Expressing Location in Zapotec: an Introduction

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This introduction started its merry journey as a position paper for contributors to the volume. We have modified it slightly and present it to you, the reader, with the intention that it be of use in both more deeply understanding the papers in this volume and in your research on languages, Zapotecan or not!

1. The languages[1]

Zapotec languages are spoken primarily in Oaxaca, Mexico, although there are populations of speakers in various other parts of Mexico and the United States, especially the greater metropolitan area of Los Angeles, California. These language varieties range from highly endangered with very few remaining speakers to varieties with thousands of speakers. Zapotec languages have basic VSO word order (with perhaps a few exceptions, noted in Lewis 2009), pronominal clitics, aspect prefixed on the verb, and tone. This volume covers a wide range of Zapotec language varieties, including representatives from all major branches: Northern, Valley, Southern, Eastern (Papabuco), and Isthmus.

In this introduction we present data from several Zapotec varieties, primarily from two branches of the Zapotec family: Valley Zapotec and Northern Zapotec.

The Valley Zapotec varieties that are represented in the introduction are Tlacolula de Matamoros Zapotec (TMZ), San Lucas Quiaviní Zapotec (SLQZ) and San Juan Guelavía Zapotec (SJGZ). The *Ethnologue* refers to all of these varieties as San Juan Guelavía Zapotec (ISO 639 code "zab"; Lewis 2009), but we refer to this group as Tlacolula Valley Zapotec (TVZ) to prevent confusion, as San Juan Guelavía Zapotec is also a variety within the "zab" group. When no other reference is made, the TVZ data is from Lillehaugen's fieldwork. TMZ and

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[1] We would like to thank the following people for their comments and suggestions: Chris Adam, George Aaron Broadwell, Michael Galant, John Foreman, Pamela Munro, and Rebecca Whistler. All errors and omissions are our own. As always, we are indebted to our Zapotec consultants, and thank them for sharing their time and language with us: Felipe H. Lopez (SLQZ), Roberto Antonio Ruiz (TMZ), Alberta Marcial Martinez (SBZZ), and other speakers of TVZ and SBZZ. Sections of this introduction draw heavily on the authors' previous publications and works in progress.

The following abbreviations and conventions are used in the glossing: *, used to mark ungrammatical sentences; #, used to mark grammatical, but semantically infelicitous sentences; 1, first person; 3, third person; ADV, adverbial; AN, animal, CL, classifier; COMP, completive; CONT, continuative; DEM, demonstrative; DET, determiner; DST, distal; EXCL, exclusive; F, formal; FP, free pronoun; FREQ, frequenative; HAB, habitual; INAN, inanimate; INCL, inclusive; INF, informal; NEU, neutral; NOM, nominalizer; PERF, perfective; PL, plural; POT, potential; PROG, progressive; PROX, proximate; S, singular; STAT, stative.

In addition, we use the following abbreviations in the text: BLC, basic locative construction; BLQ, basic locative question; BPL, body part locative; BPP, body part preposition; NP, noun phrase; PP, prepositional phrase; RN, relational noun; SBZZ, San Bartolome Zoogocho Zapotec; SJGZ, San Juan Guelavía Zapotec; SLQZ, San Lucas Quiaviní Zapotec; TMZ, Tlacolula de Matamoros Zapotec; TVZ, Tlacolula Valley Zapotec.

SLQZ are both written using the orthography developed in Munro and Lopez, et al. 1999[2] and SJQZ is written using the orthography developed by Olivia Martínez for SJGZ (Martinez 2003), which is adapted from the SLQZ orthography (Munro and Lopez, et al. 1999).

San Bartolomé Zoogocho Zapotec (SBZZ) is a Northern Sierra Zapotec language, identified by the *Ethnologue* as Zoogocho Zapotec (ISO 639 code "zpq"; Lewis 2009). The SBZZ data is from Sonnenschein's fieldwork.[3]

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[2] TVZ has six vowel qualities: *a*, *e*, *i*, *o*, and *u*, which correspond to their IPA equivalents, and a sixth vowel, *ë*, a high back unrounded vowel. Each TVZ vowel occurs with one of four phonation types: modal (plain), breathy, checked, or creaky. Breathy vowels are written with an *h* following the vowel (*ah*, *ëh*, etc.). Checked vowels are written with an apostrophe following the vowel (*a'*, *ë'*, etc.). Creaky vowels are written with a grave accent over the vowel (*à*, *è*, etc.), except for the vowel *ë*, for which a circumflex is used (*ê*). The consonants in TVZ are presented in the table below.

		bilabial	labio-dental	alveolar	alveo-palaltal	palatal	retro-flex	velar	glottal
stop	fortis	p		t				c/qu	
	lenis	b		d				g/gu	
fricative	fortis		f	s	x		x:		j
	lenis			z	zh		zh:		
affricate	fortis			ts	ch				
	lenis				(dzh)				
nasal	fortis	mm		nn				ng	
	lenis	m		n				nng	
lateral	fortis			ll					
	lenis			l					
trill				rr					
tap				r					
glide		w				y			

Key: sounds in parenthesis are not found in all TVZ varieties.

Table A. Orthographic representation of TVZ consonants

[3] SBZZ has five vowel qualities: *a*, *e*, *i*, *o*, and *u*, which correspond to their IPA equivalents. SBZZ vowels occur with one of four phonation types: modal (plain), creaky, breathy, or checked. Creaky vowels are written with two identical vowels letters in a row (*aa*, *ee*, etc.). Breathy vowels are written with an *h* in between two vowels of the same quality (*aha*, *ehe*, etc.). Checked vowels are written with an apostrophe following the vowel (*a'*, *e'*, etc.). While contrastive, tone is not marked in the current work. The consonants in SBZZ are presented in the table below. For more information on the SBZZ orthography, see Sonnenschein 2004.

		labial	Labiodental	alveolar	alveo-palatal	palatal	retro-flex	velar	labio-velar	uvular	glottal
stop	fortis	p		t				k	kw		'
	lenis	b		d				g			
fricative	fortis		f	s	sh		x	j			
	lenis			z	zh		zx			gh	
affricate	fortis			ch							
	lenis			dx							
nasal	fortis	m		nh		ñ					
	lenis			n							
lateral	fortis			lh							
	lenis			l							
trill				rr							
flap				r							
glide		w				y					

<f>, <rr>, <ñ>, and <j> are only used in loanwords from Spanish.

Table B. Orthographic representation of SBZZ consonants

For comparison, we also present data from Texmelucan Zapotec (ISO code "zpz", Papabuco; Lewis 2009).

2. The basic locative construction

Before beginning the discussion, it is useful to clarify some terminology. We use the term *figure* to refer to the item being located in a locative construction. We use the term *ground* to refer to the item that the figure is being located in reference to. For example, in the English sentence *the cat is under the table*, *the cat* is the figure and *the table* is the ground. We use the term *basic locative construction* (BLC) to refer to the complete sentence that asserts the location of a figure with respect to a ground. The BLC is a language specific construction, which has been defined as the appropriate response to the question "Where is…?" (e.g. Kutscher and Genç 2007 and Kutscher and Schultze-Berndt 2007); more specifically, "Where is *the figure*?", as in "Where is *the cat*?" Describing and understanding the BLC for a language can be useful for cross-linguistic study. It is important to point out, however, that the BLC often is not the most commonly used locative construction in the language. For example, while one may use a pronouns to refer to the figure in response to a "Where is *the figure*?" question, the BLC is nevertheless presented with a full noun phrase for the figure. Additionally, natural discourse responses to a "Where is *the figure*?" question may consist solely of a demonstrative or locative phrase; however, the BLC is defined as a full sentence, usually with non-pronominal reference to the figure and the ground.

The BLC in Zapotec can be schematized as in (1), and variations of this BLC will be discussed below. The BLC in Zapotec consists of a positional verb followed by a figure followed by a locational phrase. Positional verbs will be discussed in §6.

(1) Positional Verb – Figure – Locational Phrase

The locational phrase in the BLC may be satisfied with diverse phrase types. It may consist of a body part locative (BPL) phrase as in (2) (see §4 for discussion of BPLs), a non-BPL prepositional phrase (PP) as in (3), or an adverbial demonstrative as in (4). Other phrases also may function as locative phrases in Zapotec, including certain place names, such as proper place names, the word for 'town', and the possessed form of house (see Munro this volume).

(2)	Positional Verb	Figure	Locational Phrase = BPL phrase	
a.	Zuu	bote'iy	loh	me'es. (TMZ)
	NEU.stand	bottle	face/on[4]	table

'The bottle is (standing) on the table.'

b.	Dxi	be'ko'=n'	zxan	mes. (SBZZ)
	STAT.sit	dog=DET	buttocks/under	table

'The dog is (sitting) under the table.'

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[4] We gloss BPLs with their body part meaning followed by their locative meaning, as in "face/on".

(3)   Positional Verb   Figure   Locational Phrase = PP

    a. Zu'b.ga'ah   do'ctoor   tráhsdeh   gyahg. (SLQZ; CC18)[5]

       NEU.sit   doctor   behind   tree

       'The doctor is (sitting) behind the tree.'

    b. Dxi   be'ko'=n'   ladgho   yag=en. (SBZZ)

       STAT.sit   dog=DET   between   tree=DET

       'The dog is (sitting) between the trees.'

(4)   Positional Verb   Figure   Locational Phrase = adverbial demonstrative

    a. Zuu   ra   bote'iy   rèe. (SLQZ; CC18)

       NEU.stand   PL   bottle   there

       'The bottles are (standing) there.'

    b. Dxi   be'ko'=n'   na'. (SBZZ)

       STAT.sit   dog=DET   DEM.DST

       'The dog is (sitting) there.'

2.1. Variations of the BLC

We notice several word order variations of the BLC in Zapotec. A common word order variation is *Figure – Positional Verb – Locational Phrase*, as in (5). (In fact, when using Ameka et al's (1999) elicitation materials this was by far the most commonly volunteered word order for TMZ.) Another possible word order is *Locational Phrase – Verb – Figure*, as in (6).

(5)   Figure   Positional Verb   Locational Phrase

    a. Bote'iy   zuu   loh   me'es. (TMZ)

       bottle   NEU.stand   face/on   table

       'The bottle is on the table.'

    b. Gyahg   dèè'idy   rùu'   zhìi'mmy. (SLQZ)

       stick   NEU.cross   mouth/at_edge_of   basket

       'The stick is across the top of basket.'

    c. To   gonh pintw   zoa   yichghe=en   na'. (SBZZ)

       one   bull spotted STAT.exist   head/above=3INAN DEM.DST

       'A spotted bull is above it (a truck).'

(6)   Locational Phrase   Positional Verb   Figure

    a. Pu'ann   gyahg   zu'b.ga'ah   ma'any. (SLQZ) (CC18)

       tip/at_tip_of   tree   NEU.sit   animal

       'The bird is (sitting) at the top of the tree.'

    b. Na'   dxi   be'ko'. (SBZZ)

       DEM.DST   STAT.sit   dog

       'The dog is (sitting) there.'

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[5] CC18 stands for Lecsyony 18 in *Cali Chiu?* (Munro, Lillehaugen, and Lopez 2007).

Other variants of BLC exist; e.g. some begin with a particle or demonstrative adverb.

3. The basic locative question

There are two main basic locative questions (BLQs) in Zapotec, i.e. the question used to ask about the location of a known figure. The first, presented below in (7), involves an initial question word 'where', followed by a positional verb, followed by the figure.

(7)   Where   Positional Verb   Figure
  a. Calii   zuu   bote'iy? (TMZ)
    where   NEU.stand   bottle
    'Where is the bottle?'

  b. Gan   dxi   be'ko'? (SBZZ)
    where   STAT.sit   dog
    'Where is the dog sitting?'

The second variation of the BLQ in Zapotec uses a question word but no positional verb.[6] Note that in TVZ, this question word *cuan* 'where is' is different that the usual question word *calii* 'where' used in (7)a. However, in SBZZ the two questions words are the same: *gan* 'where'.

(8)   Where   Figure
  a. Cuan   bote'iy? (TMZ)
    where_is   bottle
    'Where is the bottle?'

  b. Gan   be'ko'? (SBZZ)
    where   dog
    'Where is the dog?'

In SBZZ, the use of the first of these variants of the BLQ will elicit a response consisting of the locational phrase alone, the position of the figure being presupposed by the positional verb in the question. In order to get a sentential BLC as a response, one is forced to use the form of the BLQ which lacks a positional verb.

4. Body part locatives

It is well established that Zapotec languages can use body part terms in locative constructions (e.g. Campbell, Kaufman, and Smith Stark 1986; MacLaury 1989; Jensen de López 2002; Sonnenschein 2004; Lillehaugen 2006), as in (9) below, where the same word *ni'ih* is used to refer to a foot in (9)a and used to express 'under' in (9)b.[7] Similarly, we see a contrast between the use of *kuzhe* to refer to a something's back as a referential body or component part (i.e. a part of an inanimate object) in (10)a and used to express 'behind' as a body part locative

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[6] The syntax of *cuan* in TMZ is an area for future research. It is classified as a "predicate" in the SLQZ dictionary and does not have other aspectual forms (Munro and Lopez, et al, 1999).

[7] The change of *ni'ih* to *ni'* is representative of a regular phonological process.

in (10)b. Such use of body part terms in locative constructions is an areal feature of Mesoamerican languages (Campbell, Kaufman, and Smith Stark 1986).

(9) a. R-zabyùu'b   ni'=a'. (TMZ)
        HAB-hurts   foot=1S
        'My foot hurts.'

     b. Nàa're'   n-u'=a'   ni'ih   me'es. (TMZ)
        1S.FP   NEU-is=1S   foot/under   table
        'I am under the table.'

(10) a. Zoa   da   gashe   kuzhe=ba'. (SBZZ)
        STAT.be   CL.INAN   yellow   back=3AN
        'Its back is yellow.'

     b. Na'   pshina'   yixe=n'   zeghe=ba'   dx-zxlonhgh=ba' kuzhe=ba'. (SBZZ)
        and   deer   wild= DET   COMP.go=3AN   CONT-run=3AN   back/behind=3AN
        'And the deer went running behind it (a dog).'

We use the term *body part locative (BPL)* to mean a body (or component) part term that is used in locative constructions. A term that is diachronically derived from a body or component part term may also be considered a BPL (cf. *cwe'eh* 'beside' in SLQZ). The term BPL is neutral in terms of syntactic category. We use the term relational noun (RN) to refer to a BPL that functions syntactically as a noun and the term body part preposition (BPP) to refer to a BPL which functions syntactically as a preposition.

This categorization may be complicated by several factors, however. As Heine 1997 points out, processes of grammaticalization may create lexical categories that exist in a continuum in relation to each other, rather than as discrete categories. Moreover, theories of grammar differ as to the criterion to be used for lexical categorization; for example, some theories of grammar view syntax as being inextricable from semantics and discourse usage.[8]

We present the inventory of common BPLs in TMZ (Table 1) and in SBZZ (Table 2).

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[8] See Payne 2011 as an example of this perspective. He defines a word class as being '(simply) a group of lexemes that have similar sets of morphosyntactic (form), semantic (meaning), and discourse pragmatic (use) properties' (Payne 61).

TMZ / SLQZ[9]	body part meaning	locative meaning
cwe'eh	'side'[10]	'beside'
dehts	'back'	'behind'
guë'ëhcy	'head'	'on top of'
làa'any	'stomach'	'in'
lohoh	'face'	'on, in front of'
nnaàa'	'hand'	'on (a branch)'
ni'ih	'foot'	'under'
ru'uh	'mouth'	'at the edge of'
têë'ix	'chest'	'beside'
zh:àa' / zh:ààa'n	'bottom'	'behind, under'
zh:àa'cw	'upper arm'	'on (a branch)'

Table 1. Common BPLs in TMZ

SBZZ	body part meaning	locative meaning
dxoa	'mouth'	'in front of'
dxoalao[11]	'face'	'around'
kwit	'side'	'by, beside'
kwitlee[12]	'middle of side'	'beside'
lao	'eye'	'in front of, to'
lee	'belly'	'in the middle of'
lho	'intestine (archaic)'[13]	'in'
nia	'foot'	'below'
yichgh	'head'	'above, in front of'
zxan	'buttocks'	'below'

Table 2. Common BPLs in SBZZ

4.1. The categorial status of BPLs

There is considerable disagreement as to the categorical status of BPLs in any Zapotec variety and across Zapotec varieties. Part of the debate surrounds the grammatical category of BPLs in any particular Zapotec variety. Some of this disagreement may represent differences in the degree of grammaticalization of BPLs in various Zapotec varieties. However, part of the disagreement may result from differing opinions on what type of evidence should be used to make this type of categorization.

Some linguists have classified BPLs as types of prepositions in the language they work on (e.g. Munro and Lopez, et al. 1999, Stubblefield and Stubblefield 1991). Lillehaugen has argued (e.g. 2006) that BPLs in TVZ show syntactic and semantic features of prepositions and

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[9] Except where noted, the TMZ data is representative of the data in SLQZ, as well, with only minor phonological differences in the vowels of the words.

[10] For some speakers of SLQZ there is no body or component part of the form *cwe'eh* 'side'. Other SLQZ speakers, however, recognize this word as a valid body and component part.

[11] This word is morphologically complex, and can be analyzed as *dxoa-lao* (mouth-eye).

[12] This word is morphologically complex, and can be analyzed as *kwit-lee* (side-belly).

[13] Synchronically this word is used in derived body parts such as *zghe-lho* 'placenta'.

do not pattern as nouns in the grammar, despite their etymology. Broadwell has shown that in San Dionisío Ocotopec Zapotec (Valley) BPLs do not behave as nouns do in pied-piping with inversion (PPI) constructions (2001).

Other linguists classify BPLs as nouns and posit that their locative meaning is derived through synchronic metaphorical extension (e.g. MacLaury 1989, Jensen de López this volume). Sonnenschein (2004, 2005a), for example, classifies BPLs in SBZZ in a subclass of nouns. He argues that in SBZZ BPLs are an open class; they interact with the metaphorical system in a way that more grammaticalized prepositions would not; they can label location canonically regardless of the position of the ground; and they do not have the dative uses shown in other Zapotecan languages where they have been more fully grammaticalized. Sonnenschein thus concludes that BPLs in SBZZ are a transitional class of words some of which have grammaticalized and are closer to the preposition end of the noun-preposition cline and others which have not. However, BPLs in SBZZ differ from regular nouns in some significant ways with respect to their syntactic features, although these features are shared with other, more general nouns relating to locations as discussed below. Thus, he classifies them as relational nouns, a sub-category of nouns.

As the categorical status of BPLs in any particular Zapotec variety is an empirical question, it should be discoverable. However, as Zapotec is a head initial language which allows direct possession of inalienable nouns, such as body parts, out of context a phrase such as *ni'ih me'es* could be interpreted as either a possessed noun phrase 'the leg of the table' (11)a, or a prepositional phrase 'under the table' (11)b. Thus, word order is not helpful in diagnosing the syntactic status of BPLs.

(11) a. ni'ih   me'es (TMZ)
          possessum   possessor
          foot   table
          'the leg of the table'

      b. ni'ih   me'es (TMZ)
          preposition   object of the preposition
          under   table
          'under the table'

In the following sections we present several diagnostics that we have found useful in discriminating between prepositional phrases and (possessed) noun phrases, including the use of phrases as adjuncts, the categorical selection restrictions of certain verbs, and evidence from coordination and modification.

4.1.1. Adjunction

The use of BPL phrases as adjuncts may be useful in determining their syntactic status. Consider the following data from TVZ. The verb 'sing' in (12)a is intransitive. A locative phrase may be allowed as an adjunct, such as *làa'any yu'uh* 'in the house' in (12)b; however *yu'uh* 'house' in (12)c cannot function as a locational adjunct.

(12) a. Ca-yu'ul=na'. (TMZ)
          PROG-sings=3DST
          'He is singing.'

    b. Ca-yu'ul=na'   làa'any   yu'uh. (TMZ)
       PROG-sings=3DST   stomach/in   house
       'He is singing in the house.'

    c. *Ca-yu'ul=na'   yu'uh. (TMZ)
       PROG-sings=3DST   house
       bad with any meaning, e.g. cannot mean 'He is singing by the house', 'He is singing
       at the house', or 'He is singing near the house.'

The difference in grammaticality between (12)b and (12)c suggests that *làa'any yu'uh* 'in the house' and *yu'uh* 'house' are not of the same syntactic category in this construction. *Làa'any yu'uh* 'in the house' can function as an adjunct in the sentence while the noun phrase *yu'uh* 'house' cannot, even though it seems as though *yu'uh* 'house' could semantically function as a location for the singing. If *laa'any yu'uh* 'in the house' was a possessed noun phrase ('the house's stomach') the differential selection here would require an explanation; it could not be accounted for by allowing NP locational adjuncts in general, as the data here shows. Put another way, the presence of *laa'any* 'stomach/in' in (12)b licenses the presence of the NP *yu'uh* 'house'.

Similar facts can be seen in SBZZ. *Lao* 'in front of' in (13)b licenses the presence of the NP *Bedo* 'Peter'. Once again, bare noun phrases cannot be used as adjuncts as seen in (13)c.

(13) a. Sh-cho=a'. (SBZZ)
      CONT-cough=1S
      'I coughed.'

    b. Sh-cho=a'   lao   Bedo. (SBZZ)
       CONT-cough=1S eye/in_front_of Peter
       'I coughed in front of Peter.'

    c. *Sh-cho=a'   Bedo. (SBZZ)
       CONT-cough=1S Peter
       bad with any meaning, e.g. cannot mean 'I coughed at Peter' or 'I coughed near Peter.'

Additionally, other locational phrases can function as adjuncts, such as place names, the word for town, as in (14)a, and the possessed form (though notable, not the non-possessed form) for house, as in (14)b. (For similar constructions in TVZ see Munro this volume.)

(14) a. Sh-cho=a'   lizha=a'. (SBZZ)
      CONT-cough=1S house=1S
      'I coughed in my house.'

    b. Sh-cho=a'   yezh=en. (SBZZ)
      CONT-cough=1S town=DET
      'I coughed in town.'

4.1.2. Categorial selection of verbs

The categorial selection (c-selection) requirements of certain verbs may also be useful as a diagnostic in determining the categorial status of BPL. We use the term *categorial-selection (c-selection)* to refer to the ability of verbs to require the complement they select to be of a certain grammatical category and the term *semantic-selection (s-selection)* to refer to the ability of verbs to require the complement they select to be of a certain semantic type.

Lillehaugen (2006) uses c-selection as an argument that BPLs in TVZ languages are synchronic prepositions. Consider the positional verb *zùub* 'is sitting', which selects for and requires a locative complement, as shown in (15). Note that despite its English translation, this verb cannot be used without a complement (15)b.

(15) a. Bèe'cw   zùub   [ni'ih   me'es]. (SLQZ)
          dog   NEU.sit   foot/under table
          'The dog is (sitting) under the table.'

      b. *Bèe'cw   zùub. (SLQZ)
          dog   NEU.sit
          bad with any meaning, e.g. cannot mean 'The dog is sitting.'

Consider the further ungrammatical sentences below, exemplifying that the positional verb *zùub* 'is sitting' does not allow an NP like 'table' as a complement, shown in (16)a, or a possessed NP complement, as shown in (16)b. Thus the phrase *ni'ih me'es* 'under the table' in (15)a is patterning differently than the NP *me'es* 'table' in (16)a and the possessed NP *x:me'esa'* 'my table' in (16)b. It cannot be the case, then, that positional verbs, such as *zùub* select for noun phrases in general or for possessed nouns phrases.

(16) a. *Bèe'cw   zùub   [me'es]. (SLQZ)
           dog   NEU.sit   table
           bad with any meaning, e.g. cannot mean 'The dog is sitting by the table.'

      b. *Bèe'cw   zùub   [x:-me'es=a']. (SLQZ)
           dog   NEU.sit   POSS-table=1S
           bad with any meaning, e.g. cannot mean 'The dog is sitting by my table.'

Perhaps these positional verbs can select for a phrase that begin with a body part word, as shown in (15)a and below in (17).

(17) Zuu.gwa'ah   bèe'cw   [cwe'eh   me'es]. (SLQZ)
      NEU.stand   dog   side/beside   table
      'The dog is (standing) beside the table.'

However, it is not the case than the complement phrase to a positional verb can begin with *any* body part word, as seen in (18). *Quihche'ehcy* 'hair' in (18)a, is a body part word, but cannot be the head of a phrase that is a complement to the locative verb *nu'uh*, as shown in (18)b. Positional and locative verbs like *zùub* 'sit', *zuugwa'ah* 'stand', and *nu'uh* 'be located' select for a locative complement, which can be a phrase that begins with one of the closed set

of body parts locatives. (For more evidence that body part locatives are a closed class in TVZ see §4.2.2.)

(18) a. X:-quihche'ehcy=a'   me'eu. (TMZ)
          POSS-hair=1SG   dirty
          'My hair is dirty.'

      b. *Yuhzh   n-u'uh   x:-quihche'ehcy=a'. (TMZ; 5:78)
            sand   NEU-be.loc POSS-hair=1SG
            bad with any meaning; e.g. cannot mean 'Sand is in my hair.'

Note that prepositional phrases headed by borrowed prepositions can also be complements of verbs like these, as exemplified in (19). (*Tráhsdeh* is borrowed from Spanish *detrás de* 'behind'.)

(19) Zuu.gwa'ah   bèe'cw [tráhsdeh   me'es]. (SLQZ)
        NEU.stand   dog   behind   table
        'The dog is (standing) behind the table.'

   To specify that only a closed set of NPs can occur as complements would be stipulative and miss an obvious generalization: these body part locatives function differently from other body part words in the syntax; they form a syntactic category and they pattern syntactically with other prepositions in the language, like borrowed prepositions in (19), and unlike possessed noun phrases, as in (16)b, or other phrases beginning with body part words, as in (18)b.

4.1.3. Evidence from coordination
In TVZ BPL phrases can be coordinated with both native non-body part prepositional phrases, as in (20) where the BPL phrase *ni'ih me'es* 'under the table' is coordinated with the native non-BPL phrase *gahx: gyizhi'iily* 'near the chair'.

(20) Bèe'ecw n-u'uh   [ni'ih   me'es]=nèe [gahx: gyizhi'iilly]. (TMZ)
        dog   NEU-be   foot/under table=and   near   chair
        'The dog is lying under the table and near the chair.'

   In TVZ, BPP phrases such as *làa'any me'es* 'under the table' can also be conjoined with prepositional phrases headed by borrowed prepositions, such *tráhsdeh gyizhi'iilly* 'behind the chair', in (21). However, a BPL phrase may not be conjoined with a referential possessed body part phrase, as shown in (22).

(21) Da bèe'ecw zuu   [làa'any   me'es]=nèe [tráhsdeh gyizhi'iilly]. (TMZ)
        PL dog   NEU.stand   stomach/in table=and   behind   chair
        'The dogs are (standing) under the table and behind the chair.'

(22) *Da bèe'ecw zuu   [làa'any   me'es]=nèe [dyahg=a']. (TMZ)
          PL dog   NEU.stand   stomach/in table=and   ear=1S
        bad with any meaning, e.g. cannot mean 'The dogs are (standing) under the table and near my ear.'

In these constructions, the BPL phrases are patterning syntactically with native non-body part prepositional phrases (20) and with borrowed prepositional phrases (21) and patterning unlike possessed referential noun phrases (22).

4.1.4. Modification of BPLs

The options for modifying BPLs may also be useful in determining the categorial status of these terms in a language. In the following sections we present data on the modification of BPLs in TVZ and SBZZ.

4.1.4.1. Plural

In TMZ, the plural marker, *da*, precedes the noun which it modifies, as in (23)a. (A noun may be interpreted as plural without being marked with *da*, but marking a noun with *da* requires that it have a plural interpretation.)

The word *loh* 'face' cannot be modified by the plural marker when it is used as a BPL, as in (23)c, although it can be if used as a referential noun, as in (23)d. If BPLs were nouns in TVZ, what would explain the ungrammaticality of (23)c? Semantically, this should be available if the locative relationship is calculated via synchronic metaphor: i.e. 'I put the cups at the tops of the tables.' The ungrammaticality of (23)c can be explained by recognizing that the BPL *loh* is not a noun, but a preposition, and that prepositions cannot be pluralized.

(23) a. Me'eu   [da   me'es]. (TMZ)
          dirty   PL   table
          'The tables are dirty.'

   b. B-zùu=a'   da ba's   [loh   da me'es]. (TMZ)
          PERF-put=1S   PL cup   face/on   PL table
          'I put the cups on the tables.'

   c. *B-zùu=a'   da ba's   [da   loh   me'es]. (TMZ)
          PERF-put=1S   PL cup   PL   face/on   table
          bad with any meaning, e.g. cannot mean 'I put the cups on the tables.'

   d. Me'eu   [da   loh   me'es]. (TMZ)
          dirty   PL   face   table
          'The table tops are dirty.'

4.1.4.2. Quantifiers and numbers

In TMZ, quantifiers precede the nouns they modify, as in (24)a. Note that *dehts* 'back' cannot be modified by a quantifier when it is used as a BPL, as in (24)c, although it can be if used as a referential noun, as in (24)d. Lillehaugen (2006) argues that (24)c should be available semantically if the locative relationship is calculated via synchronic metaphor: i.e. 'The dogs are sitting at the backs of the chairs'. The ungrammaticality of (24)c can be explained by recognizing that the BPL *dehts* is not a noun, but a preposition, and that prepositions cannot be modified with quantifiers in this language.

(24) a. [Cantidaa   gyizhi'iilly] nàa   na-ga'a. (TMZ)
       most   chair   NEU.is   NEU-green
       'Most of the chairs are green.'

    b. Da   bèe'ecw zòob   [dehts   cantidaa   gyizhi'iilly]. (TMZ)
       PL   dog   NEU.sit   back/behind   most   chair
       'There are dogs sitting behind most of the chairs.'

    c. *Da   bèe'ecw zòob   [cantidaa   dehts   gyizhi'iilly]. (TMZ)
       PL   dog   NEU.sit   most   back/behind   chair
       bad with any meaning, e.g. cannot mean 'There are dogs sitting behind most of the
       chairs.'

    d. [Cantidaa   dehts gyizhi'iilly] nàa   na-ga'a. (TMZ)
       most   back chair   NEU.is   NEU-green
       'Most of the chair backs are green.'

Like quantifiers, numbers precede the nouns which they modify in TVZ, as in (25)a. Note that the word *loh* cannot be modified by a number when it is used as a BPL, as in (25)c, although it can be if used as a referential noun, as in (25)d. Lillehaugen (2006) argues that (25)c should be available semantically if the locative relationship is calculated via synchronic metaphor: i.e. 'I put the cups by / at the three faces of the tables'. The ungrammaticality of (25)c can be explained by recognizing that the BPL *loh* is not a noun, but a preposition, and that prepositions cannot be modified with numbers in this language.

(25) a. B-zìi'=a'   [choon   me'es]. (TMZ)
       PERF-buys=1S   three   table
       'I bought three tables.'

    b. B-zùu=a'   ba's   [loh   choon   me'es]. (TMZ)
       PERF-puts=1S   cup   face/on   three   table
       'I put cups on three tables.'

    c. *B-zùu=a'   ba's [choon   loh   me'es]. (TMZ)
       PERF-puts=1S   cup   three   face/on   table
       bad with any meaning, e.g. cannot mean 'I put cups on three tables.'

    d. B-sìa=a'   [choon loh   me'es]. (TMZ)
       PERF-cleans=1S   three   face   table
       'I cleaned three table tops.'

4.1.4.3. Adjectives
In TVZ, adjectives follow the nouns they modify, as in (26)a. Note that the word *ni'ih* cannot be modified by an adjective when it is used as a BPL, as in (26)c, although it can be if used as a referential noun, as in (26)d. (26)c should be available semantically if the locative relationship is calculated via synchronic metaphor and given the appropriate context, here provided by Figure 1: i.e. 'The dog is by the yellow foot of the table.' The ungrammaticality of (26)c

can be explained by recognizing that the BPL *ni'ih* is not a noun, but a preposition, and that prepositions cannot be modified with adjectives.

(26) a. [Me'es   na-gaàa'ts]   guhch. (TMZ)
        table   NEU-yellow   PERF.is.broken
        'The yellow table is broken.'

      b. Bèe'ecw nu'uh   [ni'ih   me'es   na-gaàa'ts]. (TMZ)
        dog   NEU.is   foot/under   table   NEU-yellow
        'The dog is under the yellow table.'

      c. *Bèe'ecw nu'uh   [ni'ih   na-gaàa'ts   me'es]. (TMZ)
         dog   NEU.is   foot/under   NEU-yellow   table
        bad with any meaning, e.g. cannot mean 'The dog is at the yellow foot of the table' or 'The dog is under the table (that has a yellow leg)' as in Figure 1.

      d. [Ni'ih   na-gaàa'ts   me'es]   guhch. (TMZ)
        foot   NEU-yellow table   PERF.is.broken
        'The yellow leg of the table is broken.'

Figure 1. Dog under table with yellow leg

In SBZZ, in contrast, BPLs can be modified with adjectives, as shown in (27), where *nia* 'foot' is a locative in the construction and is modified by the adjective *gashe* 'yellow'. However, the addition of the adjective requires the alienable possession construction with the prepostion *che* as opposed to the expected inalienable construction without *che* (see Sonnenschein 2005a for discussion of alienable and inalienable possession in SBZZ). This is a rather marginal construction.

(27) Nia   gashe   che mes-en' dxi   to   be'ko'. (SBZZ)
       foot/under   yellow   of   table-DET STAT.sit one   dog
       'The dog is sitting at the yellow leg of the table.'

4.2. The semantics of BPLs

The semantics of BPLs is a question of interest, both independently from and in relation to their syntax. The following sections summarize particular areas of semantic work in relation to BPLs that we find especially interesting. This section is not exhaustive, though. We touch

only briefly on frames of reference here, and refer the reader to Lillehaugen 2006: §3 for an in-depth discussion of frames of reference within TVZ.[14] We refer the reader to Sonnenschein 2005b for information on directional clitics and their use in specifying the orientation of a figure with respect to landmarks. Additionally, we refer the reader to Lillehaugen and Foreman 2009 for an argument on the necessity of a distinction between [THING] and [PLACE] in Zapotec.

One area of tension the reader will notice throughout this section is related to what, if any, evidence the meaning of a BPL gives in terms of the lexical and / or syntactic categorization of that BPL. This difference in application of semantic data in the section that follows reflects genuine disagreement between the co-authors, which is representative of disagreement in the field in general, as exemplified by other papers in this volume. Lillehaugen and Munro have argued that the type of meaning a BPL has, including which frames of reference are allowable for any particular BPL, does not correlate with and is not predictive of the lexical category of that BPL (Lillehaugen 2006; Lillehaugen and Munro 2008.) Sonnenschein argues that constraints on available frames of reference can be taken as evidence of lexical categorization (e.g. Sonnenschein 2005a).

4.2.1. Semantically infelicitous possessed body parts

In TVZ there are some BPL phrases that, though felicitous as BPL phrases, are ungrammatical as possessed nouns. Such examples provide compelling data, since, in most cases out of context, a BPL phrase and its corresponding possessed NP are phonetically identical. However, consider the following data from San Juan Guelavía Zapotec (SJGZ). In (28)a, the phrase *ni'ih ca'r* 'under the car' is used as a BPL phrase. However there is no referential NP *ni'ih ca'r* 'the car's foot' or 'the car's feet' in SJGZ, as shown in (28)b. The problem with (28)b is not syntactic, rather semantic. (We use # to mark sentences which, though syntactically well-formed, are semantically infelicitous.) Speakers reject the possibility that the wheels or tires might be called *ni'ih ca'r* 'the car's feet' (28)b, which are referred to as *ya'annt* 'tires' (28)c.

(28) a. N-u'uh   bèe'elld [ni'ih   ca'r]. (SJGZ)
          NEU-is   snake   foot/under   car
          'The snake is under the car.'

      b. #ni'ih   ca'r (SJGZ)
          foot   car
          infelicitous with any referential meaning, e.g. cannot mean 'the car's foot' or 'the underside of the car'

      c. ya'annt (SJGZ)
          'tires'

If one were to argue that *ni'ih* has the categorial status of a noun in (28)a, there are several questions that arise: why is the possessed noun phrase felicitous only when it is a locational phrase (as in (28)a) and not when it is a referential noun phrase (as in (28)b)? And if the locational referent of BPLs are calculated through synchronic metaphor, what is the basis for the

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[14] There has been a great deal of work done on absolute versus relative frames of reference in spatial descriptions at the Max Planck Institute for Psycholinguistics in Nijmegen and elsewhere (see e.g. Levinson 1996).

metaphor in (28)a if there is in fact no nominal referent for *ni'ih ca'r* ('the car's foot')? In TVZ, cases such as these are strong evidence for the argument that BPLs are no longer nouns, but have been grammaticized as prepositions, and that the locational meanings of prepositions are not calculated through synchronic metaphor, although these are obviously their etymological origins.

4.2.2. Are BPLs an open or closed class?

In TVZ it is not the case that all possessed body parts can be used in locative constructions, even if they can be used metaphorically to refer to a part of an object. The prepositions comprise a closed class of words in any particular variety and other body parts cannot be used as prepositions, even playfully. The component part *ca'ch* 'horns' in (29) provides an example of this. *Ca'ch* 'horns' can be used referentially to refer to deer's antlers, as in (29)a, but cannot be used as a locative (29)c. Instead, if the deer's horns are to be used as a location, it must be preceded by one of a closed set of BP prepositions, such as *làa'any* in (29)b.

(29) a. X:-ca'ch   bzêiny   gwùu'ch. (TMZ)
          POSS-horn   deer   PERF.break
          'The deer's antlers broke.'

    b. Chi'c   b-iahahb   mìi'iny   làa'any   x:-ca'ch   bzêiny. (TMZ)
          then   PERF-fall   child   stomach/in   POSS-horn   deer
          'Then the child fell into the deer's antlers.'

    c. *Chi'c   b-iahahb   mìi'iny   x:-ca'ch   bzêiny. (TMZ)
          then   PERF-fall   child   POSS-horn   deer
          bad with any meaning; e.g. cannot mean 'Then the child fell into the deer's antlers.'

Recall the earlier example of *quihche'ehcy* 'hair', which can be used referentially (30)a, but in (30)b we see that it cannot be used as a locative.

(30) a. X:-quihche'ehcy=a'   me'eu. (TMZ) = ex. (18)a
          POSS-hair=1SG   dirty
          'My hair is dirty.'

    b. *Yuhzh   n-u'uh   x:-quihche'ehcy=a'. (TMZ) = ex. (18)b
           sand   NEU-be   POSS-hair=1SG
          bad with any meaning; e.g. cannot mean 'Sand is in my hair.'

The facts are different in SBZZ, however, where novel body part terms in SBZZ can be used as BPLs, making this an open class in SBZZ. For example, *zxiin* 'nose' is a body part term not normally used in locative constructions in SBZZ, but it can be used for individual lexical items. In SBZZ, many of the traditional sandals come to a point in the front, like a pair of cowboy boots. This point can be referred to as *zxiin yelh* 'the nose of sandal', as in (31)a. If the sandal is placed on its back, with its nose pointing in the air, and something is either sus-

pended above it or put on the tip of it one can use *zxiin yelh* 'at the nose of the sandal' as a locative, as shown in (31)b.[15]

(31) a. Puntiagud   n-ak   zxiin   yelh. (SBZZ)
          pointy   STAT-be   nose   sandal
           'The point of the sandal is pointy.'

      b. Zehe   to   yishe   zxiin   yelh. (SBZZ)
          STAT.hang   one   paper   nose   sandal
          'A piece of paper is hanging above the sandal.'

4.2.3. Orientation of the ground

In TVZ, the orientation of the ground (for most types of grounds) is irrelevant for the choice of preposition, i.e. the choice of preposition is dictated by the relationship between the figure and the ground and not by any potential geography or orientation of the ground. (The exceptional grounds are discussed briefly in §4.2.4.) An analysis of these constructions as possessed NPs with meaning derived through synchronic metaphor would not be able to account for semantic effects such as these. For example, (32) can be used to describe both Figure 2 and 3. We can see that *ni'ih* can be used to mean 'under' regardless of the orientation of the car, which is in its canonical orientation in Figure 2 and is upside-down in Figure 3. This provides further evidence that (32) does not mean 'the snake is located at the car's foot'. (Recall from (28)b above, that 'the car's foot' does not exist as a referential NP in SJGZ.)

(32) N-u'uh   bèèe'ld   ni'ih   ca'rr. (SJGZ)
      NEU-be.loc   snake   under   car
      'The snake is under the car.' *Can be used to describe Figure 2 and Figure 3.*

Figure 2. Snake under car   **Figure 3. Snake under upside-down car**

4.2.4. Correlating the location of figure and body part of ground

In this section we examine the relationship between the locative meaning of a BPL in regards to the named component parts of the ground.

In TVZ, for most grounds in a locative construction, even if the ground has a component part that could be referred to with the BP term used in the locative construction, the figure does not have to be located at that position on the ground in order to use that term (and sometimes it cannot be located at that place). In other words, it seems that the nominal and locative

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[15] One could also say *zxan yelh* 'under the sandal' or *yichgh yelh* 'above the sandal' to describe either of these situations.

meanings do not necessarily coincide, as would be expected if the locative uses were nouns with metaphorically extended meanings. For example, in (33)a below 'the head of the car' refers to the hood of the car in SJGZ. However, the figure (in this case, a snake) does not need to be located on the hood of the car in order to use *quiah* 'head / on' in a locative construction. Example (33)b shows the use of *quiah* 'on' in the case where the car is upside-down and a snake is on top of the upside-down car (Figure 4). The locative expression *quiah* 'on' can refer to relationships between the snake and the car where the snake is not on the hood, even though the hood is the referent of the NP *quiah ca'rr* 'the head of the car'. It is not possible then, to understand the meaning of (33)b through synchronic metaphor, i.e. 'the snake is located at the head of the car', because the snake is not located at the part of the car that can be referred to as *quiah ca'r* 'the head of the car' and nevertheless the sentence is felicitous in describing the locative relationship.

(33) a. quiah   ca'r (SJGZ)
       head   car
       'the car's head' (the hood of the car)

    b. N-u'uh   bèe'elld quiah   ca'r. (SJGZ)
       NEU-be.loc   snake   head/on   car
       'The snake is on the car.' (which is upside down, as in Figure 4)

Figure 4. Snake on upside-down car

In SBZZ the facts are different. Consider, for example, a leaf that has a pronounced curve and a spine, like a banana leaf. It can be described as having a front and a back, labeled *lhee lahaga* 'stomach of the leaf/front of leaf' (the side without spine) and *kuzhe lahaga* 'back of the leaf' (the side with the spine). In SBZZ, figures described with respect to the leaf as the ground will always refer to these parts, regardless of the orientation of the leaf. If the leaf is placed on top of a package of cigarettes with the stem-side down, the cigarettes will be described as being *kuzhe lahaga* 'at the back of the leaf'. Similarly, if the smooth side is placed down on top of the cigarettes, the cigarettes are *lee lahaga* 'at the stomach of the leaf'.[16]

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[16] The use of other body part terms is possible, but these are preferable.
  Also, note as a point of comparison, in English, if one is describing an object with respect to a person who was standing with their side facing the speaker, to say that that object was *behind* someone could mean two things: it could mean that it was occluded from the speaker's view by the ground, or it could mean that it was to the rear of the person (at the person's back). In SBZZ, one would preferably say *kuzhe* 'behind the person' for those instances where the item was at the person's back.

Most grounds in TVZ function as described above for the car in SJQZ in that the orientation and geography of the ground is irrelevant for the use of the BPL, as the BPL asserts a relationship between the figure and the ground and is not referential to a part of the ground. However, for a few types of grounds, there does seem to be some tie to the referential meaning of the component part of the ground. In particular, this seems to be true of houses and animals (see Lillehaugen 2006: §3).

4.2.5. Explanation for ambiguous sentences
Recognizing that BP prepositions are syntactically distinct from BP nouns in TVZ also provides explanatory power. Consider sentence (34) below, which is ambiguous between 'he is painting (while) inside the church' and 'he is painting the inside of the church (e.g. the inside walls and the ceiling of the church itself)'. (*Làa'any* here has been glossed in all caps to abstract away from grammatical category.)

(34) Ca-tìaa'=na'   làa'any   ydòòo'. (TMZ)
     PROG-paint=3DST   STOMACH   church
     'He is painting the inside of the church' or 'He is painting (while) in the church.'

The difference in meaning comes from a difference in syntactic structure. The first meaning corresponds to the structure in which *làa'any ydòòo'* is a NP complement of the verb, as in (35)a. The verb 'paint' is optionally transitive and the complement NP can be left unexpressed as in (35)b below. The second meaning can be explained by viewing *làa'any ydòòo'* as a PP adjunct, as illustrated in (35)c. So, although the sentences are string identical, they are structurally distinct, giving rise to the difference in meaning.

(35) a. Ca-tìaa'=na'   [$_{NP}$ làa'any   ydòòo'] (TMZ)
       PROG-paints=3DST   stomach   church
      'He is painting the inside of the church.' (i.e. 'He is painting the church's stomach.')

    b. Ca-tìaa'=na'. (TMZ)
       PROG-paint=3DST
      'He is painting.'

    c. Ca-tìaa'=na'   [$_{PP}$ làa'any   ydòòo'] (TMZ)
       PROG-paint=3DST   stomach/in   church
      'He is painting (while) in the church.'

If one were to analyze BP prepositions as synchronically nouns, one would have to say something additional in order to account for the meaning difference between these sentences, if one wished to derive the semantics from the syntactic structure. By recognizing the structural difference between these two types of sentences, the different semantics is easily accounted for.
Similar facts can be seen in SBZZ, as in (36) below.

(36) Sh-na=ba   kuzhe=ba.
     CONT-look=3AN   behind/back=3AN
     'It$_i$ is looking at its$_j$ back' or 'It$_i$ is looking behind it$_j$.'

Heine et al. (1991) analyze this type of potential ambiguity in the languages they examine as being "an inherent characteristic of transitional stages in grammaticalization: when a new structure (i.e., an adverbial morphosyntax in this example) is introduced, the old structure (a nominal morphosyntax) is generally still in use, the result being overlapping" (ibid. 135-136). One might therefore consider this to be a similar case, demonstrating the transitional nature of grammaticalization of the BPLs.

4.2.6. Human and animal based metaphorical mappings

In SBZZ certain metaphorical mappings are used to assign meaning to BPLs. The basic model is that of the human body (cf. MacLaury 1989 for Ayoquesco Zapotec). The human model is predominant and is even used in most cases describing animals, as in (37).[17] As humans canonically are upright and their back is behind them from their point of view, the generalized use of *kuzhe* in describing spatial relations refers to figures which are behind grounds.

(37)   Na'   pshina'   yixe=n'   zeghe=ba'   dx-zxlonhgh=ba' kuzhe=ba'. (SBZZ)
       and   deer   wild= DET   COMP.go=3AN   CONT-run=3AN   back=3an
       'And the deer went running behind it (a dog).'

However, *kuzhe* can also refer to the back of an animal and an animal model may also be used when *kuzhe* is a locative. As an animal is canonically on all fours, its back is upwards. Figures that are located on an animal's back can be described as being *kuzhe=ba'* 'on its back' as in (38). Note that this is an instance of Heine's Stage I (§4.2.7).

(38)   To=ba'   dxi   kuzhe=ba=n'. (SBZZ)
       one=3AN   STAT.sit   back=3AN =DET
       'One of them is on the other's back.'

In order to use any body part (be it human or animal) in a novel construction, either to refer to a component part of another object or as a locative, the body part has to make sense in the metaphorical system. For example, some words such as *xkogoba'* 'its neck' cannot be used in describing other objects at all and others, such as *xbanh* 'tail' can only be used in very restrictive environments (in one case, to describe a single gully coming off of a ravine).

Even the model of the human body, when metaphorically mapped to objects in this construction, is often mapped in an incomplete fashion. When Sonnenschein was first attempting to learn about the use of relational nouns, he asked one of his teachers if one could describe some crows on top of a tree as being *yichgh yag* 'head of tree', and was told that that would be impossible given that "trees do not have heads". As it turns out, the problem was with the choice of tree. It was a pine tree and as such one would describe those crows as being *zxiin yag* 'nose of tree' or *punt che yag* 'point of the tree'. Other trees, such as oaks or palms would potentially be acceptable. One could potentially say *yichgh yag* if they were above the tree, but that was still deemed to be odd, and it would be better to say *lao yag* 'eye tree' or one of the other two options discussed above.

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[17] In other languages, such as some discussed in Heine et al (1991), the animal model is taken as the basic model and relational nouns are derived from the canonical orientation of quadrupeds.

4.2.7. The cognitive development of BPLs

Heine et al. (1991) list the following stages as a typical conceptual path through which body parts develop into spatial concepts in African languages, following either the animal mapping or the human mapping as described above. This is meant to model the cognitive development from concrete object to spatial description and is not meant to represent categorial changes, i.e. this model does not predict that body part locatives grammaticalized to Stage III will be prepositions; it does not address syntactic categorization.

(39) STAGE   CONCEPTUAL DOMAIN

0	Body part of X	OBJECT
I	Subpart of X, spatially defined	OBJECT/SPACE
II	Space as part of and adjacent to X	SPACE/OBJECT
III	Space Adjacent to X	SPACE (ibid. 130)

All of these stages are present in SBZZ, as seen below.

(40) *Stage 0:*

a. Nadxen   sala   yichgh=to   ka'. (SBZZ)
    afterwards   POT.throw_back   head=1PL.EXCL   DEM.ADV
    'Afterwards we will throw our heads back like this.'

Stage I:

b. Za   b-zu=e'   azulejo   yichgh=en   na'. (SBZZ)
    just   COMP-put=3F   tile   head=3INAN   DEM.DST
    'He had just put tiles on the roof (its head).'

Stage II:

c. Nak   g-on=to   y-e-dxogh=to   yichgh=e'. (SBZZ)
    how   POT-make=1PL.EXCL   POT-FREQ-exit=1PL.EXCL   head=3F
    'How are we going to do it so that we leave there by his head?'

Stage III:

d. To   gonh pintw   zoa   yichgh=en   na'. (SBZZ)
    one   bull spotted   stand   head=3INAN   DEM.DST
    'One spotted bull is standing there in front of it.'[18]

Recall the discussion of *zxiin* 'nose' being used as a locative in §4.2.2. These data show that these innovative uses of body part terms as locatives show all three of Heine's cognitive stages. *Zxiin* 'nose' can be used as a referential object, a human body part, as in (41)a. It can also be used as a component part of an object, spatially defined- in this case *zxiin yelh* 'the nose of sandal', as in (41)b. As a locative, *zxiin* can be used to describe the location of a figure located at the 'nose of the sandal', as in (41)c or in the area space projecting from the 'nose of the sandal', as in (41)d (cf. Hollenbach's (1995) projecting space metaphor).

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[18] This is from "the man and tree task" in which speakers were asked to describe scenes to each other. The scenario described here was that of a bull in front of a cart. The front of a cart is considered its head.

(41)　　　　　STAGE　　　　　　　　　　　　　　　CONCEPTUAL DOMAIN

　　　　　　0: Body part of X　　　　　　　　　OBJECT
　a.　　Dx-ak=da'　　zxiin=a'. (SBZZ)
　　　　CONT-feel=1S　nose=1S
　　　　'My nose hurts.'

　b.　　I: Subpart of X, spatially defined　　OBJECT/SPACE
　　　　Puntiagud　　n-ak　　　zxiin　　yelh. (SBZZ) = (31)a
　　　　pointy　　　　STAT-be　　nose　　sandal
　　　　'The point of the sandal is pointy.'

　　　　II: Space as part of and adjacent to X　　SPACE/OBJECT
　c.　　Dxi　　to　　caj　yes　　　zxiin　　yelh. (SBZZ)
　　　　STAT.sit one　box　cigarettes　nose　　sandal
　　　　'A pack of cigarettes is on/in front of the sandals.'

　　　　III: Space Adjacent to X　　　　　　　　　SPACE (Heine et al. 130)
　d.　　Zehe　　to　　yishe　zxiin　　yelh. (SBZZ) = (31)b
　　　　STAT.hang one　paper　nose　　sandal
　　　　'A piece of paper is hanging above the sandal.'

Sonnenschein (2005a) argues that the potential novel locative uses of body part terms and the limitations to the application of body part terms to certain lexical items indicate that the metaphorical system is very active in the grammar of body part terms in SBZZ and that this is evidence of the transitional nature of this particular lexical subclass.

4.3.　Non-locative uses of BPLs
Another argument which Munro (2006:329) has used to claim the San Lucas Quiaviní Zapotec word *loh* 'face', is a preposition, is its non-locative uses, as in (42). In SBZZ there are no such non-locative uses, showing that these terms have not been as grammaticalized as in TVZ.

(42)　a.　Loh　　　　Jwaany　　b-zì=a'=ih. (SLQZ; Munro 2006, ex 52)
　　　　　face/from　Juan　　　　PERF-buy=1S=3PROX
　　　　　'I bought it from Juan.'

　　　b.　B-zhùu'azh=a'　　gueht　　loh　　　　bèe'cw. (SLQZ; Munro 2006, ex 53)
　　　　　PERF-tear=1S　　　tortilla　face/for　　dog
　　　　　'I tore up the tortilla for the dog.'

　　　c.　Zyuùa'll=ru'　　Rrodriiegw　　loh　　　　Lia　Oliieb. (SLQZ; Munro 2006, ex 54)
　　　　　tall=more　　　　Rodrigo　　　face/than　Ms.　Olivia
　　　　　'Rodrigo is taller than Olivia.'

5. Classes of prepositions

Both TVZ and SBZZ have several classes of prepositions.

In TVZ the most common way of classifying these prepositions is by the type of pronominal object they take with a distinction between "native prepositions", which take bound pronouns as objects and "borrowed prepositions" which take free pronouns as objects. These syntactic classes in general align with the etymology conveyed in their names, but not always, i.e. there are "native prepositions" which have been borrowed from Spanish, such as *pu'unnt* 'at the tip of' from Spanish *punta* 'tip', in (43). (*Pu'unnt* is one of the few BPLs that are borrowed from Spanish.)

(43) a. B-zêëb=a' li'ebr pu'unnt me'es. (TMZ)
        PERF-put=1SG book tip/at_tip_of table
        'I put the book at the end of the table.'

    b. B-zêëb=a' li'ebr pu'unnt=nìi'. (TMZ)
        PERF-put=1SG book tip/at_tip_of=3PRX
        'I put the book at the end of it.'

Some native non-body part prepositions in SLQZ are presented in Table 3 and some borrowed prepositions in SLQZ are presented in Table 4.

SLQZ	gloss
càa'nta'	along, by
gagyèe'i	around
gayààa'	along the edge of, around
lài'	through (a group); among; into the middle of

data from Munro 1998, p.c.; Munro and Lopez, et al. 1999

Table 3. Some native non-component part prepositions in SLQZ

SLQZ	meaning	Spanish origin
co'nnr	against	contra
deh	in the style of, like; (equipped) with; from	de
pahr	for; because of; as for; from	para
pohr	for; because of	por
sihnng	without	sin

data from Munro 1998, p.c.; Munro and Lopez, et al. 1999

Table 4. Some borrowed prepositions in SLQZ

SBZZ has locational non-BP prepositions, such as those in (44) as well as grammatical ones such as the comitative marker *lenh* and the possessive marker *che*. Note that some of these prepositions in (44) are borrowed from Spanish. They express a relation between one or more noun phrases or a noun phrase and the predicate, and, in contrast with SBZZ BPLs, their application is not based intrinisically, meaning that they vary with respect to the positioning of the figure or ground, crucially distinguishing them from relational nouns.

(44) *ladgho* 'between', *gadxol* 'in the center of', *galha'* 'near', *entr* 'between [Sp.]', *fuerle* 'outside of [Sp.]', *trasde* 'behind [Sp.]' (SBZZ)

As is the case with TVZ, the primary grammatical distinction between various classes of prepositions within SBZZ is between those which take pronominal clitics (which include many of the locative prepositions as well as the comitative *lenh* and possessive *che*), as exemplified in (45) and those which cannot take pronominal clitics and instead take free pronouns as their objects, as shown in (46). Many belonging to the second group are Spanish borrowings and all prepositions which are borrowed from Spanish fall into this second group.

(45)   ladgho=dxo (SBZZ)
     between=1PL.INCL
     'between us'

(46)   a. trasde   neto (SBZZ)
      behind   1PL.EXCL
      'behind us'

      b. *trasde=to (SBZZ)
        behind=1PL.EXCL
       bad with any meaning; e.g. cannot mean 'behind us'

6. Positional verbs

The first Zapotec grammar produced described the prominent Zapotec phenomenon of positional verbs (as noted in Operstein 2002): "This is said in many different ways… if I am standing, *naçoa*, if seated, *tipeea*. If lying, *naaya*… and thus the differences correspond to the posture or pose of the thing about which is spoken [italics added]" (Cordova 1578: 42).[19]

In modern Zapotec languages, these positional verbs, when used with animate figures, correspond with the posture or pose of the figure, as Cordova states above. The following examples exemplify this straightforward use of positional verbs in SLQZ where the change in positional verb correlates with a change in pose of the figure, in this case, a cat. (The use of positional verbs with inanimate figures is more complicated, and is discussed in §6.3.)

(47)   a. Zùub   zhye'et loh   me'es. (SLQZ) (Munro and Lopez, et al. 1999: 376)
      NEU.sit cat   on   table
      'The cat is sitting on the table.'

      b. Zuu   zhye'et loh me'es. (SLQZ)
        NEU.stand cat   on   table
        'The cat is standing on the table.'

6.1. Positional verbs as a formal class

In many languages, positionals can be differentiated from other verbs as a separate form class. In the Zapotec languages we study, the positional verbs tend to appear in only one aspectual form. In SBZZ, positional verbs appear in the stative form, although they do not for the most

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[19] This is our translation of the Córdova: "Este se dize por muchas maneras… Si estoy en pie, naçoa, si assentado, tipeea. Si echado, naaya… y assi los differencias conforme ala postura or asiento de la cosa de que hablan." Thanks to Pamela Munro for her help.

part use the nasal stative prefix. In TVZ, most positional verbs appear in the neutral form, and like their SBZZ counterparts, often lack the usual nasal prefix associated with this aspectual form. Positional verbs in the stative or neutral can be used for past, present, or future temporal domains. A useful tool in eliciting positional verbs is the *Picture Series for Positional Verbs* (Ameka et al. 1999, hereafter PosB) developed and used at the Max-Planck Institute for Psycholinguistics in Nijmegen.

When used in the BLC, regardless of temporality, the stative/neutral form of the positional verb is used. However, there are related habitual forms which have a more eventive connotation. We will not be discussing these here.

6.2. Inventory of positional verbs

Below we present the inventory of positional verbs in the languages we work on along with basic meaning, although, as we will show in §6.3 – §6.5, the meanings of positional verbs can be quite complex and difficult to sum up in one English word.

A list of core positional verbs is presented below in TVZ in Table 5 and in SBZZ in Table 6.

TMZ positional verb	SLQZ form (if different from TMZ)	gloss
bèe'b		'is on (a flat elevated surface)'
dêêi'dy	dèèi'dy	'is suspended (across)'
niga'ah	nàa'tga'ah, na'ga'ah	'is lying'
nu'uh		'is; is (inside something); lives; exists'
rii		'are there'
zòob	zùub	'is sitting'
zuu		'is standing'

Table 5. TVZ core positional verbs

SBZZ positional verb	gloss
daa	'to be stuck on'
dee	'to be lying' (not necessarily spread out)
dxi	'to be sitting'
nala	'to be hanging'
nase	'to be spread out' (of multiple objects such as beans)
ndobe	'to be folded or wrapped around'
ndosa	'to be upside down'
nkwaa	'to be heaped' (of multiple objects such as tortillas)
shtulhe	'to be lying on its side'
yoo	'be inserted in, wrap around'
zee	'to be standing' (of an animate figure)
zehe	'to be hanging' (especially at a higher altitude, like an electrical wire)
zhia	'to be sitting' (not used with persons and animals except if a person is mounted on a horse)
zoa[20]	'to be standing' (of an inanimate figure)
zxoa	'to be lying in an extended fashion'

Table 6. SBZZ core positional verbs

6.3. The use of positional verbs with inanimate figures

When positional verbs are used with inanimate figures their semantics are clearly different than when used with animate figures. Notice in the example from SLQZ below, that a change in the choice of positional verb does not necessarily correspond with a change in posture of the inanimate figure, as it did for the animate figures, e.g. in the cat in (47). In this case, changing the positional verb does not correspond with a change in position or pose of the figure, the cup, but rather results in an ungrammatical sentence.

(48) a. Zu'b.ga'ah   ba's   loh   me'es. (SLQZ)
         NEU.sit   cup   face/on   table
         'The cup is (sitting) on the table.'

      b. *Zuu   ba's   loh   me'es. (SLQZ)
         NEU.stand   cup   face/on   table
         bad with any meaning, e.g. cannot mean 'The cup is on the table.'

When used with inanimate figures, positional verbs can put selectional restrictions on the shape of their subject, i.e. the figure NP. Consider the examples (49) and (50) below. In each case, the bottle can be used with the positional verb *zuu* 'is standing' while the ball cannot. In fact, the verb *zuu* 'is standing' was never used with a ball as its figure in the entire TVZ corpus.

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[20] This verb can be used with animate figures with a generic existential 'be' meaning or with the meaning 'lives'.

(49) a. Bote'iy   zuu   guë'ëhcy   gyihah. (TMZ)
          bottle   NEU.stand   head/on.top.of rock
          'The bottle is (standing) on the rock.' (PosB: 10)

      b. *Baloon   zuu   guë'ëhcy   gyihah. (TMZ)
          ball   NEU.stand   head/on.top.of rock
          bad with any meaning, e.g. cannot mean 'The ball is on the rock.' (PosB: 50)

(50) a. Bote'iy   zuu   loh   me'es. (TMZ)
          bottle   NEU.stand   face/on   table
          'The bottle is on the table.' (PosB: 37)

      b. *Baloon   zuu   loh   me'es. (TMZ)
          ball   NEU.stand   face/on   table
          bad with any meaning, e.g. cannot mean 'The ball is on the table.' (PosB: 21)

What does it mean to say that TVZ *zuu* means 'is standing' when used about inanimate figures? It seems that the verb *zuu* 'is standing' puts a requirement on its subject that it must be in an orientation in which its vertical axis is longer than its horizontal axis. A bottle in its canonical orientation has a longer vertical axis than horizontal axis and can be used with the verb *zuu* 'is standing', as in (50)a and (51)a. A ball does not have a vertical axis which is longer than the horizontal axis (they are equal in length), and it cannot be used with the verb *zuu* 'is standing', as shown in (50)b and (51)b. When a bottle is lying on its side, in cannot be used with the verb *zuu* 'is standing', as seen in (51)b, which is a grammatical sentence, but cannot be used to describe Figure 5. This can be explained since in the bottle's current orientation its vertical axis is not longer than its horizontal axis.

(51) a. Bote'iy   n-i.ga'ah   loh   gyihah. (TMZ)
          bottle   NEU-lie   face/on   rock
          'The bottle is (lying) on the rock.' (PosB: 26); Figure 5

      b. Bote'iy   zuu   loh   gyihah. (TMZ)
          bottle   NEU.stand   face/on   rock
          'The bottle is (standing) on the rock.' *Grammatical sentence, but cannot be used to describe* (PosB: 26); Figure 5

Figure 5. Bottle on rock (PosB: 26)

Likewise, a book, when standing upright, as in a bookshelf, can be used with the verb *zuu* 'is standing', but when placed flat on the table, cannot, as shown in (52).

(52) Li'ebr   zuu   loh   me'es. (TMZ)
      book   NEU.stand   face/on   table
      'The book is (standing) on the table' (as in Figure 6); *cannot be used to mean* 'The book is (lying) on the table' (as in Figure 7)

Figure 6. Book upright on table

Figure 7. Book lying flat on table

So far, all of the felicitous examples for *zuu* have figures that happen to have flat bottoms: is this a requirement of the verb *zuu*? Example (53) shows that even figures which do not have flat bottoms, such as an egg, can be used with *zuu* 'is standing', as long as its vertical axis is longer than its horizontal axis, as in the unlikely event of an egg standing on its end.

(53) Zë'ty   bë'ëhdy   zuu   loh   yuhuh. (TMZ)
      egg   chicken   NEU.stand   face/on   ground
      'The egg is (upright) on the ground.'

However, the verb *zuu* does seem to work differently if the figure has a flat bottom. Consider (54), in which the verb *zuu* is used with a figure that is a box in the shape of a perfect cube. However, recall from (50)b above, that *zuu* could not be used with a ball (a perfect sphere) as its subject.

(54) Ca'j   zuu   loh   me'es. (TMZ; 4:171)
      box   NEU.stand   face/on   table
      'The box is on the table.' (In this case the box was a perfect cube.)

These data suggest that the positional verb *zuu* puts different restrictions on its figure depending on the shape of that figure. If the figure used with the verb *zuu* has a flat bottom, then it must be in an orientation such that the horizontal axis is not longer than the vertical axis: it can be the same length (e.g. the cube) or it could be shorter (e.g. the bottle). If the figure does not have a flat bottom, then it must be in an orientation such that the vertical axis is longer than the horizontal axis (e.g. the egg). These are summarized in Table 7. (It is likely that this positional verb may have additional semantic requirements of the figure, ground, type of sup-

port, or locative relationship that are beyond this section, some of which are presented in Lillehaugen 2006: §5.5.1.)

verb	gloss		restriction on shape and orientation of figure
zuu	'is standing'	if figure has flat bottom	must be shaped or oriented in such a way that the horizontal axis is not longer than the vertical axis
		if figure does not have a flat bottom	must be shaped or oriented in such a way that the vertical axis is longer than the horizontal axis

Table 7. the meaning of TMZ *zuu* 'is standing' (preliminary)

The restrictions associated with positional verbs in TVZ are complicated. It is clear that these verbs cannot be defined simply based on the shape of the figure associated with them.

6.4.   Restrictions on the animacy and number of the figure

In many languages, including Texmelucan Zapotec (Speck this volume) and SBZZ, the most important semantic divisions among positional verbs are (i) whether or not the verb can be used with a figure that is an individual vs. a group (such as the difference between SBZZ *dee* 'to be lying (not necessarily spread out)' and *nase* 'to be spread out') and (ii) if the verb can be used with an animate subject. Verbs like SBZZ *zoa* 'is standing (of an inanimate)' can be used for inanimate subjects, as in (55). (*Zoa* can also be used with animate subjects in existential constructions, as shown in §6.5.) *Zee* 'is standing (of an animate)', however, cannot be used with inanimate objects, as shown in (56), but rather must only be used with animate figures, as in (57).

(55) a. Na'   zoa   to   bi'a'. (SBZZ)
        DEM.DST   STAT.stand   one   mushroom
        'There was a mushroom (standing) there.'

      b. Na'   zoa   to   bas   lho   mes=en'. (SBZZ)
        DEM.DST   STAT.stand   one   glass   stomach   table=DET
        'There is a glass (standing) on the table.'

(56) *Na'   zee   to   bas   lho   mes=en'. (SBZZ)
        DEM.DST   STAT.stand one   glass stomach table=DET
        bad with any meaning, e.g. cannot mean 'There is a glass (standing) on the table.'

(57) Kwitlee   yaga   zee=be. (SBZZ)
        side   tree   STAT.stand=3INF
        'He's standing beside the tree.'

6.5.   Positional verbs in existential and possessive constructions

Positional verbs are also used in existential and possessive constructions in Zapotec (e.g. Speck this volume). In SBZZ, the positional verbs can be used in existential constructions, as in the following examples with the verbs *zoa* 'is standing (of an inanimate)' (58)- (60), *dxi* 'is

sitting' (61), *nala* 'is hanging' (62), and *zehe* 'is hanging' (63). *Zoa* 'is standing (of an inanimate)' can also be used to mean 'lives', as in (58)b and (59), or be used to describe location in a space such as a town, as in (60). Existential constructions such as these are quite common crosslinguistically.

(58) a. Ni   zoa   to   zhome'. (SBZZ)
      here   STAT.stand   one   basket
      'Here is a basket.'

    b. Zoa   benhe   bio. (SBZZ)
      STAT.stand   person   male
      'There is a man.' or 'A man lives.'

(59) Gan   zoa=be'? (SBZZ)
     Where   STAT.stand=3INF
     'Where does he live?'

(60) Zo=a'   yezh. (SBZZ)
     STAT.stand=1S   town
     'I am in town.'

(61) a. Dxi-dxgwa   yizhwe. (SBZZ)
      STAT.sit-much sickness
      'There are many sicknesses.' (most of the time; cf (63)b)

    b. Dxi-dxgwa   dizha'. (SBZZ)
      STAT.sit-much   words
      'There are many words.'

    c. Dxi   yelha   justis   yezh=en'. (SBZZ)
      STAT.sit   NOM   justice   town=DET
      'There is justice in the town.'

(62) Nala   magia. (SBZZ)
     STAT.hang magic
     'There is magic.'

(63) Zehe-dxgwa   yizhwe. (SBZZ)
     STAT.hang-much sickness
     'There are many sicknesses.' (from time to time; cf. (61)a)

    In SBZZ, possessive constructions can be formed using a positional verb followed by a possessed subject. The possessor is translated as the logical subject, as in (64). This seems to be the most common way of expressing predicative possession in SBZZ. In Texmelucan Zapotec, Speck shows that the possessor can be expressed as an indirect object, as in (65).

(64) a. Zehe   x-medxu=a'. (SBZZ)
            STAT.hang   POSS-money=1S
            'I have money.' [My money hangs.][21]

     b. Nala   nahago=ba'. (SBZZ)
            STAT.hang   ear=3AN
            'It (an animal) has ears.' [Its ears hang.]

(65) mbiʃ   mandʒik   nẽ (Texmelucan Zapotec; Speck (this volume, ex. 29a))
       S-lie   machete   Pp-1
       'I have a machete.'

7. Conclusions

It is our hope that this broad introduction to many of the main issues relating to how location is expressed in Zapotecan languages will help both to situate the individual papers in this volume and also to serve as a starting point for future research. This brief introduction is of course, not comprehensive. For example, we have not mentioned such exciting topics as the interaction of BPLs and positional verbs, the demonstrative system, toponyms, or expressing location without BPLs, though some of these are addressed in individual papers within this volume.

In addition to presenting an outline of the main issues in expressing location in Zapotec, exemplified by two language varieties, we have also pointed out some areas of analytical and theoretical debate within the field, particularly in relation to what types of evidence can and should be used in syntactic categorization of locatives. Individual papers in this volume contribute additional voices to this discussion and we see it is a fruitful area for future work, both in Zapotecan and beyond.

As mentioned at the beginning, this introduction started out as a position paper provided to the contributing authors. We also originally posed to the contributors a set of research questions as potential areas of investigation, jumping off points, or ways to tie in their work with other Zapotec varieties discussed here, which we include below.

- What is the BLC construction in the language you are studying?
- Are there variations of the BLC in the language you are studying? Are there semantic differences between the variations?
- What is the BLQ in the language you are studying?
- If there is more than one BLQ, does your language use different question words for the two types of the BLQ? Are there meaning differences between these two types of questions, such as differences in presuppositions?
- What terms are used as BPLs in your language? Are there any that do not correlate with a synchronic body part, such as SLQZ *cwe'eh* 'side' and SBZZ *lho* 'intestine'?
- What types of locational adjuncts can be used in the language you work on?
- Do the data regarding c-selection of verbs provide any evidence regarding the categorial status of BPLs in your language?
- Do coordination tests provide any evidence as to the categorial status of BPLs in your language?

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[21] It used to be that money would be hung from the rafters in small ceramic containers.

- Can BPLs be modified in the language you are working on, e.g. with the plural marker, quantifiers, numbers, or adjectives? Are there any ways in which your language can modify prepositions that cannot be used to modify nouns?
- Are BPLs an open or closed class in the language you are working with?
- Do items have canonical orientations? If so, do the labels from these canonical orientations carry over if they are in a non-canonical position?
- Can any of the BPLs in the language you are working with be used as a dative marker? Are there any constructions, such as the comparative construction, which use BPLs as grammatical morphemes?
- How many types of prepositions are there in your language? How do native non-body part prepositions and Spanish prepositions function in the syntax, e.g. with regards to type of pronominal object (clitic vs free form), with regards to PPI (cf. Broadwell 2001)? Do any of your native non-body part prepositions and Spanish prepositions have nominal etymologies?
- What is the set of positional verbs used in the language you are working with? Can this set be defined as a formal class?
- How are the positional verbs used? Are there any restrictions made about what types of figures can be used with individual positional verbs? Is there a distinction made in positional verbs if the subject is an individual or a group? Are there any differences between the positional verbs used for animate or inanimate figures? Are there any restrictions about the type or shape of the ground?
- How are existentials expressed in the language you are working on? Do they use positional verbs? Is there a default positional or copula used in these constructions?
- How is predicative possession expressed in the language you are working with? Are positional verbs used? Is the possessor expressed as the possessor of the subject?

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