9.

This historical hypothesis can even be refined through the etymology of the #10 directional (Vurës/Vera'a *wōl*, Mwesen *wol*, Lemerig *wël*). Knowledge of regular sound correspondences points towards a protoform ***volo**, whose meaning can be reconstructed as 'crosswise, across' (§7.3.3).[44] A plausible scenario would propose that the ancestor of Vanua Lava languages, at a time when the undifferentiated traverse was still used like in Proto Oceanic, first went through a simple process of relexification by replacing *pano with *volo, a form with a similar meaning 'across'. For a while, this *volo must have been used for encoding both SE and NW, as in Gaua. Later on, cardinal *down* was extended from the navigational scale onto the local scale, and replaced *volo for its NW direction [#11], while *volo became restricted to the SE side. The lexical replacement resulted in the differentiation of the local traverse between NW (originally 'down') and SE (*volo, originally 'across').[45] This reconstruction explains the labels I have used in Figure 11 p.170, to represent the non-geocentric meanings of directionals.

5.2.2 The memory of the lost traverse in Hiw

This scenario may also be the key to one of the oddities of Hiw. Section 4.7.2 established that the directional ***vën*** of Hiw colexifies two quite different meanings, namely 'southeast (on land)' and 'thither' (participant-oriented directional, allotropic) – see Figure 17 p.177.

My hypothesis is that the two directionals *vën* form an etymological doublet rooted in the original polysemy of its etymon *pano, of which *vën* [βen] is the regular reflex. Proto Oceanic *pano can be reconstructed as a directional verb, whose meanings included 'go away; move in a transverse direction' (Ross 2007:279); it was used on the navigational scale (Figure 5 p.155) as well as the local scale, to encode the undifferentiated traverse (§5.1). The ancestor of Hiw used *pano to lexify both sides of the traverse axis (#10, #11), just as it still does in Mota (*vano*) or Nume (*van*). Later on, Hiw went through the same innovation as Vanua Lava languages, namely the extension of the *down* (*NW*) directional to all distances on land,

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[44] Cognates with *volo include Hiw *wōywōy* 'crosswise' in ex.(49), as well as Mota *wolowolo* '[ADV] cross-wise; [N] a cross' and Vurës *wōlōwōl* '[N] a cross; a crossbeam' (François 2013:195).

[45] In addition, it appears that Vera'a may have replaced *down* on the local scale with an innovative directional *mul*, from *mul(ō)* 'go back': see the discussion in §4.4.2.2.

resulting in the lexical differentiation of the traverse axis. The use of *vën* for #10 is thus merely conservative of **pano*, the original directional for the former traverse axis.[46]

The second part of the scenario is the observation that while POc **pano* evidently had the meaning 'move in a transverse direction', it can also be reconstructed with a sense 'leave, go away (from speaker)' (Ross 2007:279). The deictic component of this meaning ('away from speaker') explains why the six northernmost languages of the Torres–Banks area have grammaticalised **pano* into a participant-oriented directional 'towards non-speaker' – as shown in Table 3 p.145. This is the source of the allotropic directional in Mwotlap (*van*), Lo-Toga (*vēn*) as well as Hiw (*vën*).[47]

In sum, the two modern senses of Hiw *vën* originate in the polysemy of its etymon **pano*. This situation is summarised in Table 8. Glosses for POc reconstructions come from Ross (2007). I compare Hiw with two other languages, Mota and Mwotlap.

Table 8 — Explaining the homophony of 'thither' and 'southeast along the coast' in Hiw

POc etymon	Mota	Hiw	Mwotlap	DIRECTIONAL GLOSS
**pano* 'move in transverse direction'	**vano**		(CARDINAL)	'across, along the coast'
		vën		'along the coast, SE side'
**pano* 'go away (from speaker)'				
	at	**vën**	**van**	'thither, to non-speaker'
**watu* 'go to addressee'				

Hiw is the only language that has kept reflexes of **pano* both for the coastal axis (like Mota) and for the allotropic directional (like Mwotlap). Hiw is partly conservative like Mota regarding #10 'along the coast, SE side', and partly innovative like Mwotlap regarding #2 'thither': this explains the presence of this etymological doublet in the system of Hiw.

5.3 Innovations affecting the *land–sea* axis

5.3.1 The relexification of the land–sea axis

In sum, all the changes affecting the coastal axis revolve around one major innovation: the extension (complete in five languages, partial in five others) of the cardinal *up–down* axis from the navigational scale to the local scale, presumably as a functional reaction to the ambiguity of the original undifferentiated traverse.

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[46] An extra twist in Hiw was the expansion of *vën* to all southeast vectors on land, including on the "intermediate scale" of long distances on a single island. As a result, Hiw is the only northern Vanuatu language that encodes southeast for long distances on land (*vën* <**pano*) differently from southeast across islands (*ag* <**sake* 'up, upwind'): compare the rows #8 and 9 in Table 5 p.14.

[47] For the same meaning, the nine southernmost languages of the Banks from Vurës down to Mwerlap (Table 3) reflect another deictic directional verb of POc, namely **watu* 'go towards addressee' (Ross 2007:275) – e.g. Lakon *at*, Vurës *net*, etc.; in doing so, they broadened its semantic scope not just to the addressee (**watu* 'towards you') but to any participant outside the speaker's sphere ('towards you/him/her/them'…).

This extension had an important impact on the whole system. As the cardinal *up–down* axis (originally *upwind–downwind*) came to be used onto the local scale, it started a competition with a different *up–down* axis, this time coding 'inland' vs. 'seawards' (i.e. *uphill–downhill*). As long as the two homophonous pairs of directionals were being used on different scales, as they still do on Gaua, the homophony was not a major problem (§4.1.1); but the overlap of two separate *up–down* axes within the same local scale was likely to create a functional conflict, with a high risk for misunderstanding.[48] This conflict was solved by a second innovation: the creation of a new pair of topological directionals *in–out*.[49]

In all Torres–Banks languages outside Gaua, this new contrast *in–out* was harnessed in the lexification of the land–sea axis, and competed with the inherited pair *up–down*. In Mwotlap and Vanua Lava, this resulted in the wholesale redesign of the system, and the complete replacement of *up–down* by *in–out* along the entire axis. In other languages, the replacement was only partial: several languages preserved the *up–down* contrast in those parts of the island where verticality was cognitively salient (typically, in the higher slopes of volcanic islands) while they relexified the axis to *in–out* in the flatter parts of the island, or the land/sea interface. What resulted were hybrid systems, in which the land–sea axis is sometimes lexified *in–out*, and sometimes *up–down* (Mota, Mwerlap, the languages of Ureparapara and the Torres Is).

5.3.2 The lexical split of up*, and resulting asymmetries*

The system of Hiw presented two main puzzles. One was the colexification of #2 'thither' and #10 'southeast (close)' with the same form *vën*: I showed this constitutes an etymological doublet, ultimately due to the polysemy of its etymon **pano*. I now turn to the second puzzle of Hiw, namely the colexification of #8 'southeast (across islands)' with #4–5 'landwards (at sea) ~ inland (on flat terrain)'. As we saw in §4.7.3, these two vectors are both encoded with a form ***ag***, which in modern Hiw only has these two geocentric meanings. I propose that this unexpected colexification is, again, a case of etymological doublet.

The configuration of Hiw is partly reminiscent of the case of Lehali (*ha*) and Lo-Toga (*iag*), presented in §4.6. In all three languages, the modern form is a regular reflex of POc ***sake**, originally '(go) up' (POc *sake* > *saɣ* > *haɣ* > LHI [ha], LTG/HIW [aɰ]). The semantic link between vertical *up* and the vectors mentioned (*uphill*, *upwind*) dates back to POc, and is unproblematic. The only difference with other Oceanic languages is that Lehali, Lo-Toga and Hiw have lost **sake* for the vertical direction, and replaced it with a local verb ***vene*** 'climb > go up > upwards, up' (**vene* > LHI/HIW [βɪn], LTG [βin]).[50] This lexical replacement in the topological domain resulted in a lexical split in the geocentric domain. The form taken by this split is highly instructive, because it reflects a cognitive contrast, I believe, between a geocentric subdomain in which verticality is still salient, and another one where it has lost any relevance for modern speakers. On the one hand, the vector #6 'uphill (in the island's heights)',

[48] See François (2004:22-26) for a similar reasoning regarding other Oceanic languages.

[49] Remember that Proto Oceanic (like the conservative languages of Gaua) did not seem to have any separate directional for 'in' and 'out', which were originally colexified with 'up' and 'down' (§2.4.2).

[50] The verbal use of **vene* 'climb, ascend' was illustrated in (47) for Hiw.

formerly associated with **sake*, underwent replacement to **vene*,[51] because this is the vector most obviously associated with verticality. On the other hand, reflexes of **sake*, while losing any synchronic connection with 'up', remained attached to two vectors which are less obviously tied to verticality: (1) the cardinal axis, and (2) the *inland* vector on flat terrain.

Lehali and Lo-Toga only preserved reflexes of **sake* for the cardinal axis, with the meaning 'southeast' (Figure 16 p.175). By contrast, the originality of Hiw is that it has preserved its directional ***ag*** (<**sake*) in two separate corners of its geocentric system. The navigational ***ag***$_1$ originates in the cardinal sense of **sake* 'up > upwind > southeast'. As for ***ag***$_2$, its origin lies in the ancient connection of 'inland' with **sake* 'up', which is still preserved in Gaua. While such a connection 'up'/'inland' is to be expected in the general context of Oceanic languages, it is nevertheless surprising in the local Torres–Banks context. Indeed, we saw that the ten northernmost languages of Vanuatu have consistently lost their directional 'up' when referring to 'inland' in a village context, and instead they have all shifted to a contrast '**in**'–'out'.[52] The fact that Hiw uses ***rōw*** 'out' for the 'seawards' direction – as in (53) above – reinforces the expectation that the 'inland' vector should have been encoded as ***iy*** 'in' – just like in Hiw's neighbour, Lo-Toga. Instead, what we observe is the unexpected retention of **sake* at a point in the system where – judging by what happened for all of Hiw's neighbours – it should have long disappeared.

What results is another etymological doublet – on top of the one exposed in §5.2.2 – involving two vestigial directionals ***ag***. The situation is summarised in Table 9, which displays modern reflexes of POc **sake* in a selection of five languages: Mota, Mwotlap, Löyöp, Lo-Toga and Hiw. Forms not cognate with **sake* are given in brackets. The two traces left by **sake* in Hiw are semantically discontiguous, and constitute a doublet.

Table 9 — Reflexes of POc *sake *'go up' in a subset of northern Vanuatu languages*

POc etymon	DIRECTIONAL GLOSS	MTA	MTP	LYP	LTG	HIW
**sake* 'go up' → 'upwind'	#8 'upwind = SE (inter-island)'	**sage**	**hag**	**sa**	**ag**	**ag**$_1$
	#9 'upwind = SE (on land)'	**sage**	**hag**	**sa**	**ag**	(*vën*)
**sake* 'go up' (vertical)	#7 'up (vertical)'	**sage**	**hag**	**sa**	(*vin*)	(*vēn*)
**sake* 'go up' → 'uphill'	#6 'uphill = inland (mountain)'	**sage**	(*hay*)	**sa**	(*vin*)	(*vēn*)
	#4-5 'uphill = inland (sea, village)'	**sage**	(*hay*)	(*hay*)	(*il*)	**ag**$_2$

Considered for itself, the system of geocentric directionals in Hiw (Figure 17 p.177) seems idiosyncratic, with asymmetries and cases of homophony which a language-internal analysis might have found difficult to explain. However, its quirkiness can be unravelled by comparing Hiw to its neighbours, and by reconstructing the various innovations that transformed the original POc system of space reference into the modern systems attested today.

[51] See ex. (42)–(43) for Lo-Toga, and (54) for Hiw.

[52] This was visible in Table 5 (p.14), which shows that all languages that have a specific directional for 'in' (row #3) also use it for 'inland', at least in the lower areas of their island (row #5).

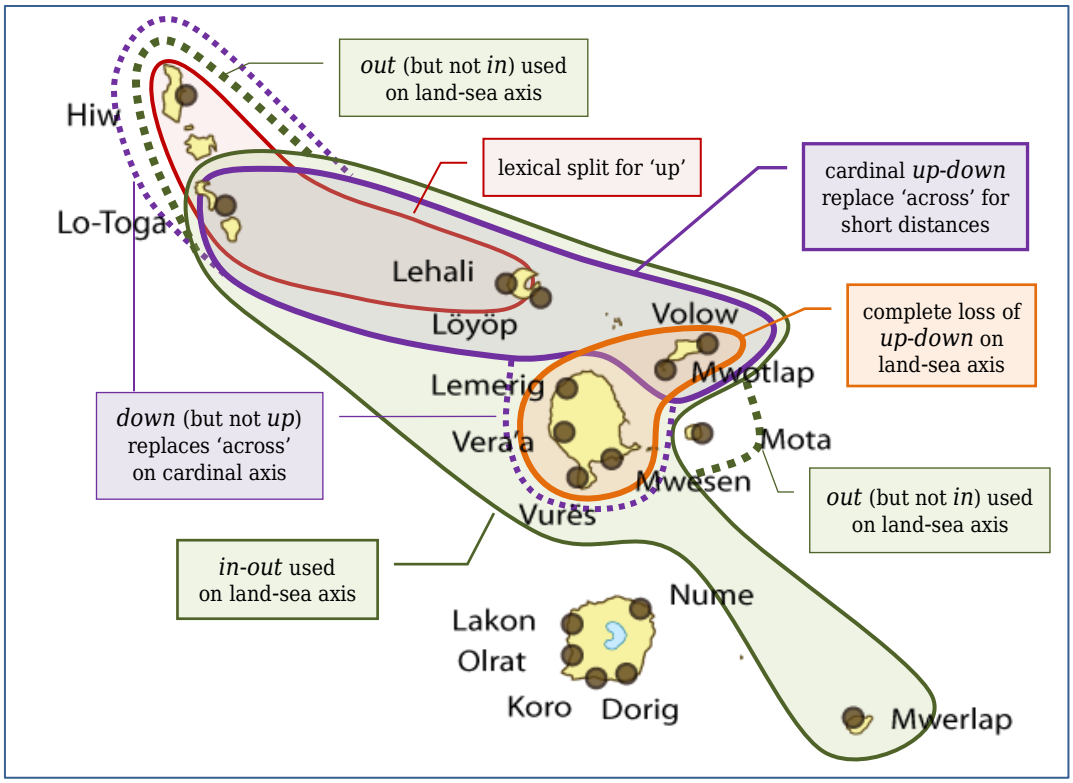
5.4 The dialectological perspective: Entangled isoglosses

While Table 6 p.167 had adopted a synchronic approach, Table 10 organises the north Vanuatu data following a historical perspective: it lists the six principal innovations involved in the make-up of modern systems, from the very conservative languages of Gaua (zero structural innovation from Proto Oceanic) to the more innovative languages in the north.

Table 10 — Main historical innovations involved in the development of modern geocentric systems in Torres–Banks languages.

	COASTAL AXIS		LAND–SEA AXIS			
	DOWN replaces *across* (NW)	UP replaces across (SE)	IN used for 'inland'	OUT used for 'seawards'	total loss of UP-/DOWN-hill	lexical split of UP
5 Gaua lgs	—	—	—	—	—	—
Mota	—	—	—	+	—	—
Mwerlap	—	—	+	+	—	—
4 Vanua Lava lgs	+	—	+	+	+	—
Mwotlap	+	+	+	+	+	—
Volow	+	+	+	+	+	—
Löyöp	+	+	+	+	—	—
Lehali, Lo-Toga	+	+	+	+	—	+
Hiw	+	—	—	+	—	+

Map 10 – The modern diversity of Torres–Banks geocentric systems results from the accumulation of post-POc innovations that diffused across neighbouring languages



Evidently, innovations were shared across neighbouring languages. The resulting isoglosses are represented in Map 10. Dotted lines reflect those cases when a new structure was adopted only partially, resulting in asymmetry. For example, while the solid purple line refers to the adoption of both cardinal *up* and *down* on the local scale, the dotted purple lines set apart those languages (Vanua Lava, Hiw) which generalised *down* but not *up*.

The isoglosses intersect – a common situation in the northern Vanuatu linkage (François 2011, 2014; Kalyan & François f/c). This can only be explained by processes of diffusion, whereby speech patterns – in this case, the internal structure of paradigms of space directionals – spread from community to community, via social and linguistic contact. Sometimes, neighbouring languages aligned their systems perfectly, whether they were spoken on the same island (Vanua Lava) or on different islands (Lehali and Lo-Toga). In other cases, the alignment was partial, as only some aspects of one system ended up leaking from one language to the other.

In sum, the history of space systems in the archipelago follows a pattern similar to what can be observed in the historical dialectology of these languages (François 2011:201). The modern linguistic fragmentation, which today takes the form of *divergence*, ultimately reflects the layering of multiple innovations, each of which diffused – via a process of *convergence* – to a certain portion of the social network. Each community shared its innovations sometimes with one neighbour, sometimes with the other, ultimately resulting in the language mosaic that prevails today.

6 Conclusion

Considered in each modern language separately, the mechanism of geocentric space reference is stable: speakers agree on a set of forms, which they use consistently within their community, with relatively little variation. However, systematic cross-linguistic comparison changes radically the perspective, as it casts light on the fluidity and internal dynamics, on the long term, of these spatial systems.

The comparative approach proves particularly helpful when attempting to interpret languages whose synchronic description unveils asymmetries and paradoxes. They ultimately appear for what they are: mere moments in a history of constantly evolving configurations, as though each language community kept searching for the right compromise between two contradictory canons. These adjustments all constitute possible answers to the various pressures that weigh upon the success of communication when referring to space: the avoidance of confusion, the need to adapt to new landscapes, the tendency for analogical levelling, or the entrenched cross-linguistic diffusion of innovations. Sometimes, along with their innovative trends, modern languages also exhibit vestigial memories of earlier systems, which have been preserved against the odds of history.

Besides their intrinsic interest for a typology of space strategies, the geocentric systems of northern Vanuatu also provide an excellent vantage point for observing how languages are constantly reshaped by the populations who use them.

7 APPENDICES

7.1 Abbreviations

7.1.1 Languages

The abbreviations for language names appear on *Map 1*, and are repeated below.

DRG	Dorig	LMG	Lemerig	MTP	Mwotlap	VRA	Vera'a
HIW	Hiw	LTG	Lo-Toga	MSN	Mwesen	VRS	Vurës
KRO	Koro	LYP	Löyöp	NUM	Nume	POc	Proto Oceanic
LHI	Lehali	MRL	Mwerlap	OLR	Olrat	PTB	Proto
LKN	Lakon	MTA	Mota	VLW	Volow		Torres-Banks

7.1.2 Interlinear glosses

Example sentences are glossed according to the Leipzig rules. More specific abbreviations are listed below.

ALL	allative case
AO	Aorist (≈narrative) aspect
ART	article
DEF	definite
DIMIN	diminutive
DIST	distal demonstrative
DOM	differential object marker (human object)
DX	deictic
EXIST	existential predicate
FOC	focus marker
HAB	habitual aspect
HUM	human article
INDF	indefinite
INSTR	instrumental
IPFV	imperfective
IRR	irrealis
LOC	locative case
MED	medial demonstrative
NEG	negation
NPL	non-plural
NSG	non-singular
PERS	personal article
PFT	perfect
POSS	possessive classifier or linker
POT	potential
PROH	prohibitive
PROX	proximal demonstrative
PRSTV	Presentative aspect
RED	reduplication
REL	relativiser
SBJN	Subjunctive mood
SEQ	Sequential aspect
STAT	Stative aspect
SUGG	suggestive (polite) imperative
TOP	topicaliser

7.2 Orthography and pronunciation

Forms in this study are given using the practical orthographies adopted for northern Vanuatu languages. Many conventions are unproblematic, and reflect their expected phonetic value: this is the case of *p*, *t*, *k*, *l*, *r*, *m*, *n*, *s*, *h*, *w*, as well as *a*, *i*, *u*, etc.

Several conventions are shared throughout the region:

- *g* is a voiced velar fricative [ɣ], realised as approximant [ɯ] syllable-finally
- *n̄* is [ŋ]; *m̄* is [ŋ͡mʷ]; *j* is [ʧ]; *y* is [j]

Some conventions are specific to some languages:

- *b*, *d*, *ḡ* represent prenasalised stops [ᵐb], [ⁿd], [ᵑg];
  but *d* is a voiceless laminal stop [t̪] in Lo-Toga

- *q* is [kʷ] in Hiw, Lo-Toga, Lehali and Mwerlap; [k͡pʷ] elsewhere
- *q̄* in Volow is [ᵑg͡bʷ]; *r̄* in Hiw is [g͡ʟ]
- *v* is [v]~[f] in Vera'a, Mota, Mwerlap; [β]~[v] elsewhere
- in the Banks, *e* is [ɛ]; *ë* is [œ]
- in the Torres, *e* is [ə]; *ë* is [ɛ] in Lo-Toga, [e] in Hiw
- *ē* is [e] in Lo-Toga, [ɪ] everywhere else
- *ō* [ʊ] contrasts everywhere with *o* [ɔ]
- *ö* is [ɒ] in Lehali, [ø] elsewhere
- *ā* is [ɒ] in Lemerig, [aː] in Dorig
- *ä* is [ɛ͡a] in Koro, [æ] elsewhere

These rules can be illustrated with some of the directionals given in Table 5 p.151. Thus *ma* is [ma]; *me* is [mə] in Hiw and Lo-Toga, but [mɛ] elsewhere; *mē* is [mɪ]. Lo-Toga *vēn* is [βen]; in Hiw, *vēn* is [βɪn] 'up' and contrasts with *vën* [βen] 'thither'. Likewise, *how* is [hɔw], *hōw* [hʊw], *sōw* [sʊw], *suwō* [suwʊ]; *sag* [saɰ], *seag* [sɛ͡aɰ], *hag* [haɰ], *ag* [aɰ]; *vēn* [βɪn]; *wël* [wœl], *wōl* [wʊl]; *row* [rɔw], *r̄ōw* [g͡ʟʊw]; *päh* [pæh].

7.3 Etymological notes

Even though this study intends to describe the paradigms of space directionals following a synchronic approach, reference is occasionally made to etymologies. This appendix recapitulates what is known of the origin of modern directionals, based on the knowledge of regular correspondences in the area (François 2005, 2013). All the forms mentioned here were presented in Table 5 p.151; their phonetic transcription was given in §7.2.

7.3.1 Hither

All northern Vanuatu languages encode 'hither' using a regular reflex of POc **mai*:

(I) POc ****mai*** 'come; hither': HIW *me*; LTG *me*; LHI *ma*; LYP *me*; VLW *me*; MTP *me*; LMG *me*; VRA *ma*; VRS *me*; MSN *me*; MTA *ma*; NUM *ma*; DRG *ma*; KRO *ma*; OLR *ma*; LKN *ma*; MRL *mē*.

7.3.2 Thither

What I gloss 'thither' for a shortcut is the allotropic participant-oriented directional (§2.4.1); a longer gloss would be 'towards non-speaker', i.e. 'towards you ~ him ~ her ~ it ~ them'.

Several modern forms reflect POc **watu* '(go) towards addressee' (Ross 2003:279):

(II) POc ****watu*** 'go towards addressee' → PTB **atu* 'towards non-speaker, *thither*': VRS *n\et*; MSN *n\at*; MTA *at*; NUM *at*; DRG *āt*; KRO *ät*; OLR *at*; LKN *at*; MRL *ot*.

Other northern languages reflect POc **pano* 'go away (from speaker)' (Ross 2007:279):

(III) POc ****pano*** 'go away (from speaker)' → PTB **vano* 'towards non-speaker, *thither*': HIW *vën*; LTG *vēn*; LHI *van*; LYP *van*; VLW *va*; MTP *van*.

See the discussion in §5.2.2.

For the same meaning 'thither, towards non-speaker', Lemerig uses its directional *wël* (also 'across'), and Vera'a its directional *suwō* (also 'down').

7.3.3 Across

As discussed in §4.1.2 and §4.7.2, the same POc verb **pano* is not only the source of the allotropic participant-oriented directional ('thither') in some languages, but also of the directional 'across' used on the transverse axis in the local scale (§4.1.2). While this meaning can be reconstructed as far back as Proto Oceanic (§5.1), it is only reflected in four languages of the Torres–Banks area:

(IV) POc ****pano*** 'move in transverse direction'
→ 'following a direction parallel to the shoreline':
HIW *vën*; MTA *vano*; NUM *van*; MRL *van*.

The languages of Gaua have non-cognate directionals *vak* and *päh*, of unknown origin.

Finally, the languages of Vanua Lava show evidence of a lexical replacement of **pano* with a local etymon **volo* 'crosswise, across' (François 2013:195):

(V) ****volo*** 'crosswise, across' → 'following a direction parallel to the shoreline':
LMG *wël*; VRA *wōl*; VRS *wōl*; MSN *wol*.

The latter etymon later underwent semantic narrowing to 'parallel to shoreline towards southeast (for short distances on land)' – see the discussion in §5.2.1.

7.3.4 Up

The following forms reflect Proto Oceanic **sake* 'go up; up' (and related meanings):

(VI) POc ****sake*** 'go up; up': HIW *ag*; LTG *ag* ~ *iag*; LHI *ha*; LYP *sa*; VLW *ha*; MTP *hag*;
LMG *sag*; VRA *sag*; VRS *siag*; MSN *sag*; MTA *sage*; NUM *sa*; DRG *sag*;
KRO *sa* ~ *sag*; OLR *saa*; LKN *hag*, *rok\a*; MRL *seag*.

Three languages have created a new directional for 'up', from a verb 'climb' which can be reconstructed as **vene*:

(VII) ****vene*** 'climb' → 'up': HIW *vēn*; LTG *vin*; LHI *vēn*.

This process of lexical replacement, and its impact, are explained in §4.6 and 4.7.3.

7.3.5 Down

The counterpart of **sake* in POc was **sipo*. However, only two north Vanuatu languages show unproblematic reflexes of **sipo* in their form for 'down', namely Lo-Toga and Mota:

(VIII) POc ****sipo*** 'go down; down': LTG *iw*; MTA *swo* ~ *siwo*.

Other Torres–Banks languages reflect **sipo* as a verb, but not as a directional. Their directionals for 'down' point to a protoform that would can be reconstructed as ****suwo*** at the level of Proto Torres-Banks (PTB). This form is of unclear origin: it might be an irregular reflex of POc **sipo* (> **siwo* > **suwo*, showing rounding of /i/ before /w/), unless it reflects another lexeme.

(IX) PTB ****suwo*** 'down': HIW *uw*; LHI *how*; LYP *sōw*; VLW *hō*; MTP *hōw*; LMG *sōw*; VRA *suwō*;
VRS *sōw*; MSN *sōw*; LKN *hōw*, (*rōk*)*ōw*; MRL *sōw*.

Four Gaua languages have innovated a new directional 'down' from an etymon ****roro***, demonstrably a stative verb meaning originally 'go deep, sink; be deep, be low' (François 2010:139):

(X) PTB ***roro*** 'sink, be deep, be low' → 'down': NUM *ror*; DRG *ror*; KRO *ror*; OLR *roy*.

This case of total relexification is mentioned in fn.42 p.181.

7.3.6 In

Following the discussion in §2.4.2, it seems that Proto Oceanic did not have any lexemes for 'in' and 'out'. These two directionals are thus local innovations only found in northern Vanuatu; they are absent from the conservative languages of Gaua.

Most Torres–Banks languages with a directional for 'in' reflect a local protoform ***saro***:[53]

(XI) PTB ***saro*** 'enter, go in' → 'in': LYP *say*; VLW *ha*; MTP *hay*; LMG *sar*; VRA *sar*; VRS *sar*; MSN *sar*; NUM *sar*; MRL *sar*.

This form **saro* must have been originally a verb meaning 'enter, go in'. Its suffixed form **sarovaɣi* (reflecting the POc applicative **-akin*) is reflected in Mota and Mwotlap as a verb with the same meaning [cf. examples (MTP.7), (MTA .16)]:

(XI') PTB **sarovaɣi* 'enter, go in': MTP *hayveg*; MTA *sarovag*.

Three northern languages have innovated a different directional for 'in'; these reflect an etymon **ila*, of unknown origin:

(XII) PTB ***ila** '??' → 'in': HIW *iy*; LTG *il*; LHI *ila* ~ *la*.

7.3.7 Out

All northern Vanuatu languages unanimously reflect a protoform ***rowo*** for 'out'. This directional is most probably cognate with the verb **rowo* in the same languages, meaning 'dash, move swiftly, escape', itself a regular reflex of POc **Ropok* 'dash, fly'.

(XIII) POc **Ropok* 'dash, fly' → PTB ***rowo*** 'dash, move swiftly, escape' → 'out': HIW *rōw*; LTG *rōw*; LHI *yow*; LYP *yow*; VLW *yo*; MTP *yow*; LMG *row*; VRA *rōw*; VRS *rōw*; MSN *row*; MTA *rowo*; MRL *row*.

This lexical innovation is not reflected in Gaua languages, which preserve the colexification of 'out' with 'down' inherited from Proto Oceanic (§2.4.2).

7.4 Morphology of directionals in Mwerlap

Section §4.5.3 presented how the geocentric system of Mwerlap is organised. Another intricacy of Mwerlap is the actual form taken by the directionals themselves; due to its complexity, this morphological excursus was better placed in an Appendix.

Most languages of northern Vanuatu have a single set of directionals, usually monosyllables, which are all formally invariant; these are the forms given in Table 5 p.151. By contrast, Mwerlap directionals vary morphologically depending on whether they define a static location or a motion path (cf. §2.3), and also on their combination with deictics (Table 11).

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[53] In several languages (Löyöp, Vurës, Mwesen, Mwerlap), this directional 'in' is homophonous with the noun meaning 'village clearing, dancing area in the centre of the village'. This similarity is purely accidental: the directional reflects **saro*, whereas the noun reflects an etymon **zara* 'sweep, broom' (Clark 2009:238).

Table 11 — Morphology of directionals in Mwerlap

	topological meaning	*directional + deictic*	Kinetic use		Static use	
			EGOTROPIC	ALLOTROPIC	EGOTROPIC	ALLOTROPIC
'inland' (<20 m)	'in'	ki **ser** (*kē*)	**ser**=mē	**ser**=lēg	kere= **ser**=mē	ka(ra)= **sar**
'seawards' (<20 m)	'out'	**kor** (*kē*)	**ru**=mē	**ru**=lēg	kere= **ru**=mē	ka(ra)= **row**
'// shore' (<200 m)	'across'	ki **vel** (*kē*)	mē	**vel**=lēg	kere= mē	ka(ra)= **van**
'inland' (>20 m)	'up'	ki **sea**(g) (*ñē*)	**sea**(g)=mē	**sege**=lēg	kere= **sea**(g)=mē	ka(ra)= **seag**
'seawards' (>20 m)	'down'	**kos** (*ñē*)	**su**=mē	**su**=lēg	kere= **su**=mē	ka(ra)= **sōw**
'to SE' (>200 m)	'up'	—	**sea**(g)=mē	**sege**=lēg	**sea**(g)=mē	**seag**
'to NW' (>200 m)	'down'	—	**su**=mē	**su**=lēg	**su**=mē	**sōw**

7.4.1 Static locations

The forms given in Table 5 for Mwerlap (namely ***sar*** 'in', ***row*** 'out', ***seag*** 'up', ***sōw*** 'down', ***van*** 'across') are the same as the rightmost column of Table 11; however, the basic forms are seldom used alone, and normally combine with other particles.

When preceded by the particle *ka* or *kara*, the directional defines a vector pointing to a static location, and deictically oriented away from the speaker ("allotropic") — e.g. *ka(ra) seag* 'up there', *ka(ra) van* 'over there [parallel to shore]', etc.

(MRL.55) Gil *kara* ***row***!
dig STATIC out
(*digging a hole*) 'Dig further away [from me], towards the sea.' [BP3-20b]

When the vector defined by the static location is deictically oriented towards the speaker (Eng. 'up here, up this way'), the phrase is followed by the enclitic ***=mē*** 'hither'. This use is not problematic *per se*, and simply corresponds to the "egotropic" use of the deictic directional 'hither' that was presented in §2.4.1 above. But the peculiarity of Mwerlap is that this clitic *=mē* triggers leftward *vowel harmony* upon its host phrase, resulting in allomorphic forms of the directionals with raised vowels. Thus *kara* ***sar*** [kara'sar] 'over there inland' becomes *kere* ***ser***=*mē* [kɛrɛsɛr'mɪ] 'over here inland'; *kara* ***row*** [kara'rɔw] 'over there seawards' becomes *kere* ***ru***=*mē* [kɛrɛrʉ'mɪ], etc.

(MRL.55') Gil *kere* ***ru*** ***=mē***!
dig STATIC out =hither
'Dig a bit more this way, towards the sea.' [BP3-20b]

Because the directional 'across, parallel to shore' is lexified with ***van*** 'thither' which is originally allotropic (§2.4.1), its egotropic counterpart is not **kere ven=mē*, but simply *kere* ***mē*** 'this way'.

7.4.2 Motion paths

When the directional vector defines a motion path followed by a participant, the directionals combine with the enclitic *=mē* for egotropic orientation (*su=mē* 'down this way') and *=lēg* when allotropic (*su=lēg* 'down that way'). The forms for 'up' are unpredictable, respectively ***sea***=*mē* and ***sege***=*lēg*. The ones for 'across, parallel to shore' are ***vel***=*lēg* ('thither') if allotropic, and simply *mē* ('hither') if egotropic.

This kinetic use of directionals was illustrated in sentences (39-40) above, in which the motion path outlined by the directionals was the one followed by the ball.

7.4.3 Combination with deictics

Finally, Mwerlap directionals show special forms when combined with a demonstrative. The rich system of Mwerlap demonstratives include ***kē*** 'PROXIMAL' (with variants *kēkē*, *kēlē*…) as opposed to ***nē*** 'DISTAL' (with variants *nēnē*, *ñea* …). Vowel harmony in the locative phrase sometimes triggers the raising of the directional's vowel (e.g. *ki* ***ser*** *kē* 'inland here'). As Table 11 above shows, some forms are unpredictable, such as {*ki*+*row*=} ***kor*** 'out' and {*ki*+*sōw*=} ***kos*** 'down'.

The following examples illustrate the directionals when they are combined with a demonstrative.

(MRL.56) i Edga *ki* ***vel*** *kēlē*.
PERS Edgar LOC across PROX
'Edgar is over there this way (parallel to shore).' [BP3-20b]

(MRL.57) i Edga ***kor*** *kē* verē.
PERS Edgar LOC:out PROX outside
'Edgar is (out) here outside.' [BP3-20b]

(MRL.58) Sean mē-lē *sar* lē eañ ***kos*** *ñē*.
3sg PFT-take in LOC house LOC:down DIST
'He took it [the knife] into that house *down* over there (seawards).' [MRL.d05:20]

(MRL.59) Ne-tedun irō se-velvelēlē ***vel*** *ñē* lē sar.
ART-person two IPFV-argue across DIST LOC clearing
'Two people are arguing over there in the middle of the village.' [MRL.d08:02]

The rich system of Mwerlap would certainly deserve further investigation.

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