2
The Body in Action

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This chapter will use videotapes of young archaeologists learning how to see and excavate the traces of an ancient village in the soil they are digging to explore some of the ways in which the human body is implicated in the structuring of human language, cognition and social organisation. Clearly the part played by the body in such processes can be analysed from a number of different perspectives. One can focus, for example, on how experiencing the world through a brain embedded in a body structures human cognition (Damasio, 1994; 1999). Such a perspective provides a counter to theories that treat cognition as the disembodied manipulation of symbolic structures, and places the body in the world at the centre of much contemporary thinking about the neural infrastructure of cognitive processes (Rizzolatti and Arbib, 1998). Moreover, it sheds light on pervasive processes that shape how the symbols that human beings construct emerge from forms of experience that have a crucial embodied component (Johnson, 1987; Lakoff and Johnson, 1999). For example, the universal experience of bodies situated within a gravitational field leads in all languages and cultures to a range of metaphors that contrast high and low or up and down (for example the symbols used to describe social hierarchies). However, it is possible to focus such analysis of embodiment largely or entirely on the experience of what is in fact an isolated individual, for example to investigate how being in a body shapes cognition and consciousness. What results is a rich analysis of psychological processes, but one in which other bodies, and social processes play only a minor, peripheral role. By way of contrast, in this chapter I want to investigate how multiple participants take each other's bodies into account as they build relevant action in concert with each other. Moreover, human bodies, and the actions

they are visibly performing, are situated within a consequential setting. The positioning, actions, and orientation of the body in the environment are crucial to how participants understand what is happening and build action together. In this chapter, embodiment will be investigated as a central component of the public practices used to build action within situated human interaction.

Symbiotic gestures

We'll begin by examining a particular type of gesture. The following provides an example. It occurred during one of the first days of an archaeological field school. Ann, the senior archaeologist and director of the school, is helping a young graduate student use the point of her trowel to outline a pattern visible in the soil they are excavating, in this case the hole that contained one of the posts that held up an ancient building. Sue is having difficulty in determining where exactly to draw the line. In line 19 Ann suggests that she remove some of the soil at a particular place ('in the:re' accompanied by a gesture over the place being indicated). When Sue hesitates, Ann repeats the request in line 21 by saying 'Toward you around parallel'. As she says 'around parallel' Ann puts her index finger just above the area in the soil being talked about and moves it in an arc over the area being specified (in essence tracing the pattern in the soil that Sue is being asked to trowel in the air above it). The gesture is repeated in the silence just after her utterance, as indicated in Figure 2.1.

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 just by attending to her hand. What Sue must see if she is to understand Ann's action in a relevant fashion is not a only a gesture, but the patterning in the earth she is being instructed to follow. The soil under Ann's finger is indispensable to the action complex being built here. The finger indicates relevant graphic structure in the soil (that is, the patterning of the post mould they are trying to outline), while simultaneously that structure provides organisation 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). I'll call action complexes of this type *Symbiotic Gestures*. The term Symbiotic is meant to capture the way in which a whole that is both different from, and greater than its parts, is constructed through the mutual interdependence of unlike elements.

19 Ann: En maybe trowel just a little bit in the:re.
20 (1.5)

21 Ann: Toward you around para:llel.

Figure 2.1

Analogy with a game, such as football, might make more clear what is meant by this. If one were to look just at the body of a runner moving a ball (Figure 2.2), one would see his or her movements and the path they made.

However, these movements could not be understood by looking at the runner's body in isolation. Instead, they are given organisation through their positioning on the visible graphic structure of the playing-field (Figure 2.3).

Thus, moving over the line at the end of the field constitutes a touchdown or goal, an action that does not occur when the runner moves over the other lines on the field. To perform relevant action in the game, a body must use structures that are located outside itself. The runner's body is given meaning by the contextual field it is embedded within. Similarly, while the playing-field contains the semiotic and physical resources that will make possible particular kinds of action (goals, firstdowns, and so on), these actions can only come into being when bodies move through the field as part of a game. Each requires the other. The runner's movements are also organised with an eye

Figure 2.2

Figure 2.3

toward the movements and actions of others on the field. With these structures in place, relevant aspects of the mental life of the runner, for instance his intention to move toward a particular place on the field, such as the goal-line, are immediately visible to all present, and indeed have a public organisation. In short, rather than being lodged in a

single modality, such as the body, talk, or structure in the environment, many forms of human action are built through the juxtaposition of quite diverse materials, including the actor's body, the bodies of others, language, structure in the environment, and so on. Moreover, because of the medium they are embedded within, each of these resources has very different properties. The gestalt pattern of a graphic field, and the ability to see the relevance of continuously changing movement within it, is quite unlike the emergence of an utterance as a successive sequence of discrete events through time. Elsewhere (Goodwin, 2000a) I have investigated in more detail how action can be not only built, but continuously changed and updated by assembling diverse semiotic fields into contextual configurations that are relevant to the activities that participants are pursuing in a particular setting.

In an analogous fashion, symbiotic gestures are built through the conjunction of quite different kinds of entity instantiated in diverse media: first, talk; second, gesture; and third, material and graphic structure in the environment. The actions they are performing cannot be understood by focusing on the gesturing hand in isolation, or even just on the gesture and the talk that accompanies it. Symbiotic gestures might thus constitute one perspicuous site for investigating embodiment as something lodged within both human interaction and a consequential, structured environment.

In many environments symbiotic gestures are very frequent, indeed pervasive. In a 2-minute 49-second strip of interaction that included the talk being analysed here, I counted 34 symbiotic gestures. Such figures provide at least a rough demonstration that gesturing activity of this type can be frequent, indeed pervasive, in some types of interaction. For other common examples of such gestural practices consider computer screens smeared with finger prints, television weather forecasts, or pointing at overheads during academic talks.

Symbiotic gestures would thus seem to constitute a common, indeed major, class of gestural activity. In light of this it is striking that symbiotic gestures have received little sustained analysis by students of gesture (but see Hutchins and Palen, 1997; Nevile, 2001). A major reason for this would seem to lie in the nature of the theoretical frameworks that have been developed for the analysis of gesture. One, well exemplified in the work of David McNeill and his colleagues (McNeill, 1992), analyses gesture as an embodied manifestation of the same psychological processes that lead to the production of sentences and utterances. This work provides important analysis of a host of phenomena implicated in the mutual relationship of language and gesture.

However, in that its analytic point of departure is processes inside the mind of the individual speaker/gesturer, this approach does not provide the resources necessary for investigating how phenomena outside the speaker, for example a consequential physical environment, contribute to the organisation of gesture.

A second important approach to gesture focuses on how it is organised within human interaction (Goodwin, 1986; Heath, 1986; Kendon, 1980, 1986, 1990a, 1997; LeBaron and Streeck, 2000; Schegloff, 1984; Streeck, 1993, 1994). This research has provided detailed analytic resources for demonstrating how gesture is consequential to the organisation of action in human interaction, and how participants other than the gesturer (for example addressees and other kinds of hearers) are central to its organisation. However, in much of this work, including my own, little attention is paid to how structure in the environment contributes to the organisation of gesture. In essence an analytic boundary is drawn at the skin of the participants. The neglect of symbiotic gesture, despite its pervasiveness, might thus arise from the fact that while existing approaches to the study of gesture provide units of analysis that include the psychology, distinctive culture (Kendon, 1995), bodies, and interaction of the participants, they do not encompass phenomena in the environment, such as the soil in example 1.[1] In short, symbiotic gestures seem to slip beyond the traditional classifications of gesture in that they include not only movements of a speaker's body, but also something outside the body: structure in the surround. This neglect is, however, being rectified. Analysis of phenomena such as symbiotic gestures contributes to an important stream of current research on gesture which investigates how gesture is tied to the physical, semiotic, social and cultural properties of the environment within which it is embedded (Haviland, 1995, 1998; Haviland, 1996; Heath and Hindmarsh, 2000; Heath and Luff, 1996; Hindmarsh and Heath in press; Hindmarsh and Heath, this volume; LeBaron, 1998; LeBaron and Streeck, 2000; Nevile, 2001).

Do the participants themselves attend to the distinctive structure of symbiotic gestures and treat it as consequential to the activities they are engaged in? The talk that occurs in line 21 'Toward you around para:llel' is grammatically incomplete. Parallel lacks a complement. Sue is not told just what her trowelling should be parallel to. Both speakers and hearers have well-developed practices for displaying to each other that there are problems in a particular utterance (Goodwin, 1981, 1987; Goodwin and Goodwin, 1986; Jefferson, 1974; Schegloff, 1979, 1992; Schegloff *et al.*, 1977). None of these practices are used here;

instead the utterance is spoken with untroubled fluency and Ann's addressee does not treat what's said here as incomplete or lacking something. Such unproblematic treatment of this talk, despite its grammatical anomaly, is not, of course, mysterious. Both participants can clearly see what the trowelling should be parallel to: the patterning in the soil located by the symbiotic gesture.

One thus finds here an utterance in which not only talk but also structure in the environment and gesture linking the two are central to its organisation. If these were removed, what was being said would not be expressed, and the action being performed would fail. The symbiotic gesture is thus most consequential in that the speaker displays in the construction of her utterance that she expects her addressee not only to see it, but take it into account as a crucial component of the process of locating just what is being said, and the action it is requesting.

Defining a feature

The actions being investigated here link the body to both language and an environment that is the visible focus of participants' current orientation and activity. Why might action packages with such a structure be so useful to participants that they occur pervasively in certain settings? To investigate this issue it is necessary to look more closely at the activities that Ann and Sue are pursuing. Sue, a new archaeologist, is faced with the task of mastering the practices required to reliably transform the raw materials provided by the soil being excavated into the signs and categories that constitute archaeology as a discipline (for example maps of structures, such as the outline of a house, the location and categorisation of relevant cultural artefacts, and so on). In so far as the ability to see such structure in the soil is not an idiosyncratic, individual accomplishment, but instead part of the professional vision expected of any competent archaeologist, such seeing must be organised as a form of public practice. Actions, such as symbiotic gestures, that link the actual soil in all of its complexity to relevant archaeological categories within systematic work practices, provide excellent resources for negotiating shared vision within a consequential public arena. Moreover, rather than simply providing definitions of categories, the process of using such talk and gesture to actually work with the soil being excavated helps organise the ensemble of embodied practices required to competently locate in 'nature' the soil being investigated, valid instances of such categories, and transform them into the signs (maps, names, and so on) required for further work with them.

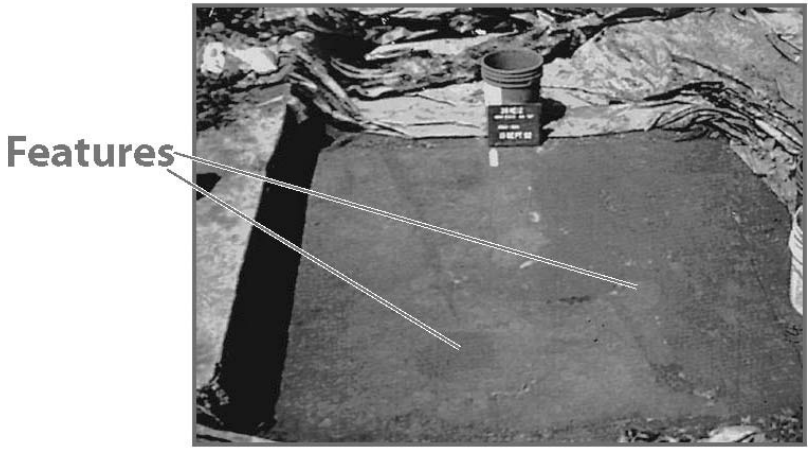

Figure 2.4

We will now look more closely at what Ann and Sue are doing, and the larger activities within which their work is embedded. The sequences being examined were recorded during one of the very first days of an archaeological field school. The participants are engaged in an activity that they call *Defining a Feature*. Many phenomena of interest to archaeologists, what they call *features*, are visible only as colour-changes in the soil they are excavating. For example, the cinders produced by an ancient hearth will leave a black stain and the decaying material in an old post hole will produce a tube of soil, called a post mould, with colour significantly different from the soil around it (Figure 2.4).

The very activity of excavating features systematically destroys them. As soil is removed to dig deeper, the patterns of visible colour difference are destroyed. In part because of this, careful records, including maps, photographs and coding forms of various types have to be made at each stage of the excavation. A map of a set of features can reveal the pattern of an ancient structure (see Figure 2.5).

In the data being investigated here, a young archaeologist is learning how to outline the colour differences that mark the presence of a post mould in the soil. This is being done to prepare that shape so that it can be transferred to a map (indeed an earlier version of the simplified map in Figure 2.5). In the abstract this process might appear both simple (just trace a pattern visible in the soil being excavated) and of little theoretical interest. However, it is here that the soil being exca-

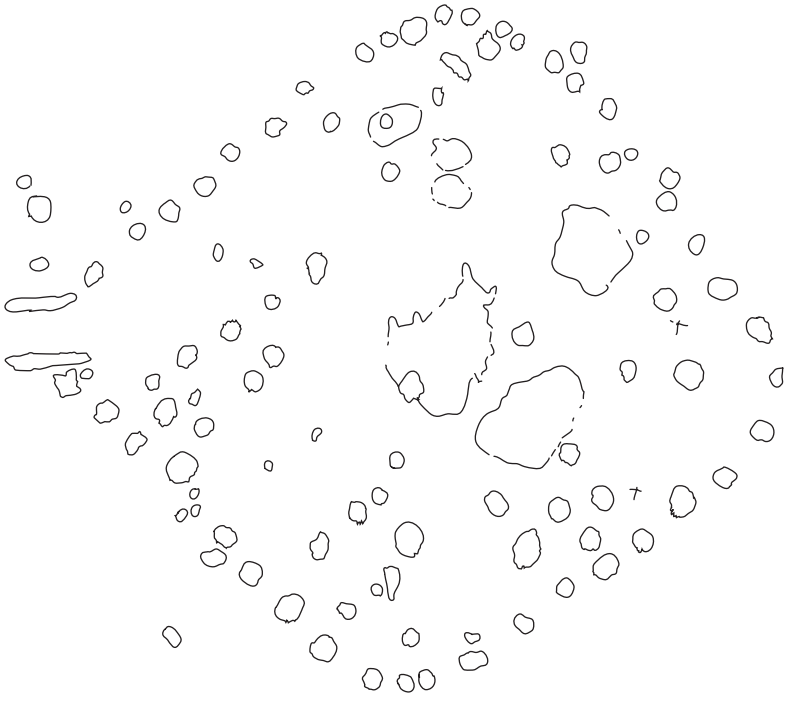

Figure 2.5

vated is transformed into the categories (post moulds) and documentary materials (maps of ancient structures) that constitute the semiotic infrastructure of archaeology as a discipline. It is precisely here that the multifaceted complexity of 'nature' (the soil being scrutinised and excavated) is transformed into 'culture' in multiple senses: First, this process literally unearths the cultural remains of the social group that is the focus of the excavation. As they routinely divide artefacts to be brought back to the lab from soil that will be left at the site, archaeologists at work in the field, engaged in the unending task of sorting nature from culture, are the true heirs of Lévi-Strauss (they themselves use the term 'cultural' to describe what should be retrieved from a site; their theories have, of course, moved well beyond earlier structuralism). Secondly, and more relevant to the issues being investigated here, through this process the soil is transformed into the cultural categories, such as post moulds, images of structures at site, and so on. that constitute the phenomenal world of a specific social group, here archaeologists.

Determining what counts as cultural (and thus something to be recorded and brought back to the lab in some fashion) is by no means an automatic, or even easy task. For example, the site being excavated in the data being examined here had been successively occupied by a number of different social groups. The land is in the American South. The excavation is focusing on the remains of a large Native American city. The archaeologists strongly suspect that it is in fact a particular city that was described by the first European expedition into the area as being ruled by a powerful woman leader. After conquest by the Europeans, the land became part of a very large plantation with many slaves. One of the most famous diaries of the civil war was written there by a wife of its owner who described herself as living in an African village (and, indeed, since new slaves were arriving in this state even during the civil war it is likely that the slaves in fact included people who had been born in Africa). The land was subsequently bought by a rich industrial family who continue to farm it today. Ploughing the soil will, of course, disturb archaeological features if the plough reaches deep enough into the soil. Many other natural processes, such as burrowing animals, will also disturb the soil. When the owner of the farm learned that it contained an important archaeological site, he tried to protect the site by no longer ploughing it to plant crops, but instead covering it with pine trees. This had disastrous effects since the roots of the trees burrow deeply into the soil. A work crew of Mexican migrant workers planted the trees in a single day. Though Latin American workers were used extensively in this state as farm labourers, they largely lived in migrant camps (in sometimes appalling conditions) far from towns and cities and most people were unaware of their presence. The site itself had been partially excavated on several occasions by earlier teams of archaeologists, and indeed the current excavation is the latest stage in a long-term project.

The soil being excavated thus contains traces of the labour and activities of many different social groups: Native Americans, slaves working on a plantation in the American South, later farmers, Latin American workers, earlier archaeologists, and so on. In order to see and accurately map the features that are the focus of her work, a young archaeologist must navigate a complex perceptual environment. For example, the features she is trying to outline may be hidden or deformed by later ploughing, an activity that leaves its own quite visible patterning in the soil (note the long stripe beginning at the top left of the excavation in Figure 2.4). Such plough scars are, of course, the visible traces of farming, an important earlier cultural activity. However, though they

are carefully mapped, such plough scars are not considered cultural materials to be analysed as part of the Native American site but instead are treated as *disturbances* which obscure and deform the features that the archaeologist wants to uncover (and thus for the purposes at hand equivalent to natural disturbance that would result from the activities of burrowing animals). Thus, in order to see features, the archaeologist must not only learn to recognise a range of other kinds of object as well, but must also take into account how they might have changed what she is trying to reveal, and make relevant judgements as to just what subset of visible cultural activities are to count as features of the structures being excavated.

The work of locating a feature involves not only culturally organised vision, but an ensemble of other embodied practices as well. To remove soil, the archaeologist scrapes away soil with the side of her trowel. As she does this she is sensitive to the feel of the soil, and to sounds, and so on, that might indicate that a solid object, or different kind of soil is being encountered. When a feature, say a roughly circular post mould, is encountered, the work with the trowel is changed: instead of scraping in a constant direction, say right across the feature, the archaeologist attempts to trowel around its contours so as to remove soil from it without damaging it. Where and how the trowel is used is thus shaped by a developing expectation about what it is uncovering, while the way in which the trowel structures the visibility of the soil helps to further clarify that very object.

Archaeologists call the process of revealing in the soil the colour patterning that marks a relevant cultural entity, and then drawing a line with a trowel that outlines its shape, 'Defining a Feature'. This expression captures very well the way in which a feature as a semiotic object (such as something that is categorised by a particular social group as a particular kind of entity and marked on a map) emerges as the product of both actual patterning in the soil being investigated, and the cultural categories and embodied practices used by archaeologists to make it visible as a particular kind of phenomenal object.

Drawing attention to the way in which the objects in the world that are studied by scientists are shaped, and constructed in part through cultural practices, is sometimes argued to demonstrate that these objects do not 'really' exist. Nothing could be further from the truth for the archaeological objects being investigated here, which are continually probed through explicit socially organised practice. Moreover, the archaeologists themselves, more than any outside observer, are acutely aware that their categories might be in error. For example,

posts are constructed from trees, and indeed a tree can leave traces in the soil that closely resemble a post mould. Students are told that they could well get to the bottom of what they have been digging as a post mould and find roots extending from it, and thus discover that they have not in fact been excavating a cultural feature. The categorisations they have made can not only be challenged by others, but overturned by the world they are probing.

The bodies around a gesture

The forms of embodiment relevant to the action being constructed here extend far beyond the speaker's gesturing hand. Thus, gestures are contextualised by participation frameworks constituted through the embodied mutual orientation of the participants within an interaction. For example, in Figure 2.6, Ann gazes toward her gesturing hand and the soil it is tied to. The gesture is visibly and publicly what she is attending to, and thus something that others should take into account if they want to co-participate in action with her, or understand what she is saying and doing.

At the same time Ann's gesture is also organised with reference to the visible orientation of her addressee's body. The gesturing hand is

Figure 2.6

placed right in Sue's line of sight. It is designed not only to express what the speaker is saying, but quite literally to show Sue something, and moreover to insist that Sue look at it by intruding into her visual focus on the soil she is working with.

Such contextualisation of gesture by the bodies of multiple parties implicated in the action it is performing has a number of consequences. First, it is quite clear that not all gestures are organised to be explicitly communicative (for example, designed, as this one is, so that an addressee will take it into account). This is in no way surprising. The hand is one of the main ways that the human body explores and knows the world in all of its complexity. It is to be expected that movements of the hand will be part and parcel of the way in which speakers think and talk about the world. However, the fact that hearers frequently show no evidence of attending a speaker's gestures is sometimes argued to show that gestures are not in fact communicative (Krauss *et al.*, 1991; Rimé and Schiaratura, 1991). However, when the contextualising displays of other parts of the body are taken into account it becomes clear that not all gestures are the same. By gazing toward a gesturing hand, and/or using deictics that explicitly direct attention to the gesture (Goodwin, 1986; Streeck, 1994), a speaker can instruct the hearer to take it into account. The placement of gestures in an addressee's line of sight constitutes a complementary aspect of this process. Such practices help locate, not only for analysts, but also for participants, a class of gestures that are clearly built to be communicative.

Second, within a single action there can in fact be a number of quite different kinds of embodiment that are relevant to its organisation. Ann's gaze towards her hand and the soil underneath it is not a gesture, but something quite different, a way of publicly displaying the current focus of her orientation and action. Moreover, her gaze is embedded within a larger postural configuration that is also displaying her current orientation to Sue's work in the soil in front of them. This postural configuration has dynamic organisation of its own. Kendon (1990b) has noted that within interaction the different segments of the body provide participants with resources for making a hierarchal cluster of displays about their involvement in the events of the moment. The lower body can remain comparatively fixed for extended strips of interaction, and thus display continuing orientation towards other co-participants or relevant phenomena in the surround. Within this larger display the upper body can move in different directions and mark changing shifts in alignment. The bodily displays of separate participants are organised into multi-party participation frameworks

Figure 2.7

(Goodwin, 1981; Goodwin, 1997). Thus a continuing state of talk can be marked by spates of focused engagement interspaced with periods of temporary disengagement (Goodwin, 1981: 95–125; 2002). Throughout this process the lower body marks a pattern of orientation that sustains the encounter, while the upper body marks shifting alignment within it (see Figure 2.7).

Gesturing hands, changing facial displays and talk constitute not only the most dynamic level of this set of nested sign systems being displayed by the body, but also the place where participants explicitly focus their attention.

Though all of these displays may be performed simultaneously by a single body (or set of bodies when viewed from the perspective of participation frameworks), it is crucial to remember that what is occurring is not a single form of embodiment, but instead sets of signs that differ from each other significantly in their structure, organisation and relevance. For example, gestures differ markedly from the orientation display made by the lower body. Thus each kind of display has a quite different scope and duration. Gestures typically occur within the space of a single utterance, while a postural configuration being sustained by the lower body can endure over extended strips of interaction. Moreover, the referential content of these signs is quite different. Gestures typically refer to what is being talked about, while participation displays are about the interaction itself. They create a spatial and temporal boundary, an 'ecological huddle' (Goffman, 1964), within which an arena for mutual orientation, shared attention to a common environment and collaborative action can be constituted. Despite such differences these diverse forms of embodiment are used in conjunction with each other to build relevant action. Thus gestures are organised as communicative actions through the way in which they are embedded within the patterns of mutual orientation made visible through embodied participation displays.

The symbiotic gesture that Ann uses to tell Sue what to do in line 21 is thus made salient and relevant through the way in which it is embedded within a constellation of other kinds of display being made by the participants' bodies.

Symbiotic gestures and inscription

A second action occurred during this sequence that is intimately related to symbiotic gestures (see Goodwin, in press). During line 58 in Figure 2.8, Sue performs a symbiotic gesture, moving her trowel just above the soil, tracing where she sees the boundaries of a feature. When Ann agrees, Sue's hand performs this movement again (line 62). However, she now lowers the point of her trowel into the soil so that an enduring line marking the outline is left there (images on the right).

By lowering her trowel into the soil as she moves her hand Sue transduces the shape that is the focus of her gesture from one medium (the moving hand) into another (the soil itself). Through this process the gesture leaves a permanent trace on the environmental field it is highlighting and describing. This will be called *Inscription*.[2]

It might be argued that these two hand movements are quite different kinds of action: the first, a gesture, and the second, something else, a form of drawing that, unlike the gesture, actually changes the world being talked about. However, Sue's second movement is not something

Figure 2.8

entirely different, but a slight modification of the first. It thus seems more appropriate and useful analytically to follow the participants and treat these two events as points on a continuum that includes, for example, iconic gestures that in no way invoke the immediate surround, symbiotic gestures, and here gestures that act upon and transform what they are representing. Rather than constituting a tightly bounded domain of phenomena, gesture is implicated in varied ways in a range of practices through which bodies know, think about and act upon the world.

Embodied framing of an intersubjective field

As in the data examined earlier, Sue's gestures do not stand alone, but instead are embedded within a matrix of other signs being displayed by not only her body, but also her addressee's. She performs both gestures right where Ann is looking within a participation framework that establishes joint focus on the soil being worked with. More crucially, the symbiotic gestures constitute the focal actions in the exchanges that occur here. Thus, in line 58 (Figure 2.8) Sue is using the gesture to show Ann where she thinks the feature is located. Ann's agreement is what sets off the act of inscription, or in terms of the archaeological activity in progress, the drawing of the line that defines that feature. Ann's encouraging comments in lines 63–64 are not responsive to anything that is being said, but instead to the accuracy with which Sue's inscription is following the outline of the feature. Her talk here presupposes a particular kind of speaker, one who is intently following the actions of her co-participant's hand as it works within the structured field of a relevant environment, here the soil. Rather than constituting something that can be ignored, the gestures that occur here are central to the actions that these participants are engaged in, and are done precisely so that the other can take them into account.

This same point is demonstrated in a different way in Figure 2.9. In line 7 Ann uses a symbiotic gesture, tracing a circular path over a particular place in the soil, to show Sue where to draw. In response Sue brings her trowel to exactly where Ann had been pointing (in fact there is almost a collision between Sue's trowel and Ann's finger) and starts to draw:

By drawing where she does Sue not only demonstrates that she has seen Ann's gesture, and taken it into account, but that the gesture is in fact the point of departure for her response to Ann (which is done through the action of drawing the outline of the feature rather than

Figure 2.9

talk). Their hands exchange places over the same spot in the soil. Then, as Sue draws, Ann produces talk that is responsive to what she sees Ann doing.

An ecology of sign systems

From a slightly different perspective, what occurs here sheds light on the relationship between language and gesture as different kinds of sign system that can function together to build relevant action. Rather than telling Ann where to draw, Ann shows her with a symbiotic gesture linked to talk describing what should be done there. Consider how difficult it would be to describe the precise place where this shape was located through language alone, and how easy it is with gesture linked to the area being talked about. As a system capable of building a potentially limitless set of discrete signs by combining and recombining a smaller set of conventional elements language has enormous power. In Bateson's (1972) terms language is digitial, while gestures (at least those being examined here) are analogic (for example they achieve their effects through continuous variation, iconicity and proximity). Despite its combinatorial power, language would become extremely cumbersome if it had to provide a separate name to differentiate every possible shape that might be visible in something as mundane as this patch of soil, and, moreover, to specify its exact location with the fine precision required here. However, the work of adequately locating and characterising relevant phenomena in the surround can be readily accomplished within talk-in-interaction if sign

systems containing different kinds or resources for constituting phenomena, such as language and symbiotic gestures, are used in conjunction with each other.

Saussure (1959: 16) called for a science focused on the general study of signs. However, like most work in Semiotics that followed, he then defined his task as the study of a single semiotic system, in his case language. The study of how individual semiotic systems are organised has made enormous contributions to our understanding of the cognitive and social organisation of humans and of other animals. However, as the data being examined here demonstrate, it is also necessary to investigate how different sign systems work together to build relevant action and accomplish consequential meaning. By virtue of this potential synergy (indeed symbiotic relationships between systems of signs) any single system need provide only a partial specification of what is necessary to accomplish relevant meaning and action. Thus in both lines 7 and 21 the talk alone is not sufficient to specify what is being requested. Neither could the gestures that occur stand by themselves without the talk that accompanies them. Talk and gesture are further elaborated by the orientation displays and participation frameworks being constituted through other aspects of the participants' embodied conduct. And, again, none of these systems in isolation would be sufficient to construct the actions that the participants are pursuing. This suggests the importance of not focusing analysis exclusively on the properties of individual sign systems, but instead investigating the organisation of the ecology of sign systems which have evolved in conjunction with each other within the primordial site for human action: multiple participants using talk to build action while attending to the distinctive properties of a relevant setting.

The term ecology is used to note the way in which these separate systems function as differentiated, interdependent components of a larger whole that can adapt to changing circumstances. For example, in other research (Goodwin, 1995, 2000b) I have investigated how a man with severe aphasia (he can say only three words) is nonetheless able to act as an effective participant in conversation. This ability is not something lodged within him as an isolated individual, but instead is made possible through the way in which he and his interlocutors reorganise the sign systems used to construct meaning and action within interaction. For example, a single individual, the speaker, typically produces both talk and the gestures that accompany that talk (for example, all of the data examined here). Since the man with aphasia can't speak he produces gestures, while his co-participants provide the talk explicating

the gesture, frequently in the form of guesses as to what he wants to say through the gesture. The basic symbiotic structure in which gesture gets its locally relevant sense from the way in which it both is elaborated by, and elaborates the talk that accompanies it remains intact. However, to adapt to one party's catastrophic loss of one of these sign systems, there is a rearrangement of the parties responsible for producing different kinds of signs. In short, there is a reorganisation of the contextual environment, the ecology tying separate sign systems to each other, which provides for the intelligibility of his gesture.

From a slightly different perspective, the way in which the structure of gesture differs markedly from language might reflect not the development of a new, more complex, system from a simpler one, but instead a process of progressive differentiation within a larger set of interacting systems in which gesture is organised precisely to provide participants with resources that complement, and thus differ significantly from, those afforded by language. Some support for the argument is provided by research (Bloom, 1979; Goldin-Meadow *et al.*, 1996; McNeill, 1992) in which fully competent speakers are asked to communicate while remaining silent. Under such circumstances their gestures quickly become more conventionalised, and linked into patterned sequences showing evidence of grammaticalisation. More generally the deictic expressions that are conventionalised in language, such as the 'this' that points toward the symbiotic gesture in line 7 (and the 'there' in line 19, and so on), constitute systematic ways of providing explicit links between different kinds of sign systems that characteristically function as parts of a larger whole.

In short, when one looks closely at how action is built within actual human interaction one frequently finds a cluster of quite different kinds of sign systems, for example talk and gesture lodged within a focus of visual and cognitive orientation constituted through embodied participation frameworks, and unfolding sequential organisation. Moreover, what is being focused on in the surround may itself have meaningful structure that can be used by participants as a resource for the construction of relevant action (Goodwin, 2000a). It would seem that something like this set of concurrently relevant semiotic fields is what is being pointed at by the phrase 'face-to-face interaction'. However, this is by no means a fixed array of fields. Thus on many occasions, such as phone calls, or when participants are dispersed in a large visually inaccessible environment (for example a hunting party, or a workgroup interaction through computers), visible co-orientation may not be present, and action might be built largely through talk

alone, or through writing and images (Goodwin and Goodwin, 1996). Again, the set of mutually interacting sign systems used to build action functions as a dynamic ecology that can change to adapt to modifications in local circumstances.

Embodiment as public practice

Sue is faced with the task of learning to see as an archaeologist. Vision is usually analysed as a psychological process, as something done in the neurological or mental life of an individual. However, an analysis of vision that treats it as a purely psychological process, and especially one that sees vision as something lodged within the private mental life of the individual runs into serious problems here. To be a competent archaeologist Sue must be able to see archaeological features in the soil, to excavate them in a way that reveals their relevant structure, and to transform them into the documents, categories and maps that animate the life of her profession. The question posed for archaeology, indeed for any profession, is how such professional vision (Goodwin, 1994) can be systematically organised, such that others can trust her to competently see what should be seen in a patch of soil, and rely upon the maps and reports she makes. In short, how can vision be organised as public practice lodged within the worklife of a community?

The activities which have been investigated here constitute one solution to this problem. Shared orientation both to each other, and relevant phenomena in the environment (for instance the soil being excavated) is publicly established when participants use their bodies to create participation frameworks. The phenomena being scrutinised are constituted as meaningful entities through the talk in progress, the activity that talk is embedded within, and the emerging sequential organisation. Moreover, these same practices can be used to assess the actions being performed by each other's bodies (for example to note Sue's failure to do something that has been requested, to judge the accuracy of a line her hand is making, and so on). Within this domain of meaningful public scrutiny symbiotic gestures link the materials that are the focus of archaeological work, the soil being excavated, to the work being done by the participants' hands to locate and prepare for mapping relevant phenomena. Moreover, by virtue of the public character of this embodied work individual differences in how something should be seen can be negotiated. In data not examined here (Goodwin, in press) after Sue draws an outline, Ann uses her finger to

Figure 2.10

draw another line alongside Sue's; Ann thus shows Sue where she would have located the feature (see Figure 2.10).

The way in which symbiotic gestures annotate relevant phenomena within a public visual field provides participants with the resources necessary for systematically calibrating their practices of seeing. Moreover, in so far as this vision is made public through work and gesture, the entrainment of Sue's body into the demands of her profession extends beyond vision to encompass the full suite of embodied practices (using her trowel to reveal structure in the soil, shading the area being worked on with her body so that structures can be easily seen, linking what is visible to relevant categories, and so on) required to competently do the work of excavation.

In brief, the ecology of sign systems articulated through the work that defines a profession structures embodiment in human interaction as a way of knowing and shaping in detail a consequential world in concert with others.

Notes

1. A topic in gesture research that is relevant to what is being examined here is Pointing. This was the subject of a recent Max Planck conference organised by Sotaro Kita (Kita, in press). Analysis draws upon both the psychological and the interactive traditions. Pointing is certainly not only relevant to, but an element of, the symbiotic gesture in example 1. However, in much

investigation of pointing, objects in the surround are not analysed as components of the gesture itself. Instead, what is pointed at is treated as something outside the gesture, for example the target of a point. Moreover, not all symbiotic gestures are accomplished through pointing. In brief, while pointing is most relevant to what is being investigated here, it is a slightly different phenomenon.

2. See Lynch (1988) for analysis of how scientists progressively refine the images they are working with.

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