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4

Pathways and patterns of metaphor and metonymy in Mixtepec-Mixtec body-part terms

Jack Bowers

4.1 Introduction

Analysis of body-part terms (henceforth ‘BPTs’) in Mixtepec Mixtec (see Table 4.1) provides numerous examples relevant to several key theoretical topics regarding the cognitive mechanisms and patterns of lexical innovation; particularly, those involving: (i) the schematic knowledge sources of the extended BPT; (ii) lexical and cognitive strategies responsible for certain semantic changes; and (iii) the diachronic directionality, on both the semantic and grammatical levels of the language.

As has been discussed for related varieties of Mixtecan (Brugman 1983; Brugman and Macaulay 1986; Hollenbach 1995; Langacker 2002a), Mixtepec Mixtec (henceforth ‘MIX’) shows ample evidence of metaphor and metonymy in lexical innovation. In line with the theory of embodiment (Lakoff and Johnson 1980a, b; Johnson 1987), body-part terms are found to be highly productive in creating new meaning, as polysemous forms, as components of compounds, and in multi-word verbal expressions. These extensions pertain to part-whole terms for objects (meronymy), spatial relations, relational concepts of differing levels of abstraction, as well as grammatical functions.

As found in a group of ten Mixtecan languages by Hollenbach (1995),¹ and as expected in line with linguistic research on grammaticalization (Heine et al. 1991; Hopper and Traugott 2003; Traugott 1989, 2003; Traugott and Trousdale 2010; Svorou 1994), MIX BPTs have given rise to a network of extended lexicalizations and are the etymological sources of more conceptually abstract, grammatical items. Nearly all of the extended BPTs coexist with the original source terms,

¹ Mixtepec Mixtec was not among the ten varieties sampled by Hollenbach (1995) and not all of the specific changes observed therein are observed in our data.

Table 4.1 Summary of primary body-part extensions

BPT	Translation	Extended sense/context
nuu	'face'	'the front part of (x)', 'in front of (x)', 'place where', 'in (x)', 'on (x)', 'at (x)', 'to (x)', 'from (x)', 'place', 'than (x)', 'those who', 'when'
tša'a	'foot'	'bottom part of (x)', 'under (x)', 'in exchange for (x)', 'instead of (x)', 'on behalf of (x)', 'about (x)', (tša'a + ña) 'because of (x)'
xini	'head'	(xini + nta'a/tša'a) 'finger/toe', 'top of (x)', 'above (x)'
sata	'back'	'back part of (x)', 'behind (x)', 'backwards'
nta'a	'hand/arm'	(nta'a + yutu) 'tree branch'
titsi	'stomach'	'underside/underneath (table or object shaped like four-legged animal)'
yu'u	'mouth'	'opening/transition portion of (x)'
si'in	'leg'	'pillar-like/object legs'

though in certain more grammatical senses, the forms may be phonologically reduced.² We can thus clearly identify a general directionality in which these more 'basic' concepts provide a vehicle for the creation of a novel term that is less so, thus following the general semantic directionality of: **concrete** → **abstract** and/or **conceptually primitive** → **less conceptually primitive**.

Accordingly, on the grammatical level, with one notable exception, we find a pattern in which BPTs generally extend in the following morphosyntactic direction: **Major category** (e.g. *noun*) → **Intermediate category** (e.g. *relational noun/adposition*) → **Minor category** (e.g. *comparative pronoun, conjunctive adverb*). However, many of the extensions display a certain gradience in which the boundaries between grammatical categorization are not necessarily discrete and the morphosyntactic structure, which is based on the possessive construction, remains consistent, leaving open the possibility of multiple grammatical classifications. This in fact is quite a common feature found in analyzing grammaticalization chains, as it has been widely noted that there is a continuum connecting lexical, contentful constructions and grammatical functions (Lehmann 1985, 2015; Hopper and Traugott 2003; Traugott and Trousdale 2010).

Ultimately each grammatical extension can be traced back to its bodily conceptual basis. Fundamental in the prototypical schema of body parts is that they are spatial objects which are part of a whole, and that are associated with their respective physical characteristics (*structural composition, general physical orientation*), various functions (*interaction, personal identification, structural stabilization, etc.*),

² These extended BPTs display increased phonetic variation, for example 'face' [nũũ] in extended senses has been observed as: [nũ], [nũ]; and extensions of 'foot' [tša'a] have been observed as [tšaã], [tša?ã], [tša?].

and physical sub-locations with respect to the whole body of an individual human or animal (Andersen 1978; Lakoff and Johnson 1980a, b; Brugman 1983; Johnson 1987; Svorou 1994; Heine et al. 1991). Extensions from a given BPT in MIX can be shown to have been licensed by one or more of these spatial, relational, and/or functional qualities of the particular source ontological profile that is in some way analogous to that of the given extended sense or lexicalization. In many cases, especially in the earlier stages, the new senses often arise from contexts in which a dual interpretation (both semantically and grammatically) of a construction is possible.

As per Svorou (1994), a single MIX body part may be the etymological source of multiple divergent branches or ‘clines’ along which further extensions have evolved gradually along a continuum or what Svorou calls a *panchronic path*. Each non-discrete stage along the path is lexicalized according to a unique salient sub-portion of the source stage’s ontological profile and is only accessible based on specific grammatical, pragmatic, and semantic usage context.

A basic factor in the phenomena at hand is that in locating multiple objects with respect to one another, humans naturally exploit asymmetrical relations (Lakoff and Johnson 1980a, b; Langacker 1986, 1987, 1993; Talmy 1983). As already described, extended BPTs provide salient conceptual material through which these asymmetrical relationships can be communicated. The entities being designated in spatial constructions are the *trajector* (TR) which is the entity to be located with respect to the *landmark* (LM) (Langacker 1986). In the context of SPACE, as well as other relational constructions, the relationship between the trajector and the landmark is often designated by an extended BPT in MIX.

Rooted in innate human cognitive/perceptual capabilities with which we profile relationships and their participants, this strategy is not limited to space, (Langacker 1986, 1987, 1993, 2010; Svorou 1994). According to Langacker, in relational predicates, subject and object status can ultimately be reduced to a kind of focal prominence assigned to participants in a profiled relationship and the roles of nominal subject and object specify the *trajector* and *landmark* of a profiled relationship (Langacker 1986, 1987, 1993, 2010).³

Abstract meanings of grammatical constructions arise from common patterns of usage through which a speaker can infer novel meanings, which is known as *pragmatic inference* (Traugott 1989; Hopper and Traugott 1993) or *context-induced reinterpretation* (Heine et al. 1991). However, this doesn’t mean that a BPT can just be simply placed in any random context for speakers to infer a new meaning, as throughout the majority of the data set we find that the TR–LM alignment remains intact with the BPT performing a relational function between the given

³ Langacker (2010) characterizes the trajector as the *primary figure* and the landmark as the *secondary figure* in a profiled relationship.

entities. Moreover, throughout the contexts in which BPTs are observed the following constructs are structured analogously on the syntagmatic level: part-whole; possessed–possessor; search domain–landmark. This is not coincidental, as this schema is a reusable cognitive mechanism which, in combination with the other cognitive and lexical factors, provides additional means through which a new sense is accessible to speakers.

In addition to the progression of the extended senses, grammatical functions, and cognitive processes, tracing the TR–LM alignment through the extensions of spatial and other domains shows patterns which shed light upon how the entities carrying out these roles change as the BPTs grammaticalize further, and how that change is correlated with the given grammatical function. Furthermore, evident in the furthest observed extensions of MIX BPTs, owing to certain changes to the syntagmatic, lexical, and pragmatic elements, which enable a grammatical function in a given type of sentential context, the trajector–landmark schema finally ceases to be intact.

In this chapter, several sets of examples for each source body part are presented incrementally, which demonstrate the aforementioned phenomena. Herein I focus on the three areas of usage which represent the primary varieties of BPT extensions, which are as follows: in compounds and multi-word expressions; in the language of space; in grammaticalized relational senses.

When organized and viewed incrementally, and analyzed within the context of cognitive linguistics and literature on grammaticalization; and incorporating the body of knowledge already brought to the issue in previous studies of Mixtecan, the stages, patterns, conceptual basis, and lexicocognitive processes of change for the various extensions can be fairly well understood.

4.2 Linguistic topology of Mixtepec Mixtec

Mixtec is a diverse complex of languages (Macaulay 1996); estimates of the number of Mixtec varieties is not concretely quantified, Josserand (1983) groups 120 varieties surveyed into 12 primary dialect areas/subgroups, however the number of varieties cannot be quantified in any reliable way. Mixtepec Mixtec⁴ *sa'an savi* ‘rain language’ is spoken by roughly 9,000–10,000 people in the seventy-two communities, neighborhoods, and colonies (‘colonias’) of the San Juan Mixtepec municipality in the Juxtlahuaca district of Oaxaca Mexico⁵. This speech area

⁴ Mixtepec Mixtec ISO 639-3 [mix]

⁵ Statistics for the speaker demographics of Mixtepec-Mixtec have not been collected since 2000 (with a census in 2010 that collected information only by language family) which put the number of speakers at 9,166. An up-to-date evaluation of its speakers is needed.

lies in the southern Mixteca Baja (Low Mixtec) region⁶ bordering the Mixteca Alta region.⁷ Additionally, MIX is also spoken by several thousand speakers living in other regions of Mexico, particularly Baja California, Tlaxiaco, Santiago Juxtlahuaca, and within the United States in California, most notably around Santa Maria and Oxnard, as well as smaller populations in Oregon, Florida, and Arkansas. Josserand (1983) classifies Mixtepec Mixtec as its own branch in the Mixtecan family however an updated and in-depth comparative study of related varieties is likely needed.

The phonology of MIX has been described by Pike and Ibach (1978), Paster and Beam de Azcona (2004), and Paster (2005, 2010). MIX is a tonal language with three tone levels: *high* [í:] ‘hail’; *mid* [ĩ:] ‘one’, ‘a’; *low* [n̄à:] ‘flat’; and a number of different combinations of rising and falling contour tones may occur on bimoraic syllables⁸: *low high rising* [kòó] ‘snake’; *mid high rising* [nāá]; *low mid* [vèè] ‘heavy’; *mid high* [mēè] ‘very much’; *high rising* (could also be considered *high low rising*) [kwīi] ‘green’; *rising mid* [nkwīi] ‘fox’; *mid low* [jñù] ‘town, village’; *high low* [mpââ] ‘god-father (of son), ‘compadre’; *high mid* [kúū] ‘to be able to’; *falling mid* [tââ] ‘earthquake’; *high falling* [pââ] ‘father’; *mid high mid (rising falling)* [t̄sââ] ‘new’.

Syntactically, like other Mixtecan languages, MIX is a VSO language, though this can be changed in the context of pragmatic focus shifts such as in interrogatives, responses to WH questions, and emphatic statements (see examples (22), (23), (36), and (39) for sentences with alternative information structure). Also, as in other Mixtecan varieties, the fact that there is no case and word ordering plays a major role in syntactic and pragmatic function.

MIX has several copular verbs which follow the same inflection patterns as regular verbs and do not follow any idiosyncratic rules, and certain adjectives may occur as predicates.⁹ Verbs (including predicative adjectives), nouns, adverbs, adpositions, and in some cases conjunctions (for comitative functions) are marked for person either with: a morphological inflection (which can be a vowel and/or tone change), an enclitic, or a pronoun. The usage of morphemes or the enclitics

⁶ The term ‘dialect region’ is used in accordance with the classifications referenced from Josserand (1983). As a side note, the use of the term ‘dialect’, traditionally used derogatorily to refer dismissively to indigenous languages in Mexico, is considered derogatory. Thus, the term ‘variety’ is generally used when referring to different Mixtec (or other indigenous) languages.

⁷ The Mixteca is a cultural region covers areas of Oaxaca, Puebla, and Guerrero states and is generally divided into three sub-regions: Mixteca Alto, Mixteca Bajo, Mixteca de la Costa.

⁸ A full inventory of the possible tone-level combinations is still being studied at present and thus it is possible that instances of additional contour combinations may be found, or that some of those described herein may be incorrect. The orthographic conventions used throughout this chapter is based on the system currently under development by Mille Nieves and Gisela Beckmann of SIL Mexico in collaboration with community members; the draft was obtained via personal communication. This orthography only represents *high* and *low* tones on certain lexical items in contexts where needed to mark minimal distinctions.

⁹ Note that it hasn’t yet been determined what the precise factors are for which adjectives may function as predicates.

for marking the primary argument of a verb is conditioned by the phonological properties of the stem, particularly the tone and vowel environments (for more on these phonological factors see: Paster and Beam de Azcona (2004); Paster (2005)); additionally, in some cases pragmatics may also play a role. MIX has at least three sets of pronouns: the dependent enclitic pronouns; the independent emphatic pronouns; and demonstrative pronouns. Table 4.2 shows the inventory of the morphemes and enclitic pronoun sets.

The emphatic pronouns (not shown in Table 4.2), mostly combine the enclitic pronouns with *mee* (e.g. 1sg: *mee*, 2sg.inf: *meu*, 2sg.form: *meeni*, 1pl.excl: *meekue*, etc.). These are used in reflexives, for emphasis, contrast, and topic shifting. These first two sets of pronouns can be used as subjects or objects in transitive and intransitive phrases, and can be used in marking possession as well. Some of the pronouns are derived from the nouns they stand for, e.g.: *ñáá* ‘woman’ > pronoun/enclitic 3sg.fem.form: *ñá*, (emphatic form: *meeñá*); *kiti* ‘animal’ > pronoun/enclitic 3sg.anml: *ti* (emphatic form *meeti*); *tutú* ‘wood’ > pronoun/enclitic 3sg.wood: *tu* (emphatic form *meetu*).

Demonstrative pronouns comprise certain enclitic pronouns with the demonstrative particle *ka*, e.g.: *ñaká*, which can mean ‘that’, ‘there’, and *ñáká*, meaning

Table 4.2 Enclitic pronouns and morphemes

Person	Gender/Entity	Enclitic pronouns	Morphemes
1.	(sg)	yu	<i>low</i> or <i>falling</i> tone (on final V)
	Exclusive (pl)	kue	
	Inclusive (pl)	ko, yóó	-o ~ -on
2.	Familiar (sg)	ku, yo	-u ~ -un
	Familiar (pl)	kueyu, koyu	
	Formal (sg)	ni	
	Formal (pl)	kueni	
3.	General (sg, pl)	ñá, kui ~ vi	-i ~ -in, -a ~ -an
	Informal (pl)	kueyi, koyi	
	Formal: Masculine (sg)	ra	
	Formal: Masculine (pl)	kuera	
	Formal: Feminine (sg)	ñá, ná	-í ~ -ín, -á ~ -án
	Formal: Feminine (pl)	kueñá, kuená	
	Formal: Human (sg)	na	
	Formal: Human (pl)	na	
	Animal	ti	
	Deity/Holy	ya	
	Wood	tu	
	Spherical	ti	
	Child	tsi	
	Liquid	ra	

‘that woman’ (from the formal female pronoun *n̄á*)¹⁰; *naká* ‘them’, ‘those people’ (formal). The particle *ka* seen in these forms is used to carry out demonstrative emphasis, mostly following nominal subjects, objects, and even obliques, and can be used to disambiguate referenced participants in a discourse. As we will see in this chapter, it is also an active component in the pragmatic and information-structure changes which license certain grammaticalized extensions of BPTs. Some of the non-demonstrative aspects of its use seem to be akin to a topic marker, though more research is needed. Additionally, there is another particle *ka* (see example (36)) which as seen in other varieties, including Chalcatongo Mixtec (Macaulay 1996), is described as the *additive* particle.¹¹ Note that throughout the examples in this chapter, the demonstrative/topical particle is glossed generically as simply a particle (PTCL), while the additive is glossed as (PTCL.ADD).

In expressions following the basic (VSO) information structure, the primary verbal argument (represented abstractly here as ‘PERS’ for generic *person*, though this can of course include nonhuman entities) follows the verb, e.g. V-PERS_(SUBJ), or in the case of the morphemes, (generally) inflects directly on the coda of the verb, e.g. *inkaa* ‘be located’ inflects for second-person-singular informal as: *inká-u* ‘you are (located)’. In basic transitive phrases, the object pronoun follows the verb and subject, i.e. V-PERS_(SUBJ) PERS_(OBJ), e.g. *ká’an =yu* ‘I speak/am speaking’, with an object (*sa’an savi* ‘Mixtepec Mixtec’) is realized as: *ká’an =yu sa’an savi* ‘I speak Mixtec’.

When marked for person, the structure of predicative adjectives, adverbs, and conjunctions mirrors that of V-PERS_(SUBJ), e.g. ADJ-PERS, ADV-PERS, CONJ-PERS. For example, the adjective *suku* ‘tall’ when predicative: *suku =yu* ‘I am tall’; the conjunction *tsi* ‘with’, which occasionally is observed as an adposition ‘to’, is inflected as *tsi-un* ‘with you (singular informal)’. When inflected, certain adverbs come between the base and the inflection or clitic, e.g. *tatsa’vi =ni* ‘thank you (formal)’, but with the adverb *nchu’a* ‘very’ or ‘much’, they are marked as follows: *tatsa’vi nchu’a =ni* ‘thank you (formal) very much’ (see also examples (16), (17), and (18) for adverbs marked for person).

¹⁰ Other Mixtec varieties, e.g.: Chalcatongo Mixtec (Macaulay 1996); Diuxi-Tilantongo (Kuiper and Oram 1991); Jamiltepec Mixtec (Johnson 1988); Ayutla Mixtec (Hills 1990), amongst numerous others have attested ‘free form’ independent pronouns which include first, second, and other persons. It may be possible that the MIX pronouns *yo* (2sg.inf) and *yóó* (1pl.incl) shown in Table 4.2 may in fact be instances of this, as they have clear cognates in numerous other varieties, e.g.: *yòò* (inclusive) Ayutla (Hills 1990); *yò’ó* (inclusive) Jamiltepec (Johnson 1988); *yo’ó/yò* (2sg.inf) Diuxi-Tilantongo (Kuiper and Oram 1991). In all observations in the MIX data, these only occur as objects of a transitive verb. Thus, it is possible that there is another set of first- and second-person independent pronouns that would be counterparts to the full nouns of the third-person forms which are the bases of enclitic pronouns such as *n̄á*, *tu*, *ti* (e.g.: *n̄á’á* ‘woman’; *tutú* ‘wood’; *kiti* ‘animal’, respectively), though more research is needed.

¹¹ More research needs to be done into this, but it is expected that the tones differ between the two *ka* particles (though this difference is not indicated in the working orthography adopted), whereas the tone of the demonstrative/topical *ka*, is high or potentially mid, I am not sure of the tone of the additive particle.

Likewise, possession of alienable and inalienable nouns¹² (such as body parts and kinship relations) is marked in the same way: N_(POSSESSED)-PERS_(POSSESSOR), e.g. *maa* ‘mother’ > *maa =yu* ‘my mother’. As will be discussed herein, part-whole relations of nouns are expressed in the same syntactic order as are possessive phrases, with the first noun (the part) preceding the head of the phrase (the whole), e.g. N_(PART)-N_(WHOLE) (see section 4.4 for discussion).

Verbs are only marked for person when the nominal subject is not explicitly specified e.g. *tsátsi =ni* ‘He/she (formal) is eating’, but *tsátsi chaa* ‘the man is eating’ (see also examples (14) and (15)). Where there are two consecutive verbs (such as in volitive modal contexts), both the first and second verbs are inflected for person (with the irrealis stem),¹³ e.g. *kúni =yu katsí* ‘I want to eat’; (literally) ‘I want I eat’.

According to Bickford and Marlett (1988), verbs in Mixtec languages inflect for aspect, and for mood rather than pure tense, and although the various aspects can refer to events in the present, past, and future, they refer to the internal temporal structure of a situation as opposed to a specific location in time. Bickford and Marlett (1988), Macaulay (1996), and numerous others have shown that there is a primary distinction between *Realis* and *Irrealis* moods, which is reflected in a dichotomy in verb stems in Mixtec languages.

Accordingly, many, (though not all) MIX verbs have a realis and an irrealis form, e.g. the verb ‘to walk’ has: *tsika* (realis) and *kaka* (irrealis), ‘to sing’: *tsita* (realis) and *kata* (irrealis). The realis forms are used with: the *Perfective* (also referred to as *Completive*), *Imperfective* (also referred to as *Incompletive*, or *Continuative*), *Habitual*, and *Progressive* aspects.¹⁴ The irrealis forms are used for the *Potential* aspect and imperatives, as well as the *Modal*.¹⁵

MIX verbs are marked for aspect and mood with a combination of the verbal stems (where applicable), prefixes, and/or tone. The imperfective aspect is used to express present situations and is not marked with a prefix, but with a high tone on the initial vowel¹⁶ on the realis verb form, e.g. *kátsi* ‘I eat’. The habitual aspect is

¹² Inalienable nouns such as body-part and kinship terms take the same enclitics, pronouns, and inflection morphemes as all other nouns in MIX.

¹³ Note that first-person singular in *katsí* is marked with a (low) tone, when represented in Mixtec orthography as an underline, though this is normally only represented in the orthography where there is a minimal distinction in which there is no other way for speakers to infer the meaning from context. Throughout this chapter the underline will be used to mark both in first-person singular only where there is specific emphasis on a given tonal feature, otherwise it will not be marked, in line with standard orthographic practice.

¹⁴ Kuiper and Merrifield (1975), Macaulay (1996), Bickford and Marlett (1988), amongst others, have discussed the issue of the *Progressive* aspect in other Mixtec varieties, amongst the characteristics of which are additional verb stems in addition to the standard *Realis–Irrealis* contrast, though only in the context of motion verb phrases. This issue is related to the semantics of motion and arrival (see section 4.5), however, the specific behavior of the progressive aspect verb stems in MIX in comparison to cognate varieties requires a more in-depth analysis and is beyond the scope of this chapter.

¹⁵ The term *Modal* is used in line with Macaulay (1996) in describing the cognate function for Chalcatongo Mixtec.

¹⁶ Whereas in the working orthography the low tone marking perfective is not represented, the high tone marking imperfective is represented with a high-tone diacritic above the vowel.

marked by the prefix (*ntsi-*), and can express past habitual behavior, or past ongoing actions, e.g. *kuntú'i* 'he/she/it is sitting' > *ntsi-kuntu'i* 'he/she/it used to sit' or 'he/she/it was sitting'.

The perfective aspect is typically used for isolated past events. As described by Paster and Beam de Azcona (2004) and Paster (2005), it is usually marked by the verbal prefix *ni-* [nì], e.g. *ya'a* 'approach' > *ni-ya'a* 'I approached', though in certain tonal and phonological conditions, can be marked with either: a combination of a prenasal *n-* along with a tone change (*low-rising tone*) on the first vowel, or simply a tone change on the first vowel, e.g.: *ts'i* 'I drink' > *ntsi'i* [ntziǝǝ] 'I drank'; *skéta* 'I am running' > *sketa* [skêta] 'I ran'.

The potential is generally used for non-actual, and for relative future situations, and is marked by the prefix (*ku-* ~ *kun-* ~ *un-*¹⁷), e.g. *sketa* 'I run' > *ku-sketa* 'I will run'. Imperatives use the irrealis verb form, and often are realized with the mid-mid tone pattern, e.g. *tsika* 'walk' (realis) > *kaka* [kākā] 'walk!' The modal, marked with the prefix (*na-*), can express numerous functions, including: hortatives, e.g. *kó'on* 'we (inclusive) go' > *na-ko'on* 'let's go!'; and intentions, e.g. *kuu* 'be able to' > *na-kuu* 'in order to (be able to)'.

There are indeed other verbal prefixes and tonal functions that occur with MIX verbs (most notably derivational and negational), however, none are present in any of the examples in this chapter, thus they are not described herein.

4.3 Methodology and data sources

The data used to conduct this study have been collected over a period of roughly ten years, which began in a Field Linguistics course and continued thereafter with two community members originally from the town of Yucunani, in the San Juan Mixtepec municipality who moved to Santa Maria California in the late 1990s. Early data for this particular study was mostly gathered in consultation sessions in California between 2010 and 2015, in which mostly translation- and some stimulus-based elicitation was used to gather vocabulary, both for this particular study, and for the general purpose of creating a digital dictionary and corpus of the language for the purpose of language documentation.¹⁸ The data set was increased by integrating several dozen booklets in the language created by SIL Mexico¹⁹ which were translated to English and Spanish with the project collaborators, annotated, and integrated into the XML corpus. The documentation, dictionary, and corpus creation are the subject of my PhD dissertation (for related publications

¹⁷ The variant form of the future prefix *un-*, phonetically [ú] or [ǰ] is represented in the orthography as *kun-*.

¹⁸ The corpus contents of this project can be found in the following location: https://github.com/iljackb/Mixtepec_Mixtec

¹⁹ https://mexico.sil.org/language_culture/mixtec/mixtec-mix

see: Bowers and Romary 2017, 2018, 2019). Recordings and metadata produced in this work can be found in the archive of resources created on the Harvard Dataverse archive²⁰ (Bowers, Salazar, and Salazar 2019). As is common in the language-documentation context, there is a significant amount of unprocessed data remaining, thus there are likely additional BPT examples to be added to the discussion in the future.

4.4 BPTs in compounds

In MIX, certain BPTs have a semi-lexicalized sense²¹ which (depending on the specifics of the object) can be re-used to express parts of a whole in which the extended BPT is (generally)²² the first component of an NN compound. This process has produced a large number of lexicalized compounds containing BPTs. Significantly, as observed in other Mixtec varieties, the syntactic structure of these compounds mirrors both that of a possessive noun phrase, in which the first item is the possessed and the second the possessor, and oblique phrases in which a (non-BPT-derived) preposition precedes a noun.

In these multipart items, an extension of a given source BPT may be based on a different sub-portion of the original ontological schema and in some cases, the BPT component may be from an extended or grammaticalized sense. Most of these terms refer to subparts of a physical entity and, while they all vary in other aspects of their schematic motivations for the extension, each exploits the meronymic (part-whole) nature of the source body part in mapping the term to the target object or concept. In the following section instances exemplary of each schematic motivation are explored.

4.4.1 Physical partitions

As mentioned, the most basic factor in the NN BPT compounds is the exploitation of physical partitions (meronymy)²³ to denote parts of objects. Evident in example (1), the lexical item for ‘branch’ is comprised of ‘hand/arm’ and ‘tree’. This is a metaphorical extension from the domain of BODY to the domain of TREE in which the part-whole mapping is motivated by the schematic correspondences between key attributes from the source and target domains, namely similarities in

²⁰ <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/BF2VNK>

²¹ Brugman (1983) refers to these as “lexical morphemes.”

²² MIX does feature examples in which the BPT is the second item: *ntuchi nuu* ‘eye’ (‘bean’ + ‘face’); *viko nuu* ‘fog’ (‘cloud’ + ‘face’), which is an example of a conceptual blend. Notably, this latter doesn’t display the same syntagmatic structure of the possessive, which isn’t surprising, as the concept of ‘fog’ is not part-whole in nature.

²³ See Winston et al. (1987) for in-depth discussion of the semantics of meronymic relations.

the *physical shape* and *relative location* of hand/arm and tree branch. Note that to demonstrate the correspondence between the part-whole and the possessive phrase structure, the components are marked here with _P and _W respectively.

- (1) **nta'a** + yutu
 [hand/arm]_P + [tree]_W
 'tree branch'

The directionality of (1), and nearly all of the following examples involving metaphor in this section, can be characterized as:

body part → *object part*

Another example of an extended BPT based on relative location and physical similarity is in the term referring to the underside of a table in which the term for 'belly' is used.

- (2) **titsi** + mesa
belly + table
 'the underside of a table'
 'underneath the table'

As attested in Chalcatongo Mixtec (Brugman 1983), the motivating schema for this term is clearly the *physical configuration* of a *four-legged animal* (see also example (10)). In addition to the metaphorical sense denoting the part of the table itself, this term is perhaps more often used to refer to adjacent space within the confines of the table legs and underneath the tabletop, which is an example of metonymy. The directionality in (2) is as follows:

body part → Metaphor → Metonymy
object part → *region adjacent to object part*

In these next two examples the BPTs 'head' and 'foot' are extended metaphorically to the TOP and BOTTOM regions of the inanimate physical object (HILL)²⁴ on the basis of *physical configuration* and *canonical physical orientation*, i.e. the TOP-BOTTOM configuration and orientation of the BODY, in which the HEAD is on the TOP and FEET are on the BOTTOM.

- (3) **xiní** + yuku
head + hill
 'top of the hill'
- (4) **tša'a** + yuku
foot + hill
 'bottom of the hill'

²⁴ This metaphor is not limited to hills, and 'head' and 'foot' are the most common (though not the only) terms used for expressing such physical partitions.

4.4.2 Function

As in the previous examples, these terms are motivated by *physical partitions* (meronymy) and *physical orientation*, however, it is the combination of *physical orientation* and *function* which underlies these terms.

(7) **nuu** + ve'e
face + house
 'front of the house'

(8) **sata** + ve'e
back + house
 'back of the house'

When considering the prominent role of the face in our interactions with the world (e.g. *local motion, interpersonal interactions, identification, speaking, eating, drinking, vision, smell*, etc.), it is clear that the function of the face is perhaps the most central to our embodied existence in the world (Lakoff and Johnson 1980a,b; Brugman 1983; Johnson 1987; Svorou 1994). Thus, the basis of the metaphorical extension of 'face' to refer to the FRONT REGION of a house is that of our primary functional *interactions* (entrance and exiting) and is most commonly the front portion.

The schematic motivations of the use of *sata* 'back' to represent BACK (of a house) are quite easily understood as being analogous to those of 'face' as FRONT, i.e. the back is *not* the part you interact with, and it is configurationally the opposite region to the front of an object with regard to canonical physical orientation.²⁶ Additionally, this sense is not only based in metaphor; given that (even accounting for potential cultural differences in conceptualized divisions of the body) the entirety of what we would consider the FRONT- and BACK REGION of the BODY are actually comprised of more than just the FACE and BACK respectively. Thus, in using FACE–BACK as the schema to represent more than just a sub-portion of opposing regions of an object, this is an example of *part-for-whole metonymy*²⁷ (note however that the *whole* is still actually limited to the subdomain of FRONT/BACK REGION).

In some extensions, the basis of common assumptions as to a *physical configuration* are not based on a static perspective. Whereas a house is always in the same physical position and the orientation of its subregions naturally remain the same,

²⁶ Note that whereas in Chalcatongo Mixtec (Brugman 1983; Brugman and Macaulay 1986), there are two separate lexical items for 'back', which are used in different extended contexts, with one based on the back of a four-legged animal, and another based on the human anatomy, MIX however uses the same lexical item *sata* for both.

²⁷ See Kövecses and Radden (1998) for in-depth discussion of types of metonymies and their cognitive bases.

examples (9) and (10), are a slight deviation from the previous schema, in which the FACE–BACK schema is applied to the domain HAND.²⁸

(9) **nuu** + nta'a
face + hand/arm
 'palm'

(10) **sata** + nta'a
back + hand/arm
 'back of the hand'

As in the previous examples, this extension is based on meronymy, opposing physical configuration, i.e. FRONT–BACK schema. However, in contrast to stationary objects such as a house or hill, the palm of the hand doesn't truly have a static FRONT CANONICAL ORIENTATION, given that the configuration of hands is dynamic as they can turn and move freely, and in general the resting position of that portion of the hand is inward toward the individual's waist. Thus, the only basis for the use of FACE to refer to the 'palm' is that it is the primary functional part of the hand with which we interact with the world, manipulate objects, etc. The use of BACK, again, is configurationally the schematic opposite of FACE in a FRONT–BACK schema within the domain: HAND/ARM.

BPTs are used in naming the entire 'anatomy' of tables;²⁹ interestingly however the naming is based on a mixing of the motivational schemata between human and animal.

(11) **si'in** + mesa
leg + table
 'table leg'

The metaphorical use of BPT 'leg' with respect to that part of a table is common not only to different varieties of Mixtec, but it is found in English and many other languages of the world. As we saw in example (2), *titsi mesa* 'belly' + 'table' *the underpart of the table*, the metaphor is based on the body of an animal rather than a human. This extension of 'leg' relates to the original BPT not only in their common *relative location*, and *physical shape*, but also their *function* of stabilizing the foundation of the object, just as the legs of animals and humans do.

Example (12) presents a further deviation from the source schema for 'face' seen in previous examples.

(12) **nuu** + mesa
face + table
 'tabletop'

²⁸ This metaphor is also present in the term for 'finger' *xini nta'a*, which is a compound of 'head' + 'hand', as well as *xini tsa'a* which is a compound of 'head' + 'foot' meaning 'toe'.

²⁹ Note that this metaphor is used in the analogous part of a chair as well.

Whereas in examples (2) and (11) the motivating schema for another component of the object (TABLE) is an *animal's legs*, and the underside of it is an *animal's belly*, the schematic conceptualization is not adhered to with regard to the SURFACE portion of a table, which uses 'face'.³⁰ This represents an even further generalization of the sense in the extension of 'face' (8) *nuu nta'a* 'face' + 'hand', as configurationally there is no FRONT REGION of a TABLE as that concept is schematically dependent on an opposite region, i.e. a FRONT–BACK schema. Thus, this extension of *nuu* is based entirely on the schematic knowledge of *meronymy*, and *function*, specifically the tabletop's being the part of the table with which humans interact.

Next is an example of an extended sense of 'mouth' in a compound with the head component of 'river', meaning 'riverbank'.³¹

- (13) **yu'u** + yucha
mouth + river
 'riverbank'

This extension exploits functional knowledge of the mouth with regard to its role as a point of transition into the interior of a whole. This term generally can be extended to physical entities that have an interior which can be entered.

Finally, (14) is a term for another part of a river with a BPT, but which is unique in several ways; note that the third line of the example specifies the part and whole portions of the phrase segmented within square brackets followed by subscript 'p' and 'w' respectively.

- (14) **nuu** + ntavi + yucha
face + breaks + river
 [place.where]_p + [breaks + river]_w
 'river fork/bifurcation'

In that the actual object is a nominal and it is a subpart of a whole physical entity, this item is consistent with the rest of the examples given. However, this differs in that most obviously, it has three components, the second of which is a verb. Additionally, the source sense of the BPT 'face' is in fact an example of one of the more grammaticalized extensions, which functions as a relativizer meaning 'place where', or what Hollenbach (1995) calls an *introductory pronoun* (this will be discussed specifically in the next section: example (30)).

³⁰ Interestingly, in other varieties of Mixtec (cf. Chalcatongo Mixtec: Brugman and Macaulay 1986) the scheme of an animal body is consistently adhered to, and the tabletop is comprised of 'back' + 'table'.

³¹ 'mouth' *yu'u* can also be used to denote the shore or bank area of other types of bodies of water (e.g. lake, creek, ocean).

4.5 BPTs in the language of space

From the previous set of examples, it is already clear that the spatial, functional, and meronymic profiles of BPTs are highly productive conceptual sources motivating BPT extensions; these same factors are active in the context of the language of space. It has been widely established that BPTs are convenient reference points for referencing spatial orientation in language as our bodies, their configurations, functions, and perceptual capacities are the fundamental means through which we perceive and interact with the world (Johnson 1987; Lakoff and Johnson 1980a; Heine et al. 1991; Svorou 1994). Schematic knowledge of these features provides a source for understanding abstract, relational concepts independent of the source entities themselves, notably on the level of grammar.

As in related languages, MIX BPTs are used in both static and dynamic spatial constructions. In the description of BPTs in the language of space, I also integrate the modified system of Universal Spatial Semantics of Zlatev (2007) and Holistic Spatial Semantics (Naidu et al. 2018) into the analysis of this section. This approach provides an expanded set of categories which can be applied to any language, and it allows for the description of constructions which may not have a landmark. The categories are as follows:

Trajector (TR): (static | dynamic³²)

Landmark (LM): (person | object³³ | *event*³⁴)

Frame of Reference (FoR):

Viewpoint-centered (VC): defined through one or more landmarks

Geocentric (GC): involving relatively fixed, ‘absolute’ reference points or axis

Object-centered (OC): class of motion situations anchored at deictic center

Region: area of space usually defined in relation to LM

Path: (Beginning | Middle | End | Zero)³⁵

Direction: used in combination with FoR where no LM is present, multiple values are possible: e.g. Left, Backward, Forward

Motion: perceivable actual motion of dynamic trajector³⁶

Manner: multiple types possible: e.g. *run, fly, jump*

Over the course of the examples in this section, we see MIX BPTs achieve numerous extension pathways via metaphor and metonymy (as well as combinations

³² Dynamic trajector indicates motion, thus the latter need not be explicitly stated unless specific analysis is needed.

³³ The type of landmark *object* is treated here as the default value and is not labeled explicitly in glossed examples.

³⁴ Landmark type *event* is applicable to nonspatial applications of the trajector–landmark system in which the schema is extended.

³⁵ The features of Path: Beginning | Middle | End are analogous to those of the Source-Path-Goal image schema (Lakoff and Johnson 1980a).

³⁶ The feature *Motion* is implicitly present where there is a dynamic trajector and is also not labeled explicitly.

The meanings of the BPT, and thus the sentences, are conceptually overlapping as we see two levels of metonymy at work depending on which reading of the sentence we chose. The first is that even though the FRONT REGION of a human body is more than just one's face (i.e. chest, belly, genitals, etc.), 'face' is being used via part-for-whole metonymy to represent the entire FRONT REGION of the speaker. This is cognitively licensed by the prominence of the face in the context of CANONICAL ORIENTATION and its role in INTERPERSONAL INTERACTION. The second is that the use of the BPT is referring to *adjacent space to the front region* of the landmark (i.e. the possessor),³⁸ which is cognitively licensed by a configurational alignment of the trajector and landmark. Finally, there is the factor of what Lehmann (this volume chapter 2) refers to as the *sympathetic relation* inherent in the meronymy of a body and its parts, which states that what affects the part necessarily affects the whole.

4.5.2 Metonymy: In motion trajectory

In motion phrases, certain BPTs can be used adverbially. In each of the two following examples the BPT indicates a direction of motion and in neither case are there explicit landmarks. In MIX, person can be marked on the adverb in a VP, this is evident in (17)–(19), in which the BPT is inflected for first person singular indicated with the low tone. Note that in contrast to (15) and (16), the person marker indicates the *trajector*, not the *landmark*.

- (17) tsíka nta'a+sachị
 IPFV\walk hand+left\1SG
 \[1SG]_{TR(dynamic)} (FoR:VC; Direction:LEFT)
 'I'm walking left'
- (18) tsíka satạ
 IPFV\walk back\1SG
 \[1SG]_{TR(dynamic)} (FoR:VC; Direction:BACKWARD)
 'I'm walking backward'

In (17) *nta'a sachi* 'left' + 'hand' expresses *lateral motion trajectory* relative to the general orientation of the speaker (i.e. the deictic center). In (18) *sata* 'back' specifies *reverse local motion trajectory*. These are instances of metonymy (region of the body > adjacent space to region of the body) underlying which is schematic knowledge of the *general orientation* of the human body in *local motion*. In each the manner of motion is 'walk'.

Interestingly, despite the fact that the MIX spatial orientational system is clearly based in the body and the use of 'back' and 'left/right hand' for three of the four general directions, the use of 'face' in the same context as the previous two

³⁸ This could also be expanded to include an intermediate step of metonymy in which: FACE as subpart of FRONT REGION is extended to > FRONT REGION.

4.5.4 Contrasting BPT sources for similar spatial relations

As discussed regarding BPTs in compounds, in the context of basic spatial expressions, a single body part is not a self-contained grammatical or semantic unit that can be applied universally to any landmark. Thus, in MIX, one cannot simply assume that a specific BPT will always express a given spatial relation such as UNDER or INSIDE, as the ontological profile of the given landmark is equally important.

- (21) inká -i **tša'a** yutu
 IPFV\COP.LOC -3SG **foot** tree
 -[3SG]_{TR(static)} [tree]_{LM} (FoR: GC+OC; Region:UNDER)
 'it's under the tree'

- (22) inká -i **titsi** mesa
 IPFV\COP.LOC -3SG **stomach** table
 -[3SG]_{TR(static)} [table]_{LM}(FoR: GC+OC; Region:UNDER)
 'it's under the table'

Examples (21) and (22) provide a poignant contrast in that while they translate into English as 'under the (*landmark*)', and the spatial semantics of each are seemingly identical, MIX does not use the same BPT to express this, as they use 'foot' and 'stomach', respectively. The reason for this lies in the conceptual knowledge of the given objects in question,⁴³ rather than being governed by any abstract Cartesian geometry or grammatical rules independent of the entities involved.

Whereas the vertical physical makeup of trees is schematized metaphorically according to the regional oppositions of the human body (HEAD–FOOT), portions of a table are schematized according to the regions of a four-legged animal⁴⁴ whose underside (i.e. *stomach*) is adjacent to the ground. Thus, as alluded to in the discussion of BPT extensions in compounds, the potential for using a given BPT in an extended sense is governed by a combination of the ontological profiles of the object in question (the landmark and the head of a compound) and the given body part.

Likewise, in MIX the spatial relations of *containment* or INTERIOR REGION may be expressed by *nuu* 'face', or *ini* 'inside', 'within'. In (23) and (24) the

⁴³ Note: the word ordering in examples (21) and (22), as well as (23) and (24) differ from the previous examples owing to a shift in focus structure as the sentences were elicited in the form of a WH question, 'where is the X?'

⁴⁴ The metaphorical schematization of a table in MIX extends only to the legs and the underside, as the surface of a table is not 'back' as would be expected but 'face' (this is due to the same principles, as described in numerous other examples in which 'face' is used to refer to portions of an object with which we interact or which are central to its function).

spatial semantics of each are again seemingly identical: (TR:static; LM:object; FoR:Object-centric; Region:INTERIOR), yet the former uses *ini* and the latter uses *nuu*.⁴⁵

- (23) **ini** nto'ò inká -i
 inside basket IPFV\COP.LOC -3SG
 [basket]_{LM} -[3SG]_{TR(static)}
 'It's inside the basket'
- (24) **nuu** yuku inkáa =yu
 face forest IPFV\COP.LOC =1SG
 [forest]_{LM} =[1SG]_{TR(static)}
 'I am in the forest'

It has been well documented that common sources for emotional states are expressed metaphorically in terms of a CONTAINER schema (Evans and Green 2006). In MIX and several other varieties of Mixtec, *ini* can pertain to the bodily 'insides',⁴⁶ and in Chalcatongo Mixtec (Brugman and Macaulay 1986) it is attested as meaning 'stomach' as a separate lexical item from 'belly'.⁴⁷ In addition to expressing configurations of CONTAINMENT, *ini* is also found in a large number of MIX lexicalized verbal phrases pertaining to emotions (see Cúneo and Messineo, this volume chapter 5) or cognitive functions.⁴⁸ In (23), the landmark is a basket, an object whose central characteristic is that it has an interior specifically designed for CONTAINMENT of other objects,⁴⁹ which as described is undoubtedly the motivation for the use of *ini* in that example.

Regarding *nuu*, as we began to see in preceding examples, the active components of the profile of 'face' which have motivated the vast array of extended senses in MIX cannot always be reduced to a simple geometric configuration. Thus, even though the expression in (24) is spatial, the basis of the use of *nuu* is only

⁴⁵ In contrast to many other instances where the BPT-N sequence in spatial expressions is identical to a compound for a given part of a whole (e.g. *nuu ve'e* 'face' + 'house' meaning 'front of the house', *tsa'a yutu* 'foot' + 'tree' meaning 'bottom of the tree', etc., the nominal for 'interior of the forest' is actually *ini yuku*, not *nuu yutu*).

⁴⁶ *ini* meaning 'insides' is attested in Yosondúa (Farris 1992); and Ayutla Mixtec (Hills 1990).

⁴⁷ Whereas in Brugman (1983) with regard to the Chalcatongo Mixtec cognate *ini* was described as having similar semantic properties to the MIX cognate, i.e. only as meaning 'inside' but likely originating from the BPT 'stomach', Brugman and Macaulay (1986) gloss it as 'stomach' and *c̄i* (cognate to MIX *titsi*) as 'belly'.

⁴⁸ Examples of expressions pertaining to emotions or cognitive functions containing *ini* are: *ntakani ini* 'think'; *tsinu ini* 'to believe'; *ntusi xeen ini* 'to get one's feelings hurt'; *ta'an ini* 'to like'; *sana ini* 'to forget'; *ntuku'un ini* 'to remember'; *kuchain ini* 'to get mad'; *kuu ini* 'to feel (sentiment)'. Additionally, it also has a polysemous sense meaning 'soul'.

⁴⁹ While the principles described here are the most prominent general patterns of usage of *ini* 'inside' and *nuu* 'face', there does seem to be some variation and interchangeability between the two in certain contexts, perhaps with certain speakers tending to favor one over the other. This potential interchangeability is also attested in Chalcatongo Mixtec (Brugman and Macaulay 1986).

marginally based on a spatial component of the profile of that body part, as a forest has no FRONT REGION. Instead, as in examples (9) *nuu nt'a'a* (face + hand) ‘palm’,⁵⁰ and (12) *nuu mesa* (face + table) ‘tabletop’, the basis for this sense is mainly *function*, specifically *interaction*; i.e. the area with/in which humans interact with the forest.

This is particularly interesting, because it shows that two different BPTs with very different ontological profiles can come to be used in the same linguistic context expressing the same spatial relation. Thus, specific extensions from a given BPT should not be seen as inevitable, as there are multiple ways to express different spatial (and relational) concepts, and by exploiting different portions of an ontologically rich source profile, two completely different body parts can be used to fill the same, or similar lexical needs of speakers.

4.5.5 BPTs in contrasting TRANSLOCATIVE motion constructions

In the context of motion constructions, ‘face’ is used in an array of different types of motion events which can express contrasting, and even opposing configurations and/or trajectories.

- (25) *ntsaa =kue nuu chuun*
 PFV\arrive =1PL.EXCL **face** work
 =[1PL.EXCL]_{TR(dynamic)} [work]_{LM} (FoR:OC; Path:End)
 ‘we arrived at work’

- (26) *ntava chumi =ka nuu yutu*
 PFV\fly owl =PTCL **face** tree
 manner [owl]_{TR(dynamic)} [tree]_{LM} (FoR:OC; Path:End)
 ‘the owl flew (in)to the tree’

Example (27) shows a multiclausal construction in which the trajector (*tikuchi* ‘bat’) is referenced twice, the first time explicitly, the second in the verbal inflection marking third person singular.

- (27) *ntava tikuchi =ka ni-ntivi -a nuu kava*
 PFV\fly bat =PTCL PFV-enter-3SG.INF **face** cave
 [bat]_{TR(dynamic)} -[3SG.INF]_{TR(dynamic)} [cave]_{LM}
 (FoR:OC; Path:End; Region:INTERIOR)
 ‘the bat flew into the cave’

As has been established, the BPT used in a given construction may differ on the lines of the specifics of the profile of the landmark (or the whole in the context of

⁵⁰ In Diuxi-Tilantongo Mixtec (Kuiper and Oram 1991) the compound for ‘palm’ uses ‘ini’ instead of ‘face’ as in MIX.

Though there are certainly interesting theoretical implications meriting further analysis, this is beyond the scope of this section to address, and thus will need to be left for future discussion.

4.6 BPTs in non-spatial senses

In MIX, as seemingly with the rest of its documented relatives, ‘face’ and ‘foot’ are the most productive in creating new meaning in nonspatial contexts. Hollenbach (1995) states that the greater degree to which these items are abstracted from the literal spatial meanings, the more relational the role seems to be. This observation gets to a fundamental truth about the phenomena, which is that body parts are such a potent force in producing new meanings and performing such grammatical functions owing to the fact that they are conceptually relational entities, thus they make natural and accessible sources for grammatical items within a language. Also, by exploiting contextual knowledge of earlier stages of semantic extensions in combination with the specific verbal frame profiles in a given novel context, they are able to naturally extend into additional, increasingly abstract grammatical senses via pragmatic inference and context-induced reinterpretation.

As discussed widely in the literature of grammaticalization, including studies of related Mixtecan languages (Brugman 1983; Lehmann 1985; Heine et al. 1991; Svorou 1994; Hollenbach 1995), grammatical items across the world’s languages have been found to originate from spatial and/or motion terms. This is the case in MIX as well, and examination of certain patterns in the examples brings to light the way in which pragmatics and the structure of the language makes this possible.

In several of the examples in this section BPTs occur in increasingly abstract and grammaticalized senses in which the information structure remains the same as in the literal and extended spatial senses discussed. Such contexts would provide a natural bridge between the spatial senses and the grammatical functions of BPTs. In these more grammatical senses, the BPTs tend to become decreasingly recognized as the source body part by speakers. Where the trajector–landmark phrase structure differs from those in space, or their literal senses (such as will be discussed in sections 4.6.5, 4.6.6, and 4.6.7), we can identify several interesting grammatical and pragmatic strategies for creating new meaning by means of alteration of information structure.

4.6.1 Grammatical extensions of *nuu* ‘face’ in transfer frames

Extending beyond the domain of SPACE, specifically MOTION, *nuu* ‘face’ is used in oblique ditransitive constructions with indirect objects.

- (36) kun-cha'vi =yu **tsa'** -i
 POT-pay =1SG **foot** -3SG
 =[1SG]_{TR} -[3SG]_{LM(object)}
 'I'm going to pay for it'

In (36) 'foot' is used in an oblique context and functions as a preposition. It is inflected with the discourse reference '-i' denoting the item being paid for and the landmark. Herein the schema of BOTTOM from 'foot' seems likely to have been extended via metaphor to a purely abstract logic schema pertaining to BASIS, i.e. 'the basis for me paying is (in exchange for) it'; English of course has a glaringly analogous phrase in 'to foot the bill'.

4.6.3 'face' as comparative conjunction

In this next example MIX clearly utilizes strategies on the level of information structure, vocabulary, and the context of a novel predication type in order to extend *nuu* to function grammatically as a comparative conjunction.

- (37) Luu =ka Jack **nuu** mee
 young =PTCL.ADD Jack **face** 1SG.EMPH
 [Jack]_{TR} [1SG.EMPH]_{LM(person)}
 'Jack is younger than me'

True to the patterns previously observed, we can still identify the trajector, the landmark (both individuals), and the BPT *nuu* still acts as a search domain. In MIX the superlative is expressed by word ordering, with the predicating adjective *luu* being fronted for focus and marked with the additive particle *ka*.

Noteworthy also, despite the ordering of the BPT-LM remaining the same, the possessive inflection of 'face' for the first person (i.e. **nuu**) is not marked by a tone change as in every other example (including its possessive source), instead an emphatic pronoun 'mee' is used to specify first person singular.

Given MIX speakers' knowledge that most generally in any predication with a relationship, a BPT typically precedes a nominal landmark, bearing a relation to the trajector, where 'face' is present in the context of a predicate with a superlative attribute and two individuals, the meaning of the phrase as a whole is pragmatically inferable by speakers.

We may speculate that this sense of *nuu* originates from ontological knowledge of the role of the face in interpersonal interaction though it is highly abstracted, owing to the successive generalizations inherent in each extension. It is still nonetheless discernible that the semantic profile of this sense maintains the content of directing attention to the individual that the speaker is being compared to (i.e. the landmark).

4.6.5 Relative or introductory pronouns

Recall example (30), presented here again as (42), in which ‘face’ takes on the function of a relativizer or *introductory pronoun* designating a location glossed as ‘place where’; in (40) it is used similarly to designate a relative pronominal phrase.⁵⁵

- (41) kuu **nuu** kuu =na yu’u+nuu señor santo
 COP **face** COP =3PL.FORM.GEN place.of lord holy
 [face COP =3PL.FORM.GEN]_{TR} [lord holy
 Gabriel
 Gabriel
 Gabriel]_{LM(person)}
 ‘they are (those who) are in the place of the lord holy Gabriel’ (Nieves 2012)
- (42) ntsaa =kue **nuu** yee sachu-in =ka
 PFV/arrive =1PL.EXCL **face** exist work-3SG =PTCL
 =[1PL.EXCL]_{TR} [exist work-3SG]_{LM}
 ‘we arrived at (the place where) he works’

In this construction the trajector is the phrase *nuu kuu na*, the search domain is the relational noun phrase *yu’u nuu*,⁵⁶ and the landmark is the noun phrase *señor santo Gabriel*. The internal structuring of the trajector is unique in that it actually contains the BPT *nuu*. However, upon examination we see that the structure of the relative pronominal phrase is analogous to that seen in (42) in which *nuu*, functioning as the search domain, precedes a verb phrase which designates a location as the landmark. In (41), *nuu* precedes a copular verb phrase designating a trajector and internally, within that substructure, functions as a search domain to the copular verb-phrase which serves to both separate and relate the first copula and the second.

This function of *nuu* has most likely arisen from the locative sense of the relative or introductory pronoun in (42) and represents another stage of metaphor and generalization of the sense. With regard to the semantics of ‘face’ itself, as in the previous example, the only identifiable feature is that it draws attention toward a landmark; in this case it reuses that strategy to create a trajector and consequently behaves grammatically as a relative pronoun.

(place) where → person (who)

⁵⁵ It should be noted that from a discourse in a wedding ceremony from Nieves (2012), the language in this example is highly figurative and is considered by the speaker consulted as specific to the ceremonial context.

⁵⁶ The item *yu’u + nuu* glossed as ‘place.of’ is also derived from the body parts ‘mouth’ + ‘face’ and interestingly appears to provide a synonym to the sense of ‘face’ in example (30), from a different combination of bodily sources. As with the rest of this sentence, the speaker consulted described the use of this term as being characteristic of poetic or ceremonial usage and could not provide any natural use of the term. For this reason, I am declining to provide analysis.

4.6.6 ‘face’ from SPACE into TIME

It has been widely discussed that it is very common across the world’s languages for SPACE and TIME to be referred to in similar terms linguistically (Traugott 1974; Langacker 1987; Lakoff and Johnson 1980a; Heine et al. 1991; Haspelmath 1997). The final example of ‘face’ is an extension of the cline in which *nuu* functions as a relative pronoun ‘place where’ to a temporal pronoun or subordinating conjunction ‘(time) when’. This is a metaphorical extension of the function mapping a position in SPACE to a position in TIME.⁵⁷

(place) where → (time) when

Once a BPT extends into a conjunction or relativizer, it can then undergo various other semantic shifts within that lexical category, which allows it to undergo further changes (Hollenbach 1995).

- (43) a. Sara **nuu** ntsinu ntata’vi =ti ...
 then **face** PFV\finish plow =3SG.ANML
 ‘then when it (animal) finished plowing ...’ (Gómez Hernández 2007a)

A major point to note is that this extension of *nuu* no longer maintains the TR–LM structure. There are two potential reasons for this. The first is that at an earlier stage it did occur in the familiar structure in which the TR and the LM are each an event, such as in example (43b) from Jamiltepec Mixtec. According to the speakers and corpus sources I consulted, MIX does not seem to have an analogous usage of *nuu* meaning ‘(time) when’ that occurs in such a context.⁵⁸ If this is the case, the item was extended to the pre-predicate context and its usage in the original context fell out of use and another lexical item (particularly *ta* ‘when’) overtook the former’s lexical space.

- (43) b. ma naka?-un **nu** ka?-in
 not will:answer-you:SINGULAR **face** speak-I
 [not will:answer-you:SINGULAR]_{TR(predicate)} [speak-I]_{LM(event: predicate)}
 ‘You won’t answer [at] the time when I speak.’
 (Jamiltepec Mixtec; Johnson 1988)

The second possibility is that this sense was extended from an existing spatial sense such as (43c) which had grammaticalized to the degree that it had already shed the TR–LM schematic template in a similar context in preverbal clausal position (*sara nuu*= ‘when’).

⁵⁷ This extension of ‘face’ is found in several related languages, notably: Silacayoapan Mixtec (Shields 1988); Yosondua Mixtec (Farris 1992); Jamiltepec Mixtec (Johnson 1988); and is discussed in Hollenbach (1995).

⁵⁸ In general, MIX has the temporal pronoun *ta* ‘when’ that is preferred in most cases by the speakers consulted, both in contexts analogous to the Jamiltepec Mixtec example and in sentence-initial position.

with a noun functioning as a relative pronoun (e.g. *that X*, *the X that ...*); (iv) a relativizer. Thus, in combining *tsa'a* with *ña* the complementizer, the content in the clause which follows is taking up the structural slot of the landmark, and the possessor in the BPT + possessor NP.⁶⁰

In (44a) the relational trajector–landmark schema is maintained, and the coordinating conjunction *tsa'a ña* still functions as a search domain configuring the relationship between two predicate clauses (the TR and LM respectively). However, in (44b) it is fronted and there is no longer the clear relational trajector–landmark schema. Given that we know the literal source of all BPT extensions to be based in contexts in which they conform to the TR–LM schema, we can posit that the usage in (44a) preceded that in (44b). Once (44a) was established, it made the way for the item to be fronted, which in effect divides the schematic trajector and landmark between two or more sentences.

The basis of the senses of (44a) and (44b), is likely a further metaphor from the primitive space-based schema BOTTOM, as seen in earlier stages of ‘foot’ in which the landmark was always a thing or a person. In these latter examples the aforementioned schema is extended further to express RESULT, ORIGIN, or CAUSE, the landmark of which becomes a predicate (i.e. EVENT).⁶¹

Though not observed in MIX, other varieties of Mixtecan have extensions of ‘foot’ meaning ‘(at the) beginning of’, which could be a plausible intermediate stage between BOTTOM, ORIGIN, and CAUSE.⁶² Hollenbach (1995) proposes that the metaphorical analogy could be related to the process of stacking items such as adobe bricks when building. In such a process (which would be a basic area of knowledge and experience of Mixtecs throughout history, and thus a likely candidate for such a schema) the bricks on the bottom (and spatially adjacent to human feet) correspond to the beginning of the process. Hollenbach posits that the senses of *foot* meaning ‘about’, ‘because’, and ‘basis for’ are more likely to have come from ‘bottom of’ than the temporal sense, given that MIX has no attested instances of it in the temporal sense but does have the former senses, as discussed in this section, and this indeed seems like an accurate assumption.

4.7 Conclusion

In this chapter I have presented a set of (nonexhaustive) examples from Mixtepec Mixtec demonstrating the vast array of senses and grammatical functions of BPTs

⁶⁰ For a related discussion, see Hopper and Traugott (2003), which discusses the grammaticalization of Old English *thæt* ‘that’ from demonstrative pronoun to complementizer.

⁶¹ An analogous conceptual basis can be attested in the English expression ‘to get to the bottom of something’, which expresses the idea of finding the cause or origin of a given issue.

⁶² Other varieties of Mixtec with extensions of ‘foot’ meaning ‘beginning of’ or ‘at the beginning of’ are attested in: Ayutla (Hills 1990); Alacatlazala (Zylstra 1991); Silacayoapan (Shields 1988); Ocotepéc (Alexander 1988); Yosondúa (Farris 1992); Jamiltepec (Johnson 1988).

in the language which adds to the body of previous studies on these phenomena in related varieties of Mixtec. This study shows that the body is central to the way that Mixtecs conceptualize, relate to, and describe so many aspects of the world they live in.

I have shown that the schemata motivating these extensions are rooted in physical characteristics, partitions, orientation, and/or functions associated with a given part, or region.

As discussed by Heine et al. (1991) both the source structures and the conceptual profile of the given propositions in which BPTs occur in their most basic usage in language play a role in how these items are extended into new senses, and their inherently relational properties make BPTs good candidates to undertake symbolically relational functions on the morphosyntactic level. This is highly evident in the data set as all BPT extensions express a relation between different conceptual and/or lexicogrammatical entities, e.g. compounds, relational pronouns, relational nouns/adpositions/prepositions, subordinating and comparative conjunctions, conjunctive adverbials, etc. I assert that this fact is evidence of a connection between the linguistic function of certain grammatical items and the semantics of their source lexical profiles.

In the majority of the examples, owing both to the nature of BPTs and to the way they are used in spatial functions, the lexical categorization of many of these items is not clear or absolute. Moreover, with the notable exception of the extension of *nuu* 'face' into a noun meaning 'place', which represents a case of degrammaticalization, I do not consider the question of whether to call the spatial functions of 'face' an adposition, preposition, or relational noun of primary importance, as it is not at all necessary to gain an understanding of a) the cognitive motivations for a given extension, or b) the semantics being expressed. This fact should be taken as evidence of the primacy of semantics and embodied knowledge of the world in human language over formal grammatically-centered descriptions as the basis of these grammatical features of the language is clearly conceptual.

As shown, MIX possessive phrases and the structure of most part-whole compounds containing a BPT mirror each other, and this is not coincidental, as the relationship between a part and whole is commonly interpreted as possessive (Lehmann, this volume chapter 2). This cognition-based conceptual relationship is reflected in the language structure in which BPTs appear in relational sentences, as well as the way that MIX expresses these two relationships is syntagmatically identical as the extended BPT occurs in the same slot as the part or the possessed when it functions as the search domain, while the landmark occurs in the same position as the whole or the possessor.

Throughout the majority of the vast network of BPT extensions, adherence to this trajector-landmark structure remains in place, though in certain types of further grammaticalized extensions, first the landmark, then potentially the trajector may be predicates rather than nominals. Extensions where adherence to

the schema is no longer evident represent the furthest level of grammaticalization observable in the MIX BPT inventory. In such cases the BPT cline either was extended from a function relating two predicates (clauses) and then was fronted, or it was metaphorically extended from another branch in the BPT's network of clines into this latter status.

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