Gesture Is Everywhere

A student walks into a class wearing a tie. The male professor is not. Both are making a statement about their attitude toward the class, whether or not they mean to. Such acts are part of what is called “nonverbal communication.” A wide-ranging array of behaviors count as nonverbal communication—the home and work environments we create, the distance we establish between ourselves and our listeners, whether we move our bodies, make eye contact, or raise our voices, all collaborate to send messages about us (Knapp 1978). But these messages, while important in framing a conversation, are not the conversation itself.

We might be tempted to restrict what we take to be the conversation to the words that come out of the speaker’s mouth. Indeed, the traditional view of communication divides it into its verbal and nonverbal components, with little attention to the way the two interact to convey meaning. Adam Kendon (1980) was among the first to challenge this view, arguing that at least one form of nonverbal behavior—gesture—cannot be separated from the conversation itself. As David McNeill (1992) has shown in his groundbreaking studies of gesture and speech, the hand movements we produce as we talk are tightly intertwined with that talk in timing, meaning, and function. To ignore gesture is to ignore part of the conversation.

The focus of this book is the way we move our hands, not the way we wear our hats. I further restrict my focus to the way we move our hands when we speak. These movements are what I mean when I use the term gesture in this book. It is obvious that how we position our bod-
ies, wear our clothing, and hold our possessions are nonverbal cues that occur everywhere—they are pervasive and inescapable (see, for example, Goffman 1976). It is less obvious that gesture, as I am using the term, is also everywhere. But it is. We have not yet discovered a culture in which speakers do not move their hands as they talk (Feyeroizen and de Lannoy 1991). Indeed, even individuals who are blind from birth and have never seen others gesture purposefully move their hands as they talk (Iverson and Goldin-Meadow 1998). Whenever there is talk, there is gesture.

What Is Gesture?

Gesture is a term that encompasses a great deal. We have already narrowed our focus to the hand movements that co-occur with speech, yet even this set of behaviors does not form a single category. In 1969 Ekman and Friesen proposed a scheme for classifying nonverbal behavior and identified five types—illuminators, adaptors, emblems, affect displays, and regulators.1 Our focus is on one of these five—illuminators, called "gesticulation" by Kendon (1980) and "gesture" by McNeill (1992). These terms refer to hand movements that are directly tied to speech. They can beat the tempo of speech, point out referents of speech, or exploit imagery to elaborate the contents of speech. For example, a child says that the way to get to her classroom is to go upstairs, and she illustrates the path by simultaneously arcing her hand upward. The gestures that I will focus on in the first three parts of this book are almost always produced along with speech. They consequently take on the intentionality of speech. Although speakers may not be completely aware of having produced hand movements, they are very aware of having spoken. Their gestures are in the service of communication and, in this sense, are deliberate.

Gestures, as I am using the term, contrast with adaptors, fragments or reductions of previously learned adaptive hand movements that are maintained by habit—smoothing your hair, pushing your glasses up on your nose even when they are perfectly positioned, holding or rubbing your chin. Adaptors are performed with little awareness and no intent to communicate (Ekman and Friesen 1969).

At the other end of the awareness spectrum, we find emblems. Emblems are what people first think of when I tell them I'm writing a book about gesture—the "thumbs up," the "okay," the "shush," and a host of other hand movements, many of which have unprintable meanings. Speakers are always aware of having produced an emblem and produce it to communicate with others, often to control their behavior.2 Emblems differ from gestures in a number of respects (McNeill 1992). Most important, they do not depend on speech. They convey their meanings perfectly well when produced without any speech at all. Moreover, unlike gestures whose meanings are constructed in an ad hoc fashion in the context of the speech stream, emblems have a constant form–meaning relation that does not depend on the vagaries of the conversation. In the above example, the arcing-upward gesture referred to taking the stairs. If that same movement were produced in the context of the sentence "their dispute seems to be escalating," it would refer instead to mounting tensions. In contrast, the "okay" emblem means "things are fine" independent of the particular sentence it accompanies, and even if it is not accompanied by any sentence whatsoever.

Emblems are held to standards of form. Imagine making the "okay" sign with the middle finger, rather than the index finger, forming a circle with the thumb—it just doesn't work. But producing the arcing-upward gesture with either a pointing hand, an open palm, or even an O-shaped hand seems perfectly acceptable. In this sense, emblems (but not gestures) are like words, with established forms that can be understood by members of the community in the absence of context or explanation.

It is precisely because gestures are produced as part of an intentional communicative act (unlike adaptors) and are constructed at the moment of speaking (unlike emblems) that they are of interest to us. They participate in communication, yet they are not part of a codified system. As such, they are free to take on forms that speech cannot assume and are consequently free to reveal meanings that speech cannot accommodate.

1. Two of the five categories do not involve hand movements at all: "affect displays," whose primary site is the face, and "regulators," which typically involve head movements or slight changes in body position. Regulators maintain the give-and-take between speaker and listener. Like gestures, they are related to the conversation; unlike gestures, however, which are interleaved with moment-to-moment fluctuations in speech, regulators are involved in the pacing of the exchange.

2. Many cultures, particularly in Africa, have developed relatively elaborate systems of emblems that are used for counting. These gestures can be used in place of spoken number words or for emphasis (Zaslavsky 1973 1999).
Types of Gestures That Accompany Speech
There are almost as many schemes for classifying the gestures that accompany speech as there are gesture researchers. The differences, however, lie mainly in the size and number of slices, not in where the major cuts are made. McNeill (1992) identifies four different types of gestures. Efron ([1942] 1972) and Ekman and Friesen (1969) divide the pie into smaller slices, whereas Krauss, Chen, and Gottesman (2000) divide it into bigger slices. I use McNeill’s terms here; Table 1 displays the relation between this categorical system and the others.

**ICONIC GESTURES**
A child makes a twisting motion in the air while saying, “I can’t open this jar.” The form of this gesture bears a close relation to the semantic content of speech. It is consequently considered an iconic gesture (McNeill 1992). Iconic gestures come in all forms:

- A spreading-apart motion produced when a child says of a row of checkers, “All you did was spread them out” (an example of Ekman and Friesen’s [1969] kinetographic gesture depicting bodily action).
- An arcing-upward motion produced while saying, “I had to go upstairs to find my slippers” (an example of Ekman and Friesen’s spatial movement gesture depicting a spatial relation).
- Tracing a circle in the air with the index finger while saying, “It

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was a round ornament” (an example of Ekman and Friesen’s pictographic gesture depicting a drawing in the air).

In general, iconic gestures represent body movements, movements of objects or people in space, and shapes of objects or people. They do so concretely and relatively transparently. But they are constructed in the act of speaking, and as a result, their “transparency” depends on the speech they accompany. For example, consider a ballerina's movements when the speaker says, “She does lovely pirouettes.” However, the same gesture refers to a hand twisting off a jar lid when the speaker says, “Which direction shall I turn this?” Iconic gestures are, by their nature, opportunistic and improvisational (Bavelas 1994).

**METAPHORIC GESTURES**
When adults are asked to solve algebra word problems, they gesture. For example, consider an adult asked to solve the following problem (Alibali et al. 1999):

> After a seven-day harvest, a potato farmer notices that his rate of gathering potatoes increased steadily from 35 bushels/day to 77 bushels/day. How many bushels of potatoes total did the farmer collect during the seven-day harvest?

Adults produce two types of gestures when explaining problems of this sort: (1) gestures containing smooth, continuous motions (such as sweeping, arcing, dragging) that represent change over a single non-partitioned event, that is, a continuous representation; and (2) gestures containing a set of discrete movements (such as a sequence of three or more taps or zigzags) that represent change over a series of steps, that is, a discrete representation. The form of these gestures indicates whether the adult conceptualizes the problem as one of continuous change or discrete change, and thus presents an abstract idea rather than a concrete object. Gestures of this type are consequently considered to be metaphoric gestures (McNeill 1992).

**DEICTIC GESTURES**
A speaker points at his sister while saying, “I gave it to her yesterday.” This is a deictic gesture—gestures used to indicate objects, people, and locations in the real world (McNeill 1992). Deictic gestures always indi-
cate, but they do not always indicate visible objects or people. For example, the speaker could have produced precisely the same sentence while pointing toward the chair where his sister sat earlier that day but no longer sits—the speaker would be pointing at the chair but using that pointing gesture to refer to his sister. More abstract still, the speaker could have pointed at a space that, earlier in the conversation, had been established as standing for his sister. Even the simple pointing gesture can be quite abstract.

**Beat gestures**

Beat gestures do just that—they beat musical time. The hand moves along with the rhythmic pulsation of speech (McNeill 1992). Beat gestures assume the same form regardless of content. They are typically made with short, quick movements in the periphery of the gesture space. Unlike iconic, metaphoric, and deictic gestures, which carry information about the plot line, beat gestures reflect the structure within which the plot line unfolds. By putting stress on a word, beat gestures index that word as significant, not for its content, but for its role in the discourse (McNeill 1992).

In the chapters that follow, I will focus primarily on gestures that tell the story—iconics, metaphors, and deictics—for these are the gestures that have the potential to reveal, and perhaps shape, speakers’ thoughts.

**Studying Gesture**

The first task in studying gesture is to identify it in the stream of motor behavior. Gesture occurs during the act of speaking, but not all acts performed by a speaker count as gesture. If I twist off the lid of the jelly jar while asking you to give me the peanut butter, my jar-twisting action would not be considered a gesture, despite the fact that it occurs with speech (and despite the fact that the jelly-jar twist gives you a good sense of what I intend to do with the peanut butter once I get it). My jar twisting is a functional act on an object and therefore is not a gesture. It opens the jar—it does not symbolize opening the jar. The criteria for a gesture thus stipulate that the hand motion (1) be produced during the communicative act of speaking (although it itself need not communicate information to a listener—more on this later) and (2) not be a functional act on an object or person.

Our next task is to describe the form of the gestures. My approach has been to borrow a descriptive system from the sign language literature. I and my fellow investigators describe the shape of the hand as it moves, using the set of symbols developed to describe handshapes in American Sign Language. We also describe the trajectory of the motion, the location of the hand relative to the body, and the orientation of the hand in relation to the motion and body.

The final task, attributing meaning to the gestures, is the most difficult. We get some idea of a gesture’s meaning from its form. For example, movements that rotate in a circle typically refer to acts that rotate, objects that have a circular shape, or abstract ideas that have circularity at their core. However, context is equally important in identifying a gesture’s meaning. A pointing finger rotating in space can refer to a ballerina’s pirouetting movements in one context, and a rotating hand in another, as we have seen. In general, gesture meaning has to be coded in relation to the task at hand. We use speech and other aspects of the communication context to provide a framework for the gestures that the speaker produces, and we then interpret the gestures within that framework. For example, in our conservation studies, where children are asked whether the transfer of a liquid (or other medium) moved from one container to a differently shaped container has affected the quantity, the appropriate unit of analysis for the task is the conservation rationale—the type of explanation the child gives to justify his or her beliefs about a quantity (children before age seven or eight are convinced that the amount of liquid does change when it changes containers, and can give reasoned explanations for their beliefs). There is a large literature describing and cataloging the rationales children produce in speech on this task. When we code the gestures that children produce, we first ask whether the children convey information in gesture that is relevant to a conservation rationale; if so, we attempt to code the children’s gestures in terms of rationales. To the extent that this is possible, we can then compare the rationales children convey in their speech with the rationales they convey in their gestures.

Note, however, that gesture and speech never convey exactly the same information, as we will discover in Chapter 3. The extent to which gesture and speech convey diverging information is always one of degree, and depends crucially on the level at which we are analyzing the task. For example, saying “the glass is tall” does not convey exactly the same thing as gesturing “tall” (a flat palm held horizontally at the top of the glass). The speech indicates that the child is thinking generally about the height dimension, the gesture indicates a particular height. In terms of type of rationale for a conservation of water task, however,
both gesture and speech are conveying the same information—the “focus on height” rationale. What we choose to focus on as the child’s “meaning” depends on the question we are asking. If we want to use gesture to probe the child’s understanding of conservation, we need to code speech and gesture at the level of the rationale. If, however, we want to use gesture to probe how children describe the dimensions of objects, we will want to code at a finer level of detail.

Thus the meaning codes we use for gesture can be more or less detailed—although, unfortunately, whatever system we use, gesture coding always takes time. It is a slow, painstaking process. At the end of the process, moreover, there is no guarantee that the meaning we assign a particular gesture is, in fact, the right meaning for that speaker. As in all studies that involve subjective coding, we need to establish reliability—that other coders would attribute this particular meaning to the speaker—and validity—that this meaning is, in fact, what the speaker had in mind. I tackle issues of reliability in gesture coding in Chapter 3 and validity in Chapter 5.

The typical gesture study relies on video recordings of people talking—conversing naturally, narrating a story, explaining how they solved a problem, and so on. Researchers observe the gestures that are produced in relation to speech, and use those gestures to make inferences about how the speaker talks and thinks. Often the content of talk is directed by having all of the speakers watch the same cartoon, describe the same objects, or solve the same problems. Giving all of the speakers the same stimulus to react to has the advantage of narrowing the range of responses. Speakers are likely to say the same kinds of things on such tasks, which then allows us to interpret gesture in the context of spoken sentences that are similar in content and form.

We can also be clever about which speakers we study. For example, if speakers who have been blind from birth gesture when they speak, it tells us something about how important—or in this case, how unimportant—seeing gesture is to using gesture. As another example, we can study children who are having difficulty learning language. These children, by using gesture to go beyond their linguistic limitations or not, can tell us whether gesture and speech can complement each other in children whose development has gone awry. My colleagues and I have also spent many years studying deaf children who have not learned to speak and have not been exposed to sign language. It turns out that these children use gesture to communicate. Comparing the gestures that the deaf children use with those produced by hearing speakers when they talk can tell us whether gesture changes its form when it is not produced in the context of speech. Thus we can learn a great deal just by observing gesture in a variety of well-chosen speakers and tasks.

In addition to observing gesture as it occurs along with relatively natural talk, we can manipulate aspects of a task and look at what happens to gesture. For example, we can make a task harder and explore whether rate or type of gesture changes as speakers increase the amount of cognitive effort they are putting into the task. We need studies of this type in order to better understand the causes that lead to gesturing—its mechanism. We can also manipulate gesture itself, and observe the consequences. For example, we can prevent speakers from gesturing and explore the effect that this manipulation has on their performance of other cognitive tasks. These types of studies are necessary to understand the function gesture serves.

Overall, the key to any study of gesture is its coding system—isolating gesture from the stream of motor behavior, describing its form, and assigning it meaning (and, of course, going through the steps to ensure that the meaning codes are reliable and valid). Although time-consuming, looking at gesture is essential if our goal is to fully understand what people are thinking about as they talk.