Environmentally Coupled Gestures

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Using as data videotapes of archaeologists excavating a prehistoric village this chapter investigate gestures that cannot be defined completely within the skin of the actor(s), but require as well phenomena in the environment, such as archaeological structure in the dirt under a moving hand. What emerges are gestures built through the mutual elaboration of different materials in different media that have a symbiotic organization in which a whole that is greater than, and different from, any single part is created. Environmentally coupled gestures are central to the cognitive organization of a profession such as archaeology and the ongoing constitution of the distinctive professional mind of the archaeologist. Simultaneously they force us to expand our sense of what counts as gesture, and the analytic frameworks required to study it.

The work of David McNeill (1992, and much more) provides exemplary analysis of the intimate relationship between gesture and language. He demonstrates that utterances emerge within a microgenetic process in which language and gesture develop together as integrated but complementary meaning making resources. Here I want to investigate a range of phenomena relevant to the organization of gesture that encompass not only psychological processes within the speaker, but also embodied participation frameworks constructed through the collaborative actions of multiple parties, and structure in the environment.

1. Gestures Tied to the Environment

I will focus on environmentally coupled gestures, gestures that cannot be understood by participants without taking into account structure in the environment to which they are tied. Consider the following. Talk is transcribed using a system developed by Gail Jefferson (Sacks, Schegloff & Jefferson, 1974: 731-733):

(1) Father: So she sold me ***this***.
But she didn't sell me this (0.2) or tha:t.

It is impossible to grasp just what the speaker is telling his recipient from the talk alone. Clearly a major reason for this is the use in the talk of deictic terms ('this' and 'that') that instruct the hearer to attend to phenomena beyond the

stream of speech. Indeed each of these terms indexes a gesture. Characteristically gesture is analyzed by linking what a hand is doing to the structure of the talk in progress. Here however that is inadequate. When the gesturing hands alone are taken into account what exactly is being talked about is still not visible:

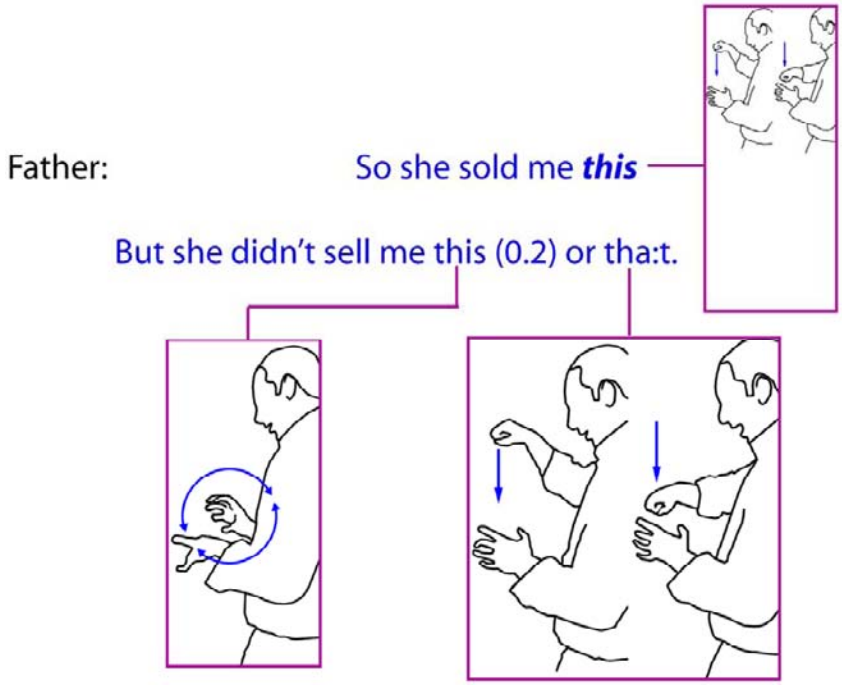

Figure 1: *Gesture alone.*

To grasp what the speaker is saying and demonstrating a hearer must take into account an object being held by the speaker and being presented and demonstrated through the gesture (see Figure 2). The object here is a pitcher for an electric blender that the speaker has ordered over the Internet. The speaker is telling his addressees that while the pitcher was shipped he did not receive either the top for the pitcher, or its screw-in base. While this is not made visible through gesture and its accompanying talk alone, it becomes vividly clear when a larger multimodal sign complex that encompasses not only talk and gesture, but also objects in the world is taken into account (Streeck, 1996).

As the speaker begins this utterance (more specifically during the word "sold") his hands noticeably grasp the pitcher. He is not grasping the pitcher to hold it (it is already well supported by his other hand) but instead to prominently display the object to his addressees. One might think of this hand movement as a gestural practice for presenting or indicating something, that is as an action similar to a pointing gesture. However it is crucial to not restrict analytic focus to the gesturing hand, but to also take into account the object in the world being grasped.

As is demonstrated a moment later this object forms a crucial part of the multimodal signs that display the missing parts of the blender. The gesturing hands alone fail to make visible the absent base and lid (see Figure 1).

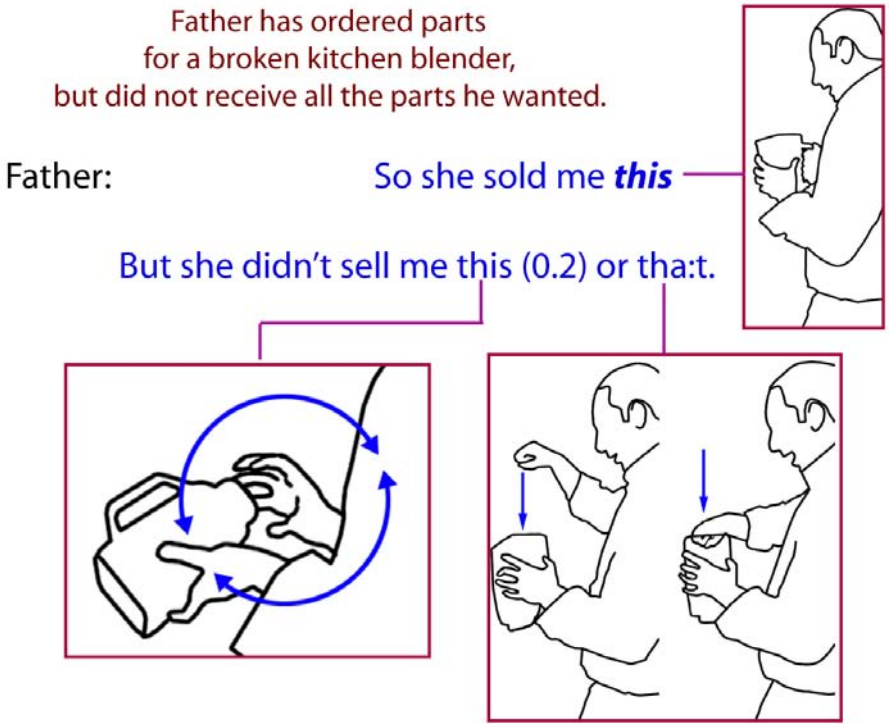

Figure 2: *Object incorported into gesture.*

The co-occurring talk is equally crucial in that it formulates what is being done as describing something absent that can be inferred from the structure of the object being held. The general importance of the talk that elaborates a gesture is made particularly clear when the party producing the gesture can't speak, as can happen for example in aphasia. Rather than being immediately, transparently clear, a gesture such as this unaccompanied by relevant talk can set off a long sequence devoted to figuring out what a speaker suffering from aphasia is trying to say to his interlocutors through the gesture (Goodwin, 1995; 2002).

Gestures coupled to phenomena in the environment are pervasive in many settings (archaeological field excavations, weather forecasts, pointing to overheads in academic talks, etc.—consider how many computer screens are smeared with fingerprints). Gestures linked to the environment would thus seem to constitute a major class of gesture. However with a few notable exceptions (Goodwin, 2000; 2003; Haviland, 1996; 1998; Heath & Hindmarsh, 2000; Hutchins & Palen, 1997; LeBaron, 1998; LeBaron & Streeck, 2000; Murphy,

2005; Nevile, 2001; Streeck, 1996) multimodal sign complexes that encompass both gesture and phenomena in the world have been largely ignored. This neglect may result from the way in which such gestures slip beyond theoretical frameworks focused on either ties between gesture and psychological processes inside the mind of the individual speaker, or exclusively on the talk and bodies of participants in interaction. An invisible analytic boundary is frequently drawn at the skin of the participants. However, rather than being something that can be studied in isolation as a neat, self contained system, gesture is an intrinsically parasitic phenomenon, something that gets its meaning and organization from the way in which it is fluidly linked to the other meaning making practices and sign systems that are constituting the events of the moment. Human cognition and action are unique in the way in which they use as resources both the details of language, and physical and cultural environments that have been shaped by human action on an historical time scale.

Environmentally coupled gestures are pervasive in the work of archaeologists who must articulate for each other visible structure in the dirt they are excavating together. In Figure 3, Ann, a senior archaeologist, is guiding the work of Sue, a new graduate student at her first field excavation. Sue is outlining in the dirt the shape of a post mould that will be then be transferred to a map. Ann locates relevant structure in the dirt for Sue with a series of environmentally coupled gestures, while formulating with her talk what is to be seen there. As Ann says, “This is just a real nasty part of it,” her extended index finger outlines something in the faint color patterning visible in the dirt.

Figure 3: *Environmentally coupled gesture*.

Most analysis of gesture focuses on the movements of the speaker’s body, typically the hand. However, neither Sue, nor anyone else, could see the action that Ann is performing here by attending only to her hand. What Sue must see if

she is to understand Ann's action in a relevant fashion is not only a gesture, but also the patterning in the earth she is being instructed to follow. The dirt under Ann's finger is indispensable to the action complex being built here. The finger indicates relevant graphic structure in the dirt, while simultaneously that structure provides organization for the precise location, shape and trajectory of the gesture. Each mutually elaborates the other, and both are further elaborated by the talk that accompanies the gesture (see Figure 4). Ann's gesturing hand is but part of a multimodal complex that includes not only the speaker's talk, but extends beyond the body to encompass material structure in the environment. This was true as well for the first example, shown in Figure 4:

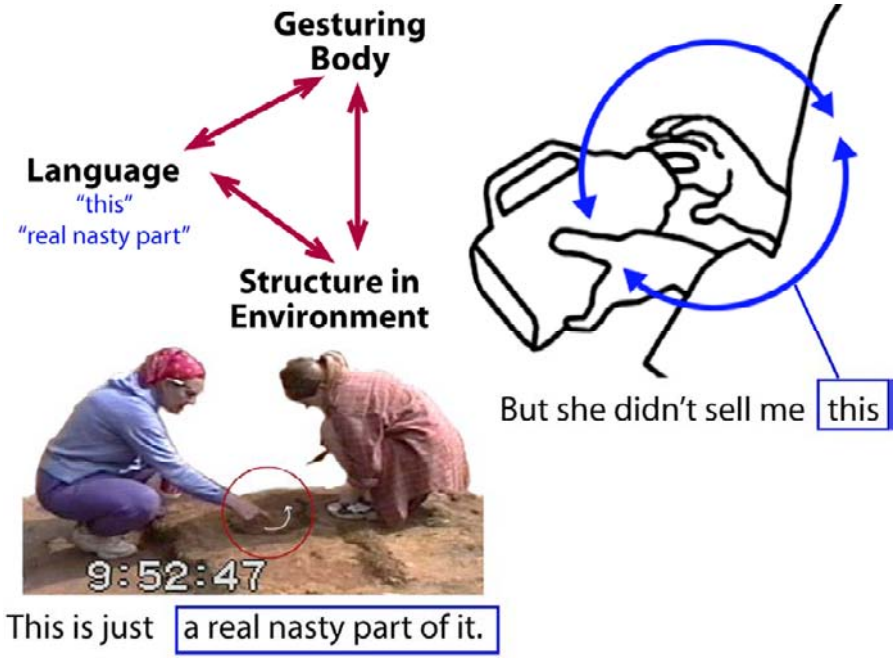

Figure 4: *Multimodal organization of action.*

In brief what one finds here is a small ecology in which different signs in different media (talk, the gesturing body and objects in the world) dynamically interact with each other. Each individual sign is partial and incomplete. However, as part of a larger complex of meaning making practices they mutually elaborate each other to create a whole, a clear statement, that is not only different from its individual parts, but greater than them in that no sign system in isolation is adequate to construct what is being said.

2. The Communicative Status of Environmentally Coupled Gestures

It has sometimes been argued that gestures are not inherently communicative (Krauss, Morrel-Samuels & Colasante, 1991; Rimé & Schiaratura, 1991). For example, people on the telephone, as well as blind speakers, can be observed to gesture. Indeed, in light of LeBaron and Streeck's (2000) demonstration that one primordial basis for gesture is the hand's engagement with a world, one would certainly not want to argue that all gestures are communicative. Many gestures emerge from the actor's experience of working in the world and can help the speaker conceptualize phenomena that are known through embodied action. However, if my argument is valid that gesture, talk and relevant structure in the environment are all interdependent components of the actions being built with environmentally coupled gestures, then addressees must take into account not only the talk, but also the gesture. How might this be demonstrated?

In Figure 5 Ann's talk in lines 44-46 is grammatically incomplete. The noun phrase projected to occur after the preposition "of" is central to the action in progress in that it will specify what Ann is inquiring about. However it is never produced. Instead Ann points to seeable structure in the dirt where Sue is trying to trace the outline of a feature.

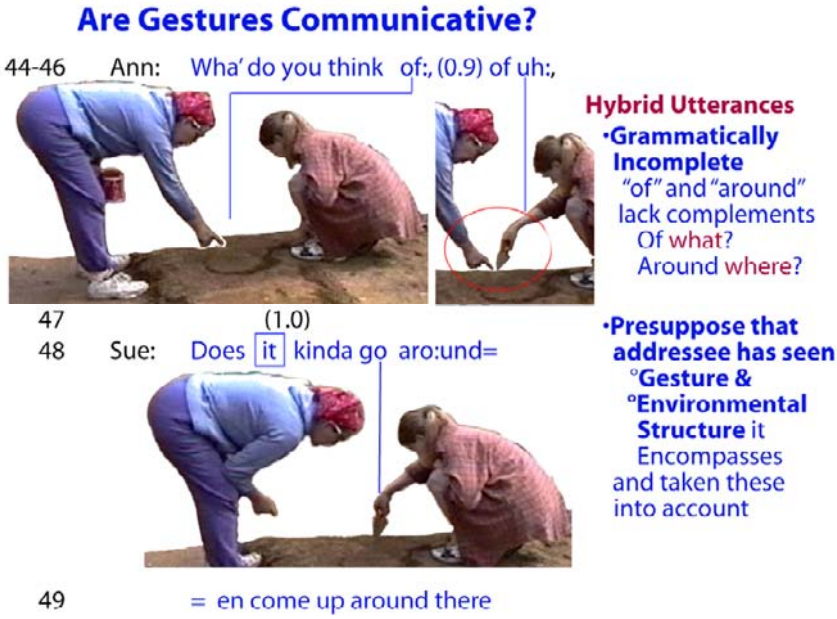

Figure 5: *Utterance presupposes gesture.*

Despite the absence of this crucial noun phrase Ann has no difficulty whatsoever in understanding and responding to Ann's request. With the "it" in line 48 she not only displays that she has unproblematically located what she has been asked to see, but incorporates that recognition into the structure of her own subsequent utterance.

The way in which Sue is building subsequent action by explicitly taking into account Ann's environmentally coupled gesture is further demonstrated by her own gestural activity. During the end of Ann's utterance ("of uh:," in line 46) Sue brings her hand right next to Ann's, and points with her trowel at the very place that Ann is indicating with her finger (second image in the top row of Figure 5). Once Sue's pointing hand has been linked to both Ann's gesture and the relevant structure in the dirt being scrutinized, Sue uses this position as the point of departure for an environmentally coupled gesture of her own in lines 48-49 that constitutes the answer to Ann's question. Once again crucial grammatical structure, such as the locative complement to the first "around" in line 48 (around *where*?) is provided not by structure in the talk, but instead by the accompanying gesture.

The environment that a gesture ties to has been discussed so far in terms of the physical surround that is the focus of the participants' attention. However another crucial component of the environment that organizes participants' actions is the prior talk and action that constitutes the contextual point of departure for the production of subsequent action (Heritage, 1984; Sacks et al., 1974). Through the way in which Sue's hand is visibly linked to the prior placement of Ann's hand, and the deictic reference in her talk, her action is explicitly tied to, and indeed emerges from, this sequential environment, as well as the structure in the dirt that her moving hand traces. Her action is coupled to a range of quite different, but mutually relevant environments.

The communicative status of the environmentally coupled gestures that occur here is demonstrated in a number of different ways. First, Sue clearly and explicitly takes Ann's gesture into account in the construction of her reply to Ann, both by including in her subsequent utterance a deictic term that indexes what Ann's gesture has indicated, and by visibly using Ann's gesture and the space it has located as the point of her departure for her own subsequent gesture. Second, Ann's utterance is not in any way marked as defective, for example through use of repair initiators (Schegloff, Jefferson & Sacks, 1977). It nonetheless uses linguistic structure that would be grammatically incomplete if all relevant meaning making resources were to be found exclusively within the stream of speech (for example in line 48 "around" without a locative complement). The grammatical choices made by the speaker presuppose that the addressee has attended to the gesture (see Goodwin, 2003b for further examples of this process). The speaker is incorporating into the construction of her utterance the communicative expectation that a relevant gesture will not only be seen, but systematically taken into account for proper understanding of what is being said.

2.1 Embedding gesture within participation frameworks

What practices warrant the assumption that certain gestures will be treated as communicative and be attended to as crucial to the organization of the talk and action in progress? Consider what happens in Figure 6. As Ann begins to explain something with an environmentally coupled gesture her two addressees look away from the dirt being pointed at and briefly talk together (lines 166-168, first image). Ann interrupts her developing utterance without bringing it to completion (line 166) and her addressees return their gaze to the dirt being pointed at (see Goodwin, 1981 for extended analysis of how restarts are used to secure the gaze of nongazing hearers). Once they are gazing toward the environmentally coupled gesture Ann does it again while recycling an earlier section of her talk ("show that"), but only now moves that talk forward to the point of her demonstration, the location of a "stripe" in the dirt, something that her addressees are now visibly positioned to see.

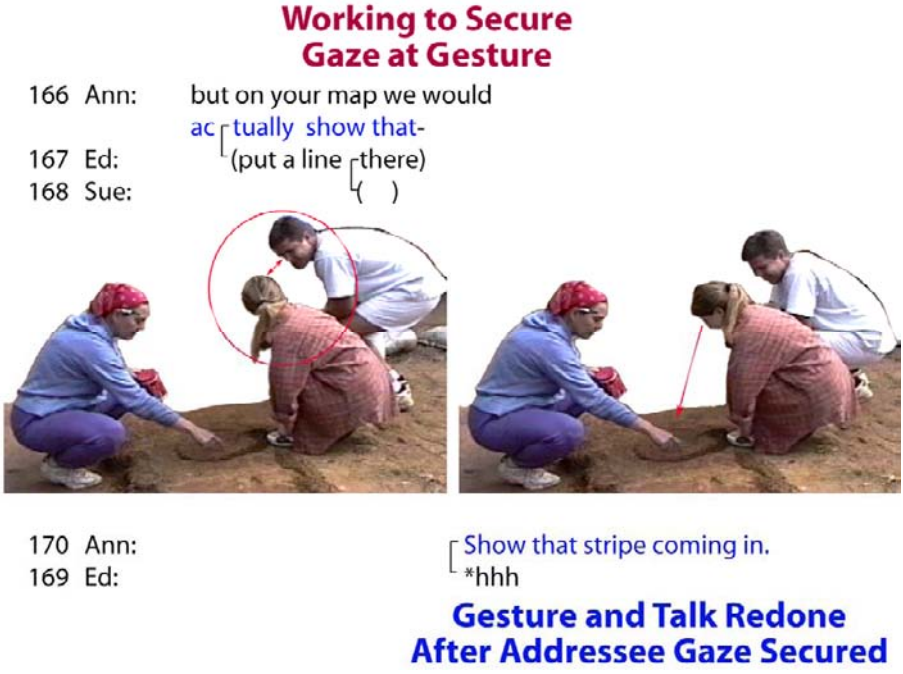

Figure 6: *Addressee gaze toward gesture.*

The environmentally coupled gesture is thus constructed as a communicative event by being performed right at the place where its addressee is gazing. It is built to be seen. Moreover, such positioning is not accidental, but, as demonstrated by the sequence in Figure 6, something that parties making such gestures not only attend to, but systematically work to achieve (for example by

delaying the crucial conjunction of gesture, space and talk until the relevant gaze of the addressee has been obtained). More generally, the production of the gesture is embedded within a multi-party embodied participation framework (Goodwin, 1981; 2002c; in press; Goodwin & Goodwin, 2004; Kendon, 1990) that creates for the participants a shared focus of visual and cognitive attention toward both each other and relevant phenomena in the environment. In this it has similarities to what Tomasello (1999; 2003) has described as a, "joint attentional frame." Note however that the participation framework encompasses more than the mental life of the actors. It is systematically organized through visible embodied practice, and is capable of ongoing negotiation and calibration, as indeed occurs in Figure 6 when Ann sees that her addressees are not attending to her. Moreover, though beyond the scope of the present paper, such participation frameworks encompass not only orientation toward events in the environment (the primary focus of Tomasello's analysis), but also their attention to each other. Indeed the use of participation frameworks to systematically organize mutual orientation between speakers and hearers is central to the organization of talk-in-interaction (Goodwin, 1981; in press). Through the ongoing organization of relevant participation frameworks participants are able to hold each other accountable for detailed and relevant participation in the events of the moment, something that is central to their ability to build ongoing courses of action in concert with each other. The communicative status of particular gestures is constituted through the way in which they are organized to be seen within relevant participation frameworks.

Both gesture and participation frameworks are built through visible embodied displays. Both thus constitute a primordial locus for the organization of human action and cognition through embodiment. It is however important to note that they in fact constitute quite different kinds of semiotic processes that stand in a complementary relationship to each other (see Figure 7). Gestures are intimately linked to the details of what is being said, and, like the words they frequently accompany, are evanescent. Particular gestures rapidly disappear as the talk moves onward. By way of contrast participation frameworks are not about the substance of what is being said, but instead about the relationship of the participants toward each, or more precisely their mutual orientation. They also have a far more extended temporal duration than gestures do. Indeed they typically frame extended strips of talk and gesture. Most crucially participation frameworks create an embodied, multi-party environment within which structurally different kinds of sign exchange, including talk and gesture, can occur (Goodwin, 2000; 2003b).

In his analysis of gesture McNeill draws attention to the importance of *gesture space* which he initially identifies as something that can be visualized "as a shallow disk in front of the speaker, the bottom half flattened when the speaker is seated" (1992:86) Consideration of environmentally coupled gestures enables us to expand the notion of gesture space to encompass, first, structure in the surround that is implicated in the organization of a participant's gestures (for

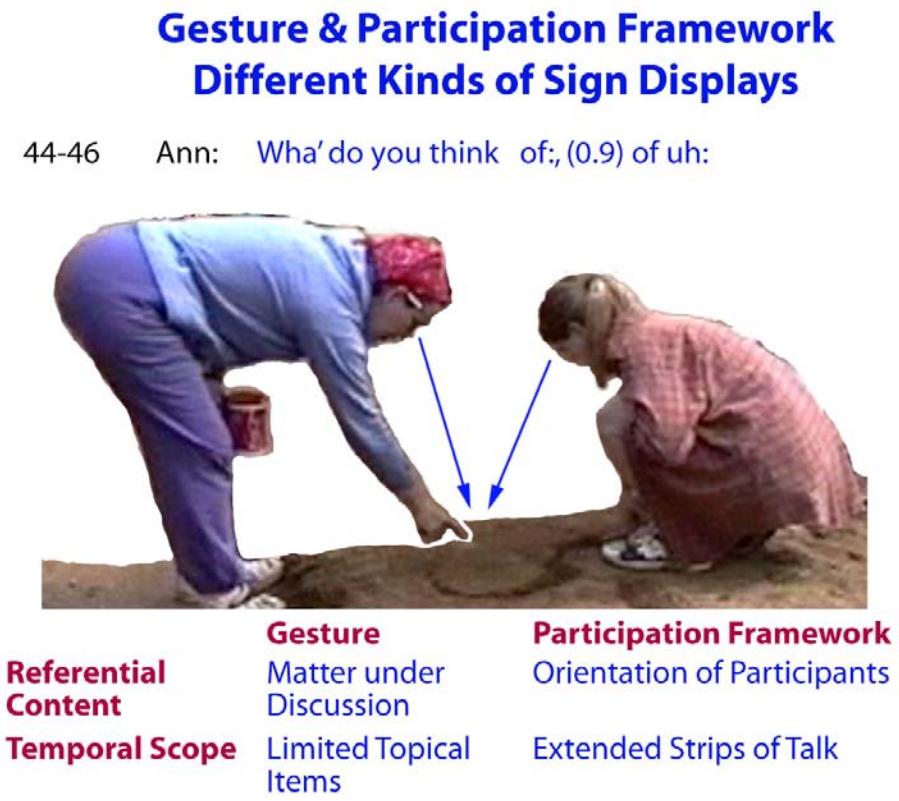

Figure 7: *Participation framework creates frame for other sign exchange processes.*

example, the patterning in the dirt that is incorporated into an environmentally coupled gesture and which shapes the movement of the gesturing hand), and second, the bodies of not only the party making the gesture, but also the body of the addressee (see also Goodwin, 1998).

3. Environmentally Coupled Gestures and the Social Calibration of Professional Vision

How might the distinctive properties of environmentally coupled gestures be implicated in the organization of other aspects of human cognition? One phenomenon will be briefly noted here: the social calibration of embodied knowledge and professional vision.

Communities, workgroups, and professions categorize phenomena in the environments that are the focus of their concern in distinctive ways. For example, unlike laymen, archaeologists systematically see traces of past human activity in the color patterns visible in the dirt they are excavating. Moreover they use such seeing, as well as an ensemble of other embodied practices (such as the ability to

reveal structure in dirt through the precise movement of a trowel) to construct the distinctive textual artifacts, such as maps and coding schemes, that constitute the documentary infrastructure of archaeology as a profession (Goodwin, 2000). Archaeologists trust each other to competently see relevant structure in the complex visual field provided by the emerging soil of an excavation. Indeed a crucial cognitive component of what it means to validly occupy the identity of archaeologist is mastery of such professional vision (Goodwin, 1994). Both vision and embodiment are frequently analyzed from a perspective that focuses on the experience of an isolated, individual actor (for example the psychology of the actor doing the seeing). However, to function in the social life of a profession the ability to see relevant structure in a complex environment must be organized, not as an idiosyncratic individual ability, but instead as systematic public practice.

Environmentally coupled gestures provide important resources for shaping the perceptual activities of individuals into the ways of seeing required to accomplish the distinctive work of a community. To investigate this it is useful to first briefly describe some of the tasks faced by archaeologists excavating a site.

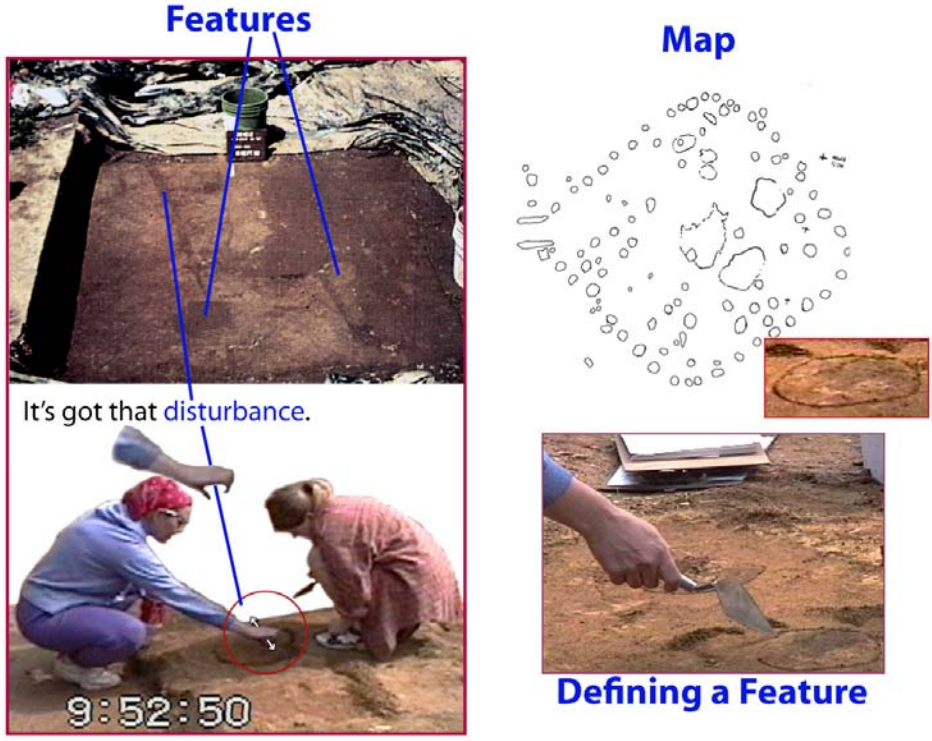

Figure 8: *Mapping a feature.*

Though visitors to museums typically look at artifacts—physical objects such as pottery and tools—much of the evidence used by archaeologists to study

earlier human activity consists simply of color patterns in the soil being excavated. The colored shapes left by a fire or a decayed post provide examples. The very process of excavation systematically destroys such features. The dirt that reveals them is subsequently removed to uncover what is underneath. Making accurate maps of such features to provide an enduring record of structures visible at specific points in the excavation is thus one of the central tasks of excavation.

To make such maps relevant features must first be located in the dirt through systematic excavation. This process is complicated by the fact that the soil containing the feature may be visibly disturbed by the actions of burrowing animals or later human activity, such as a plow moving through the dirt. Once a feature has been clearly revealed through careful trowel work, its shape is outlined in the dirt with the point of a trowel, a process that archaeologists call 'defining a feature'. The position of the feature is then precisely measured and transferred to graph paper to make a map (see Goodwin, 1994 for a more detailed description of map making). Figure 8 provides an overview of this process.

Some of the ways in which environmentally coupled gestures provide resources for socially organizing the practices of seeing and acting that are crucial to the work of a community will now be briefly examined.

Reliably locating relevant archaeological structure in the dirt that is the focus of an excavation is by no means a transparent task. What patterns of color differences count as a feature of a particular type? How is the patterning that constitutes a feature to be distinguished from an intruding disturbance? As argued by Wittgenstein (1958; see also Baker & Hacker, 1983; Edgeworth, 2003) there is a gap between the diverse, frequently amorphous events in a complex visual environment being scrutinized by working actors, and the categories used by their social group to classify such phenomena (for example, categorizing a pattern visible in patch of dirt as an archaeological "feature"—a process that may include drawing a line that gives that analytic object a precise shape within the documents, such as maps, that organize the work of the group doing the classification). Environmentally coupled gestures provide resources for bridging this gap through work-relevant practice

In the two images above each other on the left side of Figure 8, Ann, the senior archaeologist, makes an environmentally coupled gesture, running her hand in an inverted U shape over a long stripe in the dirt while describing it as, "that disturbance." The stripe is later identified as a plow scar (see (Goodwin, 2003a for more extended discussion of this sequence). Environmentally coupled gestures, such as the one made here, integrate in a single action package both categories (for example, a 'feature', a 'post mould', a 'disturbance') and the phenomena in the setting that are being categorized (actual structure in the dirt), and moreover do this as part of the consequential activities that make up the significant work of a community.

When the patterns of movement that trace a shape leave a physical mark on the surface being described the activities of the archaeologist's moving hand can move beyond gesture into inscription. Thus one of the most common gestures at

an archaeological field site takes the form of tracing with a finger or trowel a shape argued to be present in the dirt just below the moving hand (see A in Figure 9). If the finger or trowel is lowered so that it actually penetrates the soil a more enduring record of the gesture in the form of a line in the dirt is created (B in Figure 9). Though drawing on the environment might be argued to fall beyond the boundaries of gesture, there is in fact a continuity of action, a family resemblance, between the gestures used to highlight structure in the dirt being scrutinized (A in Figure 9) and the activity of inscription (B in Figure 9), which transduces such a gesture so that it leaves an annotation in the environment itself (Goodwin, 2003a: 228-233).

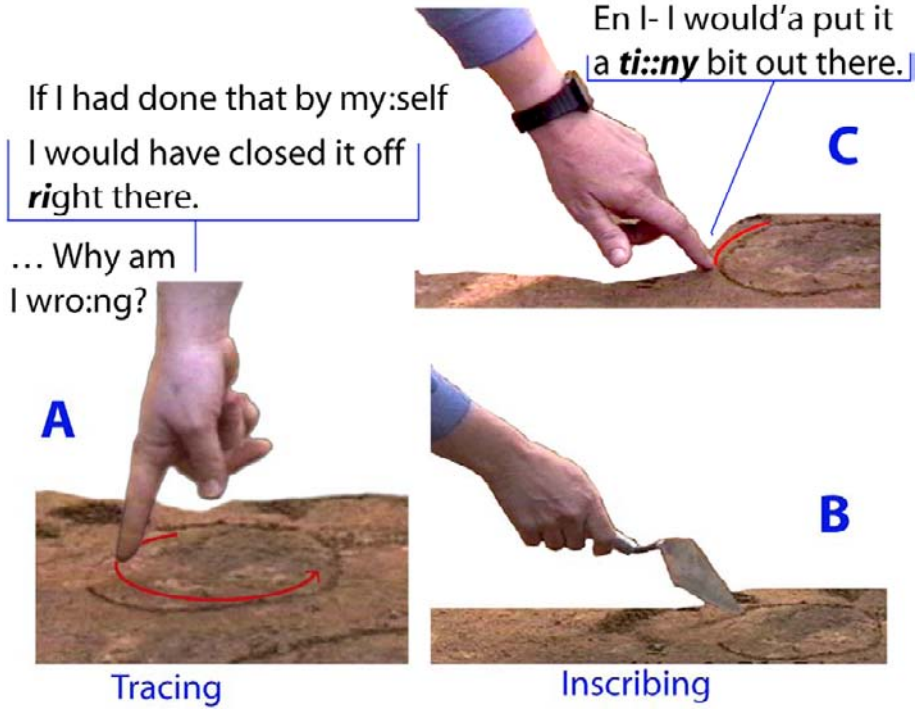

Figure 9: *From gesture to durable marks in the environment.*

This line in the dirt that imposes precise shape on the color pattern is a category, the first version of the iconic sign for the feature that will then be transferred to the map. However, unlike maps, which free themselves from the ground from which they emerge and travel from the site in a new medium, sheets of paper (i.e., they have the properties of Latour's 1987 immutable mobiles), the inscription in the dirt has a liminal status. Though it has the clear, humanly drawn, precise shape that will later be found on the map, it is constructed in the same visual field and from the same materials as its signified. It has not yet been removed from the very color patterning in the dirt that it stands as a sign for. This

has a range of most important consequences for the social organization of embodied practice and professional vision.

First, the way in which an actor, such as an apprentice archaeologist, sees a relevant structure in a patch of dirt is no longer a private process of perception. Instead, when an inscription is made, the feature is given precise shape in a public arena. By virtue of the way in which the inscription, and the gestures that accompany it, occur within a participation framework that creates a shared focus of visual and cognitive attention (see Figure 7), the senior archaeologist is systematically positioned to see both the complex visual environment that is the focus of their work (the dirt currently being excavated), and the operations being performed on that environment by a newcomer attempting to master the practices required to properly see and annotate relevant structure in that field.

Of great importance to the social calibration of vision and practice is the liminal status of the inscription, the way in which it is positioned simultaneously in both the world of clear, distinct archaeological categories (features, disturbances, plow scars, etc. as iconically displayed through the sharply defined figures drawn by the archaeologist), as well as in the messy, material particulars of the dirt that quite literally constitutes the primordial ground for the objects of knowledge that animate archaeology as a discipline. The senior archaeologist is able to see simultaneously both precisely how her co-participant sees and categorizes the structures they are working with together, and the evidence used for such seeing. She can thus judge not only the correctness of the line (something that becomes impossible later in the lab when the shape has been moved from the dirt to a blank piece of paper), but also the correctness and competence of her student's action.

Second, by virtue of the way in which they are engaged in interaction with each other in an environment with these properties, the relationship between evidence and categorization, the correctness of fit, can itself be topicalized, investigated, and negotiated. Environmentally coupled gestures are central to this process. Figure 9 provides two examples. In A on the left Sue uses her finger to trace just above the dirt how she would have drawn the line there differently. In C on the top right in Figure 9 Ann actually lowers her gesturing finger slightly into the soil as she demonstrates where she would have made Sue's inscription. These environmentally coupled gestures provide resources for imagining and publicly displaying alternative outcomes (Murphy, 2005) to the current task of seeing and categorization. Note that in both of these cases the gesture is tied to not only the color patterning in the dirt (and indeed constitutes an argument through gesture about what is to be seen there), but also to another act of categorization that has been given public shape through an inscription. The gestures in A and C of Figure 9 are sequentially next gestures to a prior act of classification, an existing line defining the feature. The subsequent gesture parasitically builds upon that earlier hand movement of another party by indexically tying to the trace it left. This mutual commentary, a dialogue of gestures in a complex, contested visual field, provides resources for publicly probing and debating the proper way to see and

delineate relevant structure in the dirt, and thus to move toward the entrainment of individual perception into socially organized professional practice.

4. Conclusion

In his groundbreaking analysis of gesture McNeill (1992) demonstrated that gesture and the speech that accompanies it have a common origin in the mind of the speaker. Thus the combination of gesture and language found in the prototypical utterance are parallel, integrated manifestations of a unitary psychological process. While using McNeill's powerful demonstration of the close ties between language structure and gesture as an essential point of departure, the present paper has investigated how the scope of phenomena relevant to the organization of at least some gestures can extend beyond the skin of the actor.

Several components of such an expanded gesture space have been briefly examined. First, a particular class of gestures cannot be understood by taking into account only a gesturing body and its accompanying talk (see Figure 1). Such gestures are tied to different kinds of structure in the environment that are central to the organization of both what they are seen to mean, and to the actions being built through them. Environmentally coupled gestures are pervasive in certain settings. Much of the analysis in the present paper focuses on videotapes of archaeologists engaged in the process of excavation. A particular environment, the dirt they are excavating, is the explicit focus of their work and their gestural activity provides them with resources for locating and highlighting relevant structure in that complex visual field. One clear demonstration of the importance of such gestures is the regular occurrence of hybrid utterances that are grammatically incomplete, but which pose no problems of understanding for participants who are expected to take into account not only the talk in progress, but also the gesture and the structure in the dirt indicated by the gesture.

A second component of this expanded gesture space is the participation framework structured by the mutual orientation of the participants' bodies. Not all gestures are communicative. However, systematically placing a gesture within a relevant participation framework, in other words, designing it to be seen and taken into account by an addressee, is one method for publicly establishing the communicative status of a particular class of gestures. From such a perspective the gesture space includes the body of the addressee, as well as that of the speaker making the gesture. A clear demonstration of the importance of the addressee is provided by cases in which a speaker discovers that she does not have the gaze of an addressee, solicits that gaze, and only then produces the gesture (see Figure 6 and (Goodwin, 1998). Though both gestures and participation frameworks are made visible through embodied displays, they in fact constitute quite different kinds of semiotic processes. The gesture elaborates what is being said or done at the moment, while the participation framework does not deal with such local content, but instead is about the orientation of the participants toward each other.

It creates an embodied frame, a publicly displayed, shared focus of visual and cognitive attention, within which other kinds of sign processes, such as gesture, can flourish.

An equally important, but quite different kind of framing is provided by the sequential context from which an action containing a gesture emerges. That context can include not only talk, but also the prior gestures of others. Moreover, on some occasions these gestures leave enduring traces that provide organization for subsequent action, and which suggest continuity between gesture and the human capacity to structure a consequential environment by annotating it with meaningful marks.

The environmentally coupled gestures investigated here are thus organized through a rich and diverse set of structurally different kinds of spaces and frames. They are built through the mutual interplay of multiple semiotic fields, including the moving hand, the dirt which the hand is articulating, the accompanying talk, the participation framework constituted through the positioning of the participants' bodies, local sequential organization, the larger activity that these particular actions are embedded within, etc. Since these gestures are built through the mutual elaboration of different materials in different media (e.g, the dirt, the hand, the postures of multiple bodies, language structure, etc.), they have a symbiotic organization in which a whole that is greater than, and different from any single part is created.

A central feature of David McNeill's research is his continuing emphasis on the importance of gesture for the analysis of human cognition. This raises the question of how environmentally coupled gestures might be relevant to cognition. The work of many communities, including professions such as law, archaeology and medicine, requires that members of the community have the ability to see relevant structure in an environment that is the focus of their professional scrutiny, and transform what they see there into the distinctive categories, objects of knowledge, and documents that define the special expertise of their community. Part of being an archaeologist includes the ability to see in the color patterning of dirt being excavated specific traces of earlier human activity, such the holes of posts that held up the roof of a now vanished building. Environmentally coupled gestures provide crucial resources for organizing such professional vision (Goodwin, 1994) as a form of public practice rather than private experience or idiosyncratic competence, that is as a precise way of seeing the world and constituting objects within it that can be trusted and relied upon by others. Gesture's interstitial position as something that links the details of language use to structure in the environment provides a key analytic point of entry for investigation of the rich interdigitiaton of different kinds of semiotic resources that human beings use to build relevant action in the consequential settings that define the lifeworld of a society. Environmentally coupled gestures are central to the cognitive organization of archaeology and the ongoing constitution of the distinctive professional mind of the archaeologist. Simultaneously they force us to

expand our sense of what counts as gesture, and the analytic frameworks required to study it.

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