that the use of space is a tool that makes cognition interactively available, even interactively constructed, and thus appears under contrasting linguistic conditions. That cognition is interactively constructed is the theme emphasized by Goodwin. He provides a unique exploration of the communicative solution invented by a patient suffering severe aphasia and his conversational co-participants in which gesture was used to create a new meaning in a socially distributed, group way.

Gestures are themselves shaped by the social interactive context. This is the phenomenon demonstrated by Özyürek and Furuyama in their respective chapters. As mentioned above, Özyürek tests the hypothesis that an individual's memory and thought are altered by the social context of speaking. Furuyama documents the role of gestures in instruction, discovering *listener* gestures and listener co-manipulation of *speaker* gestures, and analyzing the conditions under which these phenomena occur.

Kendon emphasizes that gestures are used to make something more precise or complete, especially the pragmatic aspects of the utterance. Kendon's chapter discusses the emblems, or, in the terminology he prefers, the quotable gestures, that figure prominently in Neapolitan interactive culture, and argues that these gestures are an integral part of the communication process, often carrying the main illocutionary load of meta-, para-, and extralinguistic effects in the conversation.

If the logical end point of gesture in action is gesture as one of the co-participants in the interaction, LeBaron and Streeck present evidence that the gesture's starting point may be an actual instrumental action. They analyze examples from recordings of adult-level instruction in the manipulation or design of material objects, to demonstrate a seamless progression of actions performed, from the manipulation of objects, to symbolic displays, to, finally, a conventionalized fixing of gestures within the local interacting group, by which time the former instrumental action has become a shared mode of symbolic reference.

1   Pointing, gesture spaces, and mental maps

John B. Haviland

Reed College and Centro de Investigaciones y Estudios Superiores en Antropología Social (Mexico)

1   Introduction

One way people display their knowledge about space is by pointing, using a gesture to indicate a place or a thing in a place, or perhaps a thing moving from one place to another. Haviland (1993) argues that storytellers speaking the Australian language Guugu Yimithirr (GY) assiduously orient pointing gestures in the 'correct' compass directions. What GY speakers and their interlocutors know about space[1] is thus made plain in their gestures. This chapter[2] examines spatial gestures in a different speech tradition and argues that the spaces in which gestures are performed both reflect and constitute, as an interactive mnemonic medium, people's representations of the spaces they inhabit, know, and talk about.

Consider two exemplary utterances[3] which appear to include 'pointing' gestures. In the first, my compadre P, a Tzotzil-speaking corn farmer from Chiapas, Mexico, tells about a roadside *cantina* he used to visit as a boy. He compares its size to that of the house next to which we are sitting, extending an index finger (Figure 1.1) in a seemingly unproblematic act of immediate physical deixis: he appears to 'point' at the house.

(1)   yech smuk'ul chk i na chk li`e
       (It) was the same size as this house here.

Next, Maryan describes the route he used to take from the hamlet of Nabenchauk in highland Chiapas to the distant resort town of Cancún where he was working to pay off his debts. He has gotten his listener as far as Palenque, a town along the way.

(2)   nopol xa li palenke
       Palenque is close by.

Maryan's index finger (Figure 1.2) points slightly downwards and roughly north from where he sits in a house patio in Nabenchauk. In the context of his assertion "Palenque is close" Maryan apparently means to 'point at Palenque'.
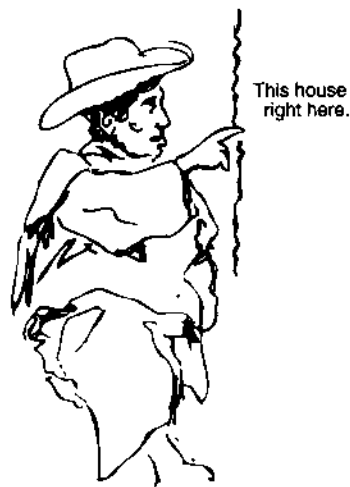
This house
right here.

Figure 1.1.   Figure 1.2.

Pointing seems a straightforward matter: you stick your finger out in the appropriate direction, perhaps saying some accompanying words, and your interlocutors follow the trajectory of your arrow-like digit to the intended referent. Nothing could be simpler – and nothing could be farther from the truth.

2   Directional precision in language (and gesture)

One complication to the simplicity of pointing may be the demand for directional accuracy. People in many different societies, speaking such languages as Warlpiri (Laughren 1978) and GY (Haviland 1979) in Aboriginal Australia, Austronesian languages like Malagasy (Ozanne-Rivierre 1987), and American Indian languages like Wintu (Pitkin 1984), Assiniboine (Farnell 1988), and Tzeltal (Brown & Levinson 1993), are reported to keep careful track of cardinal directions, recorded in locational expressions in speech. The linguistic details vary, but frequently people use lexical roots for cardinal directions to describe things and events as points or vectors in the appropriate divisions of the horizontal plane.

There are, unfortunately, rather few descriptions of usage of the spoken reflexes of these terminological systems,[4] still fewer of the *visible* constituents of linguistic interactions in such languages. My work on narrative in GY provides one example of how gestures, too, can be precisely oriented by compass direction. Farnell (1988, 1994) gives another for the Assiniboine.

3   Gestural accuracy and linguistic precision

Haviland (1993) compares two narrative performances, separated by several years, in which a Hopevale storyteller recounts how he and a companion once had to swim three and a half miles to shore through shark-infested seas after their boat capsized. Careful spoken discrimination of cardinal directions in these GY narratives is matched by a parallel directional precision in gesture, although sometimes conceptual transpositions – mostly shifts in the narrator's perspective – are required to maintain this precision.

A particularly dramatic case of 'oriented' gestures in these GY narratives involves no explicit pointing but is an example of what Sotaro Kita has dubbed 'motion direction blends' – gestures that portray the manner[5] of a motion, but combine it with a specific orientation. The boat in question was caught in rough seas, and strong winds flipped it over in the water. On two separate tellings the narrator illustrated with different motions how the boat capsized, but in both cases he kept the orientation constant, showing that the boat rolled over from east to west.

Keeping oneself cardinally oriented is a communicative convention, a rule of proper GY with both a verbal and a gestural expression. These GY facts raise several questions, which this essay begins to address. If cardinal directions can be recovered from talk, they must figure in the 'mental representations' of the spatial configurations that are thus expressed. Moreover, the narrative transpositions to which I turn at the end of the essay suggest that these putative 'mental maps' of what 'interlocutors know' about spatial arrangements must be dynamic and shiftable (see Bühler 1982, Hanks 1990, Haviland 1991a, Engberg-Pedersen 1995). How are such transpositions managed and successfully communicated?

In languages like GY there is considerable linguistic support for directional precision, as evidenced by the obligatory and ubiquitous use of cardinal direction terms in all kinds of GY talk. Thus the orderly gestural practices of GY speakers are mutually reinforced by the insistent use of spoken compass terms. By contrast, in many other languages, among them Zinacantec Tzotzil, explicit directional terms occur rarely if at all in everyday talk. Do oriented gestures occur in such a different kind of linguistic tradition?

4   Gestural typologies and language

For ordinary interactants, gesturing is part of talking, and one learns to gesture as one learns to talk (see, for example, Bates et al. 1983). The organization of gesture is inextricably (though problematically) related to linguistic structure, as studies of the relative timing of gesture and talk suggest

(e.g., Birdwhistell 1952, 1963; Kendon 1980, 1988b; Schegloff 1984). McNeill (1985, 1992) bases an entire psycholinguistic program on an argued conceptual co-dependence between gesture and speech. There may be evolutionary connections between speech and gesture, since language has evolved in the context of face-to-face interlocutors, and Armstrong, Stokoe & Wilcox (1995) find in structural elements of gesture the roots of syntax. An apparent chain of development also links spontaneous gesticulation (perhaps grounded in early motor activity, e.g., reaching and grasping [Carter 1975], to gestural 'babbling' [Petitto & Marentette 1991]) and spontaneous signs and, given appropriate communicative conditions, to systems of homesign (see, for example, Goldin-Meadow 1991), alternate sign languages (Kendon 1988a), sign-language pidgin, and ultimately full-blown (sign) language (Kegl et al. in press).

Moreover, at the level of functional interdependence, deictic gestures both substitute for and supplement spoken deictics (see Marslen-Wilson et al. 1982; Levelt et al. 1985). Several analytic consequences follow. First, as part of the interactive repertoire available to interlocutors,[6] gesture-with-speech is a vehicle of communication not only for propositional purposes but for the coordinated social action whose characteristic domain is ordinary conversation. Second, the indexical properties of gestures are potentially as central to their import and effectiveness as are those of words, since word and gesture conjointly index the spatio-temporal context of the speech event.

Typologies of gesture[7] often involve two broad cross-cutting dimensions: *representationality*, and *convention* or *autonomy*. The first dimension concerns how bodily movements that accompany speech are alleged to depict the referential content of an utterance. Some gestures seem tailored to the 'meaning' of speech, whereas others appear to be aligned to other aspects of talk.[8] The second dimension of autonomy concerns the degree to which gestural movements are *ad hoc* fleeting creations of the moment, inextricably tied to concurrent speech, as opposed to more or less conventionalized, 'language-like' signaling devices in their own right, independent of verbalization, possibly both 'glossable' and 'quotable' (Kendon 1983, 1988b, 1990a; McNeill 1987).

The notion of conventionality in gesture is too complex to treat here. There are surely elements of gestural form, even in 'pointing', that make the line between symbolic (conventional) and indexical modes of signaling problematic.[9] However, a central and striking element of 'conventionality' in GY gesture is the apparent 'fixity' of direction that accompanies pointing. When a gesture portrays location or motion, it must in a variety of ways preserve cardinal directions.

Although such a gestural convention may seem exotic, one reflex of the

Figure 1.3.

convention is probably widespread. GY speakers frequently point to the part of the sky where the sun would be visible at a certain hour to refer to the corresponding time of day. In a similar way, but using a very different pointing style, my Zinacantec compadre describes returning to a place where he had left a sick and dying horse. When he says, "it was getting late" (see (3)), he glances up at the place the sun would have been (see Figure 1.3), providing a kind of gestural metaphor for time that relies on the true cardinal direction, or local geography, to evoke the afternoon sun.

(3)   ju:ta mal xa k'ak'al u:n
       Damn, it was already getting late.

Nonetheless, it is *not* a gestural convention in my dialect of English that pointing gestures be oriented by the compass, perhaps not even to talk about sunset or sunrise. Directional precision is thus a somewhat unexpected overlay to 'conventionality' in gesture not captured by standard typologies.

5   Pointing and indexicality

Gestures are frequently classified by a familiar Peircean trichotomy. Unlike emblems, which are symbols or conventional vehicles of meaning, iconic gestures (McNeill 1987) are said to depict (by virtue of resembling in some way or other) entities in narrative. 'Deictic' or 'pointing' gestures, on the other hand, are not representational but instead act as Peircean indices, picking out their referents by virtue of a shared spatio-temporal proximity

with them. Indeed, pointing gestures are the canonical and for many theorists the ontologically primeval indexical signs. (Etymology enshrines the fact that we generally point with our INDEX fingers, though people may use other body parts.)[10]

Reference is characteristically anchored in the speech event through such indexicals as pronouns, tenses, demonstratives, and so on. However, it is supposed, one can refer equally well (if not better) by showing as by saying. Accordingly deictic gestures can *replace* rather than merely accompany referring expressions. Levelt et al. (1985) consider it distinctive of certain deictic gestures that "they can be obligatory in deictic utterances" (p. 134).

> Deictic terms like 'there' or 'that' . . . require the speaker to make some form of pointing gesture, for example, by nodding the head, visibly directing the gaze, turning the body, or moving arm and hand *in the appropriate direction*. (P. 134; emphasis added)

But *which* is 'the appropriate direction'? As Wittgenstein (1958) points out, ostension itself relies on what he calls a 'custom'. There is the famous example of the signpost in Wittgenstein's discussion of rules.

> A rule stands there like a sign-post. – Does the sign-post leave no doubt about the way I have to go? Does it shew which direction I am to take when I have passed it; whether along the road or the footpath or across country? But where is it said which way I am to follow it; whether in the direction of its finger or (e.g.) in the opposite one?[11]

The direction of a pointing gesture can, as in ASL, start out as arbitrary but once established become both significant and enduring. Bellugi & Klima (1982: 301) describe some functions of pointing in ASL as follows:

> If a referent (third person) is actually present in the discourse context between signer and addressee, specific indexical reference is made by pointing to that referent. But for non-present referents that are introduced by the speaker into the discourse context only 'verbally', there is another system of indexing. This consists of introducing a nominal and setting up a point in space associated with it; pointing to that specific locus later in the discourse clearly 'refers back' to that nominal, even after many intervening signs.

A pointing gesture, like any indexical sign, projects a surrounding context or space – let's call this its 'gesture space' – within which it can 'point'.

> [E]very sign insofar as it signals indexically . . . serves as the point-from-which, or semiotic origin of a presuppositionally/entailing projection of whatever is to be understood as context. (Silverstein 1992: 36)

Note that this is a *conceptual* projection; one may point in 'real' physical space, but pointing conjures up a space oriented and populated by concep-

tual entities. How far an indexical sign projects, how wide or detailed the projection is, are central empirical questions.

As philosophers have been at pains to argue, what there is to point *at* is (at least ontologically) a variable thing. When an interactant 'points at something', how structured and how detailed a space that something entails (or that pointing presupposes) is neither constant nor fixed in advance. Moreover, a sequence of pointing gestures does not necessarily produce a coherent space, within which contiguous gestures may jointly be understood to point. Any coherence to the space delimited by such a sequence of indexical signs is *itself* a projection (of the indexical fact of the contiguity of the gestures), and thus the result of interpretive efforts.

6   Presupposing/entailing

Pointing gestures, like other indexical signs, may thus be placed along a continuum from relatively presupposing to relatively creative (Silverstein 1976). Where a present and 'directly' perceivable referent is the target of a pointing gesture, it is relatively presupposable: its existence, as well as its location and other salient characteristics, may be taken for granted in the speech context. You can exploit presupposable features of the actual location of a co-present referent, thus rendering the interpretability of your gesture dependent on those presupposed features. (In the absence of other information, your interlocutor must share knowledge of geographical and perhaps other relevant facts if she is to identify your gestures' referents correctly.) A gesture that 'points at' such a presupposable entity simply inserts it, and its relevant features, into the current universe of discourse.

"This Willy Woibo's father," says JB, pointing with his thumb over his shoulder, in the direction of the store where the man in question can usually be seen. JB's gesture (Fig. 1.4) draws upon the immediate environs of the speech event, within which deixis presupposes (usually observable) targets, such as local objects or geographical features, although sometimes mediated, as here, by kin relationships. Such a space is 'anchored' because the presupposable loci of such perceivable entities are immediately given in relation to the current origo, the here-and-now of the interlocutors. You locate the things you point at where they actually are. Such a situation is perhaps the primeval home that theorists imagine for deictic gestures.

This relatively presupposing strategy for pointing gestures may be adopted for *narrated spaces* as well. JB and his companion faced a long swim through rough seas from the capsized boat. JB describes the situation with a sweeping gesture to his left (Figure 1.5) – that is, southwest. He says, "You couldn't see the beach to the south; well, (it was at a distance of) three mile(s) and a half."

JB, sitting at modern Hopevale, indicates the three and a half miles to the

Figure 1.4.   Figure 1.5.

Figure 1.6.   Figure 1.7.

beach at Bala by pointing not in some arbitrary direction, and not north-east to where Bala actually lies from where he sits, but *southwest* – calculating from his narrated perspective near the capsized boat. He thus presupposes his interlocutors' knowledge of the geography he is describing and their ability to transpose themselves to a narrated origo from which can be projected known (presupposable) landmarks, including the named spot on the beach.

7   Relatively creative pointing gestures

Other pointing gestures – often those directed 'towards' non-present 'objects' – can by contrast be relatively creative. When your gestures themselves help create their referents – entail their existence for discursive purposes – you can often put those referents where you want them. Indeed, it may be that the 'pointing' gesture depends in no way on the location of a referent. The location may be discursively irrelevant, and the 'pointing' gesture may have only an individuating function. In such a case it may not be necessary to refer again to the same entity, so it matters little where you pointed 'at' it; and if you do have to refer to it again, the initial baptismal gesture has established a locus to which you can return.

In (4), a Zinacantec man describes how he once met a supernatural demon called *j'ik'al* 'blackman'. The man tried to grab the creature, which ran away. The narrator illustrates how the *j'ik'al* fled (Figure 1.6) and hid behind the cross in the man's patio (Figure 1.7), both times using pointing gestures. The conversation took place far from the village where the con-

frontation occurred. The locations indicated by the man's gestures appear to be creative choices of the moment, not derived from the geography of the actual events. Thus the pointing gesture in Figure 1.6 arbitrarily creates a locus for the hiding demon, a locus that is then taken up and gesturally elaborated when the house cross is mentioned.

(4)   1...2...........
       i -0-jatav   un
       CP-3A-run_away PT[12]
       It ran away

1 Turn face to right and sight to spot some distance away, then return gaze to front
2 Right arm extends out in point to R (SW), then back to rest at knee

As he describes the event, the speaker surveys the local scene to gauge how far the demon ran, pointing to his right to where the blackman fled after he tried to grab it. In his next utterance the narrator establishes a more definite locus.

1   3.....   4..............a....b
     te i -0 -bat   yo`   pat   krus -e
     there CP-3A-go where back cross-CL
     It went there behind the cross.

3 Look quickly out R again, then back
4 R arm lifts out R and slightly to front, (a) circles anticlockwise, index finger slightly down, (b) moving all slightly L and held

2   ......5.................   6........................
    k'al   yo`   krus ali te vechel   krus ta
    as_far_as where cross uh there sitting_on_base cross PREP
    (It went) there to sit by the cross where . . .

> 5 R arm still extended, fingers drop to expose back
>   of hand, in anticlockwise circling motion
> 6 Circling motion of R hand repeated, then arm
>   withdrawn to rest

ch -av-il   onox   li   j -krus k'al   tana
ICP-2E-see nonetheless ART 1E-cross as_far_as afterwards
Where my cross is still today, you know.

The gesture depicted in Figure 1.7 combines both the oriented pointing that locates the cross relative to the place where the *j`ik'al* originally fled (in Figure 1.6), with a hand shape (and circling motion) evidently intended to convey the spatial relationship encoded in the Tzotzil expression *ta pat krus* 'behind the cross'. The gestures here literally create their referents to populate the illustrative graphic space.

8   Gesture spaces

These two strategies for constructing indexical gestures involve different principles for calibrating the immediate local space of the speech event with the gesture space where the conceptual entities 'pointed to' reside. In relatively presupposing pointing, the location pointed at can be derived from coordinating the space referred to (i.e., the space conceptually containing the referent) with the immediate space (where the gesture is physically performed). In relatively creative pointing, a location is selected in the local scene, as it were, arbitrarily. The gesture 'creatively' entails the referent's existence by 'placing' it within the referent space, and it imposes a structure on that space – including a location for the referent where such location is relevant – with certain possibilities for subsequent reference.

There is a further consequence of the choice between these two pointing strategies. Suppose that one explicit aim of a stretch of discourse is to establish relations, spatial and otherwise, *between* referents. An arbitrary map, populated by means of relatively creative deictic acts of reference, may produce arbitrary interrelationships. Or it may invoke principles other than the geometries implied by 'actual' geographic location. Referent *X* may (in the real world) stand north of referent *Y*, but I may put my 'pointed-at' *X* and *Y* in some other relationship – *X* to the right of *Y*, or higher, or lower (and there may be no need for a single consistent solution). On the other hand, a gestural map that presupposes actual geography can directly

exploit actual presupposable geographic relations, although certain principles of transformation or rotation, zooming, and resolution may need to be invoked both to keep things straight and to achieve the required level of detail.[13]

However, choosing between relatively presupposing and creative strategies is presumably not itself an arbitrary matter. It may depend on a further convention between interlocutors, or, indeed, on a communicative tradition, part of the 'culture' of a linguistic community. My dialect of American English favors relatively creative solutions for referential gestures, 'locating' referents more or less wherever they happen conveniently to fall. For GY speakers by convention the solution is highly presupposing. It was the suspicion that Zinacantecs, despite having little overt linguistic support for precise orientation in spoken Tzotzil, also were relatively presupposing in the orientation of their gestures that prompted this closer look at Zinacantec pointing.

In addition to *local* and *narrated* gesture spaces, Haviland (1993) distinguishes a further *interactional* space, defined by the configuration and orientation of the bodies of the interactants (see Kendon 1990b). Interactional space usually comprises the intersection of the hemispheres of action and attention that project forward from the bodies of the interlocutors, especially the speaker (see Özyürek, this volume). This space has a privileged interactional character, being conjointly available to interlocutors for gesticulation. Interlocutors in a sense create this space by virtue of their interaction; they do not find it in the local surround, but carry it with them.

Although interactional space in principle can also come with cardinal directions attached, Haviland (1993) shows that even in GY discourse it is here that gestures are frequently emancipated from the compass. This is the area within which a speaker locates 'absent' referents creatively and refers to them subsequently. Interactional space may thus be free from fixed cardinal orientation.

Furthermore, when narrative recounts scenes of interaction, narrators may also quote 'free' gestures, thus invoking *narrated interactional space*: a space in which narrated interaction is located. If interactional space is unanchored by cardinal directions, then narrated interactional space may be similarly emancipated.

To repeat, in this parlance a 'space' is simply the projected spatial context for an indexical sign, the signs of interest being the loosely defined 'pointing gestures' which supposedly require at the very least spatially locatable referents. Since gestures flash by evanescently, so do their projected spaces. Thus the different kinds of gesture spaces – really complementary dimensions of projected spaces which may, in fact, be laminated one on top of another –

are swiftly instantiated and sometimes just as swiftly discarded in the interactive flow, though rarely does an entire space disappear without leaving some usable residue. It is the multiplicity of gesture spaces, and the shifting between them, that belies the alleged simplicity of 'pointing' gestures as primitive referential devices. It is also what makes pointing gestures rich evidence about spatial knowledge – social, interactive, and individual.

9   Mental map or externalized mnemonic?

The notion of a mental map implies an internalized conceptual structure, abstracted perhaps from external, physical space, but subject to various manipulations and characterizable through linguistic categories. The interactive practices of Mayan Indians and Australian Aborigines suggest that although physical ('real') space can be the object of linguistic and cognitive processing, it also may serve as a *tool* for such processing, a medium upon which cognition may be externalized. In particular, when conversants are actively trying to construct or agree about spatial relationships, space itself can be a mnemonic through which knowledge of land, terrain, and territory can be (re)constructed and (re)calculated. The gesture spaces of conversation constitute an interactively available – indeed, interactively constructed – analog computational device for working out spatial and other sorts of relations. Gestures, which directly exploit this spatial medium, consequently assume a special importance in such conversations.

Older GY speakers, like the narrator of the shipwreck story, show great (if quite unconscious) precision in orienting their gestures – comparable to an equal precision in the use of spoken directional terms. The same sort of gestural accuracy can occasionally be observed in the speech of much younger people, even those who liberally mix English into their GY, or who almost entirely eliminate spoken references to the cardinal directional system. One such younger man, GC, does not use spoken directionals, for example, in pseudo-experiments like retelling books or video scenarios, although older GY speakers frequently do. When it comes to his own tribal country, however, he tries to maintain careful orientation, in both word and gesture. GC is currently reclaiming rights over land expropriated by both government and other Aboriginal groups (see Haviland 1997). As a result, even otherwise innocuous interactions have been transformed into proving grounds for his traditional territorial claims.

GC is a fluent GY speaker, but one who has spent time away from the community, speaking English. He is thus out of practice with his native language, though for political reasons he cultivates its use in appropriate contexts. He describes a site on Lizard Island, part of the traditional clan territory at Cape Flattery, which he has inherited from his patriline. The site

is named after the barb of a giant stingray. According to tradition, it was also the spot where men of his lineage should be christened so as to insure their success at hunting. GC has recounted the story from the perspective of the island, which lies east of the mainland Cape Flattery camp. GC sits with his back to the east facing his interlocutor in the west. He has come to the point in his story where the ancestral figure who speared the giant stingray now turns west toward the mainland to await the birth of male children. At line 4 of fragment (6), GC points clearly to the west (see Figure 1.8), at the same time saying first "to the east," then "to the north," and finally, with a confirmatory nod at line 6, "to the west" – the word which, to judge by his oriented gesture, he was searching for.

(6)   Cape Flattery
1 well ngathi   nhaamu-:unh
   "   grandfather that -ABL
   Well, then my grandfather . . .

                    1...... a....... b
2 nyulu   said well all right
   3SgNOM "   "   "   "
   He said, "Well, all right."

                    1 RH up in open C, rises to midchest at (a), drops
                      at (b)

                    2....... 3......
3 ngathu ganggal yii nhangu
   1sgGEN child   here 3sGEN
   My child here –

                    2 Gaze up W, staring

   ....a....b...
4 nagaar
   east+R
   in the east –

                    3 RH starts up, two index fingers pointing: W at
                      (a), high W at (b)

  c
5 gunggarra
   North+R
   in the north –

                    3 (*cont.*) RH circles into body and drops to rest at
                      (c)

Figure 1.8.   Figure 1.9.

4.....
6 guwaar . balga=-=:ya
  west+R make -REF+NPAST
  in the west, (my child) will be born.

>   4 Gaze high W, head rises slightly, staring, and
>   falls

7 m; Cape Bedford?
      At Cape Bedford?
                [
                5.........
8 g;   ngayu-
              1SgNom
              "I–"

>   5 RH rises to chest height, palm in, fingers out S,
>   circles clockwise and up

GC's interlocutor, knowing the geographical relationships involved, is confused by GC's words, and he hazards two incorrect guesses (at lines 7 and 10) about the place GC is talking about. Both GC's subsequent pointing gesture at line 9:6 (see Figure 1.9) and his verbal confirmation at line 11 show that GC was perfectly clear about the relative positions of Lizard Island and Cape Flattery even if he couldn't quite find the correct term. His own hand, mnemonically pointing west, may have helped him with the word search.

>   ..... 6.........7
9   gaari
     No.

>   6 Segues into RH indexes point, palm face in, up
>   high W, back to rest.
>   7 Gaze meets M, slight nod.

......
10 m; McIvor
       At McIvor?

11 g; dingaal
       At Cape Flattery.

10   Tzotzil narrative and oriented gestures

Tzotzil-speaking Indian peasants in the highlands of Chiapas, Mexico, also display precise bodily orientations to space despite the comparative lack of linguistic support for such precision. There are, in Tzotzil, only underdeveloped devices for talking about cardinal directions, when compared with the morphologically hypertrophied and ubiquitous cardinal direction terms in GY. Indeed, although the ancient Maya are celebrated for their calendrical and astronomical achievements, modern-day Zinacantecs have paltry lexical or grammatical resources for talking about cardinal directions. East and west are simply "place where the sun rises" and ". . . sets," or – reflecting an overall inclination of the territory dominated by the central Chiapas highlands (on the east), and the lowland Grijalva valley (on the west) – simply *ak'ol* 'up, upland' and *olon* 'low, lowland' (de León 1994a). Talk about direction is dominated by local geography rather than by celestial absolutes,[14] and directional terms are infrequent in ordinary conversation.

It may thus seem somewhat surprising that Zinacantec Tzotzil-speakers appear to maintain a division in gesture space that roughly parallels the division between *directionally anchored* local space and the *free* interactional space I have described for GY. Finding that Tzotziles, too, have their anchored spaces pushes one to search for the conceptual support that using such spaces in gesture might require.

Peasant agriculturists whose livelihood depends on intimate knowledge of the lay of the land, and especially people like my compadre P, who spent his youth leading mules on trails crisscrossing the highlands, have good reason to maintain detailed and precisely oriented mental maps of their territory.

Knowledge of routes and geography, not unlike knowledge of plants (see Laughlin & Breedlove 1993), grows naturally from tromping the trails. Older Zinacantecs are encyclopedias of place names, botanical and topographic lore, paths, routes, water holes, creeks, and settlements over a wide area that extends far beyond municipal boundaries.

Detailed knowledge of geography and terrain may have begun to fade when younger men took to trucks and buses after the arrival of the Pan American Highway in the early 1950s. However, although micro-geographic knowledge may have narrowed, the scope of Zinacantec macro-geographic knowledge has expanded. Because of economic changes in Mexico, Chiapas Indians once relatively isolated from the pressures for outmigration that have long characterized much of rural Mexico have begun to leave their communities in search of work. Zinacantecs have always traded throughout the region, but more and more individual Zinacantecs now travel far from their municipalities, sometimes never to return.[15]

Maryan described to me the route he took when, burdened by crushing debts, he fled his village and sought work in the resort city of Cancún, far from his highland Chiapas home. Although aspects of Maryan's story have great ethnographic interest, I have deliberately ignored them here to concentrate on how he carried with him to Cancún a system of directional orientation which he exhibits gesturally as he talks.

At the beginning of Maryan's performance – in which he tells me how to get to Cancún from the village of Nabenchauk where we sit – he shifts his sitting position so that the line of his shoulders runs precisely east–west. Once made conveniently available by this shift, cardinal directions in pointing seem to remain constant and significant.

Maryan describes leaving Nabenchauk and proceeding to San Cristóbal. He accompanies his words (shown at (7)) with a slow rising gesture pointing out and up to his right, due east (see Figure 1.10).

(7)   Nabenchauk to San Cristóbal
                1   2–3 . . . *(high and retract)*
        tuk' onox ya`el cibat   ali ta
        I would go straight to . . hh . . .

        li ta . ta Jobel xkaltike une
        to . . . San Cristóbal, as we say.

The route leaves San Cristóbal and heads for another spot on the Pan American Highway called Rancho Nuevo. As Maryan describes reaching that point, his vertical flat hand, still pointing east, moves downward (see Figure 1.11), apparently indicating 'arrival'.

Figure 1.10.

Figure 1.11.

North

3

2

1

Figure 1.12.

(8)   Getting to Rancho Nuevo
          (1)......... 2............ *(rise and down to rest)*
          va`i un ali ja` xa li ta-
          So then, when we ... uh ...

                RH up ... rest
                |out again to R
          yo` jtatik ali . rancho nwevo une
          when we get to where Rancho Nuevo is

From that point one "turns to the side" (9) and continues toward the next major town, Ocosingo. Maryan's expression with the verb -*k'atp'uj* means simply 'turn aside'; it makes no further specification of direction.

(9)   Turning sideways
          1   2----3... *(high and stretch further)*
          ja` xa cik'atp'ujotik ec'el xi to cibatik .
          that's where we turn away to the side and we go this way
          [towards Ocosingo].

However, Maryan's gesture at this point, shown in Figure 1.12, does indicate that the direction involved is slightly east of north. He makes a pushing

motion, first turning his palm to face north with the fingers slightly cupped, and then extending the hand outward in front of him (to the north-north-east), and finally extending his fingers.

One of the illustrations with which I began (Figure 1.2) is drawn from a later segment of this same route description. Maryan has located himself discursively at a crossroad just south of Palenque. His left arm is extended fully in front of his body, with the pointing finger angled slightly downward and to the right – a position that he holds as he says, "Palenque is close." The gesture is clearly transposed, in a now familiar way. *From the discursively established crossroad*, Palenque lies roughly NNW, the direction in which he now points. He has thus constructed a *narrated space*, over which he laminates the here-and-now of the conversation which supplies the required cardinal orientation.

If you look carefully at the compass directions of all Maryan's pointing gestures in this route description, you can construct a map which can be compared to, say, a road map of the same territory.

I have schematized a 'pointed' map of Maryan's Nabenchauk-to-Cancún route in Figure 1.13a. (The distances represented are only approximate interpretations of the accompanying gestural sweeps.) Comparing this virtual map with a standard road map, it is clear that Maryan's directional sense, though somewhat normalized, is close to that of cartographers (see Figure 1.13b).

Notice that Maryan's representation gives considerable local detail, naming many nearby locations, especially within the state of Chiapas, and becoming less detailed the farther he gets from home. Such differential density in representation is reminiscent of comparative findings about such externalized 'maps',[16] although it is hard to say whether this reflects Maryan's geographical knowledge or constraints of the interactive situation (where he expected his interlocutors to know more about nearby places in Chiapas than about distant points in Quintana Roo).

Maryan's gestures show directions as he proceeds from each named point to the next. However, such a point-by-point mapping of the route, if not corrected by spot sightings on unbroken roads, might be expected to produce cumulative error.[17] To judge by the ultimate tracing of paths, Maryan does not seem to have been misled by the fact that a road may leave a town in one direction, only to head ultimately in another.

These diagrams suggest that Maryan has constructed for himself an accurate representation of this macro-space, which he displays in carefully oriented gestures. Although in the whole conversation he makes hardly any *spoken* reference to cardinal directions, in his gestures he tracks his progress across the landscape with great precision.
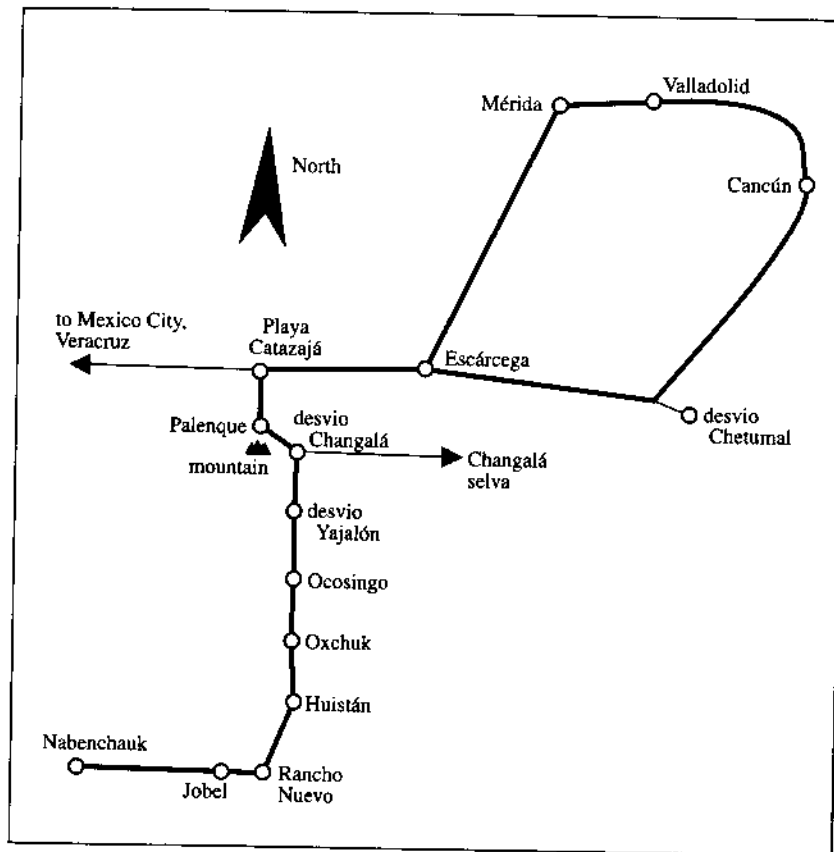
Figure 1.13a.

11   Transposition: movement among spaces

The theoretical continuum between relatively creative and relatively presupposing indexes, imported from words to pointing gestures, is complicated in practice by 'indirect' or mediated links from indexed referent to intended referent. A narrator may, for example, point at a co-present interlocutor to refer either directly to that person as a protagonist, or indirectly through links of kinship or historical association to some other person or entity. More globally, pointing gestures may indicate referents which are entirely absent, at least in the immediate physical surround.

Furthermore, skilled narrators can exploit different intertransposable spaces, switching rapidly among them. The other gesture with which I
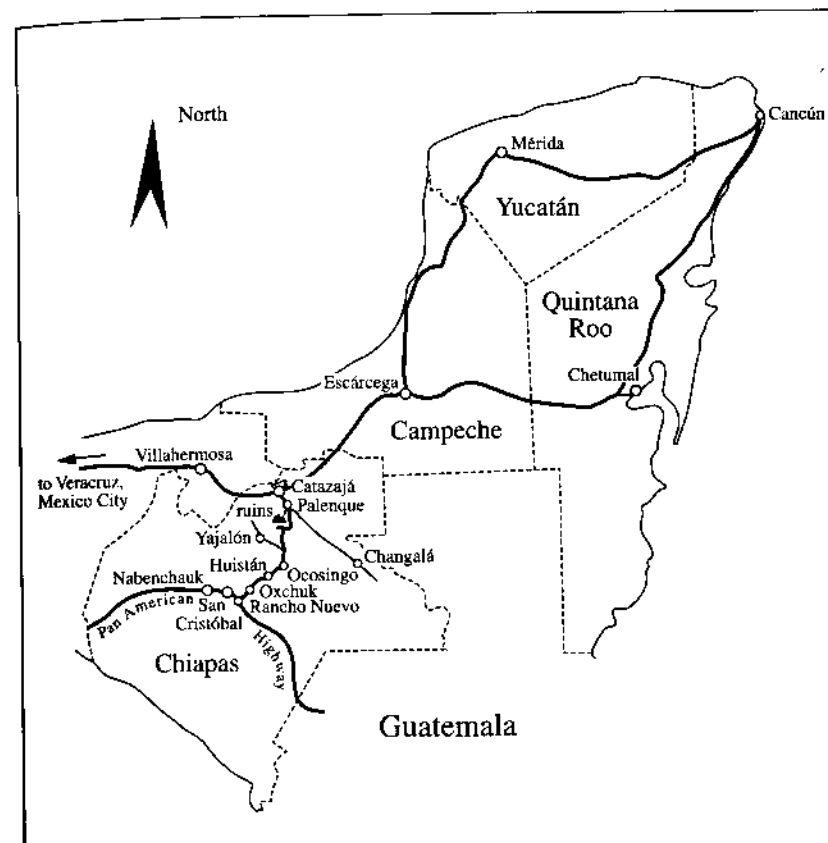
Figure 1.13b.

began (Figure 1.1) illustrates the speed with which speakers engineer (and interlocutors evidently absorb) such transpositions. P describes a roadside *cantina* where the muleteers used to drop in for a drink. Using props presented by the house patio in which we sit, he evokes this imaginary space in a remarkable sequence.

First he uses the micro-geography of his own house compound, where we sit, to establish a link between the physically co-present path and gate in *local* space – the entrance to the *sitio* (Figure 1.14) – and a *narrated gate* at the roadside bar (Figure 1.15).

(10)   1   2   4..........
1   . . oy te . ali ti` be ya`el chk li`e
         There was a gate there, just like here
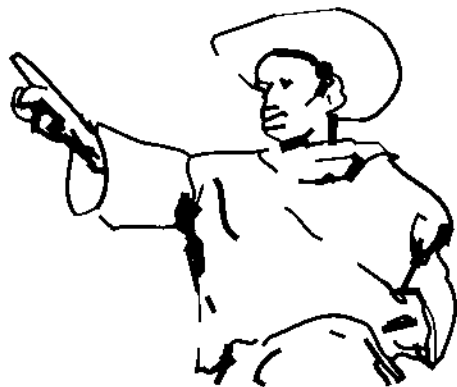
Figure 1.14.   Figure 1.15.

1 Gaze out to right, focus on path?
2 Right hand up from knee, points with index finger to N *(there)*
4 Right hand moves back W, returns E, fingers curling inwards *(like this)*

	5 6
2	te jun . pwerta lek

There was a . proper door.

5 Right hand moves higher to above head level (head turns back and down to middle) *(one)*
6 Fingers down, hand raised, bounces down twice with palm down as gaze returns to me *(door)*

	6'.....
4	ta ti` be

at the entrance.

6' Right hand starts to drop, rises slightly in loose hand, down to knee *(gate)*

...
..........8.....................9...

7	oy tey nakal krixchano un

There were indeed people living there.

8 Cupped hand palm down, arm still extended, taps once up and down out [N] *(living there)*
9 Right hand points down quickly, then (b) curls back in → SW to position in front of face *(people)*
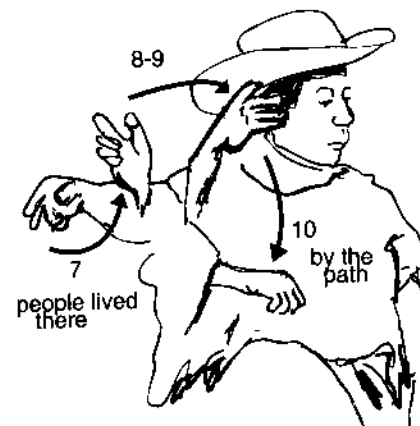
Figure 1.16.

In this transposed space his gestures (Figure 1.16) point at an imaginary fence and gate: the *tey* 'there' to which he points with the gesture shown as [8] in line 7, and the *ti` be* 'gate' which he represents with gesture [10] in line 8.

	10
8	ta ti` be

beside the path.

10 Hand flat, vertical down and up motion (gaze to hand) *(gate)*

Swiftly, however, he brings his gesture back to the current here-and-now, in order to point, at [11], line 9, directly at the kitchen house beside which we are seated. "*That* house [whose gate I can point to in transposed narrative space] was the same size as *this house* [which I can point to here]." (Refer back to Figure 1.1.)

	11a 11b
9	. yech smuk'ul chk i na chk li`e

(It) was the same size as this house here.

11a Right hand crosses to SW, and gaze also
11b and points to kitchen house before returning to rest *(size)*

Within a complex utterance he thus moves from immediate local space to a narrated hypothetical space, laminated over the former and deriving its structure therefrom, and then swiftly back again. A seemingly simple

Figure 1.17.

gesture points at once to a local building and to a narrated roadside bar long disappeared.

12   Lamination of spaces

The seemingly unproblematic notion of direction itself turns out to be unexpectedly complex. Even location by cardinal directions is not 'absolute', but relational, depending on a reference point from which a direction can be projected. Furthermore, the phenomenon of transposition makes clear that this reference point, far from being firmly anchored in the default here-and-now of the speech moment, can shift radically.

A particularly dramatic case comes from the sequence in which Maryan describes the topography of the area around the town of Palenque, which is located on a flat coastal plain running north from the central Chiapas mountain range. The famous Palenque ruins sit in the foothills of this range, in an area covered by dense jungle. He explains exactly where they are.

As we have seen, Maryan describes how one gets to the town of Palenque, and then, gesturally, he locates himself *there*. His gesture shown in Figure 1.17 establishes, in our shared mnemonic interactional space, the spot that will count as Palenque. That is where the trajectory he is about to describe starts.

(11)   *RH starts out from rest*
    | 1---2----*RH moves rapidly back, and*
        |*gaze back over R shoulder*

Figure 1.18.

Suddenly he turns around rapidly to his right and makes an expansive gesture over his right shoulder (i.e., slightly to the southeast – see Figure 1.18).

(12)   1-----2--
        ali mi jtatik i Palenke
        If one gets to Palenque
        ---------3...............
                gaze back to me
                |
        xi chkom xi to vi
        (the ruins) are located this way.

He then says "(the mountains, i.e., the ruins) are located this way." After turning back to the front, he again turns to the southwest, in a further gesture.

(13)   *gaze starts back over R shoulder*
        | 1 *(points twice)*
                then rapidly back to rest
                gaze front
        k'u cha'al yochob
        like the (Nabenchauk) sinkhole.

Figure 1.19.

At the second line of (13) (Figure 1.19) MA turns to point straight south, at the same time focusing his gaze on a stand of rocks across the Nabenchauk lake, a place called *yochob* 'sinkhole'. Now his mental calculations are made plain. (1) Transpose yourself to the town of Palenque. (2) From *there* look that way [south]. That's where the mountains are. (3) Bring yourself back to Nabenchauk. It's the same *direction* as the sinkhole from *here*. To follow the entire performance requires the interlocutor to superimpose a map of the local terrain on the narrated spot and then calibrate positions in the latter by recalculating positions in the former (see Figure 1.20). In this spectacular feat of mental gymnastics, both location and direction are transposed, and it is the presumed constancy of compass directions that calibrates the lamination of two different spaces, one local and one narrated.

13   Morals

Space, no matter how immediate or unproblematically accessible it may seem, is always itself a construction, conceptually projected from not only where we are but who we are and what we know. Gesture makes use not of 'raw space' but of this projected conceptual entity. Gestures employ spaces for the characteristically dual ends of discourse generally: both to represent states of affairs, and to manipulate states of affairs. Let me suggest three sorts of conclusion: methodological, conceptual, and ethnographic.
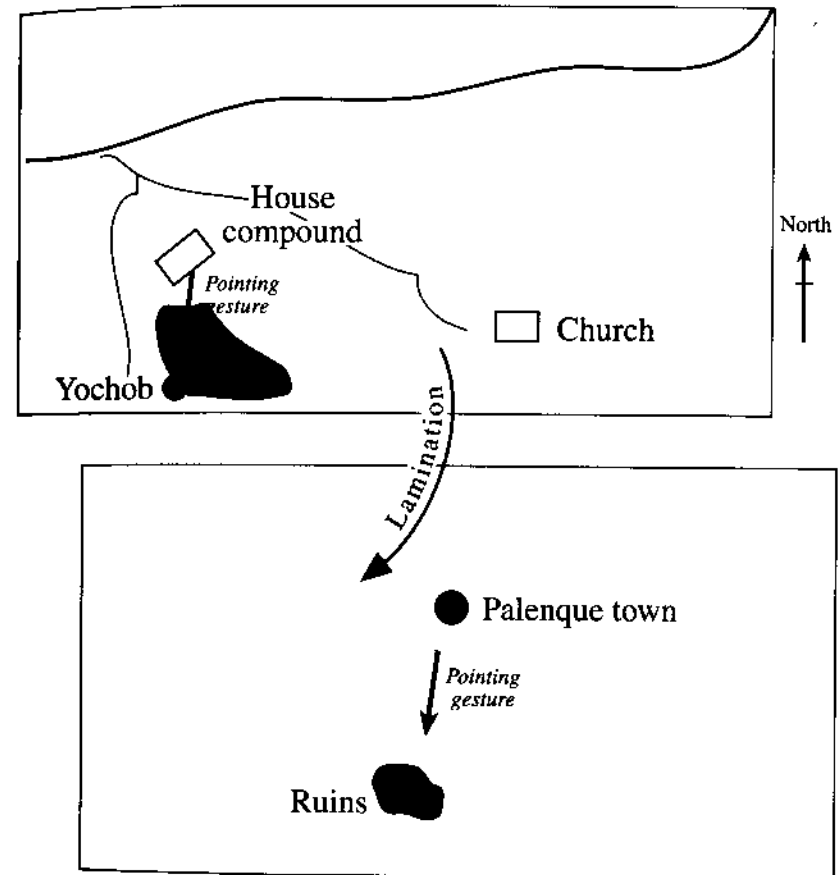
Figure 1.20.

First, the study of gestures recommends itself as ethnographic method. To unravel even apparently simple 'pointing' gestures requires cognitive and sociocultural insight: about what entities exist to be pointed at, about how to reconstruct referents from indicated locations, about why an interactant points at all (as opposed to using some other referential modality). Indeed, gestures are fleeting but accessible cognitive exhibits, playing out with the body the actions, referential and otherwise, that constitute discourse.

Second, an adequate understanding of even supposedly primeval pointing gestures requires surprisingly complex conceptual tools. My metaphor for these conceptual tools has been the 'gesture space', distinguishing a

local space which is relevantly *anchored* (for example, by cardinal directions, independent of the entities that may populate it) from *interactional* space, whose orientation may be irrelevant or determined solely by the relative positions of interactants. Entities in both spaces can be indexically signaled with both gestures and other deictics.

Narrated spaces are laminated over these immediate spaces, substituting for the here-and-now a narratable there-and-then. Narrated entities can in turn be denoted by indexical devices, including 'pointing' gestures, whose referents must be iconically mapped from one laminate onto another.

A narrated space can be anchored on a discursively established origo and laminated over local space so as to inherit the latter's cardinal orientation, thereby allowing referents to be located by their indicated positions, presupposably, as when relative narrated positions are (a) known to interlocutors or (b) recoverable by inference (for instance, the motion of the capsizing boat). On the other hand, what is narrated may itself be *(narrated) interactional* space, established discursively and providing an autonomous locus of reanimated narrated interactions.

All of these 'gesture spaces' can be complex constructions from knowledge that is at once geographic and social. Their lamination both enables and relies upon conceptual links that go well beyond any unproblematic spatial givenness. At the same time, the immediacy of the space that interactants share offers a vehicle for externalizing, onto the body and its surround, calculations of place and spatial relationships that might otherwise be difficult both to conceptualize and to communicate. Both Zinacantecs and GY-speaking residents of Hopevale inscribe ethnography on geography. Space itself, whether represented or simply inhabited, has an indelible social quality not captured by either topology or topography. Gesture exploits this quality of the very space it uses as its vehicle, also incorporating, indirectly, the sociohistorical evolution of spaces.

In GY country, knowledge of land traditionally involved orientational precision. As ties to land have faded in importance, such precision has also declined. Recent legal possibilities for land rights have fostered a resurgence of interest in local practices of reckoning space, which calibrate directionally anchored spaces with socially populated conceptual universes. In Zinacantán, local models of space have been exported to faraway universes, both social and spatial, perhaps contradictorily domesticating distant and dangerous places by transposing them to the here-and-now.

NOTES

1 Levinson (1992) explores some cognitive underpinnings of GY linguistic practices, and de León (1994b) discusses aspects of their acquisition.

2 A longer, multimedia version of the material presented here can be found at http://www.cs.uchicago.edu/l-c/archives/subs/haviland-john/.

Material presented in this paper is based on work with many friends, pseudo-kin, and colleagues, of whom I most especially would like to thank several now deceased Guugu Yimithirr speakers from the Hopevale, viz., Jack Bambi, Bob Flinders, and Tulo Gordon; also my friend and 'cousin' Roger Hart, my 'uncle' Frankie Confin, and Gordon Charlie. I am also especially indebted to my compadres Pedro Vázquez Xuljol and Maryan Ach'eltik, from the hamlet of Nabenchauk, Zinacantán, Chiapas, Mexico.

3 Tzotzil examples in this chapter are transcribed with an abbreviated practical orthography, largely based on Spanish. Guugu Yimithirr is written in a standard Australianist practical orthography. Transcript lines are accompanied by a free English gloss, and by gestural descriptions, which are synchronized with the transcript. L, R, H, N, S, E, and W are abbreviations for left, right, hand, north, south, east, and west, respectively. Where a transcript line is accompanied by gestural drawings, numbers (on the drawing and set in synchrony above the transcript line) indicate the illustrated moments of a movement.

4 An exception is Evans (1996).

5 See Talmy (1985).

6 Kendon (1994) argues that gesture has an unavoidable and naturally exploitable communicative role. Compare Goodwin & Goodwin (1992), Goodwin (1986), Moerman (1990), and Streeck (1993). But contrast Krauss et al. (1991).

7 Typologies on quite different principles are possible; Wilkins (1997) describes a native Arrente classification of manual gestures, for example.

8 McNeill and his associates (McNeill & Levy 1982; McNeill 1985; McNeill, Levy & Pedelty 1990; Cassell & McNeill 1991), drawing on the classic proposals of Efron (1972 [1941]), propose a classificatory scheme which distinguishes iconic and metaphoric gestures which bear a relation of resemblance to aspects of utterance content, deictic gestures which index referents both concrete and abstract, and beats which seem to be non-representational. See also Ekman & Friesen (1969) and McNeill (1992).

9 The possibility of formal/functional links between gestures and the meanings they encode complicates the dichotomy between gesticulation and emblem or sign. See, for example, Calbris (1990), Haviland (1991b), and Kendon's recent work (e.g., Kendon & Versante 1998) on recurrent hand shapes in Italian gesticulation.

10 For example, see Sherzer (1972).

11 Wittgenstein (1958), sect. 85. Lest this seem like a mere philosopher's nicety, consider Sander Adelaar's (pers. com.) anecdote about speakers of Chamic languages during World War II and the Western soldiers who pointed to a far-off spot, asking for a place name, only to be given the name of the spot directly *below* the outstretched finger.

12 Underlining connects words in phrasal glosses that correspond to single Tzotzil words. Hyphens divide morpheme-by-morpheme breakdowns.

13 See Haviland (1991a). Habel (1990) employs the notion of resolution to model people's knowledge of the Hamburg train system.

14 Gossen (1974) notes that Chamulans conventionally denote north as "the side of the sky on the right hand" and south as ". . . on the left hand" (p. 32). Zinacantecs often simply refer to either direction as *ta k'atal* 'sideways'. Brown & Levinson (1993) describe the cognate 'uphill' and 'downhill' system in neighboring Tenejapa Tzeltal, where the denotations are rotated 90 degrees ('uphill' denotes south).

15 See Haviland (1989) and de León (1991) for recent Zinacantec labor migration to the United States and Mexico City.

16 See Gossen (1974), who argues that as distance from Chamula increases, so do time, alienness, and danger in Chamulan ideas about the world.

17 The observation is due to Stephen Levinson.

REFERENCES

Armstrong, D. F., Stokoe, W. C. & Wilcox, S. E. 1995. *Gesture and the Nature of Language*. Cambridge: Cambridge University Press.

Atkinson, J. M. & Heritage, J. (eds.) 1984. *Structures of Social Action*. Cambridge: Cambridge University Press.

Auer, P. & di Luzio, A. (eds.) 1992. *The Contextualization of Language*. Amsterdam: Benjamins.

Basso, K. & Selby, H. (eds.) 1976. *Meaning in Anthropology*. Albuquerque: University of New Mexico Press.

Bates, E., Bretherton, I., Shore, C. & McNew, S. 1983. Names, gestures, and objects: symbolization in infancy and aphasia. In Nelson (ed.), pp. 59- 123.

Bellugi, U. & Klima, E. 1982. From gesture to sign: deixis in a visual-gestural language. In Jarvella & Klein (eds.), pp. 297-314.

Birdwhistell, R. L. 1952. *Introduction to Kinesics*. Louisville, KY: Louisville University Press.

Birdwhistell, R. L. 1963. The kinesis level in the investigation of the emotions. In Knapp (ed.), pp. 123-139.

Brown, P. & Levinson, S. C. 1993. 'Uphill' and 'downhill' in Tzeltal. *Journal of Linguistic Anthropology* 3: 46-74. (Also: Working Paper no. 7, Cognitive Anthropology Research Group, Max Planck Institute for Psycholinguistics, Nijmegen, 1991.)

Bühler, K. 1982. The deictic field of language and deictic words. In Jarvella & Klein (eds.), pp. 9 -30.

Calbris, G. 1990. *The Semiotics of French Gestures*. Bloomington: Indiana University Press.

Carter, A. L. 1975. The transformation of sensorimotor morphemes into words: a case study of the development of 'more' and 'mine'. *Journal of Child Language* 2: 233-250.

Cassell, J. & McNeill, D. 1991. Gesture and the poetics of prose. *Poetics Today* 12: 375-404.

DeGraff, M. (ed.) in press. *Language Creation and Change: Creolization, Diachrony, and Development*. Cambridge, MA: MIT Press.

de León, L. 1991. Achiote y fresas. *Mexico Indigena* 23: 30-31.

de León, L. 1994a. Exploration in the acquisition of geocentric location by Tzotzil

children. *Linguistics* 32: 857-884. (Paper presented at Cognitive Anthropology Research Group, Max Planck Institute for Psycholinguistics, Nijmegen, January 20, 1992.)

de León, L. 1994b. Acquisition of geocentric location by Guugu Yimithirr speaking children. Unpublished paper, Cognitive Anthropology Research Group, Max Planck Institute for Psycholinguistics, Nijmegen.

Dixon, R. M. W. & Blake, B. (eds.) 1979. *Handbook of Australian Languages*, vol. 1. Canberra: Australian National University Press.

Efron, D. 1972 [1941]. *Gesture, Race and Culture*. The Hague: Mouton. (Reprinted from *Gesture and Environment*, New York: King's Crown Press.)

Ekman, P. & Friesen, W. V. 1969. The repertoire of non-verbal behavioral categories: origins, usage, and coding. *Semiotica* 1: 49-98.

Emmory, K. & Reilly, J. S. (eds.) 1995. *Language, Gesture, and Space*. Hillsdale, NJ: Erlbaum.

Engberg-Pedersen, E. 1995. Point of view expressed through shifters. In Emmory & Reilly (eds.), pp. 133-164.

Evans, N. 1996. *A Grammar of Kayardild. With Historical-Comparative Notes on Tangkic*. Berlin: Mouton de Gruyter.

Farnell, B. 1988. Where mind is a verb: sign talk of the Plains Indians revisited. Paper presented at the American Anthropological Association meetings, Phoenix, November.

Farnell, B. 1994. Ethno-graphics and the moving body. *Man* 29: 929-974.

Gibson, K. R. & Ingold, T. (eds.) 1991. *Tools, Language and Cognition in Human Evolution*. Cambridge: Cambridge University Press.

Goldin-Meadow, S. 1991. When does gesture become language? A study of gesture used as a primary communication system by deaf children of hearing parents. In Gibson & Ingold (eds), pp. 63-85.

Goldin-Meadow, S. & Mylander, C. 1998. Spontaneous sign systems created by deaf children in two cultures. *Nature* 391: 279-281.

Goldin-Meadow, S., McNeill, D. & Singleton, J. 1996. Silence is liberating: removing the handcuffs on grammatical expression in the manual modality. *Psychological Review* 103: 34-55.

Goodwin, C. 1986. Between and within: alternative sequential treatments of continuers and assessments. *Human Studies* 9: 205-217.

Goodwin, C. & Goodwin, M. H. 1992. Context, activity and participation. In Auer & di Luzio (eds.), pp. 77-99.

Gossen, G. H. 1974. *Chamulas in the World of the Sun: Time and Space in a Maya Oral Tradition*. Cambridge, MA: Harvard University Press.

Gumperz, J. J. & Levinson, S. C. (eds.) 1996. *Rethinking Linguistic Relativity*. Cambridge: Cambridge Univiversity Press.

Habel, C. 1990. Formalization of the spatial inventory. Paper presented at Workshop on Space, Time, and the Lexicon, Max Planck Institute for Psycholinguistics, Nijmegen, November.

Hammond, G. R. (ed.) 1990. *Advances in Psychology: Cerebral Control of Speech and Limb Movements*. Amsterdam: Elsevier/North Holland.

Hanks, W. F. 1990. *Referential Practice*. Chicago: University of Chicago Press.

Haviland, J. B. 1979. Guugu Yimidhirr. In Dixon & Blake (eds.), pp. 27-182.

Haviland, J. B., 1989. Tztamik ta lume, asta k'u cha'al bu chak' sat te' (Desde el suelo hasta la fruta): la migración y la información en el discurso tzotzil. Paper presented at annual meetings of the Sociedad Mexicana de Antropología, Mérida, 18 October.

Haviland, J. B. 1991a. Projections, transpositions, and relativity. Paper presented at Wenner-Gren Conference on Rethinking Linguistic Relativity, Ocho Rios, May. (Also: Working Paper, Cognitive Anthropology Research Group, Max Planck Institute for Psycholinguistics, Nijmegen.)

Haviland, J. B. 1991b. Xi chbat ta lok'eb k'ak'al: it goes towards the sunrise: sculpting space with the body. Unpublished paper, Cognitive Anthropology Research Group, Max Planck Institute for Psycholinguistics, Nijmegen.

Haviland, J. B. 1993. Anchoring, iconicity, and orientation in Guugu Yimithirr pointing gestures. *Journal of Linguistic Anthropology* 3: 3–45. (Also: Working Paper no. 8, Cognitive Anthropology Research Group, Max Planck Institute for Psycholinguistics. Nijmegen.)

Haviland, J. B. 1996. Projections, transpositions, and relativity. In Gumperz & Levinson (eds.), pp. 271–323.

Haviland, J. B. 1997. Owners vs. *bubu gujin*: land rights and getting the language right in Guugu Yimithirr country. *Journal of Linguistic Anthropology* 6: 145–160.

Jarvella, R. J. & Klein, W. (eds.) 1982. *Speech, Place, and Action: Studies in Deixis and Related Topics*. Chichester: Wiley.

Kegl, J., Senghas, A. & Coppola, M. in press. Creation through contact: sign language emergence and sign language change in Nicaragua. In DeGraff (ed.).

Kendon, A. 1980. Gesticulation and speech: two aspects of the process of utterance. In Key (ed.), pp. 207-227.

Kendon, A. 1983. Word and gesture. Paper presented at Fifth International Conference on Culture and Communication, Philadelphia, March.

Kendon, A. 1988a. *Sign Languages of Aboriginal Australia*. Cambridge: Cambridge University Press.

Kendon, A. 1988b. How gestures can become like words. In Poyatos (ed.), pp. 131-141.

Kendon, A. 1990a. Gesticulation, quotable gestures, and signs. In Moerman & Nomura (eds.), pp. 53–78.

Kendon, A. 1990b. *Conducting Interaction*. Cambridge: Cambridge University Press.

Kendon, A. 1994. Do gestures communicate? A review. *Research on Language and Social Interaction* 27: 175–200.

Kendon, A. & Versante, L. 1998. Pointing by hand in Campania and Northamptonshire. Paper presented at 6th International Pragmatics Conference, Reims, July.

Key, M. R. (ed.) 1980. *The Relationship of Verbal and Nonverbal Communication*. The Hague: Mouton.

Knapp, P. H. (ed.) 1963. *Expressions of the Emotions in Man*. New York: International University Press.

Krauss, R. M., Morrel-Samuels, P. & Colasante, C. 1991. Do conversational hand gestures communicate? *Journal of Personality and Social Psychology* 61: 743–754.

Laughlin, R. M. & Breedlove, D. 1993. *The Flowering of Man: A Tzotzil Botany of Zinacantán*. Washington, DC: Smithsonian Institution.

Laughren, M. 1978. Directional terminology in Warlpiri. In Le & McCausland (eds.), pp. 1–16.

Le, T. & McCausland, M. (eds.) 1978. Working Papers in Language & Linguistics No. 8. Tasmanian College of Advanced Education (Newnham).

Levelt, W. J. M., Richardson, G. & W. La Heij 1985. Pointing and voicing in deictic expressions. *Journal of Memory and Language* 24: 133–164.

Levinson, S. C. 1992. Language and cognition: the cognitive consequences of spatial description in Guugu Yimithirr. Working Paper no.13, Cognitive Anthropology Research Group, Max Planck Institute for Psycholinguistics, Nijmegen.

Lucy, J. A. (ed.) 1992. *Reflexive Language*. Cambridge: Cambridge University Press.

Marslen-Wilson, W., Levy, E. T. & Tyler, L. K. 1982. Producing interpretable discourse: the establishment and maintenance of discourse. In Jarvella & Klein (eds.), pp. 271–295.

McNeill, D. 1985. So you think gestures are nonverbal? *Psychological Review* 92: 350–371.

McNeill, D. 1987. So you *do* think gestures are nonverbal! Reply to Feyereisen (1987). *Psychological Review* 94: 499–504.

McNeill, D. 1992. *Hand and Mind: What Gestures Reveal about Thought*. Chicago: University of Chicago Press.

McNeill, D. & Levy, E. T. 1982. Conceptual representations in language activity and gesture. In Jarvella & Klein (eds.), pp. 271-295.

McNeill, D., Levy, E. T. & Pedelty, L. L. 1990. Gestures and speech. In Hammond (ed.), pp. 203-256.

Moerman, M. 1990. Gesticulation, quotable gestures, and signs. In Moerman & Nomura (eds.), pp. 53–78.

Moerman, M. & Nomura, M. (eds.) 1990. *Culture Embodied*. Senri Ethnological Studies no. 27. National Museum of Ethnology, Osaka.

Nelson, K. E. (ed.) 1983. *Children's Language*, vol. IV. Hillsdale, NJ: Erlbaum.

Ozanne-Rivierre, F. 1987. L'expression linguistique de l'orientation dans l'espace: quelques exemples océaniens. *Cahiers du LACITO* 2: 129–155.

Petitto, L. A. & Marentette, P. 1991. Babbling in the manual mode. *Science* (Washington, DC) 251: 1483–1496.

Pitkin, H. 1984. *Wintu Grammar*. Berkeley and Los Angeles: University of California Press.

Poyatos, F. (ed.) 1988. *Cross-Cultural Perspectives in Nonverbal Communication*. Toronto: Hogrefe.

Schegloff, E. A. 1984. On some gestures' relation to talk. In Atkinson & Heritage (eds.), pp. 266–296.

Sherzer, J. 1972. Verbal and nonverbal deixis: the pointed lip gesture among the San Blas Cuna. *Language and Society* 2: 117–131.

Shopen, T. (ed.) 1985. *Language Typology and Syntactic Description*, vol. III: *Grammatical categories and the lexicon*. Cambridge: Cambridge University Press.

Silverstein, M. 1976. Shifters, linguistic categories, and cultural description. In Basso & Selby (eds.), pp. 11–56.

Silverstein, M. 1992. Metapragmatic discourse and metapragmatic function. In Lucy (ed.), pp. 33–58.

Streeck, J. 1993. Gesture as communication I: its coordination with gaze and speech. *Communication Monographs* 604: 275–299.

Talmy, L. 1985. Lexicalization patterns: semantic structure in lexical forms. In Shopen (ed.), pp. 57–149.

Wilkins, D. 1997. Four Arrente manual points. Unpublished paper, Cognitive Anthropology Research Group, Max Planck Institute for Psycholinguistics, Nijmegen.

Wittgenstein, L. 1958. *Philosophical Investigations*. Oxford: Blackwell.

2   Language and gesture: unity or duality?

Adam Kendon

Philadelphia, PA

1   Introduction

'Language' and 'gesture' have long been held to be different, yet at the same time a relationship between them has always been recognized. However, whether they are regarded as belonging together or not depends upon how these words are defined. Thus if, with Armstrong, Stokoe & Wilcox, we accept Studdert-Kennedy's (1987: 77) definition of 'gesture' as "an equivalence class of coordinated movements that achieve some end" (see Armstrong et al. 1995: 43), then, insofar as both speech and, let us say, gestures of the hands are comprised of "coordinated movements that achieve some end," it is possible to argue for a fundamental identity between the one and the other, as indeed they have done. On the other hand, if we insist, as some have, that a defining feature of language is that it be spoken, then this seems forever to make it impossible to see 'gesture' as part of 'language'. However, if we define language in a more abstract fashion, and allow that its medium of realization is not one of its defining features, then whether or not 'gesture' is to be seen as a part of language depends upon what other features are insisted upon. For example, if we follow Saussure's definition of language, so long as 'gestures' can be shown to be arbitrary form-meaning pairs differentiated in contrastive relationships and organized paradigmatically and syntagmatically, they can be regarded as a form of language. On these grounds, gesture systems such as primary or alternate sign languages would be included, but we might exclude such modes of expression as improvised or locally created gesturings such as may be observed in many of the gestures used concurrently with speech. On the other hand if, like William Dwight Whitney, we define language as "the means of expression of human thought" (1899: 1), which, as he goes on to say, is comprised of "certain instrumentalities whereby men consciously and with intention represent their thought, to the end, chiefly, of making it known to other men," then 'gesture' may be seen as a part of language. Indeed, Whitney is explicit on this point, since he lists among his 'instrumentalities' "gesture, grimace, pictorial or written signs, and uttered or