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

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Abstract

In accordance with data published from several related varieties of Mixtecan, and numerous other languages, Mixtepec-Mixtec body-part terms feature expansive networks of extended senses as the head component of a compound, in multi-word expressions and polysemous forms. Parts of the body which have given rise to other meanings in Mixtepec-Mixtec and/or in other forms of Mixtec are: 'head,' 'face', 'back' 'foot', 'leg', 'back', 'hand/arm', 'belly/stomach', 'mouth'. Of these, as is the case in related Mixtecan varieties, 'face' and 'foot' are the most productive and have undergone multiple stages of extensions.

Keywords: Mixtec, grammaticalization, body-parts, etymology, metaphor, metonymy

1.1 Introduction

Analysis of body-part terms (henceforth 'BPT') in Mixtepec-Mixtec 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, both on 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 2002), 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, 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 10 Mixtecan languages by Hollenbach (1995)[1], and as expected in line with linguistic research in grammaticalization (Heine et al.1991; Hopper and Traugott 1993; Traugott 1989, 2003; Traugott and Trousdale 2010; Svorou 1994), MIX BPT 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 BPT co-exist alongside the original source term 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 BPT generally extend in the following morphosyntactic directionality: ***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 in analyzing grammaticalization chains, as it has been widely noted that there is a continuum between 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.*), and physical sub-locations with respect to the whole body of an individual human or animal (Andersen 1978; Lakoff and Johnson 1980a,b; Brugman

[1] Mixtepec-Mixtec was not among the 10 varieties sampled by Hollenbach (1995) and not all of the specific changes observed therein are observed in our data.

[2] These extended BPT display increased phonetic variation, for example 'face' [nùǔ] in extended senses has been observed as: [nǔ], [nū]; and extensions of 'foot' [tsaʔá] has been observed as [tsąą̀], [tsaʔa], [tsaʔ]

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 particularly 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 described above, extended BPT 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 landmark is often designated by an extended BPT in MIX.

Rooted in innate human cognitive/perceptual capabilities with which we profile relationships and its 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 role 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 speaker can infer novel meanings, which is known as *pragmatic inference* (Traugott 1989; Hopper and Traugott 1993) or *context induced reinterpretation* (Heine et al.

[3] Langacker (2010) characterizes the trajector as the *primary figur*e and the landmark as the *secondary figure* in a profiled relationship

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 dataset we find that the TR-LM alignment remains intact with the BPT performing a relational function between the given entities. Moreover, throughout the contexts in which BPT 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 BPT grammaticalize further, and how that is correlated with the given grammatical function. Furthermore, evident in the furthest observed extensions of MIX BPT, due 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, they 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, 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 lexico-cognitive processes of change for the various extensions can be fairly well understood.

2. Linguistic topology of Mixtepec-Mixtec

Mixtepec-Mixtec[4] *sa'an savi* 'rain language' is spoken by roughly 9-10,000 people in the 72 communities, neighborhoods, and colonies 'colonias' of the San Juan Mixtepec municipality

[4] Mixtepec-Mixtec ISO 639-3 [mix]

in the Juxtlahuaca district of Oaxaca Mexico. This speech area lies in the south western Mixteca Baja (Low Mixtec) dialect region[5] bordering the Mixteca Alta region (Josserand 1983)[6]. Glottolog classifies MIX on its own branch in the Mixtecan family, though this is likely in need of revision and this classification doesn't seem to be based on research of the language varieties themselves or the available literature[7]. In Mexican government data, the language is referred to as Western-Central Mixtec (*mixteco de oeste central*). 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, particularly around Santa Maria and Oxnard, as well as Oregon, Florida, and Arkansas.

The phonology of MIX has been described by Pike and Ibach (1978), Pastor and Beam de Azcona, (2004a,b) and Pastor (2005, 2010). MIX is a tonal language with three tone levels: *high* [ḭ́:] 'hail'; *mid* [ḭ̄:] 'one', 'a'; *low* [nt̰à:] 'flat'; and a number of different combinations of rising and falling contour tones may occur on bimoraic syllables[8]: *low high rising* [kòó] 'snake'; *mid high rising* [nāá]; *low mid* [vèē] 'heavy'; *mid high* [mēě] 'very much'; *high rising* (could also be considered *high low rising*) [kwíĩ] 'green'; *rising mid* [nk̦wǐi] 'fox'; *mid low* [ɲūù] 'town, village'; [mpáà] 'god-father (of son)', 'compadre'; *high mid* [kúū] 'to be able to'; *falling mid* [tâã̄] 'earthquake'; *high falling* [páâ]; *mid high mid* (*rising falling*) [ts͡āáā] 'new'.

Syntactically, like other Mixtecan languages, MIX is an SVO language, though this can be changed in the context of pragmatic focus shifts such as in interrogatives, responses to WH questions and emphatic statements. Also, like other Mixtecan varieties, the morphological structure of MIX is fairly simple, with word ordering playing a major role in syntactic and pragmatic function; there is no case, and there is a single particle *ka* which is primarily used to carry out pragmatic emphasis on nominal subjects, objects and even obliques and as we will see

[5] Although the term "dialect region" is used in accordance with the classifications referenced from Josserand (1983), the use of the term "dialect" has traditionally been used derogatorily to dismissively refer to indigenous languages in Mexico is considered derogatory. Thus, the term "variety" is generally used when referring to different Mixtec (or other indigenous) languages, though this is not meant to imply that past linguists covering the topic used the term "dialect" with any such negative connotation.

[6] 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. Past studies (see Josserand 1983) have discussed language variety groupings intermixing these concepts of linguistic vs cultural sub-regions.

[7] https://glottolog.org/resource/languoid/id/mixt1425

[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.

in this chapter, it is also an active component in the information structure changes which licence certain grammaticalized extensions of BPT.

MIX has several copular verbs which follow the same inflection patterns as regular verbs and do not follow any idiosyncratic rules. Additionally, certain adjectives may occur as predicates[9]. There are two sets of pronouns, the standards pronouns, which can function as true pronouns or enclitics, and the emphatic pronouns. The emphatic pronouns are used emphatically as well as in reflexive phrases and with certain verbs. Some of the standard pronouns are derived from the nouns they stand for e.g. the pronoun/enclitic *ñá* (used for referring to a respected or elder woman) which is clearly derived from: *ña'a* 'woman'; or *ti* (used for referring to animals) derived from *kiti* 'animal'. Each set of pronouns can be used as subject (in which they function as enclitics) or object in a transitive or intransitive phrase and can be used in marking possession as well. Possession of alienable vs inalienable nouns (such as body-parts and kinship relations) are marked in the same way, using the same pronouns, e.g. $N_{(POSSESSED)}$-$PRON_{(POSSESSOR)}$. As will be discussed herein, part-whole relations of nouns are expressed in the same syntactic order as are possessive phrases, and carry the same meaning, with the first noun (the part) preceding the head of the phrase (the whole), e.g. $N_{(PART)}$-$N_{(WHOLE)}$.

Verbs only inflect for person when the nominal subject is not explicitly specified and where there are two consecutive verbs (such as in volitive modal contexts, e.g. 'I want to learn'), both the first and second verb are inflected for person. Verbs (including predicative adjectives), nouns and in oblique phrases, adverbs, adpositions and in some cases conjunctions are marked for person with either: an enclitic, a pronoun with certain verbs; a morphological inflection which can be a vowel and tone change, or just a tone change; both the morphological inflection and the tone change occur on the verbal coda. In the subject role, the enclitics follow the verb e.g. V-$PRON_{(SUBJ)}$, and in the object in a transitive context, the object pronoun follows the verb and subject e.g. V-$PRON_{(SUBJ)}$ $PRON_{(OBJ)}$. In a predicative adjective, adverb[10], conjunction and possessive context the structure mirrors that of the verb with the subject enclitic, e.g. in the case of a predicating adjective ADJ-$PRON_{(SUBJ)}$, ADV-$PRON_{(SUBJ)}$, etc. In the case of first person

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

[10] The adverb *nchu'a* take personal markers in certain multi-word expressions as well as when modifying verbal phrases, e.g. *tatsa'vi=ni* 'thank you (formal)' but *tatsa'vi nchu'a=ni* 'thank you very much' where *ni* is the second person formal enclitic.

singular and second person singular informal, the use of an enclitic vs a vowel/tone change depends on the preceding tonal and/or vocalic conditions (for more discussion on tone and the morpho-phonology of MIX see: Pike and Ibach 1978; Pastor and Beam de Azcona 2004a; Pastor 2005).

Verbs are generally marked for tense, aspect and mood with verbal prefixes, though in certain tonal and phonological conditions, past tense/completive aspect, usually marked by the verbal prefix *ni-,* can be marked with either: a combination of a pre-nasal *n-* along with a tone change (*low tone*) on the first vowel of the item; if there already is a verb-initial *n-*, and on a small number of other verbs without verb-initial *n-,* only the tone change distinguished past tense.

3. Methodology and data sources

The data used to conduct this study has 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 1990's. Early data for this particular study was mostly conducted in consultation sessions in California between 2010-2015, in which mostly translation- and some stimulus-based elicitation was used to gather vocabulary, both for this particular study, as well as for the general purpose of creating a digital dictionary and corpus of the language for the purpose of language documentation[11]. The dataset was increased by integrating several dozen booklets in the language created by SIL Mexico[12] 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 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 archive[13] (Bowers, Salazar and Salazar 2019). As is common in the language

[11] The corpus contents of this project can be found in the following location: https://github.com/iljackb/Mixtepec_Mixtec
[12] https://mexico.sil.org/language_culture/mixtec/mixtec-mix
[13] https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/BF2VNK

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. BPT in compounds

In MIX, certain BPT have a semi-lexicalized sense[14] 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)[15] the first component of a NN compound. This process has produced a large number of lexicalized compounds containing BPT. Significantly, as observed in other Mixtec varieties, the syntactic structure of these compounds mirror both that of 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 multi-part items, an extension of a given source BPT may be based off of 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 sub-parts of a physical entity and, while each vary in other aspects of their schematic motivations for the extension, each exploit the meronymic (part-whole) nature of the source body part in mapping the term to the target object or concept. In the following section exemplary of each schematic motivation are explored.

4.1 Physical partitions

As mentioned, the most basic factor in the NN BPT compounds is the exploitation of physical partitions (meronymy)[16] 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 the *physical shape* and *relative location* of hand/arm and tree branch. Note

[14] Brugman (1983) refers to these as "lexical morphemes".
[15] 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.
[16] See Winston et al. (1987) for in depth discussion of the semantics of meronymic relations.

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 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 table top, which is an example of metonymy. The directionality in (2) is as follows:

<u>Metaphor</u> <u>Metonymy</u>

body part → object part → region adjacent to object part

In these next two examples the BPT 'head' and 'foot' are extended metaphorically to the TOP and BOTTOM regions of the inanimate physical object (HILL)[17] 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'

[17] 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) **tsa'a** + yuku
foot + hill
'bottom of the hill'

While the following examples are based on the same schematic knowledge of the body as in the previous examples, specifically: *physical partitions, physical configuration* and *canonical orientation,* they differ in that the initial stage of extension is metonymy, not metaphor.

(5a) **nta'a** + sachi
hand/arm + left
'left'

(5b) **nta'a** + kua'a
hand/arm + right
'right'

When used in contexts specific to an individual human (i.e. 'to your left/right') this sense is simply metonymic and thus this extensions directionality can be characterized as:

body part → region adjacent to body part

When used in terms of a non-human (or animal with analogous limbs), this term also is metaphorical, and thus its subsequent directionality can be characterized as:

<u>Metonymy</u> <u>Metaphor</u>

body part → region adjacent to body part → region adjacent to object part

According to my consultants the non BPT components *sachi* and *kua'a* no longer have any non-spatial meaning in and of themselves[18]. These items also appear in compounds for the analogous cardinal directions as well.

(6a) chi + sachi
'west'

[18] Note the forms of 'left' and 'right' cited in these examples are from consultations obtained in consultation with speakers from the town of Yucunani. In other sources, from SIL Mexico, namely Ramos López et al. 2009) both 'left' and 'right' are used without the *nta'a* 'hand'. This is likely due to sub-dialectal variation within the MIX variety. Nonetheless however, it would seem likely that this term originated as a compound with 'hand' and then in the speech variety of the authors of the SIL source was dropped.

(6b) chi + kua'a
'east'

Note that although these terms are conceptually nominal in their origin (i.e. the direction corresponding to the side of one's left/right hand), they also can be used adverbially as well, when they are, they maintain the same structure as in their nominal form.

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 underlie these terms.

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

(7) **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 our primary functional *interaction* (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[19]. Additionally, this sense is not only based in metaphor; given that (even accounting for potential cultural differences in conceptualized divisions of the

[19] 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.

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*[20] (note however that the *whole* is still actually limited to the sub-domain 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 sub-regions naturally remain the same, examples (8) and (9), are a slight deviation of the previous schema in which the FACE-BACK schema is applied to the domain HAND[21].

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

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

Like 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 inwards towards 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 is again, is configurationally the schematic opposite of FACE in a FRONT-BACK schema within the domain: HAND/ARM.

BPT are used in naming the entire 'anatomy' of tables[22], interestingly however the naming is based on a mixing of the motivational schemas between human and animal.

(10) **si'in** + mesa

[20] See Kövecses and Radden (1998) for in depth discussion of types of metonomies and their cognitive bases.
[21] This metaphor is also present in the term for 'finger' *xini nta'a* which is compound of 'head' + 'hand', as well as *xini tsa'a* which is compound of 'head' + 'foot' 'toe'.
[22] Note this metaphor is also used in the analogous part of a chair as well.

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 mes*a '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 (11) presents a further deviation from the source schema for 'face' seen in previous examples.

(11) **nuu** + mesa
face + table
'table top'

Whereas in examples (2) and (10) 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 regards to the SURFACE portion of a table, which uses 'face'[23]. 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 table top being the part of the table with which humans interact.

Next, is an example of an extended sense of the 'mouth' in a compound with the head component of 'river' meaning the 'river bank'[24].

(12) **yu'u** + yucha
mouth + river
'river bank'

[23] 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'.
[24] '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).

This extension exploits functional knowledge of the mouth with regards 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 (13) 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 a subscript 'P' and 'W' respectively.

(13) **nuu** + ntavi + yucha
face + breaks + river
[place.where]$_P$ + [breaks + river]$_W$
'river fork/bifurication'

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 above. 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 29).

5. BPT in the language of space

Already from the previous set of examples it is clear that the spatial, functional and meronymic profiles of BPT 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 BPT are convenient reference points for referencing spatial orientation in language as our bodies, its 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 as source for understanding abstract, relational concepts independent of the source entities themselves, notably on the level of grammar.

As in related languages, MIX BPT are used in both static and dynamic spatial constructions. In the description of BPT in the language of space, I also integrate a 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 in which may not have a landmark. The categories are as follows:

Trajector (TR): (static | dynamic[25])
Landmark (LM): (person | object[26] | *event*[27])
Frame of Reference (FoR):
Viewpoint-centered (VC): defined through one or more landmarks
Geocentric (GC): involves 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)[28]
Direction: used in combination with FoR where no LM present, multiple values possible: e.g. Left, Backwards, Forwards
Motion: perceivable actual motion of dynamic trajector[29]
Manner: multiple types possible*: e.g. run, fly, jump*

Over the course of the examples in this section, we see MIX BPT achieve numerous extension pathways via metaphor and metonymy (as well as combinations thereof) in expressing spatial configurations. Additionally, resulting from the various factors of grammaticalization, the extensions (particularly *nuu* 'face') extend beyond concrete spatial configuration, and emerge as purely relational concepts containing only minimal portions of the spatial profile of their sources, and their individual semantics are much less easily defined independent of the predicate context. In this section I trace the often complex and divergent etymological pathways of MIX BPT in the domain of space from the bodily source itself, beginning with metonymy.

[25] Dynamic trajector indicates motion thus the latter need not be explicitly stated unless specific analysis needed.
[26] The type of landmark *object* is treated here as the default value and is not be labeled explicitly.
[27] Landmark type *event* is applicable to non-spatial applications of the trajector-landmark system in which the schema is extended.
[28] The features of Path: Begin | Middle | End are analogous to those Source-Path-Goal image schema (Lakoff and Johnson 1980a).
[29] The feature *Motion* is implicitly present where there is a dynamic trajector and is also not labeled explicitly.

5.1 Metonymy and adjacent space

In examples (14) and (15) 'face' is used in nearly identical spatial expressions as both are Object-centered frame of reference (*FoR:OC*) in relation to the FRONT-REGION of the landmark with the only differences being that in (14) the trajector is *static*, and in (15) it is *dynamic* (+*Motion*) with *Path*:*Middle*. Beginning in (14) and continued throughout the rest of this chapter, the third line of many examples marks the (trajector-landmark) role and any further classification of the given component. Additionally, in example (14), the part-whole components are shown on the fourth line in order to demonstrate the correlation between the linguistic structure of: part-whole, possessed-possessor, BPT-person (all discussed in 4.1 and 4.2), and the trajector-landmark relationships shown on the third line of the examples. Note that MIX is a tonal language and in certain lexical items, first person singular is marked (in possession, verbal inflection and several other functions) with a falling tone on the final vowel, represented in MIX orthography with an underline[30].

(14) ntu'u saa =ka **nuṵ**
sit bird =TOP **face**\1SG
[bird]$_{TR(static)}$ \[1SG]$_{LM(person)}$ (FoR:OC; Region:FRONT)
[face]$_{P}$\[1SG]$_{W}$
'the bird is sitting in front of me'
'the bird is sitting in front of my face'

(15) ntava saa =ka **nuṵ**
COMP\fly bird =TOP **face**\1SG
[bird]$_{TR(dynamic)}$ \[1SG]$_{LM(person)}$ (FoR:OC; Region:FRONT; Path:Middle)
'the bird flew in front of me'
'the bird flew in front of my face'

The meaning 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.

[30] The tonal inflection for marking first person singular occurs in tonal environments where the offset of the root is not *low*. In cases where the root offset is low, the clitic '-yu' [jù] is used (Paster and Azcona 2004a,b). The orthography is based on the system currently under development by Mille Nieves and Gisela Beckmann of SIL Mexico, the draft was obtained via personal communication. Also significant is that in the aforementioned draft system, the grammatical extensions of 'face' are spelled with a single vowel 'nu' to distinguish them from the literal BPT. These conventions are not shown here as the change has not been universally adopted and in the interest of showing examples consistently.

chest, belly, genital, 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)[31], which is cognitively licensed by a configurational alignment of the trajector and landmark). Finally, there is the factor of what Lehmann (this volume) 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.

5.2 Metonymy: in motion trajectory

In motion phrases, certain BPT 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 (16)-(18) in which the BPT is inflected for first person singular indicated with the low tone. Note that in contrast to (14) and (15), the person marker indicates the *trajector* not the *landmark*.

(16) tsika **nta'a**+sachi̲
walk **hand**+left\1SG
\[1SG]$_{TR(dynamic)}$ (FoR:VC; Direction:LEFT)
'I'm walking left'

(17) tsika **sata̲**
walk **back**\1SG
\[1SG]$_{TR(dynamic)}$ (FoR:VC; Direction:BACKWARDS)
'I'm walking backwards'

In (16) *nta'a sachi* 'left' + 'hand' expresses *lateral motion trajectory* relative to the general orientation of the speaker (i.e. the deictic center). In (17) *sata* 'back' specifies *reverse local motion trajectory*. These are instances of metonymy (region of 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'.

[31] This could also be expanded with to include an intermediate step of metonymy in which: FACE as subpartOf FRONT-REGION is extended to > FRONT-REGION.

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 examples does not mean 'walk forwards', and while it expresses motion, it is an activity verb[32] and does not express TRANSLOCATION, thus it has no FoR[33].

(18) tsika **nuu̱**
walk[1SG] **face**\1SG
\[1SG]$_{TR(dynamic)}$
'walk/wander around'

Due to the fact that unless otherwise stated, local motion (which is the category *Manner* for all three examples) is assumed to be *forwards*, there is no need for further adverbial specification, thus in MIX *tsika* 'walk' is assumed to mean 'walk forwards' which leaves lexical space for the use of 'face' in an idiomatic expression.

5.3 Metaphor and metonymy in adjacent space

As shown thus far, BPT are used metaphorically to refer to parts of inanimate objects and even other body parts; in (14) - (17) BPT are used metonymically to refer to a trajectory of adjacent space relative to an individual. In example (19), both metonymy and metaphor are used to refer to adjacent space to a specific *region* of the object 'house/building'[34].

(19) ntu'-i **nuu** ve'e
sit -3SG **face** house
-[3SG]$_{TR(static)}$ [house]$_{LM(object)}$ (FoR: OC; Region:FRONT)
'he/she/it is sitting in front of the house'

As alluded to in the introduction, in this and similar cases in MIX as well as related languages, there is ambiguity as to the grammatical role of the BPT. Whereas it is clearly

[32] As an activity verb, *tsika nuu̱* would be an answer to the question "*what* are you doing?", rather than a locative wh-phrase such as "*where* are you going?".
[33] Another example of non-TRANSLOCATIVE motion expression is *'Mary is jogging in the park'* (Naidu et al. 2018), herein there is also no change in the basic location of the trajector (*Mary*) with regards to the landmark (*the park*) however in contrast to (18) there is a landmark and the FoR is Object-centered.
[34] Analogous extensions are also valid with *sata* 'back', *xi'in* 'side' to express 'in back of', or 'next to' (the house) respectively.

performing the role of the search domain (which is usually prepositional), as discussed above, it also is part of an existing compound[35] noun.

5.4 Contrasting BPT sources for similar spatial relations

As discussed regarding BPT 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.

(20) inka -i **tsa'a** yutu
COP.LOC -3SG **foot** tree
-[3SG]$_{TR(static)}$ [tree]$_{LM}$ (FoR: GC+OC; Region:UNDER)
'it's under the tree'

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

Examples (20) and (21) 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,[36] 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 animal[37] whose underside (i.e. *stomach*) is

[35] This and most other compounds containing BPT are commonly written with whitespace but are nonetheless considered a single lexical item.
[36] Note: the word ordering examples (20) and (21), as well as (22) and (23) below differ from the previous examples due to a shift in focus structure as the sentences were elicited in the form of a WH question 'where is the X'.
[37] 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

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 (22) and (23) the 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*[38].

(22) **ini** nto'o inka -i
inside basket COP.LOC -3SG
[basket]$_{LM}$ -[3SG]$_{TR(static)}$
'It's inside the basket'

(23) **nuu** yuku inkaa =yu
face forest 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'[39], and in Chalcatongo Mixtec (Brugman and Macaulay 1986) it is attested as meaning 'stomach' as a separate lexical item from 'belly'[40]. 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) or cognitive functions[41].

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examples in which 'face' is used to refer to portions of an object with which we interact or which are central to its function.

[38] 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' 'front of the house', *tsa'a yutu* 'foot + 'tree' 'bottom of the tree', etc., the nominal for 'interior of the forest' is actually *ini yuku*, not *nuu yutu.*

[39] *ini* meaning 'insides' is attested in Yosondúa (Farris 1992); Ayutla (Hills 1990);

[40] Whereas in Brugman (1983) with regards to the Chalcatongo Mixtec cognate *inì* 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 *čìì* (cognate to MIX *titsi*) as 'belly'.

[41] Examples of expressions pertaining to emotions or cognitive functions containing *ini* are: *ntakani ini* 'think'; *tsinu ini* 'to believe'; *ntutsi 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'.

Turning to ‘face’, whereas in (22), the landmark is a basket, an object whose central characteristic is that it has an interior specifically designed for CONTAINMENT of other objects[42], which as described is undoubtedly the motivation for the use of *ini*. 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 is spatial, the basis of the use of *nuu* is only marginally based on a spatial component of the profile of that body-part. As a forest has no FRONT-REGION. Instead, as in examples (8) *nuu nta’a* (face+hand) ‘palm’[43], and (11) *nuu mesa* (face+table) ‘table top’, 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 as it shows that two different BPT 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 needs of speakers.

5.5 BPT 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.

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

[42] While the principles described above 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, with perhaps certain speakers tending to favor one over the other. This potential interchangeability is also attested in Chalcatongo Mixtec (Brugman and Macaulay 1986).

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

(25) ntava chumi =ka **nuu** yutu
COMPL\fly owl =TOP **face** tree
manner [owl]$_{TR(dynamic)}$ [tree]$_{LM}$ (FoR:OC; Path:End)
'the owl flew (in)to the tree'

Example (26) shows a multi-clausal construction in which the trajector (*tikuchi* 'bat') is referenced twice, the first explicitly, the second in the verbal inflection marking third person singular.

(26) ntava tikuchi =ka ni-ntivi -a **nuu** kava
COMPL\fly bat =TOP COMP-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 compounds). In comparing the motion construction in (26) (with 'face') and (27) (with 'mouth'), the use of a BPT can also depend on the nature of the *interaction* between the trajector and landmark.

(27) ntava tikuchi =ka **yu'u** kava
COMPL\fly bat =TOP **mouth** cave
[bat]$_{TR(dynamic)}$ [cave]$_{LM}$ (FoR:OC; Path:End; Region:EXTERIOR)
'the bat flew to the opening/mouth of the cave (but didn't enter)'

As in example (12) *yu'u yucha* 'river bank', *yu'u* 'mouth' is used in compounds for a region through which one enters a physical entity with an interior. Thus in (27) we see it in *yu'u kava* 'opening of a cave', but significantly, the usage of 'mouth' is limited to the subregion of the opening and is not used once it is passed through.

Example (28) shows 'face' in a construction expressing *motion away from source* following interaction i.e. the owl departs the tree that it flew to in example (25).

(28) ntakoo chumi =ka **nuu** yutu
COMPL\arise owl =TOP **face** tree
[owl]$_{TR(dynamic)}$ [tree]$_{LM}$ (FoR:OC; Path:Begin; Region:INTERIOR)
'the owl arose(flew) out of the tree'

It's noteworthy here that even though in each the implicit *Manner* of motion of the event being described is the same (*flight*), (25) and (28) use different verbs, as in the arrival sentence the verb is *ntava* 'fly', and in the departure phrase the verb used is *ntakoo* 'arise'[44].

Given that there could be no distinction between the meaning of sentences, were both to use the verb *ntava* 'fly' (at least without additional preceding verbal or visual context), as asserted by Brugman and Macaulay (1986) and Hollenbach (1995), the semantics of accompanying verbs necessarily play a key role in communicating certain aspects of the scene such as directionality, trajectory, etc. Thus, it is the combination of the all aspects of the verbal predication, and the semantic profile of the trajector and landmark which allow these two contrasting constructions to be successfully communicated in which *nuu* seemingly expresses contrary motion trajectories.

5.6 'face' as 'place where'

Whereas in previous examples in this section 'face' is used to describe a spatial configuration, or some kind of interaction with a location (i.e. a landmark) in (29), it is used to refer to a location in general which is specified as a relative verb phrase rather than as a noun as we have previously seen.

(29) ntsaa =kue **nuu** yee sachu-in =ka
COMPL/arrive =1PL.INCL **face** exist work-3SG =TOP
=[1PL.INCL]$_{TR}$ [exist work-3SG]$_{LM(object:location)}$ (FoR:OC; Path:End)
'we arrived at (the place where) he works'

Comparing this example to (24), presented here as (30), the motion event is identical semantically[45] except for the way in which (29) refers to the landmark.

(30) ntsaa =kue **nuu** chuun
COMPL/arrive =1PL.INCL **face** work
=[1PL.INCL]$_{TR}$ [work]$_{LM}$ (FoR:OC; Path:End)

[44] This may have to do with a fundamental point of ontological knowledge about the movement and action of birds, as the act of 'arise' is synonymously associated with departure and could likely equally be translated (in the context of a bird or flying animal) as 'take off'.
[45] The difference between *sachuin* (gloss form *sachuun*) and *chuun* is that the former is an inflected verb and the latter is a noun.

‘we arrived at work’

The extension in (29) is referred to as an “introductory pronoun” by Hollenbach (1995), it could also be considered a conjunction, or a relative pronoun depending on the syntagmatic contexts. I assert that the specific label given is to a degree arbitrary and this ambiguity is to be expected as a result of the gradience in the boundary between linguistic categories commonly observable in the process of grammaticalization (Traugott and Trousdale 2010). The landmark in this example is an entire verb phrase referring to a location (*yee sachuin*) which is literally ‘where his work is located’; the topic marker here seems to serve to group these constituents.

The reanalysis of the BPT is schematically akin to the possessor of the face as in senses discussed earlier examples. Note that in this sense, ‘face’ is contextually bound and cannot be interpreted as ‘place’ without the subsequent specification of a landmark.

5.7 Degrammaticalization: ‘face’ as ‘place’

Finally, in these next two examples in which the motion semantics are identical to (29) and (30), with the presence of the indefinite article *in* preceding *nuu,* ‘face’ is extended further, and here takes the true sense of ‘place’ with the unambiguous grammatical function of a noun. The incrementally differing senses shown below are natural extensions of the so-called introductory pronoun function in the previous example in which *nuu* translated as ‘place where’. In contrast to the previous sense, where the extended BPT functions as the search domain and it is contextually bound to the following content (i.e. the landmark), in (31) and even more clearly in (32), it is functioning as the landmark itself.

(31) ni-ya’a =kue **in** **nuu** inkaa in yucha luu
COMPL-cross =1PL.INCL **ART.INDEF** **face** COP.LOC ART.INDEF river small
=[1PL.INCL]$_{TR}$ [ART.INDEF face COP.LOC ART.INDEF river small]$_{LM}$
(FoR:OC; Path:End)
‘We crossed over to **a place where** there is a small river’

Next, below is a slight altered version of the previous sentence in which *nuu* is glossed only as ‘place’ rather than the relative location ‘place where’, which thus demonstrates the fact that this item has achieved a complete reanalysis into a full-blown noun rather than a relational noun.

(32) ni-ya'a =kue **in** **nuu** vii
COMPL-cross =1PL.INCL **ART.INDEF** **face** beautiful
=[1PL.INCL]$_{TR}$ [ART.INDEF face beautiful]$_{LM}$ (FoR:OC; Path:End)
'We crossed over to **a** beautiful **place**'

This phenomenon is not attested in any of the extensions discussed in Hollenbach (1995) nor in any other known literature on related Mixtecan varieties and it represents an interesting and rare case in which an item having undergone several stages of grammaticalization then emerges as a true noun. Notably, given the clear establishment of the clines of *nuu* demonstrated herein, this presents a clear example of the theoretically enigmatic degrammaticalization (see Lehmann 2015 [1982]), as it is an extension from lexical closed-class item to a nominal open-class status[46].

While the predominant consensus that grammaticalization is largely "unidirectional"[47], this shift should not be seen as a radical example of degrammaticalization given that the intermediary status of the preceding relational grammatical function (whether you label it "relative pronoun", "conjunction", "introductory pronoun", etc.), the context of a locative verb phrase seen in (29) makes the purely nominal sense of 'place' much more pragmatically accessible, resulting in the senses seen in (31), and (32).

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

6. BPT 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 non-spatial 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

[46] While a noun is of course recognized as a prototypical 'open-class' category, this item is somewhat less than prototypical as it is a categorical noun, which is not generally as 'open' as other nouns.
[47] The vast majority of the literature on grammaticalization asserts, to varying degrees of strictness, that the majority of the time grammaticalization is a unidirectional process (Langacker 1977; Givón 1979; Lehmann 1985, 2002, 2015 [1982]; Hopper and Traugott 1993; Haspelmath 1999) . See Janda (2000) for counterarguments to this perspective.

performing such grammatical functions due 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 that pragmatics and the structure of the language makes this possible.

In several of the examples in this section BPT occur in increasingly abstract and grammaticalized senses in which the information structure remains the same as in the literal, and extended spatial senses discussed above. Such contexts would provide a natural bridge between the spatial senses and the grammatical functions of BPT. In these more grammatical senses, the BPT 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 6.5, 6.6 and 6.7), we can identify several interesting grammatical and pragmatic strategies for creating new meaning by means of alteration of information structure.

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.

(33) kun-kua'a chuun **nuu** Jack
FUT-give\1SG money **face** Jack
\[1 SG]$_{TR}$ [money]$_{LM'(object)}$ [Jack]$_{LM''(person)}$
'I will give money to Jack'

(34) ntakani =na **nuu̱** ña ntivi karru =ku

COMPL\tell =3PL.FORM.GEN **face**\1SG REL COMPL\break car =2SG.INF
=[3PL.FORM.GEN]$_{TR}$ \[1SG]$_{LM'(person)}$ [COMPL\break car =2SG.INF]$_{LM''(object)}$
'someone told me that your car broke down'

In these ditransitive constructions, the trajector remains the primary argument of the verb. In (33), the *money* is the PATIENT (or what Langacker calls the *mover*) and is the primary landmark (LM_I) and the RECIPIENT is the secondary landmark (LM_{II}). In (34) the primary landmark is the entire relative clause following the relativizer *ña*, which is the stimulus, and the secondary landmark is the EXPERIENCER.

In each, *nuu* continues to act as the search domain designating a relation between to the landmark, the difference is the specific relation designated. If we assume that the directionality of grammaticalization at work here is consistent with what I have shown thus far, (33) is likely to be a natural source of (34) as the former is clearly an extension from the domain of SPACE in which a *transfer of location* schema, is mapped to a *transfer of possession* schema with the RECIPIENT being akin to the semantic Goal (or *Path:End*). The extension from (33) to (34) represents another step of metaphorical process, and further generalizations of *nuu,* as it moves to the domain of VERBAL COMMUNICATION and the schema is extended to *transfer of information* involving a semantic agent (the speaker).

6.2 'foot' as medium of exchange

Extensions of 'foot' show additional grammatical roles in logical entailment functions; these are likely metaphorical extensions of the portion of the schema of FOOT pertaining to BOTTOM which is then extended into an array of abstract, yet related concepts. Whereas in many of the grammaticalized senses of 'face' the trajector-landmark structure becomes increasingly divergent from the basic spatial constructions seen in the earlier stages of the BPT extensions, with one exception, the extensions of 'foot' maintain a clearly analogous structure.

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

In (35) ‘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'.

6.3 ‘face’ as comparative conjunction

In this next example in which 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.

(36) Luu =ka Jack **nuu** mee
young =TOP 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 topic marker *ka* (which is usually reserved for nominal items).

Noteworthy also, despite the ordering of the BPT-LM remaining the same, the possessive inflection of ‘face’ for the first person (i.e. *nu**u***) 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 1st person singular.

Given MIX speakers’ knowledge that most generally that 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 to speakers.

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

6.4 'foot' as REPLACEMENT FOR/INSTEAD OF and BENEFACTOR OF LM

In each sentence 'foot' functions as a conjunctive adverbial. These next two express two increasingly abstract, but nonetheless closely related ideas.

(37) sachuun **tsa'a** Maria =ka
work\1SG **foot** Maria =TOP
\[1SG]$_{TR}$ [Maria]$_{LM(person)}$
'I'm working instead of Maria'

(38) ka'an =yu **tsa'a** Pedro =ka
speak =1SG **foot** Pedro =TOP
=[1SG]$_{TR}$ [Pedro]$_{LM(person)}$
'I am speaking on behalf of Pedro'

As is clear, the only difference in these sentences is the verb, thus, though there is no indication of which one is likely to have preceded the other, once one sense was used, the other was likely easily pragmatically inferable to speakers.

The basis of each of the senses (in 37 and 38) seems to be the metaphorical schema of 'X (the trajector) occupying the place of Y' (where 'Y' is the landmark in the form of a person). The schema is based also in the knowledge that a person's feet are the *foundation of their presence in a location*, which implies at least a *part-for-whole metonymy* (FOOT of INDIVIDUAL for INDIVIDUAL).

(39) sko'a nchu'a tsini =yu **tsa'a** kue asteka =ka
very much know =1SG **foot** PL aztec =TOP
=[1SG]$_{TR}$ [PL aztec]$_{LM(people)}$
'I know a lot about the Aztecs'

In (39), *tsa'a* expresses a relation between the speaker and the topical STIMULUS, the conceptual basis is closely related to (37) and (38). Again, this further abstracted sense is activated by the specifics of the verb predication and could be cognitively motivated by the association of BOTTOM with FOUNDATION, or ROOT. Either sense could have a basis in a metaphor of the structure of a TREE or potentially its growth trajectory. These concepts are

likely the basis of the schematic motivations for the rest of the grammaticalized extensions of 'foot' as well.

6.5 Relative or Introductory Pronouns

Recall example (29), presented here again as (41), in which 'face' takes on the function of a relativizer or *introductory pronoun* designating a location glossed as 'place where', in (39) it is used similarly to designate a relative pronominal phrase[48].

(40) kuu **nuu** kuu =na yu'u+nuu señor santo Gabriel
COP.INCOMP **face** COP.INCOMP =3PL.ALL place.of lord holy Gabriel
[face COP.INCOMP =3PL.ALL]$_{TR}$ [lord holy Gabriel]$_{LM(person)}$
'they are (those who) are in the place of the lord holy Gabriel' (Nieves 2012)

(41) ntsaa =kue **nuu** yee sachu-in =ka
COMPL/arrive =1PL.INCL **face** exist work-3SG =TOP
=[1PL.INCL]$_{TR}$ [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 relational noun phrase *yu'u nuu*[49]*,* 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 the that seen in (41) in which *nuu,* functioning as the search domain precedes a verb phrase which designates a location as the landmark. In (40), *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 from the second.

This function of *nuu* has most likely arisen from the locative sense of the relative or introductory pronoun in (41) and represents another stage of metaphor and generalization of the sense. With regards to the semantics of 'face' itself, as in the previous example, the only

[48] 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.
[49] The item *yu'u+nuu* glossed as 'place.of' is also derived from the body-parts 'mouth'+'face' and interestingly appear to provide a synonym to the sense of 'face' in example (29) 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 this term. For this reason, I am declining to provide analysis.

identifiable feature is that it draws attention towards 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)

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[50].

(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).

(42a) Sara **nuu** ntsinu ntata'vi =ti…
then **face** COMPL\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 is an event, such as in example (42b) from Jamiltepec Mixtec. According to my speakers and corpus sources consulted, MIX does not seem to have an analogous usage of *nuu* meaning '(time) when' that occurs in such a context[51]. If this is the case, item was extended to the pre-predicate context and its usage in the

[50] 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).
[51] 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 as well as in sentence initial position. Note however that there is a significant degree of variation within MIX as in most varieties of Mixtec and it is impossible at this point to rule out that it may exists in the speech of other towns or idiolects in the Mixtepec-Mixtec speaking areas.

original context fell out of use and another lexical item (particularly *ta* 'when') overtook the former's lexical space.

(42b) ma nakaʔ-un **nu** kaʔ-in
not will:answer-you:singular **face** speak-I
[not will:answer-you:singular]$_{\text{TR(predicate)}}$ [speak-I]$_{\text{LM(event: predicate)}}$
'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 (42c) 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').

(42c) ..sara **nuu** tsinu inka+tsio inkaa eje nani-a Polo+chi+Ninu
then **face** end other.side COP.LOC equator be.called-3SG south.pole
"..then where it ends, the other side of the equator is called the South Pole"
(Ramos López et al. 2009)

6.7 'foot' as CAUSE

In (43), 'foot' is combined with the complementizer *ña* to mean 'because'. In MIX and its cognates[52] *ña* signals a subsequent relative clause. The two sentences (43a) and (43b) show two different syntagmatic contexts in which this item appears. To be examined here are four primary factors, namely: the presence and function of the complementizer *ña;* its effect on the TR-LM system; the ordering of and relationship between the items in each of the two contexts (43a) and (43b); and the conceptual basis for these extensions of 'foot' as a subordinating conjunction (43a) or conjunctive adverb (43b).

(43a) ...sto'o =yu ni-kintasi-a yu **tsa'a**+ña nii
owner =1SG COMPL-disgusted-3SG.INF 1SG **foot**+COMP be.old\1SG
[owner =1SG COMPL-disgusted-3SG.INF 1SG]$_{\text{TR(predicate)}}$ [old\1SG]$_{\text{LM(event: predicate)}}$
' ...my owner was disgusted with me because/due to the fact that I am old' (Gómez Hernández 2007a)

(43b) **Tsa'a**+ña ntiñu'u kui yee vichi

[52] This has been observed in at least two other Mixtecan language Ocotepec Mixtec and Copala Trique (Hollenbach 1995)

foot+COMP color.ash 3SG exist today
'this is why today it's the color of ash' (Gómez Hernández 2007b)

Upon examination of *ña* we can gain some insight into how it fits into the construction and how it isn't as big of a structural departure from the original primitive source of BPT + possessor as it may first appear. E. de Hollenbach (1995) examines this item at length in 15 other Mixtecan languages, herein she presents the following functions for the various cognates of MIX *ña*: nominalizing prefix, a complementizer, relative pronoun with an antecedent, and relative pronoun without an antecedent. In MIX, as in related languages, it clearly derives from the noun *ña'a* 'thing' and has the sense/function of: (i) pronoun meaning 'something'; (ii) a nominalizer (where followed directly by a verb); (iii) as a prefix it can also occur with a noun functioning as a relative pronoun (e.g. *'that X', 'the X that…'*); (iv) 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[53].

In (43a) 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 (43b) 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 (43a) preceded (43b). Once (43a) 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 (43a) and (43b), 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)[54].

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

[53] For a related discussion, see Hopper and Traugott (1993) which discusses the grammaticalization of Old English *thæt* 'that' from demonstrative pronoun to complementizer.
[54] 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.

BOTTOM, ORIGIN, or CAUSE[55]. 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 adjacent to human's 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, this indeed seems like an accurate assumption.

7. Conclusion

In this chapter I have presented a set of (non-exhaustive) examples from Mixtepec-Mixtec demonstrating the vast array of senses and grammatical functions of BPT 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.

Commented [A1]: chapter?

I have shown that the schemas 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 conceptual profile of the given propositions in which BPT 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 BPT good candidates to undertake symbolically relational functions on the morphosyntactic level. This is highly evident in the dataset as all BPT extensions express a relation between different conceptual and/or lexico-grammatical entities, e.g. compounds, relational pronouns, relational nouns/adpositions/prepositions, subordinating and comparative conjunctions, conjunctive

[55] Other varieties of Mixtec with extensions of 'foot' meaning 'beginning of' or 'at the beginning of' is attested in: Ayutla (Hills 1990), Alacatlatzala (Zylstra 1991), Silacayoapan (Shields 1988), Ocotepec (Alexander 1988), Yosondúa (Farris 1992), Jamiltepec (Johnson 1988)

adverbials, etc. I assert that this fact is evidence of a connection between certain grammatical items and the semantics of their source lexical profiles.

In the majority of the examples, both due to the nature of BPT and 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 the features of the language are clearly conceptual.

As shown, MIX possessive phrases and the structure of most part-whole compounds containing a BPT mirror each other, this is not coincidental, as the relationship between a part and whole is commonly interpreted as possessive (Lehmann, this volume). This cognition-based conceptual relationship is reflected in the language structure in which BPT 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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