Interactions between Strategies of Spatial Referencing: 
A Case Study on Diidxazá Spatial Descriptions

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The present paper provides a synthesis of work carried out on spatial descriptions in Diidxazá (Juchitán/Isthmus Zapotec, Otomanguean). The research takes a semantic typology approach for the analysis of descriptions of topological and projective relations (frames of reference, FoRs). Data from elicitation and from linguistic and non-linguistic experimental tasks provides a comprehensive view of the strategies used by Diidxazá speakers to organize space and describe the location of objects in it. The analysis of topological descriptions provides initial data on the use of meronyms, mainly body part-derived meronyms, to describe the location of a figure in relation to a part of a ground. Further investigation on the mechanisms enabling the semantic extension of body part-derived meronyms and the extent of their use in spatial descriptions reveals an interface between a meronymic system of spatial relators and FoR preferences. This provides a wide-ranging understanding of spatial description strategies as implemented by Diidxazá speakers and of their division of labor. Further, this ramifies into new lines of inquiry such as the analysis of unexpected functions of otherwise dispreferred strategies, as well as language contact phenomena.

The use of body part-derived meronyms for spatial description is well acknowledged as a noteworthy feature of Mesoamerican languages (Campbell, Kaufman & Smith-Stark 1986 *inter alia*). This has been documented for Otomanguean languages including Zapotec languages (MacLaury 1989, Lillehaugen 2006, Pérez Báez 2012; see also chapters in Lillehaugen and Sonnenschein (eds.) 2012), Chalcatongo Mixtec (Brugman 1983, Brugman & Macaulay 1986) and Copala Triqui (Hollenbach 1987, 1988); for the Mayan languages Tzeltal (Stross 1976, Levinson 1994) and Tzotzil (de León 1992); as well as for Tarascan (Friedrich 1969, 1970, 1971), Totonac (Levy 1992, 2006) and Cora (Casad 1982). Pérez Báez 2012 and forthcoming, explore the process of semantic extension of Diidxazá body part-derived meronyms. Data from various elicitation tasks conducted between 2003 and 2009 with over 20 native Diidxazá speakers analyzed within the framework provided by the Structure Mapping Theory (Gentner 1983, *inter alia*) provide evidence in support of an analogy-based process of semantic extension compatible with the

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1The experimental tasks include a novel objects part identification task developed by the *Spatial Language and Cognition in Mesoamerica* project (https://www.acsu.buffalo.edu/~jb77/MesoSpaceManual2008.pdf), and the Ball and Chair and New Animals in a Row tasks, also designed by the MesoSpace project after the Men and Tree and Animals in a Row tasks developed by the Cognitive Anthropology Research Group at the Max Planck Institute for Psycholinguistics (Danziger 1992, Levinson and Schmitt, 1993).

2Figure and ground are understood here as per Talmey 2000:184).
process proposed, for instance, in MacLaury 1989 for Ayoquesco Zapotec. Additional elicitation conducted notably with tools as stimuli suggests that the analogy-based process does not exclude an algorithm-based process such as the one proposed in Levinson 1994 for Tzeltal Maya.

Beyond the description of the process of semantic extension of body part-derived meronyms, the analysis of these relators in spatial description uncovers the interaction between the meronymic system and a FoRs system. Data collected through referential communication tasks conducted in the field with 12 native speakers of Diidxazá show that the relative FoR is clearly dispreferred (Pérez Báez 2011). In orientation descriptions, the relative FoR was not used at all. In descriptions of figure-ground arrays, the relative FoR was used in only 3% of the documented descriptions. In a non-linguistic task administered to 19 native Diidxazá speakers, only one participant in one trial produced a response consistent with the relative (or the direct) FoR. This bias prompts the question as to what function(s) such a constrained FoR might have when used.

The notion that speakers of some Mesoamerican languages exhibit a bias against relative FoRs has been discussed in a number of works (Brown and Levinson, 1993; Levinson, 1996, 2003; Brown and Levinson, 2009; Pérez Báez 2011, Polian and Bohnemeyer, 2011, Hernández-Green et al 2011). However, there are no studies, to my knowledge, whether their constrained use might correlate with specialized function(s). The Diidxazá data suggests that the relative FoR serves an ambiguity resolution function: in cases where a meronym—used to refer to the part of the ground in relation to which the figure is to be located—might refer to more than one part (as when referring to one of the two sides of a chair, the relative FoR serves to identify the correct part. The relative FoR is not the only disambiguating strategy. However, it is only in this context that the relative FoR was used.

The relative FoR and the meronymic system interact in a similar way (Pérez Báez, forthcoming). Body part-derived meronyms in Diidxazá can be assigned to objects even in cases where an object might have few or no discernable parts, for example a sphere. In these cases, the relative FoR enables a structure mapping between an abstraction of the human body—and not the actual body—in canonical vertical position as the source domain and, say, the sphere as the target domain (Pérez Báez forthcoming). This mapping can only be done in the context of a projection from the observer/speaker’s perspective. In other words, on the basis of a relative FoR.

Further, the Diidxazá data shows that the relative FoRs are generally encoded by Spanish loan words referring to the ends of the sagittal and transversal axes rather than by native Diidxazá words. This suggests that the relative FoR has a particular function linked to the use of Spanish loan words. This finding points to yet another line of inquiry that has received little attention: spatial referencing in language contact situations. Hernández et al 2011 report a similar marked function of the Spanish word lado “side” in relation to the use of the relative FoR in San Ildefonso Tultepec Otomi (Otomanguean). McComsey 2015 reports on FoR use among speakers of Diidxazá, Spanish and both. Bohnemeyer et al 2015 report on contact diffusion of FoR preferences. Yet, reports on functions of linguistic spatial referencing strategies associated with language contact phenomena are lacking in the literature.
In sum, this paper demonstrates the value of comprehensive typology-based analysis of data collected in the field through a combination of elicitation and experimental tasks, both linguistic and non-linguistic. Further, it advocates for a systemic analysis of language in spatial referencing to uncover new lines of inquiry that may yield a more broad-reaching understanding of the relation between a variety of spatial referencing strategies as well as the relation between language, cognition and social and cultural contexts.