

***Xi to vi: “Over that way, look!” (Meta)spatial representation in an emerging (Mayan?) sign language.***

John B. Haviland, UCSD

Draft: March 14 2011

**Introduction: language and space**

Those aspects of human experience most taken for granted, most widely shared, most seemingly universal and ‘natural’ are for many anthropologists precisely those most in need of conceptual and comparative scrutiny. For those interested in language such scrutiny often begins with the linguistic resources speakers use for talking about apparently shared aspects of human experience: kinds of people and their interrelationships (represented, say, in kinship terminologies or in systems of linguistic gender), elements of the environment (found, for example, in ethnobotanical nomenclature or in ‘color’ vocabularies), and certain quasi-mathematical aspects of assumed human perceptual experience (for example, numbers, or systems of quantification and classification).

‘Space’ has recently been a central focus of such comparative conceptual scrutiny.<sup>1</sup> Assuming neither a shared conceptualization of physical space, nor some experiential construal of its mathematical or topological properties, the point of departure here is instead the fact that particular languages provide interlocutors with certain resources for answering questions like “Where is X?” These linguistic resources include, of course, those which make construable the entity ‘X’ itself and also language particular devices to indicate such notions as size, distance, shape, position, arrangement, contact, containment, contiguity, alignment, motion, direction, and velocity. An important result is that languages provide interrelated but conceptually incommensurable “frames of reference” for representing spatial relationships and, correlatively, that speakers often give variable priority to different representational devices that incorporate such frames of reference.

Mayan languages have been important role in the typology of spatial language, partly because of the multiple and overlapping frames of reference typically employed by speakers of Mayan languages.<sup>2</sup> Typological interest in Mayan spatial conceptualization is recent, however, when compared to the very long tradition of ethnographic inquiry into Mayan spatial practices—from the physical layout of house, cornfield, or church, etc., to the cosmological significance of spatial orientations, or from the day-by-day calibration

---

<sup>1</sup> See, for example, %Levinson 2003, %Levinson & Wilkins 2006.

<sup>2</sup> See, among others, Haviland 1991, 1992, 1993, 200, 2005; de %Leon 1992; %Brown & Levinson 1993; %Brown 1994, 2006; %Bohnemeyer & Stolz 2006)

of spatial knowledge and information in interaction,<sup>3</sup> to the vast archeological and colonial record of elaborate socio-spatial organization in the Maya area.<sup>4</sup>



Map 1. The township of Zinacantán, in highland Chiapas, Mexico.

In of my own work on linguistic representations of “space” in Tzotzil (Mayan) I have focused on two striking features of communicative practice in the community of Zinacantán, in highland Chiapas, Mexico (see map 1). The first is the structure of speech and the high degree of lexical elaboration in various spatial subsystems in the spoken language. The second has to do not with words but with co-speech gestures that give direct evidence about Tzotzil speakers’ conceptualizations of space even in the absence of corresponding spoken forms.

### **Space in spoken Tzotzil**

In spoken Tzotzil, several linguistic subsystems contribute to spatial descriptions. A hypertrophied set of Tzotzil roots (traditionally called “positionals” in Mesoamerican linguistics) having to do with shape, configuration, and anatomy facilitates—indeed, requires for felicitous speech—careful specification of the spatial character of different sorts of objects.<sup>5</sup> Much of the topological and geometric specification accomplished in other languages by adpositions or nominal cases (Talmy 1985, Svorou 1994) falls in Tzotzil to the complex anatomical and positional semantic portmanteaux of these positional roots. Tzotzil also elaborates ‘body part’ expressions (Levinson 1994a) which enable descriptions of spatial position via an “intrinsic frame of reference” using the anatomies of objects construed as virtual bodies as points of locative reference. The exact ‘body-part’ distinctions involved thus represent a partially grammaticalized spatial ‘anatomy’ which can be variously applied to different sorts of object. Tzotzil

<sup>3</sup> See, for example, Vogt 1992, Gossen 1974a, 1974b, Hanks 1990.

<sup>4</sup> For example, W. A. Haviland 1966; Ashmore 1989; Ashmore & Willey 1981, Hanks 1988, 1992; Jones 1989; to cite only a few.

<sup>5</sup> See Laughlin 1975, Haviland 1992, 1994, 1994b for Tzotzil, Brown 1994 for Tseltal.

additionally has an elaborate set of grammaticalized auxiliary and directional verbs which permit precise inflection of virtually all predicates with respect to trajectories and motion.<sup>6</sup> Finally, the metaphor of an “up/down” opposition, which literally refers to the vertical axis, is conventionally extended to an East/West axis: where the sun rises is thought of as *ak’ol* or ‘up’, and where it sets as *olon* ‘down.’<sup>7</sup> This opposition allows Tzotzil speakers to apply Levinson’s “absolute frame of reference” which uses a coordinate system conceptually independent of local terrain and landmarks for locating objects in relation to one another.

These linguistic sub-systems are illustrated in a spontaneous dyadic interaction (videotaped in 1993 in the hamlet of Nabenchauk) in which Peter, a Zinacantec man in his eighties, describes to much a younger *compadre* the earliest settlement of their village as they stand in the older man’s house compound. Questions of location are naturally prominent throughout this short conversation.

Consider first the use of Tzotzil ‘body part’ words to describe locations. The complete meronymy for Tzotzil is complex<sup>8</sup>, but a few ‘part’ words exemplify the general principles. The word *pat* is used to denote a human ‘back’ or, for example, the posterior side of some object which has a distinct anterior *sat* ‘face, eye’, *ni`* ‘nose’, or *ti`* ‘mouth.’<sup>9</sup> The corresponding posterior surface is a *pat*; the posterior end, if there is one, is a *chak* ‘bottom.’ *Pat* also denotes the outer surface of an object that is conceived as having a *yut* ‘interior.’

Describing where his great grandmother settled after her husband cleared the virgin forest, Peter points toward the eastern edge of the valley where the village lies, saying

(1) “Intrinsic” use of *pat* ‘back.’

te        nakal    yo` bu    s-pat    s-na        chikin p'ine<sup>10</sup>

THERE residing WHERE 3E-back 3E-house name

She lived over in that area behind the house of the Chikin P’in family.

---

<sup>6</sup> See Aissen 1984, Haviland 1981, 1993b, Zavala 1992.

<sup>7</sup> See Gossen 1974a for an account of some ramifications of this conceptual coincidence in the Tzotzil of neighboring Chamula. Cognate words apply to a parallel distinction in the Tseltal of nearby Tenejapa (Brown 2006, Brown & Levinson 1993) although there the dominant topography seems to have produced a different conventional association: since North is topographically downhill in most of Tenejapa, there “up” means South and “down” North. But see Polian & Bohmeyer (forthcoming) for more details on Tseltal usage more widely.

<sup>8</sup> See Laughlin 1998c, Haviland 1992.

<sup>9</sup> What defines this anterior extremity is, as the glosses suggest, partly a matter of shape and configuration: a *sat* is usually a flat surface or point in a flat surface; a *ni`* is a projection; a *ti`* is a hole. See Levinson (1994) for related facts about Tseltal.

<sup>10</sup> Tzotzil is written in a Spanish based practical orthography. Abbreviations include 1E = 1<sup>st</sup> person ergative, 3E = 3<sup>rd</sup> person Ergative, ASP = aspect, ART = article, CL = clitic, DIR = directional, EVID = evidential, PREP = preposition, PLU=plural,

He conveys that his grandmother lived in an area that lies on the opposite side from the front (*ti`* or doorway) of the current Chikin P'in house. The intrinsic orientation of the reference object, the Chikin P'in house with its clearly identifiable parts, fixes the location of the great grandmother's former house.

Later Peter uses *pat* in a different way to describe the location of an old path that people from lowland villages originally used to make the journey up the mountain to the nearest market town.

(2) "Relative" use of *pat* 'back.'

Xi la ch-jelav li be ta pat<sup>11</sup> vitze

THUS EVID ASP-pass ART path PREP back mountain

The road used to pass on the far side of the mountain over there.

Since a mountain, unlike a house, has no clear "front" side—no *sat* 'face' or *ti`* 'mouth'—the reference to "the mountain's back" must be calculated relative to the perspective of an observer (here the interlocutors), by a Tzotzil convention that parallels that of English.<sup>12</sup> Peter intends to say that the old path ran on the far side of the mountain *from where they stand*. The location is thus triangulated from (or projected onto) the mountain relative to the observers' viewpoint.

A still different use of a 'body part' word to convey a spatial configuration occurs when Peter reminisces about the deer that once abounded in the forests surrounding the village in the early days before virgin forest was felled to accommodate settlement.

(3) Lexicalized body part projecting a spatial layout.

te`tikil chi je, te x-k'ate:t ta x-chak te`-tike

wild deer THERE ASP-lying\_sideways PREP 3E-bottom tree-PLU

Deer would be just be lying about sideways amongst the tree stumps.

The expression *x-chak te`* 'lit., bottom of tree' is lexicalized to mean 'stump' (as well as its literal denotation: the cut end of a tree trunk—the end on which the trunk could, in principle, 'sit'), and it is partly here that Peter conveys the information that the deer are low-lying, on or close to the ground.

Example (3) also illustrates the second aspect of Tzotzil spatial language mentioned: how a spatial configuration can be partly encoded via the highly elaborated inventory of Tzotzil positional roots (e.g., Haviland 1994, 1994c). The verb *x-k'at-et* is based on the positional root *k'at* 'sideways, crosswise (predicated of a longish thing)' which combines information about the shape of the object described with a specific configuration or

---

<sup>11</sup> There is a further grammatical difference between examples (1) and (2), namely that *pat* is grammatically possessed in the former intrinsic use, but not in the latter relative use. See de Leon 1994 for further grammatical details.

<sup>12</sup> But it differs from that of Hausa (Hill 1982).

disposition in space: here that objects which are relatively longish in shape (the deer) are arranged so as to run perpendicular to the reference objects (the tree stumps in the forest). The image resulting from the positional information in the verb plus the body-part modification of the reference object is of deer lounging on the ground partially obscured behind the felled forest trees.

Other positional predicates in Peter's description of the forest are generally evocative of spatial scenes. He describes mushroom hunting, where

(4) Positional predicate

te lam-al li tajchuch  
THERE spread\_out ART lentinus\_mushroom  
The mushrooms covered the ground.

Or he describes the scene after the forest was chopped down to accommodate cornfields as

(5)

mo:l toje, tzel-ajtik  
large pine heaped\_up-PLU  
Big pine trees all heaped up.

In both cases, the positional roots give precise spatial indications: *lam* that the ground was apparently an unbroken blanket of mushrooms; *tzel* that the heap was composed of longish things in a jumble.

Two other lexical systems in spoken Tzotzil systematically encode spatial information. One is the system of motion verbs, which are grammaticalized across the verbal system as both auxiliary verbs and directional particles.<sup>13</sup> Peter illustrates the latter as he describes the original clearing of the mountainsides in his village. Motioning toward one of the mountain ridges that ring the town he says:

(6) Directional particles

Tz-boj-ik muyel xi to vi noxtok une  
ASP-chop-PL DIR:rising THUS CL EVID also CL  
They chopped the forest all up this way, too

Tz-boj-ik tal naka jvaskisetik la une  
ASP+3E-chop-PL DIR:coming only Vazquez EVID CL  
And they chopped down this way only members of the Vazquez family, they say.

The directional in the first clause is derived from the intransitive root *muy* 'ascend' and allows Peter to add an upward trajectory to the action of chopping trees he depicts as the early settlers worked their way up a mountain ridge. The directional in the second clause

---

<sup>13</sup> See Aissen 1994, Zavala 1992, Haviland 1993b, 1996.

uses the root *tal* ‘come’ and it incorporates a deictic perspective into the scene: it was on the side of the mountain ridge *toward the observers* that the colonists continued felling the forest.

One final aspect of spatial language in spoken Zinacantec Tzotzil is the conventionalized association between the vertical axis—denoted by the relational nouns *ak’ol* ‘above’ and *olon* ‘below’ as well as by verbs of ascending (like *my*) and descending—and the East/West axis. Considerable attention is paid to the exact path of the sun, and there are strong symbolic and religious associations with the East/West axis.<sup>14</sup> The East, where the sun rises, is “high” and the west, where it sets, is “low.” Despite local variations in terrain, it is geographically the case that the lowland cornfields that Zinacantecs frequent, historically, lie largely to the west of the township, and that access to them has been by paths that lead inexorably westwards and down. What is called ‘hot country’ in Spanish is *olon osil* ‘low country’ in Tzotzil; people called *j’olonetik* ‘lowlanders’ are those from the township’s westernmost settlements.<sup>15</sup> And the westernmost and at one time most distant place where Zinacantecs ever used to venture—Mexico City—is still called *olontik* ‘the low place’ by old timers.

There is sometimes tension between applying the vertical axis to the actual slope of the landscape as well as opposed to the east/west axis independent of local inclination. In describing macro-space, however, by ‘up’ and ‘down’ Zinacantecs usually mean the East/West axis. Peter thus describes the former walking path from his village into San Cristóbal, the closest market center. The path made its way up to a high point just east of the village and continued eastward, descending again into the large village of Nachij. Just before reaching Nachij<sup>16</sup> another path branched off to the north, just beyond the house of a well-known person whom his interlocutor mentions. Peter confirms that this is the place he means, placing it directly East (although, in terms of the local terrain actually lower than) the point of reference.

(7) East/West

y-ak’ol s-na konkoron x-k-al-tik  
3E-above 3E-house name ASP-1E-say-PLU  
East of the house of the guy we call Konkorón.

### Space and Zinacantec co-speech gesture

Although all of these spoken Tzotzil forms are frequently used in descriptions of spatial configurations, much of what we know about how Zinacantecs conceive of space comes

---

<sup>14</sup> See Gossen 1974a.

<sup>15</sup> They are also called *jchobtiketik* ‘cornfield people’ because that is where corn grows best.

<sup>16</sup> Notably, Peter says *ta ba Nachij* ‘above Nachij’ using a ‘body-part’ word *ba* ‘top, forehead’ that unambiguously refers to a high point on the vertical axis and is never used to mean “East.”

not from their words but from their gestures. The evidence in gesture that space is oriented by compass directions is indirect but compelling.

As he pronounced the phrases in all of the examples (1)-(7) above, Peter also produced gestures, in each case supplementing the spoken spatial information with manually presented visible representations as well. Thus, in talking about his great grandmother's house located (intrinsically) behind the Chikin P'in house, he points in the direction the house would have stood from his current vantage point (Figure 1).



Figure 1. Behind the Chikin P'in house.

Placing the old path (relatively) behind the mountain, he also points in the direction he means.



Figure 2. Behind the mountain

As he reminisces about the deer lounging in the forest, he places them demonstratively on the relevant mountainside.



Figure 3. Deer lying amongst the trees.

More iconically he sketches with his hand, just as he describes with positional roots, how the mushrooms carpeted the forest, and how the tree trunks were stacked.



Figure 4: Mushrooms covering the forest, trees stacked.

He traces with his hand the trajectories he describes with directional verbs when talking about the felling of the forest, up one side of the mountain ridge and back down the other.



Figure 5. Chopping up one side of the ridge, and back down this way.

By placing Peter's performance on a map of the village where he is speaking one can calculate the directions he is pointing (knowing that the edge of the water tank by which he stands runs almost directly east to west from his left to his right). Readers can judge for themselves how closely the places shown on Map 2 correspond to the apparent directions of his pointing gestures.





Map 2. The places Peter narrates in and around the village.<sup>17</sup>

When he goes on to speak about a more distant location—some 8 to 10 kilometers away, over the mountains to the East—Peter also indicates with a contoured hand gesture where the exact place he describes is located relative to the house of the man mentioned by his interlocutor.



Figure 6. East of Konkorón's house

Once again, it is possible to check the directional accuracy of Peter's gesture by comparing its vector with a map of the area (Map 3), knowing roughly where the spot he mentions stands in relation to the nearby village of Nachij, directly on the old walking path into the town of San Cristóbal.

---

<sup>17</sup> Thanks to Google Earth for aerial photographic coverage (from the area in and around San Cristóbal de las Casas, Chiapas, Mexico) incorporated into these maps, the sources for which are copyrighted material belonging to Google, INEGI, Cnes/Spot image, and Digital Globe, all copyright 2011.



Map 3. Map of the wider area between Peter's village, Nachij, and Zinacantán.

Zinacantec gestures can be even more spatially demonstrative. At another point in Peter's narrative he describes how people from the village (often Indians who had immigrated to the village from other Tzotzil communities in search of land and wives) were conscripted into the Mexican army and sent off to fight in distant places. One such man had given a vivid account of battle, and Peter describes how the man was taught to shoot either from a kneeling or prone position. He has recourse to two Tzotzil positional roots: *kej* 'kneeling' and *pat* 'lying on the belly with the front of the body raised.'

(8). Shooting in a kneeling or prone position

kej-ajtik la ch-ak' xi toe  
kneel-PLU EVID ASP+3E-give thus CL

They would shoot kneeling like this.

mo`oje, patal tal ta lum  
no prone DIR:coming PREP ground

Otherwise they would lie down on the ground.

However, he refines his postural description by acting out the positions via pantomime, showing how the soldiers were trained to kneel on just one knee (as opposed to the standard Zinacantec way of kneeling on both), and to support themselves on their arms when shooting from a prone position.



Figure 7. Shooting while kneeling or prone.

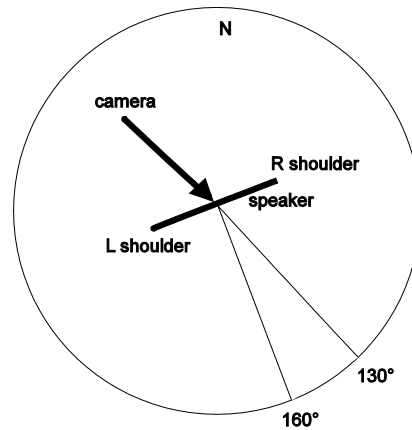
More striking still is a conceptually more complex gestural specification of ‘absolute’ direction that Zinacantecs frequently use. Peter used it repeatedly with me over the forty years of our interactions, although unfortunately I do not have clear examples on film. He was once telling me how I should travel to reach his lowland cornfield, a day’s journey from the village where we sat. He told me to take a truck down to the city of Tuxtla, from there to take a 2<sup>nd</sup> class bus in the direction of a certain town in central Chiapas, and to ask the bus driver to let me off at a certain named place in the countryside. “When you get off the bus,” he told me, “go that way”—pointing at a spot on the hills rimming the village, about 70 km. as the crow flies from where I was heading. The only way for me to understand his instructions was to memorize the compass direction in which he had pointed and try to reproduce it when I found myself by the side of the road after the bus let me off.

Another Zinacantec, Martin, who spent many years traveling between the village of Nabenchauk and the distant town of Cancún told me one morning in 1991 about the route he followed. I filmed his description. Ten years later, as part of a systematic study of co-speech gesture<sup>18</sup> I again asked Martin to recount the route to Cancún, although at that point he had not made the trip overland in nearly a decade. Given how he was seated on both occasions, one can track with reasonable accuracy Martin’s pointing gestures and their compass directions. A striking feature of both versions of the route description, separated by more than a decade, is the consistent orientation of his pointing gestures, which suggest a highly accurate point-by-point recalibration of the compass directions he took at each major juncture of the trip.

The journey took Martin from his village through San Cristóbal, then north to Palenque, then east to Chetumal, and from there north again to Cancún. Figure 8 diagrams roughly how Martin sat in the 1991 film, as he described the trip from his home village of Nabenchauk.

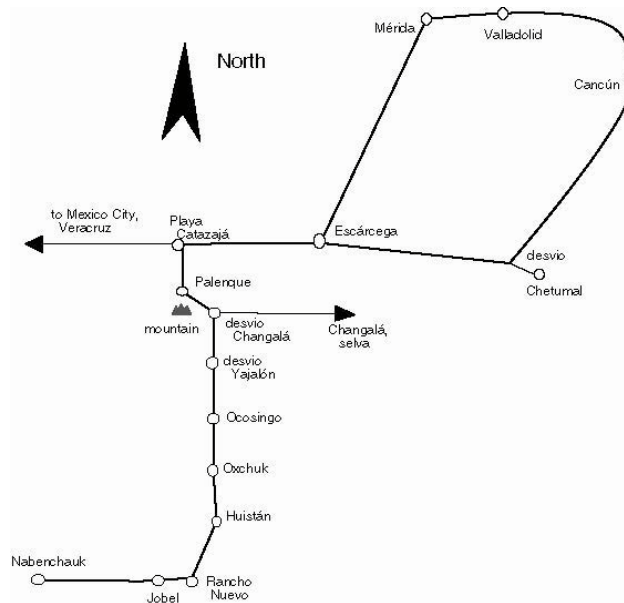
---

<sup>18</sup> Supported by a subcontract to Reed College from National Science Foundation KDI program, Grant No. BCS-9980054, “Cross-Modal Analysis of Signal and Sense: Multimedia Corpora and Tools for Gesture, Speech, and Gaze Research,” Frances Quek, Principal Investigator. A fuller description of some of the results is in Haviland 2005.



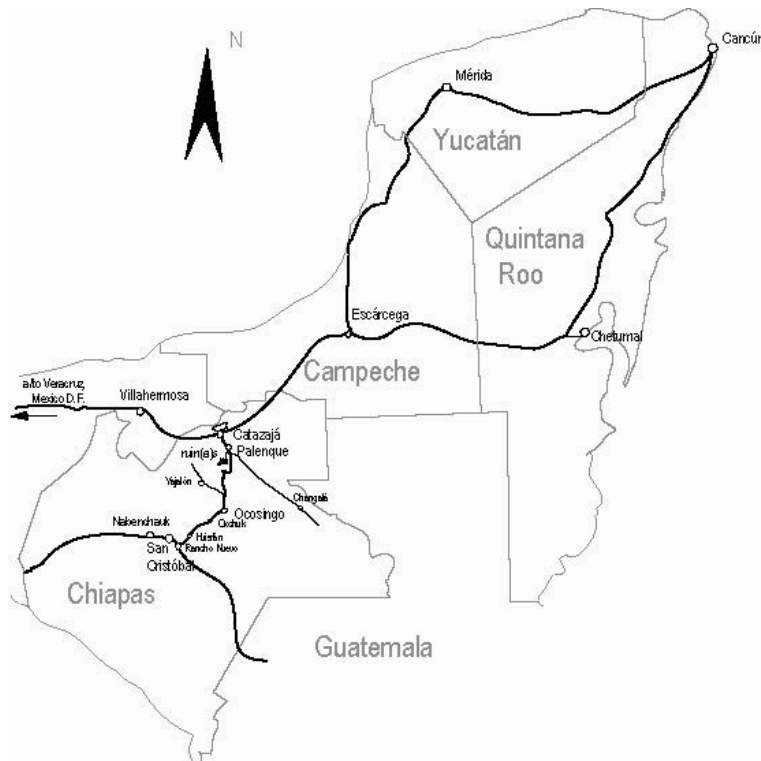
1991 filming of Cancún route, Nabenchauk  
Figure 8.

On the basis of the narrated route description in 1991, I calculated the approximate directions portrayed at the different stages of the trip<sup>19</sup> and incorporated them into a virtual map, shown in Map 4, which can be compared to a standard Western map of the same territory in Map 5. From the two maps it is clear that in 1991 M had a strong memory for the overall trajectories .



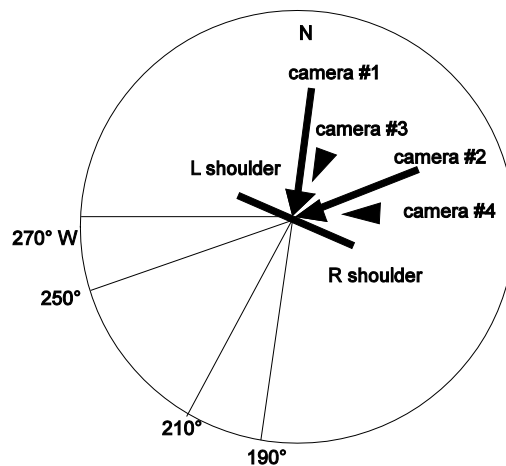
Map 4: M's approximate "gestured" map of the route to Cancún, 1991 telling

<sup>19</sup> See Haviland 2000d for more detailed treatment of this route description and its gestures.



Map 5: standard map of the route between Chiapas and Cancún.

In 2001, Martin described the same route again, from a different place. His body was this time oriented in a different direction, rotated slightly clockwise, in terms of absolute compass directions, from the film one decade earlier. Multiple video cameras, arranged as shown in Figure 9, allowed more accurate calculation of the directions of his pointing gestures.



2001 Cancun route description, SCLC

Figure 9.

There is a place on Martin's route where the road branches, near the coastal city of Chetumal. The main highway bypasses the city, which lies to the east and slightly south of the intersection, and it there turns northeast toward Cancún. (See Map 6.)



Map 6. Turn-off to Chetumal

In the 1991 film, Martin describes arriving at the Chetumal turn-off. Silently he indicates the trajectory of the turn-off road, branching away from the main highway. He then explicitly locates where the city of Chetumal is, flipping his right hand slightly back to the right as he says “*xi ta xkom chetumal xi toe*” (Chetumal is over that way). If we interpret this gesture in compass terms it places Chetumal slightly south of east, at about  $100^\circ$  on a  $360^\circ$  compass with North at  $0^\circ$ . In the 2001 narrative, with a brief turn of his hand off to the southeast, Martin notes that Chetumal lies off the main trajectory of his route. The corresponding images from the two video recordings are shown in Figure 10; both gestures appear to place Chetumal in the same compass direction from the turnoff.

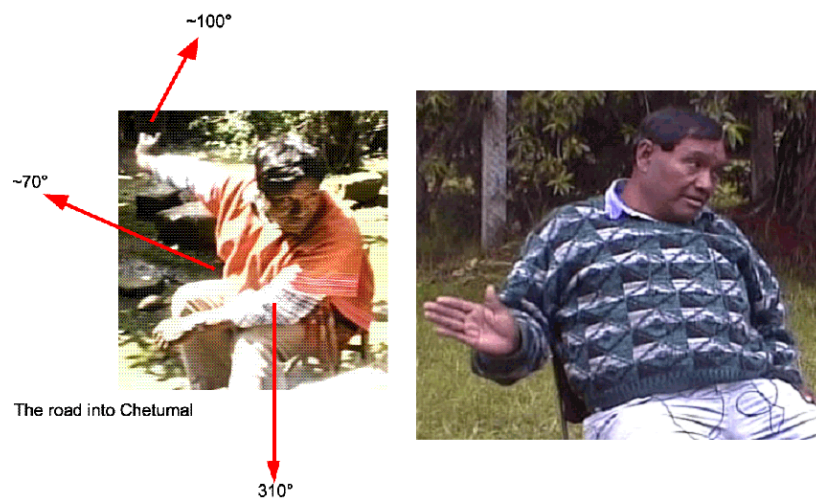


Fig. 10. “Chetumal is this way”

Understood as ‘absolute’ reckonings of compass directions from the imagined road junction, his gestures reflect a consistent sense of orientation and direction which receives similar expression across the decade-long span (and his different body positions) between the two different narrations.

## **Narrated and narrating spaces**

It is worth reflecting on the conceptual underpinnings these pointing gestures seem to imply. Because gesture about space itself uses space as its communicative medium—it is, in this sense, “metaspatial”—it seems important to distinguish at least three conceptually different kinds of ‘space’ involved in the practices we have been examining. Jakobson (1957:390), in his classic elaboration of the basic grammatical categories of the verb, distinguished between “1. speech itself ( $S^n$ ), and its topic, the narrated matter ( $E^n$ ); 2. the event itself (E). and any of its participants (P), whether ‘performer’ or ‘undergoer.’” He continues: “[c]onsequently four items are to be distinguished: a narrated event ( $E^n$ ), a speech event ( $E^s$ ), a participant of the narrated event ( $P^n$ ), and a participant of the speech event ( $P^s$ ), whether addresser or addressee.”

Because events generally involve entities arranged in space, one could extend Jakobson’s classification to include both a narrated space ( $S^n$ ) and a narrating or speech-event space ( $S^s$ ) within which the narration takes place. The former is the space in which narrated events putatively occur (and which thus may be at least selectively represented in the narration), and the latter is the space of the speech event itself, available to participants as they talk. As in the case of the other entities Jakobson distinguishes, these spaces are conceptually different: the narrated space is in a clear sense imagined and essentially partial, as it only acquires details as the narration and interlocutors’ own knowledge progressively provide them. The narrating space, within which the speech event occurs, is largely presupposable from the immediate surround of the speech act participants, and partly brought into some kind of correspondence with the narrated space as elements of the narration highlight local places or entities to create such correspondence. For example, Peter locates his long deceased grandmother’s house (part of the narrated space) relative to a contemporary local house known to his interlocutor (in the wider narrating space), to which he can point as shown in Figure 6. Various mechanisms, including use in narration of immediately perceivable local landmarks, or coincidence of compass directions, can superimpose narrated space on local speech-event space or otherwise calibrate the two conceptually different spaces.

In previous work (Haviland 1993a), I have appealed to a further “interactional space” ( $S^i$ )—related in some ways to what Kendon (1990:211) long ago called “o-space”—which is distinguished from the narrating or speech-event space ( $S^s$ ) by its centrality not to the narrated events or to the speech-event surround in general but to the specific mutual interaction of the participants in the speech event: it is the immediate shared space of the interaction and mutual attention, within which interlocutors usually gesture. (In the case of sign language, to which we shortly turn, it is also the space where signs are generally performed.) A distinguishing conceptual feature of  $S^i$  is that, just as the narrated space may be independent from the narrating space, the interactional space can also be independent or decoupled from the speech-event space. It is “free”: a space created by and for the immediate interaction. When Peter half kneels to illustrate how the narrated protagonist fired his rifle (Figure 7), he demonstrates the position in interactional space;

his use of interactional space is arbitrary in the sense that exactly *where* he kneels is irrelevant to the performance (and his interlocutors must understand this).

### **Space in an emerging language: ZFHS**

Distinguishing different conceptual spaces in this way underlines how ‘space’ is, first and foremost, a discursively constructed, linguistically structured category of interpersonal interaction. Whatever origins spatial understanding may have in the perceptual capacities and cognitive development of individual human beings, the central and most important features of ‘space,’ on this view, emerge from the way people talk about and otherwise represent spatial relations in their ordinary interactions. Such a perspective obviously lends special interest, in the comparative study of spatial conceptual systems, to a *new* language. If a community of speakers relies on its language to structure space, what happens when the linguistic resources for representing space are only beginning to emerge? How, in such a case, does spatial conceptualization come to express itself?

A first-generation sign language, Zinacantec Family Homesign (ZFHS), emerging among five young adults in the township of Zinacantán, Chiapas, México allows a unique view of how spatial language grows out of interactive and social practices. The three deaf and two hearing members of this miniature speech community have grown up with no interaction with other deaf people and virtually no contact with any language other than spoken Tzotzil, in a small and relatively isolated village of peasant Indians. Their communicative system using a visual/manual modality is the complex result of their interactions with each other, with Tzotzil speakers more widely, and their own processes of invention and innovation. Because of the extensive prior work on spatial representation in both spoken Tzotzil and also co-speech gesture, it is of special interest to see how a sign language emerging in this communicative context provides raw materials for creating linguistic representations of space, and how those of this manual modality compare with parallel Tzotzil resources.

In 1976 a daughter, Jane, was born to my ritual kinsmen Mario and Rose, who already had three older living daughters. Jane never began to speak, although she was sent to school for part of a year, after which she remained at home, like many other Zinacantec girls her age. Six years later a brother, Frank, was born, and he, too, failed to begin to speak. Both children were labeled *uma?* ‘dumb’—a word which in Tzotzil has the same pejorative polysemy as its English gloss—and raised more or less exclusively by their mother and older siblings. In 1986 another daughter, Terry, was born, and although she also remained silent until she was well over two years old, she suddenly began to speak Tzotzil, as though the silence of her two nearest siblings had until then left her unmotivated to talk. It was only at this point that medical diagnosis revealed to the family what perhaps should have been obvious: that both Jane and Frank were profoundly deaf. Finally, in 1988—when his older deaf sister was nearly thirteen years old—a youngest sibling, Will, was born, also deaf. What thus presumably began as a typical “homesign” system developed for mutual communication by Jane and the rest of her hearing family was over the span of a decade extended to a medium of communication for the three, and then, four siblings who used it as their only means of interaction, with each other and to a



lesser extent with the other hearing members of the family. Added to this mix, five years later, was a niece—Rita—who, although hearing, grew up largely in the company of her signing aunts and uncles and thus became fluent in their emerging sign language as well.

I have known all of these children—now young adults—since they were born. Their unique linguistic circumstances have cried out for systematic investigation, despite the children’s reluctance to sign in public and their general abashedness about the stigma of their deafness. As it happens, Mario, the father, was also a major collaborator in my ongoing research on Tzotzil ritual language and co-speech gesture, as well as an old friend and *compadre*. When in 2008 the work on an emerging Bedouin sign language by my UCSD colleague Carol Padden and her associates<sup>20</sup> inspired me to undertake research on ZFHS, Mario and his children readily agreed.<sup>21</sup> By then Jane had her own hearing son, Victor, now a 3-year-old bilingual signer and Tzotzil speaker, who along with a younger cousin represent the beginning (and perhaps also the end) of the second generation of this miniature ZFHS speech community. (See the genealogical chart in Figure 11.)

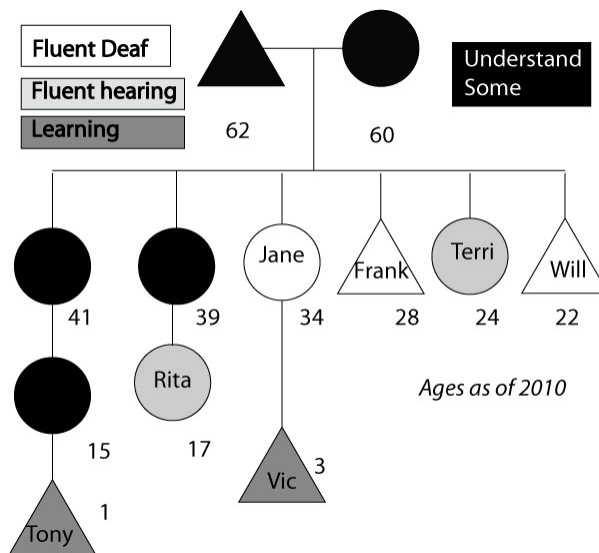


Fig. 11. Genealogy of the extended household where ZFHS is spoken.

ZFHS represents a functionally effective means of communication for the signers in this family, allowing them to participate in apparently all the activities normally facilitated by spoken language in the context of a Zinacantec household. ZFHS signers issue and respond to commands, ask and answer questions about both facts and speculations, recount past events, participate in decisions, plan for the future, tell stories, argue, evaluate, joke, ridicule, criticize, and scold. Despite the very shallow history of their

<sup>20</sup> See for example Sandler, Meir, Padden, and Aronoff 2005; Meir, Padden, Aronoff, and Sandler 2007.

<sup>21</sup> The research is sponsored by NSF award BCS-0935407, administered by the Center for Research on Language (CRL) at UCSD. My principal debts are to the ZFHS signers themselves, acknowledged here by their pseudonyms: Jane, Frank, and Will, as well Terry, Rita, and Victor.

conjointly developed system of signs, despite the unusually high level of presupposable “common ground” that results from the intimately shared biographies of the tiny ZFHS signing community, and despite the relative isolation in which the ZFHS signers live compared to hearing Zinacantecs, they appear to have no more difficulty than other Tzotzil-speaking Zinacantecs in dealing with (and naming) things and people both familiar and unfamiliar, and generally in negotiating their lives, practical and social. Strikingly, for me as a linguistic anthropologist somewhat obsessed by the presumed central role of language in cultural transmission, the ZFHS signers seem completely Zinacantec, in what they know, what they like, what motivates them, how they act, how they move, and how they interact. The central research questions in ongoing work on ZFHS address the structural properties of ZFHS in the face of this evident functional efficacy.

The issue for the present chapter, however, is much more specific. If one’s notion of space derives in large part from the language one speaks, as comparative work on spatial language suggests, then how is space construed by the first generation of speakers of an extremely young language like ZFHS? What resources for communicating about space have the ZFHS signers invented for themselves or somehow imported from some other sources?

As a novice student of sign languages, I have borrowed and invented tools for studying ZFHS. I have relied on my previous knowledge of Tzotzil (which is, of course, my conduit to ZFHS through the glosses and interpretations offered by the two hearing signers, Terry and Rita) and of Tzotzil gesture (which offers certain tools for describing ZFHS sign form), trying to make only the most austere assumptions about how ZFHS might work. Most of the ZFHS signing I describe in this paper was elicited in response to semi-controlled tasks, usually involving a simple description and matching task in which one or two signers describe a photo or short video clip to other signers, who are in turn asked to select a matching photograph or video frame from an array. The descriptions and accompanying clarifying discussion (as well as subsequent critical commentary in ZFHS) are filmed, transcribed, glossed into Tzotzil, and analyzed. Using such pseudo-experimental eliciting techniques has both advantages and defects, obvious in what follows.

First, however, I introduce the ZFHS signers in the context of spontaneous conversation, to illustrate both the general character of the language and some of its spatial resources. Here are Memo and Frank, in a typically competitive interchange for young Zinacantec male siblings. They are talking about which of them will be asked to accompany their brother-in-law who makes periodic trips to a distant market town on the Chiapas Pacific coast to sell flowers, mostly for specific fiestas. These are some of the few outings the boys make away from their home village, and they are prized occasions both to escape from quotidian routines and to earn money. The general tenor of the exchange is mutual insult: each brother boasts that he is more likely to be invited on the next trip because the other brother is “useless.”

Consider Frank's first few utterances as he introduces the topic by mentioning that the brother-in-law had just left for the coast earlier that day. He says, "At 4:30 the truck set out and went (to the coast). Dad (will go) tomorrow, he didn't (go) now." Different parts of the utterance are illustrated in still frames from the video recording in the following figures. In Figure 12 Frank points to his left wrist (as if at a watch) to refer to the time of day, then displays the number 4 on his right hand, and adds the half hour by drawing his left finger across his right palm. He goes on to say that that was the hour when the truck was loaded and ready to set out (Figure 13).



Figure 12. "at 4:30"



Figure 13. "the truck was loaded"



Figure 14 "it went there"

He signs that the truck went to the coast by performing a 'go' verb: he points with his right thumb (see Figure 14) placing the final destination a long way away (signaled by

the height of the movement arc<sup>22</sup>) and slightly to the west of south (signaled by the compass direction of the pointing movement).

Frank goes on to add that their father (whose proper name in ZFHS is illustrated in Figure 15--it is an iconic reference to the older man's prominent paunch) did not leave (using a conventionalized negative hand wave seen in Figure 16), but would be going in the next couple of days (shown with the conventionalized "tomorrow or the day after" sign—rotating the curled out in several circles oriented away from the body in Figure 17).



Figure 15. Dad



Figure 16 He didn't go yet.



Figure 17 (He'll go) tomorrow.

---

<sup>22</sup> See Calbris 1990, Haviland 1993 for gestural uses of a similar convention to denote distance.

At several other points in the conversation the boys make further references to trips to the coastal town in question. The form of the signing anticipates a general finding about ZFHS, already evident in the ‘go’ verb illustrated in Figure 14: that it typically “absolutely” anchors locations in the narrating space. Thus, when Will mocks Frank for being left behind himself, Frank retorts that Will frequently is also not invited on the trip, which he illustrates with another pointing gesture, somewhat awkward to perform from his seated position facing north-northeast: he traces a high backward arc to show the southern trajectory of the trip. (See Figure 18.)



Figure 18. Frank says “go to the coast” while seated facing north.

Will continues mocking, by saying to his brother, “Just wait, you’ll see [see Figure 19]— I WILL be going to the coast.” Will also performs the motion verb with a dramatically exaggerated arc (Figure 20), ending with a triumphant flourish and grin at his brother.



Figure 19. “Just wait!”



Figure 20. “I WILL go to the coast.”

It is worth highlighting the uncanny directional accuracy of these pointing gestures. In Map 7 I superimpose on a map of Chiapas the rough directional vector of Frank’s finger point and his and Will’s later more demonstrative renditions of the same journey as they were performed from the signers’ house in Zinacantán (see the inset on Map 7). Even with a very approximate reckoning of the direction indicated, both Frank and Will’s pointing gestures seem to pick out only one possible candidate town on the Chiapas coast: Pijijiapan, the place where in fact their brother-in-law does go to sell flowers.



Map 7, Map of Chiapas, ZFHS household inset

Despite this remarkable accuracy, in my understanding the vector that forms part of the sign for ‘go’ in ZFHS does not depend on some arcane and mysterious directional acuity on the part of the ZFHS signers, who have only rarely traveled as far as Pijijiapan in the course of their lives. Instead, one must consider such dead reckoning of location from a given origo, together with a set of gestural devices to show relative distance and other aspects of intervening terrain, to be based on the wider convention in Zinacantec co-speech gesture to locate even distant places in terms of absolute compass directions from the current speech origo, as illustrated above in Peter’s gesture in Figure 6 and the

corresponding map in Figure 6.<sup>23</sup> Such “absolute” locations (calculated relative to some speech event location) effectively serve as a proxy for ZFHS place names.

### **Pseudo-experiments about space and place**

As opposed to occasional free conversations I have been able to film, the sorts of controlled tasks I have inflicted on ZFHS signers are designed to elicit targeted descriptions of objects and situations which can be analyzed for lexical, morphological, and syntactic regularities. I began with simple matching tasks in which the “Describers” (a single signer or sometimes a pair of signers together) described a pictured stimulus (starting with common and unfamiliar objects and animals, moving to action scenes both ordinary and outlandish) which other signers (the “Matchers”) were then asked to pick from an array of candidate pictures. With individual objects, sometimes distinguished only by color, size, or shape, these matching tasks proved trivial for ZFHS signers. For example, when presented with a signed description of an object marked by a red arrow in an array of objects like those in Figure 21, signers had no difficulty picking the corresponding item from a differently arranged array. The result suggest a well-developed conventional lexicon for ZFHS, as well as less specific resources for denoting size, shape, color, etc., and for creating nonce descriptions of novel objects.



Figure 21 Arrays of objects

To elicit spatial descriptions I used a similar design. I asked Describers first to describe photographs of specific known places from local villages as well as unfamiliar sites so that Matchers could pick out the corresponding photos from an array. I then asked all parties involved to tell me where the place was if they knew. These tasks were carried out in different physical locations, sometimes in the signers’ home in the village of Zinacantán, sometimes in my house in nearby San Cristóbal, both places whose locations and orientations are precisely known.

### **“Absolute” dead-reckoning**

---

<sup>23</sup> From my earliest days in Zinacantán in the mid 1960s, when people ask me where I am from, they routinely request that I show by pointing on the horizon where my homeland lies, or where my current residence is.

Given the apparent use of “absolute” dead-reckoning in S<sup>s</sup> as a conventional part of naming known places, it should come as no surprise that when the ZFHS signers want to refer to identifiable places, they do so by pointing in the “correct” direction calculated from their current locations. For example, to describe a picture of the Chamula market from the vantage point of my house in San Cristóbal the signers pointed as in the following illustrations (Figure 22), where Frank, seated on the right, faces almost directly west. Will, Frank, and Jane all appear to indicate a direction a bit north of west.



Figure 22. The ZFHS signers point to identify a picture of the Chamula market.

By contrast, while carrying out a similar task while seated in their house compound in the village of Zinacantán, Will and Terry indicated the location of the Chamula church as shown in Figure 23.<sup>24</sup>



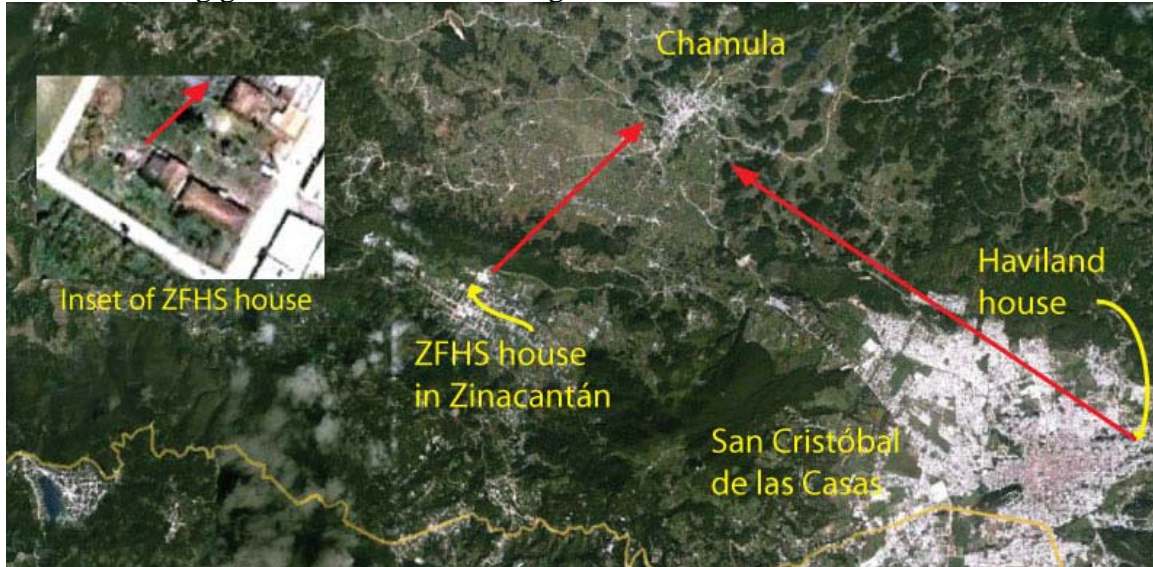
Figure 23. Locating Chamula from Zinacantán

---

<sup>24</sup> In the right hand panel shown in Figure 23, Will is already retracting his hand from the apex of his pointing gesture. It is important to note that there is more to these locational signs than the vector of direction: different hand shapes are involved; the arc of the gesture indicates something about distance and visibility; gaze is sometimes engaged, often “sighting” along the pointing limb; and, crucially, different movements of the hand often seem to suggest something about the intervening terrain. For example, Terry’s gesture on the right frame of Figure 23 involves a twirling toss of the hand clockwise (from her point of view) and forward, indicating that from where she sits the Chamula church lies on the other side of the high mountain ridge along the northern edge of the valley of Zinacantán. Detailed treatment of these formational details must await another occasion.



Drawing the rough vectors thus indicated from these two different vantage points onto a map of the region that includes the ZFHS signers' house in Zinacantán, the researcher's house where the first experiments took place, and the center of Chamula (Map 8) shows that the locating gestures do in fact converge on the intended location.



Map 8. Map showing signer's locations their pointing directions, and Chamula

Very similar directional convergence can be observed for other “named” locations in the ZFHS repertoire, including the signer's natal village of Nabenchauk or the lowland state capital of Tuxtla Gutierrez, both of which lie considerably farther from the immediate horizon. For example, I once asked the signers to describe the picture shown in Figure 24.



Figure 24. A bucket holding a coffee plant outside Jane's house.

Jane, who is sitting in my house in San Cristóbal, describes it as a bucket containing a coffee plant (Figure 25, left panel) which her mother (Figure 25, right panel) brought from Nabenchauk (Figure 26 right panel) to their house in Zinacantán (Figure 26 left panel). The example illustrates clearly three quite different formational principles in ZFHS conventionalized signs: the sign for 'coffee' is an arbitrary (though iconic),

established, and highly portable convention based on coffee's strong smell. (It involves waving a flat "5" hand up and down in front of the nose.) The proper name for the signers' mother, 'Mom,' is a somewhat uncomplimentary reference to her prominent belly. The 'names' for the towns of Zinacantán and Nabenchauk are based on inferences from a pointed direction which must itself be recalculated on every occasion of use from the current speech event origo. (See Map 9 which shows the rough vectors of Jane's pointing gestures in Figure 26 from the vantage point of where and how she was seated.)



Figure 25. Jane signs "coffee" and "Mom"



Figure 26 Jane signs "Zinacantán" and "Nabenchauk" from Haviland house



Map 9. Haviland house, signers' home village, and village of Nabenchauk.

There seems little doubt that the gestural convention in Zinacantec Tzotzil of locating named locales on the horizon has been incorporated into ZFHS as a formational component of locative signs: both place names for known places, and also locations “attached” to other sorts of entities. Successful use of such a convention requires both dead reckoning skills and strong inferential intuitions coupled with geographic awareness on the part of interlocutors. Maintaining such geographic awareness clearly requires reinforcement and depends on collaborative practices among signers and Tzotzil speakers alike. When the ZFHS signers were unable to identify a pictured place they often indicated their perplexity by pointing in several different directions with an accompanying shrug: “I wonder where that is.” During one of these quasi-experiments in the village of Zinacantán, the signers’ father was also puzzling over such a photograph. When I told him it depicted a place he knew by reputation—the famous waterfalls at Agua Azul—he remarked “That’s on the road to Palenque” and in a seemingly automatic and unconscious way flipped his arm out in a rapid high arc in the correct direction (which, as it happened, lies just clockwise from the angle toward Chamula to the northeast, although Agua Azul is considerably farther away).



Figure 27. Agua Azul “on the road to Palenque.”



Map 10. From Zinacantán to Agua Azul

Almost certainly related to this use of an “absolute” spatial frame of reference is a ZFHS convention for talking about time. Frank and Will, who are familiar with watches, tend to name the hours with numbers shown on the fingers. Jane on the other hand often shows the hour with “absolute” gestures, pointing to an idealized position of the sun in the sky. For example, in a spontaneous conversation about her favorite afternoon soap operas, she once asked her sister Terry what time she thought they might return home (after a videotaping session). She asked whether it would be late: first by pointing to her left wrist, and then pointing at the afternoon sky to the west.



Figure 28 Jane: Will we finish late?

She went on to explain that the two television programs she was interested in started at noon and at 1pm, in both cases using a demonstrative pointing gesture at an idealized solar trajectory overhead (see Figure 29).



Figure 29. Noon and one o'clock.

Using the distinction between  $S^n$  and  $S^s$  introduced above, it is worth considering in which conceptual space these “absolute” dead-reckoning pointing gestures operate. Where or at what they are directed? When signers point at a visible landmark or local place, the gesture seems to draw on direction and location in the narrating or speech event space to supply a referent in the narrated event. Pointing at a more distant referent seems essentially similar: it relies on the location of things and places in the narrating space, widely construed, to supply narrated referents. Alternatively, such pointing relies on a convention that the narrated space, which is projected both from these pointing gestures and from any other narrative elements which allow interlocutors to imagine narrated events, must be superimposed over narrating space. at least with respect to cardinal directions. Both spaces, that is, are identically oriented. (This is not, as far as I can tell, a convention of pointing in my own native English-speaking narrative tradition.) Indicating points along the trajectory of the sun to denote times of day suggests that the latter interpretation—a conventional oriented lamination of  $S^n$  on top of  $S^s$ —does better conceptual justice to the facts. Pointing to the place where the sun would be at noon—when it is not actually noon—seems to instruct an interlocutor to imagine another time when the sun would actually be where one is pointing in the here-and-now, a transposition that resembles Peter’s superimposing his great grandmother’s now long defunct house onto a location projected from the current Chikin P’in’s house of the moment, in Figure 1 above.

### **Intrinsic, relative, and absolute frames of reference mixed together**



Figure 30. The church in the Cerrillo square

“Dead reckoning” can also be used by the ZFHS signers to argue about location, and it is combined interestingly with other signs that rely on non-“absolute” frames of spatial reference. Consider the interaction that followed Frank’s description of the church front pictured in Figure 30. The church has a distinctive set of sculpted and painted arches above its door, which Frank sketches in the air as he begins his description (Figure 31), adding that it is a church (Figure 32), and he locates it in direct line of sight from where he sits. He is facing west as he signs, and the Guadalupe church he identifies is visible south-southwest from him.



Figure 31. Frank sketches the design of the church front.



Figure 32. Frank signs ‘church’ (by crossing himself quickly).

In fact, Frank identifies the church several times as the church of Guadalupe, each time by pointing directly at the church, sometimes in a casual unmarked way, sometimes with just a gaze and head tilt (Figure 33), and later—when he is challenged on his identification—in much more demonstrative ways (Figure 34).



Figure 33. Frank points casually at the Guadalupe church.



Figure 34. Frank points at the Guadalupe church in more marked ways.

Frank's interlocutors, who are sitting across a table from him (and thus are oriented more or less facing East), recognize that he is describing a church front, but they (rightly) dispute his identification. They claim, instead, that the picture shows the front of a different church almost directly west of them in the *plaza* of the neighborhood called Cerrillo. (See the map in Map 11.) They signal their disagreement (using negative finger waves—see Figure 35) and propose their alternate identification with a variety of pointing gestures (Figures 36 & 37). Frank ultimately concedes that they are right (Figure 38).



Map 11. Map of the location of the right and wrong churches



Figure 35. Will and Jane contradict Frank with finger waves.



Figure 36. Memo points to Cerrillo church.



Figure 37. Terry points to Cerrillo church.



Figure 38. Frank concedes that his interlocutors are right (split screen).



Strikingly, although all the signers here use absolute dead reckoning to indicate location (and as usual their pointing gestures are carefully calibrated from the origo of the speech event), a very different spatial “frame of reference” is implied by another aspect of their description of the stimulus picture in Figure 30. Just after Frank begins to sign, Will asks him whether the picture shows the church from the front. Frank replies that it does. Both Will’s question and Frank’s answer use a distinctive two-handed ‘pushing’ gesture designed apparently to suggest the perspective an observer looking at the front surface of an object (Figures 39 and 40). It is clear that the two men, although using the same signs, have oriented them not ‘absolutely’ but relative to their own perspectives as observers. Since they face each other, the two “pushing” vectors are in fact performed in exactly opposite directions, as the illustrations show.



Figure 39. Will asks if the church is seen from the front.



Figure 40. Frank answers that the picture does show the church front.

Even more striking is Will’s use of a similar sign when he turns to Terry to repeat that the picture in question shows the front of the Cerrillo church. He signs that they are looking at the front of the church, but he is now turned toward Terry and his “pushing” gesture now goes from him out toward her. He continues with an oriented finger point in the absolute direction of the church itself (Figure 41).



Figure 41. Will tells Terry that the picture shows the front of the Cerrillo church.

In terms of Levinson's typology of frames of reference, the 'front' sign seems to rely on a "relative" spatial frame of reference, calculated deictically from the perspective of an observer. There seems a clear affinity between this kind of unanchored or interactionally anchored sort of directional vector and the use of what I have called  $S^i$ , interactional space, illustrated above in Figure 7, and to which we shall turn again at the end of this chapter. The "free" or perspectively anchored 'front' gesture is immediately followed by another pointing gesture which requires, for its interpretation, absolute reckoning of the location of the church in  $S^s$ .

ZFHS signers' spatial representations in fact make extensive use of a "relative" frame of reference that requires projection from an observer's viewpoint. Although some of the spatial task I asked ZFHS signers to perform were relatively easy for them, certain tasks repeatedly confounded their efforts to achieve a match, apparently because the tasks required certain conceptual transpositions at which the signers are not practiced and which ZFHS provides few ready-made tools to facilitate. Figure **Error! Bookmark not defined.** shows a simplified version of the stimuli in one such case, which despite a deeply flawed design revealed interesting aspects of ZFHS spatial resources.

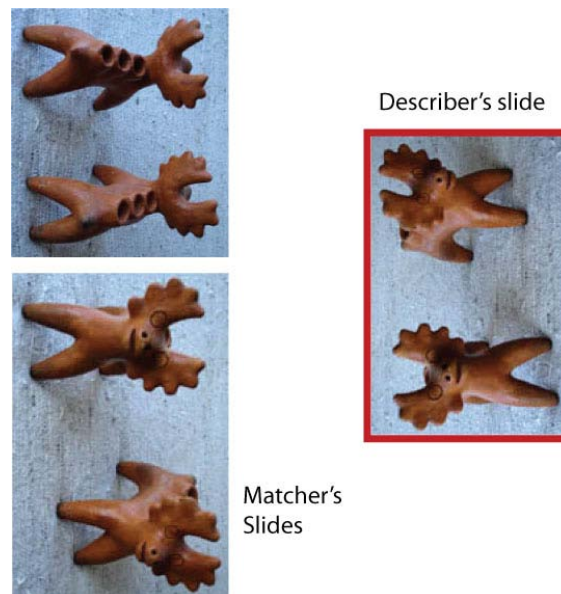


Figure 42. Candleholder matching task

One must first imagine the spatial layout of the task, with the Describer sitting on the right to describe the picture rimmed in red. The Matcher, seated on the left, must pick the “corresponding” picture. If it seems obvious to the reader that the right hand or bottom picture on the left is the correct match (“the same picture”), consider a Describer, seated facing West, who uses an absolute frame of reference and describes his picture as (for example) “two animals facing East” or, alternatively who says “the animal directly facing me is on the south.” Which of the Matcher’s pictures would now be the correct match? The actual arrangement of signers for this particular description, shown in Figure 43, further complicates matters because the Describer’s slide was projected vertically on a computer screen, whereas the Matchers were presented with an array of printed photographs arranged horizontally on the table, requiring a further transposition of perspective.



Figure 43. Rita and Terry match, and Jane, holding Vic, describes.

The picture that Jane sees is reproduced the way it appears to her in Figure 44. The two clay objects have already been identified by the signers as candle holders, in the shape of small animals.



Figure 44. The stimulus picture as it appears to Jane.

The two matchers, confronted with an array of nine different photographs of the same two clay candle holders in distinct configurations, ask Jane to tell them how the animals are oriented. Jane first shows that the figures are oriented straight back from her perspective (i.e., as she sits, on an East-West line) by tracing a straight vector with her flat palm, forward and upwards (Figure 45). She goes on to sign that both figurines are facing her (Figure 46).



Figure 45. Jane signs “that way, straight.”



Figure 46. “Both facing this way.”

In order to add still more detail, Jane—who does not have access to the whole array of pictures Terry and Rita are looking at—elaborates a bit further. She notes that while the figurine on the left is facing straight toward her, the figurine on the right is angled slightly outward (Figure 47), clearly the result of fairly close observation of the original stimulus picture in Figure 44. Later the signers have recourse to drawing the vectors on the table top with their hands (Figure 48).



Figure 47. Jane shows that one figurine is angled slightly.



Figure 48. Jane sketches the orientation of the figurines on the table top.

How the matchers understood Jane's description can be inferred from their first (mistaken) choice of a "matching" photograph, shown in Figure 49.



Figure 49. The first (wrong) picture chosen by the Matchers.

On the basis of Jane's signs alone it does not seem possible to decide whether her description involves a relative frame of reference, in which she calculates direction relative to her own observer's perspective, or whether she is locating these pictured figurines in an absolute space in which they are facing not "toward her" but toward the East. (An intrinsic frame of reference is also implied, in the sense that the description appeals to how the figurines are "facing" which depends on their own intrinsic anatomies.) The Matchers' misconstrual of Jane's description is also ambiguous between an interpretation based on absolute directions (which would instruct them to look for a picture in which at least one of the figurines can be understood to "face East"), or an observer-relative frame of reference in which the matchers fail to re-center their perspective to that of the describer (who is facing in exactly the opposite direction).<sup>25</sup>

In another type of task, slightly less constrained than the previous one, the Describer was shown a photograph of an array of small plastic farm animals. The Matchers were given the actual toys themselves and seated behind a screen so that the Describer could sign to

---

<sup>25</sup> Since I persisted in treating only the 'same' photograph as the right answer, the Matchers in this case were very frustrated and resorted to guessing until I showed them the picture that Jane was describing, which allowed them to see how *my* frame of reference defined the task.

them but not see their workspace. Their task was to follow the Describer's instructions in order to arrange the toys according to the model in the picture. Figure 50 shows one such stimulus photo which Frank described to Jane, Will, and Terry, also in a face to face configuration (Figure 51).



Figure 50. A configuration of farm animal toys



Figure 51. Frank describing the turkey to the Matchers.

In this task is the Matchers must construct a real array of toy animals, directly on the table in front of them, in  $S^s$  (and perhaps simultaneously in  $S^i$ ). It seems clear that Frank's instructions are both intended and interpreted to involve absolutely oriented directions. He begins by specifying two animals: the bluish turkey and the large rooster with a red crest and a blue tail. He then describes how they are to be arranged on the table. Lifting two fingers, representing the two figures, he turns back over his right shoulder and points both fingers in that direction, showing a northeast vector with his right hand (see Figure 52).



Figure 52. Frank describes two animals, both facing northeast.

In response to Will's question about which animal is on which side (Figure 53), Frank places the turkey on the south (Figure 54).



Figure 53. Will asks which side is which.



Figure 54. Frank puts the turkey on the south.

Frank then uses another striking devices to describe the spatial relationship between the turkey and the rooster. Asked specifically about the turkey's position, he first points in the same direction to show how the turkey is to face; he then extends two fingers on his right hand, points them both back in the desired direction, and then indicates (by grabbing it with his other hand) that the southernmost finger corresponds to the turkey (see Figure 55).



Figure 55. Frank locates the turkey relative to the rooster.

In this task, anchored in the shared and absolute orientation of local space, Frank's instructions resulted in an almost perfect match between the Matchers' toy configuration and how Frank himself wanted the figurines to be arranged. At the end of the task Frank was allowed to rearrange the toys as he wanted, and he made virtually no changes to what his interlocutors had proposed.

### **Left and right**

Spoken Tzotzil I believe makes virtually no use of a left-right coordinate in describing either location or direction.<sup>26</sup> In the texts and transcribed conversations that many researchers have collected over the years I have found only one clear case in which Tzotzil speakers use a left/right expression to describe direction, and this in unique circumstances. In the diaries of two Zinacantec travelers taken on a visit to the United States by the great Tzotzil lexicographer Robert Laughlin, on one occasion when they are totally lost they describe coming to a crossroad, and for want of any other criterion, choosing the right fork.

Then we went out again the next day. We didn't know which road to take. We came to two roads. We took the one that went to the right.<sup>27</sup> Then we saw that we had just come back to the place where we started (Laughlin 1980:94).

Apparently only in describing such a totally disoriented state would Zinacantecs resort to using a left/right coordinate, perhaps to suggest its total arbitrariness.

Nonetheless, in trying to match photographs of places the ZFHS signers clearly do seem to make reference to a deictically centered right-left distinction, although, as in the case of the clay candlestick holders mentioned above, there is also evidence that it is difficult

---

<sup>26</sup> Brown 2006 writes of a closely related neighboring language that “[t]here is no relative system available in Tenejapan Tzeltal based on oppositions for which the projections from the body provide a coordinate system” (270). We have already seen above that Tzotzil does employ a projected, deictically construed directional construction using the word *pat* ‘back.’

<sup>27</sup> The Tzotzil says *ta batz' i jk' obtik* ‘on our right hand.’



for their interlocutors to adopt the speaker's point of view rather than sticking to their own. Here are two slightly different sorts of example, one involving an unrecognized place but the other a well-known and absolutely oriented local. In describing the picture shown in Figure 56, which shows a San Cristóbal street that leads to a church on a hill, both Frank and Jane mention the church. (See Jane signing 'church' in Figure 57 and Frank signing that it is barely visible at the far end of the street in Figure 58).



Figure 56 Stimulus picture of street with Guadalupe church in background.



Figure 57. Jane signs 'church.'



Figure 58 Frank signs 'far that way' and 'small.'

Both signers also point out that there are many cars on the street (using both hands as if turning a steering wheel—Figure 59). To show that the cars are on the left side of the picture, but that they are all parked facing down the street (i.e., on the right hand side of the street coming down from the church) the signers resort to slightly different techniques.



Figure 59. Jane and Frank both sign 'cars.'

After signing the street itself with her right hand, Jane singles out its left hand side (from her point of view) by tracing a vector forward with a flat hand, palm inward, thumb perpendicular to the fingers—a movement that she repeats three times (Figure 60), immediately after mentioning the cars.



Figure 60. Jane shows the left side of the road (three times).

She goes on to sign that the cars are facing toward her (Figure 61).



Figure 61. Jane signs 'coming this way.'

In a more demonstrative way, Frank also mentions the cars, then signs the street itself (and both its edges, by using both hands to sketch the street's vector moving away from him), and then turns his body so that with his right hand he can mirror both the side of the street and the direction where the cars are parked (see Figure 62).



Figure 62. Frank signs 'street' and then 'down the right side'

It might be possible to think that the signs here still do preserve the absolute cardinal directions of the scene itself, rather than a body-centric deictic projection. The photograph in Figure 56 shows a street that travels west to east, with the church of Guadalupe far at the eastern end of it. Although in the end they could not identify which actual church was pictured, both Frank and Jane are surely aware of the convention that generally places churches throughout Mexico with their doors to the west and altars to the East. However, from where they are actually seated in their house, their gestures run in exactly the opposite directions: they place the church slightly north of west, and the cars are portrayed as running in a direction that is actually east southeast.

Since we have already seen that the ZFHS signers are scrupulous in placing known locations more or less exactly where they lie on the horizon, more striking still is the signers' description of the photograph in Figure 63, which shows a simple flat-roofed house which both signers recognized as being just up the street from the vegetable stand their sister operates in the town of San Cristóbal. The shop is a place they visit frequently, and they have no trouble in dead-reckoning its location from where they sit in their house. Both Frank and Jane begin their descriptions by mentioning the vegetable stand (Figure 64).



Figure 63 Stimulus picture showing a house near the signers' sister's shop



Figure 64 Both Frank and Jane sign 'shop' (the vegetable stand)

Jane continues by tracing a vector corresponding to the road on which both shop and house lie, moving right to left, and placing the target house on the left (Figure **Error! Bookmark not defined.**).



Figure 65 Jane signs 'up the street' and 'that side'

Frank is again more forceful in his signing. Having first mentioned the vegetable stand, he 'places' it out in front of his body to the right with a well-defined hand whose fingers are bunched and slightly bent. He then flattens the hand and moves it swiftly to the left (see Figure 66), where he holds it to signal that from the shop just mentioned the house in question (whose shape he goes on to describe) lies up the street to the left.



Figure 66 Frank signs 'from here to there'

Once again, to discount the possibility that the signers are tracing the actual cardinal direction involved in going from shop to house, consider Map 12, where I have overlaid over a map of the region an inset of the house in the village where the signers sit (with the directions in which they portray the vector from shop to house shown with arrows), and also an inset of the configuration of shop and house on the ground. The map shows that whereas the target house is northwest of the shop, both signers portray the vector as roughly southwest, orthogonal to the geographic vector.



Map 12. Map showing orientation of shop and the signers' vectors.

These examples allow us to conclude that for both known and unknown places, the ZFHS signers are comfortable using a relative, observer centered, horizontal axis, for describing location and motion, in sharp contrast to speakers of Tzotzil who virtually never do so.

### Transpositions and signing spaces

In this last described right-left type usage, the ZFHS signers resemble most speakers of English, who tend to use projections from an observer viewpoint to describe horizontal angles in space, and whose interlocutors are practiced in transposing such perspectives to alternative viewpoints to interpret such descriptions (Haviland 1996). By contrast, speakers of Zinacantec Tzotzil appear to prefer to calculate horizontal angles “absolutely”—using cardinal directions. Although only a single horizontal axis, east-west, is lexicalized, evidence for this absolute frame-of-reference is abundant in the conventions of Zinacantec co-speech gesture. Furthermore, as examples like the description of the Chetumal turn-off (Figure 10) show, Zinacantec interlocutors are presumably also practiced in transposing indicated cardinal directions onto imagined places, real or otherwise, other than the immediate location of the speech event—otherwise, Martin’s gestures as he describes where Chetumal and Cancún lie from the Chetumal turn-off would be un-interpretable.

The different ‘spaces’ I distinguished above, modeling them on Jakobson’s distinction between narrated and narrating events, were originally postulated to clarify aspects of the speech and gesture of speakers of languages like Tzotzil or Guugu Yimithirr in Australia, who rigorously track places and movements in terms of cardinal directions. In these languages, all locations seem to come with directions attached, so that—as we saw in the first part of this chapter—one automatically projects the orientation of  $S^s$  onto  $S^n$ , according to language-specific conventions. There are other ways that directions can be projected onto  $S^n$  from  $S^s$ , notably by transposing the relative perspective of an observer in  $S^s$  onto that of some suitable vantage point in  $S^n$ , as speakers frequently do in English and as the ZFHS signers appear to rely on the interlocutors to do in the last few tasks described above.

One motivation in earlier work for positing an additional  $S^i$ , distinct from either the narrated or the narrating space, was to provide for the fact that interactants in both Tzotzil and Guugu Yimithirr sometimes perform gestures in a way that seems *not* to be anchored by cardinal directions. For example, when a Tzotzil narrator like Peter demonstrated how a solider pointed his gun, as it happens, facing east in the direction of his interlocutor (Figure 67), he seems not to have intended to indicate that the solider actually aimed east. Instead the direction of his gesture is arbitrary, or rather it responds to the interactive conditions of the conversation rather than to the spatial arrangement of things in some world, past or imagined. Spatial relations between entities in this theoretical interactive space  $S^i$  are thus imagined to be essentially arbitrary, emancipated from any sort of real space, and thus highly abstract. In this sense there is a scale of increasing abstraction from  $S^s$  which is constrained by the physical and concrete spatial surround of the speech event, to  $S^n$  which is selectively populated by those entities and the spatial relationships between them that a narrator chooses to depict (or an interlocutor chooses to imagine), to  $S^i$  wherein “spatial” relationships are absent or only serve as proxies for other kinds of relationships and which respond primarily to interactive needs.



Figure 67. Peter mimes how a solider aimed his rifle.

A young language like ZFHS whose conventionalized resources for communicating about space are presumably still developing poses an insistent question about the relationship between linguistic spatial practices and speakers’ conceptual resources for thinking about space, including these postulated distinct conceptual spaces. In particular,

the contrast between dead-reckoning of location but an alternation between an absolute and a relative right-left representation of narrated horizontal spatial relationships, that I have tried to demonstrate for the ZFHS, suggests a series of conventions still in-progress which rely in quite different ways on the theoretical conceptual spaces I have distinguished. Thus, for example, the fact that known locales are absolutely located on the horizon seems to imply that known places, even those that figure in narrated events, are always signed in  $S^s$ , in local space. To name a known location one does not *leave* the most concrete, local space of the speech event. Once spatial entities are conceptually implanted in  $S^n$  the relationships between them may be denoted with either an absolute or a relative frame of reference. The plastic toys are sketched in local space (perhaps diagrammatically) and one supposes that their absolute orientation is to be reproduced in the narrated space (i.e., the re-constructed array of the actual toys). On the other hand, the house near the sister's vegetable stand must be understood from the perspective of the speaker in  $S^s$ , but transposed to some vantage point in  $S^n$  with linguistic devices which can be interpreted in at least two different, and mutually incompatible ways. Deciding between the two frames of reference (as well as the requisite transpositions they imply) requires mental operations and conventions which ZFHS seems not yet to facilitate, judging by the difficulty the signers have in resolving such ambiguities.

There remains one last matter to consider about spatial resources in ZFHS, a matter of great theoretical interest which, unfortunately, I can introduce here in only a preliminary way. This relates to the use of space as a grammatical device. There is evidence that even in a very young sign language like ZFHS, the signers have begun to incorporate space into the grammar of the language in a way that recalls the "spatial grammar" of, among other things, verb inflection and agreement in established sign languages like ASL. ZFHS thus provides evidence for the potential for  $S^i$  to serve directly as a morphological medium in the manual modality.

One device for turning space into grammar, prevalent in ZFHS, we have so far met only laterally: the use of what I have been calling "haptic" classifiers to show the size, shape, and aspects of the manipulability of objects. We see hints of the phenomenon in the handshapes and configurations the signers use to indicate trajectories (of the road, for example in Figures 60 or 62), to show how human beings interact manually with named objects (e.g., cars in Figure 59, or the vegetable stand in Figure 64), to show their apparent size (e.g., the distant church in Figure 58, or even the proper name for the signers' mother in the right panel of Figure 25, which portrays her belly in a none too complimentary light) or their shape (the turkey's tail in Figure 51 and the left panel of Figure 54). The same principle is incorporated more directly into grammar, however, when the ZFHS signers combine a common noun for an object with a haptic classifier that shows the size, shape, and manipulability of the object in question. The principle can be illustrated with my favorite example, the ZFHS sign for 'chicken' which itself iconically incorporates the standard way of killing a chicken in Zinacantán: a sharp jerk with both hands to break the bird's neck. Figure 68 shows Will performing this sign, which, in his rendition also incorporates a characteristic way of holding the mouth.



Figure 68. The ZFHS sign for ‘chicken.’

I have never seen this sign performed alone, however. Instead, Will always seems to precede it with a haptic classifier to show the general class of object he is referring to. Thus, to describe a picture of a full grown rooster, he starts with a handshake that indicates the size and characteristic way of holding such an animal (Figure 69), and only then performs the specific noun ‘chicken.’



Figure 69. Haptic classifier for full-grown rooster sized animal.

On the other hand, to describe a picture of two chicks (Figure 70) he first signs a different haptic classifier, then the same neck-breaking chicken sign, immediately followed by the numeral two. The whole performance is illustrated in Figure 71. It suggests both the conventionalized nature of the noun (since presumably, despite the iconicity, chicks are not so man-handled) and the abstract or grammatical character of the classifier as part of a larger noun-phrase-like construction. Haptic classifiers seem routinely to accompany nouns for commonly handled objects: domestic animals, clothing, tools, utensils, boxes, etc., and they are directly incorporated into the grammar. They rely on the immediately shared interactive bodily space of the signers to convey information that is incorporated into abstract, closed-class, functional elements resembling classifiers in other languages.



Figure 70. A stimulus photo.





Probably the most well-known grammatical use of space in established sign languages like ASL is linked to argument structure and to the fact that for certain classes of verbs "verb agreement is marked using spatial positions" (Padden 1990:118), or more specifically "the form of the verb itself makes spatial reference to the subject, object, or both" (Liddell 1990:176). Here is a rough illustration: the verb 'give' in ASL typically involves a specific hand configuration. A signer can sign "I give it to you" by moving the 'give' hand from her own body towards that of the addressee, or "you give it to me" by moving it in the opposite direction. For third person arguments, the signer can 'place' the giver in one arbitrary position in signing space, the 'receiver' in another, and sign "She gives it to him" by moving the 'give' hand from the giver's location to the receiver's— anaphorically indexing grammatical arguments via previously established spatial positions (i.e., signed 'pronouns').

Meir et al. (2007) have shown that a young sign language like ABSL (developed over the last 70 years in a settled Bedouin village in Israel) does not code verb agreement with such a spatial device, although they note that the subject argument of a verb is typically implicit in the fact that a verbal action is performed in a way that iconically treats the signer's body as the virtual subject. This is, of course, in itself a grammatical use of space, in that the spatial orientation of the signed verb and its relationship to the signer's body provide essential grammatical information. It could be argued, nonetheless, to be less abstract than the ASL convention, which moves agreement (almost) entirely off the signer's body and into an arbitrarily structured S<sup>i</sup>.



Figure 72. Frame from video of a woman giving a man a shirt.<sup>28</sup>

---

<sup>28</sup> The stimulus video here was part of a set originally produced by Carol Padden and her associates for their ABSL research.

As my last examples will show, ZFHS appears to share features of both ASL and ABSL, suggesting the range of possibilities space affords as a grammatical medium. The spatial affordances made available by the laminated conceptual spaces I have distinguished— $S^s$ ,  $S^n$ , and  $S^i$ —are indexed by ‘inflecting’ a verbal sign directly, as well as through body orientation, and gaze. Consider first how the ZFHS signers described a short video which shows a woman passing a shirt to a man (Figure 72). Describing a small set of such videos was one of the tasks I asked the ZFHS signers to do on the very first day after they agreed, in 2008, to participate in a study of their language. The way they initially represented this video in sign is indicative of the highly telegraphic, largely presupposing style with which they originally approached the tasks I set them. It also illustrates the sign they chose in this case for ‘give’ (or, less contentiously, for denoting the transfer of the shirt from one person to the other). Will’s entire rendering of the video is initially contained in a single action, which he repeats twice. Using an apparently nonce haptic hand configuration that suggests the sort of transferred object involved, namely the shirt, he signs ‘give’ by moving the two grasping hands out away from his own body (Figure 73). He makes no other apparent attempt to sign explicitly the man, the woman, or the shirt.



Figure 73. Will signs ‘give.’

Frank, who has been asked to match Will’s description against a series of possible still frames, picks one picture and describes it back to Will. He explicitly and opportunistically does sign ‘shirt’ (Figure 74), and he continues with a mirror image of Will’s sign for ‘give’ (Figure 75). (The two brothers are sitting on opposite sides of a table.) As they negotiate about which picture Frank should choose, at one point both signers simultaneously sign the ‘give’ verb in exactly opposite directions, both using their bodies as the origo from which the narrated protagonist ‘gives the shirt’ (Figure 76).



Figure 74. Frank signs 'shirt.'



Figure 75. Frank signs 'give.'



Figure 76. Frank and Will simultaneous sign 'give' from opposite vantage points.

In this rendition there is no marking of the recipient, and the subject is virtually incorporated into the verb by virtue of the action's being performed from the perspective of the imagined agent.

Six months later, when the signers had figured out that both the tasks I set them and my expectations required a much higher level of explicitness in their renditions than they had volunteered that first day, they again described the same series of video vignettes. On this second occasion, both Frank and Jane, seated side-by-side, simultaneously described the video stimulus to the Matchers, and they took advantage of this arrangement to sign explicitly that it was a woman passing the shirt to a man. They used their own bodies as proxies for this gender distinction, an opportunistic device to which they frequently had recourse.

Frank started in a somewhat contradictory way. He began by pointing to himself, following with a finger wave to signal negation, and immediately thereafter pointing to Jane (Figure 77), as if to say “not the man but the woman.” With a subtle shift of his hand position, he then signaled the transfer of an object—not itself identified—from the woman to the man by drawing his hand from Jane’s position back to his own chest (Figure 78), a movement he repeated twice.



Figure 77 “Not the man, but the woman.”



Figure 78. Frank signs “The woman gave it to the man.”

Using his own body as a proxy for the male recipient, and his sister’s for the female giver, he was able to mark grammatical relations in an abstract signing space (that is, in  $S^1$ ) overlaid on top of genders abstracted from  $S^5$ .

Jane used a variant device to sign “the woman gave the man a shirt.” She performed a sign virtually identical to that used six months previously to show ‘give’—using both hands in a gripping configuration that suggested that what they held was something like a shirt—and she moved them outward from her own body (as if following the ‘body as subject’ convention). However, by demonstratively turning her body toward her brother (see Figure 79) as she signed ‘give,’ Jane was able to exploit their gender difference again to encode “the woman gave it to the man.”



Figure 79. Jane signs “The woman gave it to the man.”

Exploiting features of the current local signing or “speech event” space  $S^s$  that are not themselves arbitrary (like the actual physical locations of co-present people,  $P^s$ —participants of the speech event, in Jakobson’s formulation) but that can be used as at least partially arbitrary proxies for  $P^n$ —participants in the narrated event—seems to be one step in the direction of the spatially marked abstract verb agreement of languages like ASL. The ZFHS signers made prolific use of such a device in presenting stimulus videos meant to test the marking of presumed arguments in transitive clauses. So, for example, to sign another video clip in which a woman turns to look at a man, Frank signs ‘look’ (twice), and again points first at Jane and then at himself (Figure 80) to show who was looking at whom. One could liken such a signed construction to an uninflected verb combined with pronominal proxies opportunistically extracted from  $S^s$  (plus a principle of word order, in this case resembling the order VSO).<sup>29</sup>



Figure 80. Frank signs ‘the woman looks at the man.’

As in Jane’s performance in Figure 79 above, shifting body orientation can also signal grammatical relations in way that combines a default iconic convention—that the signer’s body stands in for a notional agent—with a different sort of spatialized inflection on a verbal predicate: a further step toward grammaticalization of abstract, arbitrary positions in  $S^i$ . In fact, ZFHS signers seem to use body orientation in a variety of ways to signal grammatical relations, perhaps least surprisingly in the case of locative arguments. For example, in describing a video clip in which his young nephew was shown walking across a room to stand in front of a television set, Will first made the sign for “TV”, placing it slightly to his right, and then demonstratively turned his body before signing (with his feet) that the little boy walked (Figure 81): “he walked to the TV set.” Will’s

<sup>29</sup> See Haviland (forthcoming) for a preliminary discussion of ZFHS word order patterns. The normal constituent order in spoken Tzotzil is a robust VOS.

reorientation of the body (and the directional arc that he traces in the air afterwards—see Figure 82—interpreted by the hearing signers as “he went that way”<sup>30</sup>) seems to inflect the verb of motion and thus serve the grammatical function of linking the television to the verb as a kind of allative argument.



Figure 81 Will signs “He walked to the TV.”



Figure 82

My final observation about space and grammar in ZFHS links such indexical signs as pointing and bodily orientation to one further such visible device: gaze. Gaze has been argued in ASL to be yet another resource used to mark agreement.<sup>31</sup> ZFHS signers also recruit gaze, in sign, apparently to help signal arguments and distinguish what might be called participant frames; and they do so in ways that preserve distinctions we have already seen between different sorts of conceptual spaces.

Unsurprisingly, for example, to sign a verb like ‘see’ the direction of the gaze suggests what is being looked at. Will, talking about a peculiar old man, signs that he saw him yesterday, and the vector he draws from his eye to the object of his vision (Figure 83)

---

<sup>30</sup> Just to dispel a different possibility that may have occurred to diligent readers, the actual cardinal direction of the narrated movement here *cannot* be what Will meant to signal; the actual location of the scene depicted in the video clip is well known to him, close by, and in fact lies directly behind where he is sitting, and not in the direction he indicates.

<sup>31</sup> See Neidle et al. 2000; but compare Thompson et al. 2006.

links  $S^n$  to the local geography of  $S^s$  in a way exactly parallel to dead-reckoning in naming places.



Figure 83. Will signs, “I saw [the old man].”

Just as one can direct gaze along a pointed vector in local space to indicate what one saw and where, however, one can also emancipate gaze from real space and direct it at an imagined or abstract interactive  $S^i$ , populated by discursively introduced entities. This appears to be what Frank does when he also sights along a pointed vector (Figure 84) to sign the threat that when he catches sight of his sister’s boyfriends, he plans to beat them up (Figure 85).



Figure 84. Frank: “when I see those guys”

In Figure 84, Frank’s gaze is directed along an arbitrary vector in  $S^i$  (and in fact is a kind of neutral “fake” gaze, looking at nothing at all in a kind of neutral middle space—perhaps appropriate to the hypothetical situation he is evoking).



Figure 85. Frank: “I’ll punch them.”

By the time he signs “punch” in Figure 85 his gaze reverts to his interlocutor—that is, it returns to  $S^s$ , the site of the speech event. Note that Jane’s gaze did something similar in Figure 79 above, when she signed ‘give’ with her body oriented toward and apparently looking at or at least in the direction of her proxy recipient, but then returned her gaze to her interlocutors before actually retracting the ‘giving’ hands of her sign. The gaze shift, as it were, brackets off the narrated event (“I see the boyfriends” or “the woman gives the shirt”) from the interactional mutual attention check between the interlocutors in the speech event.

The “fake” gaze—apparently directed at some imaginary entity in the abstractly created interactional space—seems to represent a further exploitation of an interactively created or imagined  $S^i$  within which signed morphology can be abstractly spatialized. In checking that she has properly understood Frank’s description of the video clip of a woman turning to look at a man, illustrated in Figure 80 above, Terry also presents a “blank gaze” as she mimes the verb ‘look’—directing it first to her right as she asks Jane if it was the woman who was doing the looking (see Figure 86), and then directing it to her left (and toward Will seated next to her—see Figure 87) as she asks Frank (to whom she then shifts her gaze) “was she looking at a man?”<sup>32</sup>

---

<sup>32</sup> Terry is a hearing signer, and there is a striking parallel between her signing and a standard discursive employment of voice in spoken Tzotzil. To clarify the argument structure of a transitive action, one can ask (with an antipassive) *mi chk’elvan li antze* ‘Did the woman do the looking?’; or with a full transitive *mi isk’el vinik (li antze)* ‘Did (the woman) look at the man?’ See Aissen 1990, 1999, Haviland 1981, Ayres 1983, Davies & Sam-Colop 1990, Craig 1979.





Figure 86. Terry uses “fake” gaze to ask “was the woman looking?” and then returns a real gaze to her interlocutor.



Figure 87. Terry “gazes” at a proxy protagonist, to ask “was she looking at a man?” and then looks back at her interlocutor.

Just as ZFHS signers represent narrated spaces,  $S^n$ , whose geographies are sometimes known and sometimes not, by reference to local space,  $S^s$ , populated by presupposable entities with known locations, they also can use a much more abstract, interactively constructed interactive space,  $S^i$ , with arbitrarily (or opportunistically) created virtual entities, whose locations that can be reprised in the form and direction of manual signs, as well as through posture and gaze. I have presented evidence that these spatial references are recruited, in at least a preliminary way, for grammatical purposes, in particular to mark argument structure in discourse in the emerging sign language.

### **Summary: representing space with space**

A very young sign language like ZFHS affords special insights about how language construes space. Because it is a poorly documented language (albeit one in the making, and already endangered after a scant generation of existence), its structuring of space in linguistic terms has a compelling typological interest. Because it is young, its speakers can be expected still to be constructing formal resources for communicating about things important to them, including space, a domain they can scarcely avoid talking about, and how they do so is thus of immediate diachronic interest. And because the medium is sign, ZFHS necessarily uses space to represent space. It is metaspatial, by design, and thus allows a direct glimpse of the denotative and pragmatic potentials and requisites of space as both a medium and a referential target.

This chapter began with a quick review of Tzotzil, the spoken Mayan language that surrounds and overlaps with the tiny ZFHS “speech community,” to illustrate typological distinctions that have been proposed for spatial language—most notably different “frames of reference”—and how spatial notions are realized in different Tzotzil form classes. One striking fact of Tzotzil spatial vocabulary is the elaboration and specificity of the lexical systems involved, especially a developed anatomical meronymy, hypertrophied positional roots, and grammaticalized verbs of motion. Perhaps more striking is the combination of somewhat meager lexical resources—the up/down distinction—with careful and quite precise directional gestures for specifying locations in terms of absolute cardinal directions, transposable between different perspectives or vantage points evident in the utterances of Zinacantec Tzotzil speakers. It is only in the combination of audible and visible features of utterances that the interaction between lexicalized space in speech and the visible manipulation of space in gesture to produce spatial reference is manifested.

Co-speech gesture immediately embeds the analyst in a further set of conceptual complications about space, for no matter how we might understand what space is or how it is structured in the abstract, gesturing which may be “about space” in various ways willy-nilly takes place *in* space. Elaborating on Jakobson’s distinction between a narrated event  $E^n$  and a speech event  $E^s$ , I applied to gesture a parallel distinction between a narrated space  $S^n$  which interlocutors talk about, and a narrating or speech event space  $S^s$  where they are situated when they talk. I also found it useful provisionally to distinguish a further interactional space,  $S^i$ : a creation—a by-product—of the speech event and the positioning of interlocutors.  $S^i$  is, in an important sense unanchored by the wider  $S^s$ , and it responds instead to interlocutors’ interactional needs for conjoint attention. It is also where they sometimes gesture.

Distinguishing these different spaces involves interlocutors and analysts alike in the problem of how these different spaces are interrelated and coordinated. Thus, when my Zinacantec compadre points to a distant spot, he may intend his interlocutor to understand that he is pointing in an imagined narrated  $S^n$ , that he is pointing instead to a “real” place somewhere within narrating  $S^s$ , the space where he is speaking, construed either locally or more widely; or that he is pointing “arbitrarily” to a locus or entity created by the interaction, that is, in  $S^i$ . There may, moreover, be interactions between these different spaces, so that a narrated space may be laminated over the top of local space, allowing the absolute directions of one to be transposed onto the other, as in the description of places and directions along my compadre’s route to Cancún. Likewise, the coordinating principle may be relative rather than absolute, if relative or projected relations are involved. Interactive space  $S^i$  may also be directionally anchored in some way, or it may be free from all orientation other than that imposed by its own conjured entities, whether arbitrarily placed in space or not. A central puzzle for interactants is, then, how to keep these spaces straight.

Having laid this groundwork, I introduced several striking features of ZFHS spatial practice. First, the Zinacantec signers must keep careful track of the absolute locations of

known places, so much so that the standard device for naming them seems conventionally to be pointing to them either line of sight or on the horizon, directly in  $S^s$ . This seems one clear example of the direct source in Zinacantec co-speech gesture for a central structural device in the emerging sign language. By contrast, despite the fact that in co-speech gesture Zinacantecs virtually never seem to calculate position or direction on the horizontal plane relative to a speaker's own body, the ZFHS signers—perhaps because they do not (yet) have conventionalized lexemes for “absolute” directions (in much the same way that they lack conventional color names, for example)—do appear to apply body-centric relative signs for right and left in descriptions of spatial scenes, a device that clashes with an apparently poorly developed convention for altering perspective or point of view and thus leads to occasional miscommunication. In using such body-relative descriptive devices for spatial relations, the ZFHS signers make extensive use of the directionally ‘unanchored’ interactive space  $S^i$ , thus building their linguistic devices around an interactively created and manipulated virtual metaspace.

The final sections of this chapter expand on the ways that  $S^i$  can serve as an abstract medium through or upon which spatial diagrams can be constructed to represent a variety of different sorts of relations, only some of which are literally spatial. The well-known phenomenon, labeled “spatial grammar” in developed sign languages, allows different spatial devices to assume the functions of grammatical marking, notably argument structure, agreement and anaphora. Even a language like ZFHS, emerging over barely thirty years in a single, tiny speech community, can be shown to be using space itself to re-invent anew the abstract notions of grammar.

### References cited

- Aissen, Judith L. 1984 Control and command in Tzotzil purpose clauses. *In Proceedings of the Tenth Annual Meeting of the Berkeley Linguistics Society*. Pp. 559-571. .
- Aissen, Judith L. 1990. Una teoría de voz para idiomas mayas. In *Lecturas sobre la lingüística maya*. Nora England, and Stephen R. Elliott, eds. pp. 399-419. Plumsock Mesoamerican Studies., South Woodstock
- Aissen, Judith L. 1994 Tzotzil auxiliaries. *Linguistics* 32:657-690.
- Aissen, Judith L. 1999. Agent focuses and inverse in Tzotzil. *Language* 75(3):451-485.
- Ashmore, Wendy & Gordon R. Willey 1981. A historical introduction to the study of lowland Maya settlement patterns. In *Lowland Maya Settlement Patterns*. Wendy Ashmore, ed. pp. 3-18. University of New Mexico Press, Albuquerque .
- Ashmore, Wendy 1989. Construction and cosmology: politics and ideology in lowland Maya settlement patterns. In *Word and Image in Maya Culture: Explorations in Language, Writing, and Representation*. William F. Hanks and Don S. Rice, eds. pp. 272-286. University of Utah Press, Salt Lake City.
- Ayres, Glenn T. 1983. Antipassive voice in Ixil. *International Journal of American Linguistics* 49(1):20-45.
- Bohnenmeyer, Juergen and Christel Stolz. 2006 . *In Grammars of Space, Explorations in Cognitive Diversity*. Stepehn C. Levinson and David P. Willkins, eds. Pp. 273-310. Cambridge: Cambridge University Press.

- Brown, Penelope 1994 The INS and ONS of Tzeltal locative expressions: the semantics of static descriptions of location. *Linguistics* 32(4/5):743-790.
- Brown, Penelope 2006 A sketch of the grammar of space in Tzeltal. In *Grammars of Space, Explorations in Cognitive Diversity*. Stephen C. Levinson and David P. Willkins, eds. Pp. 230-272. Cambridge: Cambridge University Press.
- Brown, Penelope and Stephen C. Levinson 1993 "Uphill" and "downhill" in Tzeltal. *Journal of Linguistic Anthropology* 3(1):46-74.
- Calbris, Genevieve 1990 *The semiotics of French gesture*. Bloomington: Indiana University Press.
- Davies, William D. & Sam-Colop, Luis E. 1990. K'iche' and the structure of the antipassive. *Language* 66(3):522-549.
- de León, Lourdes 1992c Locative body parts and geographic anchoring in Tzotzil acquisition. Paper presented at the Stanford Child Language Forum, March, 1992..
- de León, Lourdes 1994a Exploration in the acquisition of geocentric location by Tzotzil children. *Linguistics* 32 (4/5):857-884.
- Fowler, Catherine S., 2001, Numic cardinal directions, In *Avances y balances de lenguas yutoaztecas*. Jose Luis Moctezuma Zamarron, Jane Hill, eds. pp. 267-292. Instituto Nacional de Antropología e Historia, México
- Gossen. Gary H. 1974a. *Chamulas in the World of the Sun: Time and Space in a Maya Oral Tradition*. Harvard University Press. 382 p., Cambridge, MA.
- Gossen. Gary H. 1974b. Another look at world view: aerial photography and Chamula cosmology. In *Aerial Photography in Anthropological Field Research*. Evon Z. Vogt, ed. pp. 112-124. Harvard University Press, Cambridge, MA.
- Craig, Colette G. 1979. Antipassive and Jacalteco. In *Papers in Mayan Linguistics*. Nora C. England, ed. pp. 139-164 *Miscellaneous Publications in Anthropology*, 6 University of Missouri, Department of Anthropology, Columbia, MO.
- Hanks, William F. 1988. Grammar, style, and meaning in a Maya manuscript. *International Journal of American Linguistics* 54(3):331-362.
- Hanks, William F. 1990. *Referential Practice: Language and Lived Space Among the Maya*. University of Chicago Press. 580 p., Chicago
- Hanks, William F. 1992. Intertextualité de l'espace au Yucatán. *L'Homme* 32(122-124):53-74.
- Hanks, William F. 2003. "Reduccion" and the remaking of the social landscape in colonial Yucatan. In *Espacios mayas : usos representaciones creencias*. Alain Breton, Aurore Monod Becquelin, and Mario Humberto Ruz, eds. pp. 161-180. Universidad Nacional Autónoma de México, Mexico.
- Haviland, John B. (forthcoming). Nouns, Verbs, and Constituents in an Emerging 'Tzotzil' Sign Language. In *Representing Language: Essays in Honor of Judith Aissen*, R. Gutiérrez-Bravo, L. Mikkelsen & E. Potsdam (eds.)
- Haviland, John B. 1981. *Sk'op sotz'leb: el tzotzil de San Lorenzo Zinacantan*. Universidad Nacional Autónoma de México. 383 p., Mexico.
- Haviland, John B. 1992. "'Seated and settled.' Tzotzil verbs of the body." In de León, L. and S. Levinson (eds.), *Space in Mesoamerican Languages*, special issue of *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung*, 45(6):543-561. Berlin: Akademie Verlag.

- Haviland, John B. 1993. "Anchoring, iconicity, and orientation in Guugu Yimidhirr pointing gestures." *Journal of Linguistic Anthropology*, Vol. III(1), pp. 3-45.
- Haviland, John B. 1993b. "The syntax of Tzotzil auxiliaries and directionals: the grammaticalization of 'motion.'" *Proceedings of the Nineteenth Annual Meeting of the Berkeley Linguistics Society: Special Session on Syntactic Issues in Native American Languages*. pp. 35-49.
- Haviland, John B. 1994. "*Te xa setel xulem* (The buzzards were circling): Categories of verbal roots in (Zinacantec) Tzotzil." *Linguistics* 32(1994), pp. 691-741.
- Haviland, John B. 1994b. "Verbs and shapes in (Zinacantec) Tzotzil: the case of 'insert'." *Función* 15-16(1994):83-117.
- Haviland, John B. 1994c. Special issue: spatial conceptualization in Mayan languages, edited by John B. Haviland and Stephen C. Levinson. *Linguistics* vol. 32-4/5.
- Haviland, John B. 1996. "Projections, transpositions, and relativity." In Gumperz, J.J. & Levinson, S.C. (eds.), *Rethinking Linguistic Relativity*. Pp. 271-323. Cambridge: Cambridge University Press.
- Haviland, John B. 1998a. "Guugu Yimithirr Cardinal Directions." *Ethos* 26(1) (March 1998), pp. 25-47.
- Haviland, John B. 2000a. Early pointing gestures in Zinacantán. *Journal of Linguistic Anthropology* 8(2), pp. 162-196.
- Haviland, John B. 2000d. "Pointing, gesture spaces, and mental maps." In *Language and Gesture: Window into Thought and Action*, David McNeill, editor. Pp. 13-46. Cambridge: Cambridge University Press
- Haviland, John B. 2003. Dangerous places in Zinacantec prayer. In *Espacios mayas : usos representaciones creencias*. Alain Breton, Aurore Monod Becquelin, and Mario Humberto Ruz, eds. pp. 383-420. Universidad Nacional Autonoma de Mexico, Mexico.
- Haviland, John B. 2003a. "How to point in Zinacantán." In Sotaro Kita (ed.), *Pointing: Where Language, Culture, and Cognition Meet*. Pp. 139-170. Mahwah, N.J. & London: Lawrence Erlbaum Associates..
- Haviland, John B. 2005. "Directional Precision in Zinacantec Deictic Gestures: (cognitive?) preconditions of talk about space." *Intellectica*, 2005/2-3, 41-42, pp. 25-54.
- Haviland, John B. 2005b. Dreams of blood: Zinacantecs in Oregon. In *Dislocations/Relocations: Narratives of Displacement*, Mike Baynham & Anna de Fina (eds.), pp. 91-127. Manchester, UK ; Northampton, MA: St. Jerome Pub.
- Haviland, Leslie K. & John B. Haviland 1982. Inside the Fence: the social basis of privacy in Nabenchauk. *Estudios de cultura maya* 14:323-352.
- Haviland, William A., 1966. Maya settlement patterns: A critical review. In *Archaeological Studies in Middle America*. pp. 21-47 Publication, 26 . Tulane University, Middle American Research Institute, New Orleans.
- Hill, Clifford 1982 Up/down, front/back, left/right: a contrastive study of Hausa and English. In *Here and there: cross-linguistic studies on deixis and demonstration*. J. Weissenborn and W. Klein, eds. Pp. 13-42. Amsterdam: John Benjamins.
- Jakobson, Roman 1957 Shifters, verbal categories, and the Russian verb. Mimeo. Russian Language Project, Dept. of Slavic Languages and Literatures, Harvard University..

- Jones, Christopher. 1989. Builders of Tikal: archaeology and history. In *Word and Image in Maya Culture: Explorations in Language, Writing, and Representation*. William F. Hanks and Don S. Rice, eds. pp. 255-259. University of Utah Press, Salt Lake City.
- Kendon, Adam 1990. *Conducting Interaction*. Cambridge: Cambridge University Press.
- Kendon, Adam. 2004. *Gesture: Visible action as utterance*. New York: Cambridge University Press
- Laughlin, Robert M. 1975 *The Great Tzotzil Dictionary of San Lorenzo Zinacantan*. Washington, D.C.: Smithsonian Institution.
- Laughlin, Robert M. 1980 *Of shoes and ships and sealing wax: sundries from Zinacantan*. Washington, D.C.: Smithsonian.
- Laughlin, Robert M. 1988 *What is a Tzotzil?*. *Res* 15:133-156.
- Levinson, Stephen 1994 *Vision, shape, and linguistic description: Tzeltal body-part terminology and object description*. *Linguistics* 32 (4/5):791-856.
- Levinson, Stephen C. 2003 *Space in Language and Cognition, Explorations in Cognitive Diversity*. Cambridge: Cambridge University Press.
- Levinson, Stephen C. and David P. Wilkins, eds. 2006 *Grammars of Space, Explorations in Cognitive Diversity*. Cambridge: Cambridge University Press.
- Liddell, Scott K. 1990 *Four functions of a locus: reexamining the structure of space in ASL*. In *Sign language research: theoretical issues*. Ceil Lucas, ed. Pp. 176-200. Washington DC: Gallaudet University Press.
- Meir, Irit, Carol Padden, Mark Aronoff, and Wendy Sandler. 2007. *Body as subject*. *Body as subject* 43:531-63.
- Neidle, Carol, Judy Kegl, Dawn MacLaughlin, Benjamin Bahan and Robert G. Lee. 2000. *The Syntax of American Sign Language: Functional Categories and Hierarchical Structure*. Cambridge, MA: MIT Press.
- Padden, Carol A. 1990 *The relation between space and grammar in ASL verb morphology*. In *Sign language research: theoretical issues*. Ceil Lucas, ed. Pp. 118-132. Washington DC: Gallaudet University Press.
- Polian, Gilles and Juergen Bohnemeyer forthcoming. *Uniformity and variation in Tzeltal reference frame use*. *Language Sciences* :.
- Sandler, Wendy, Irit Meir, Carol Padden, and Mark Aronoff. 2005. *The emergence of a grammar: Systematic structure in a new language*. *Proceedings of the National Academy of Sciences*, 102(7), 2661-2665.
- Svorou, S. 1994. *The grammar of space*. Amsterdam: John Benjamins.
- Talmy, Leonard 1985 *Lexicalization patterns: semantic structure in lexical forms*. In *Language typology and syntactic description*. Timothy Shopen, ed. Pp. 57-149. London: Cambridge University Press.
- Vogt, Evon, 1992, *Cardinal directions in Mayan and Southwestern Indian cosmology*, In *Antropología mesoamericana: homenaje a Alfonso Villa Rojas*. pp. 105-128, Gobierno del Estado de Chiapas, Tuxtla Gutiérrez
- Zavala Maldonado, Roberto 1992 *Mayan directionals: patterns of grammaticalization*. Paper presented at the 91st annual Meetings of the American Anthropological Association, San Francisco, Dec. 4, 1992.