Hand and Mind: What Gestures Reveal About Thought

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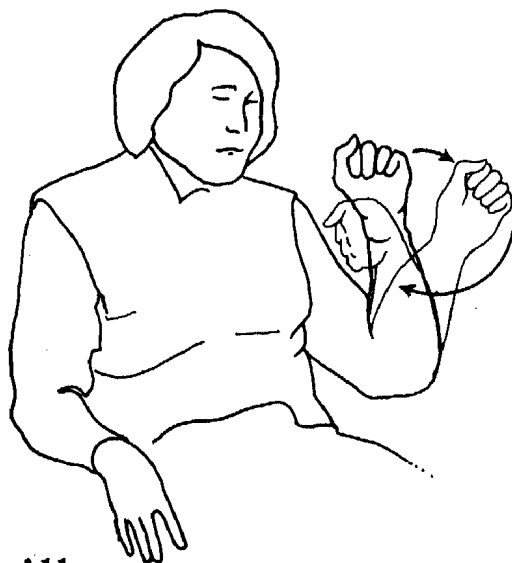
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HAND AND MIND

What Gestures

Reveal about

Thought

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The University of Chicago Press

Chicago and London

In this chapter and in chapter 6 I will present details about the varieties of gesture: what they look like, how they function, and in general how they are able to express our thoughts. My aim in these two chapters is to demonstrate with numerous examples that gestures and speech are truly integral parts of a single process, with the gesture manifesting the imagery that is inherent in this process at an early stage. (Chapter 5 describes an experiment testing the communicative effects of gestures on listeners.) The present chapter is devoted to gestures that depict concrete objects and events. These are the gestures of the concrete, the ones that we call iconic. Chapter 6 concentrates on gestures of the abstract. By studying gestures of both the concrete and abstract kinds, we can see how speakers represent objects and events in actual and fictive worlds. We will see that speakers reveal in their gestures what they regard as relevant and salient in the context—the "psychological predicate" of which Vygotsky (1962) wrote. At the same time speech may be unable to express fully the shading of relevance and salience that is shown in the gesture, since speech (but not gesture) is constrained by standards of linguistic form, and these standards add their own limits to the speech channel. The first point to establish is that, in performing gestures, the speaker's hands are no longer just hands, but *symbols*.

Gestures Are Symbols

Gestures are not just movements and can never be fully explained in purely kinesic terms. They are not just the arms waving in the air, but *symbols that exhibit meanings* in their own right. They have a meaning that is freely designated by the speaker. The hand can represent a character's hand, the character as a whole, a ball, a streetcar, or anything else; the space likewise can be freely designated—a table top, a street, the side of a building, midair. In other words, the gesture is capable of expressing the full range of meanings that arise from the speaker. Gestures are symbols different from spoken language, however. They are created—in contrast to retrieved—by the speaker at the moment of speaking. They coexist with the words and sentences of speech but are qualitatively different from those words and sentences. They are a separate symbolic vehicle with their own history, and finding their own outlet in space, movement, and form. This coexistence of different *qualities* of symbols—both idio-

syncratic and standard—is the fundamental aspect of gestures and speech emerging at the same time from a common core process of meaning presentation.

That gestures are symbols is convincingly demonstrated by comparing the gestures produced by different people when they are describing the same event. The descriptions can be compared because of our method of presenting the same narrative stimulus to all subjects. In the following, five speakers are describing a scene from a cartoon in which one character tries to reach a second character by climbing up the inside of a drainpipe (the sixth speaker did not produce a gesture for this event). The drainpipe conveniently stops at the window ledge where the second character is perched ever so provocatively. The hands are symbols in that they represent something other than themselves: a character rising upward and other specific details, depending on whatever an individual speaker chooses to highlight in the episode. The individually different gesture forms have a common core of meaning, not because of a code or gesture language, but because each speaker separately created her own manual symbol of the event. For each symbol refers to the basic event of upward motion, and yet is unconstrained by standards of well-formedness of the type that hold in linguistic systems.

Speaker 1 (see fig. 4.1):

Figure 4.1. Speaker 1's iconic gesture with "he tries going [up the inside] of the drainpipe." Sylvester is depicted as an undifferentiated blob rising upward. The extended index finger may be an attempt to convey the interiority of the path or simply indicate the destination. The blob hand is not without meaning but highlights no aspect of Sylvester's person (no limbs, etc.).

(4.1) he tries going [up the inside] of the drainpipe
Iconic: hand rises up with the index finger extended, depicting the character rising and possibly the interiority of the pipe.
Speaker 2 (see fig. 4.2 at the top of page 107.)
(4.2) he tries climbing up the [drainspout] of the building
Iconic: hand rises up with first and second fingers wiggling, depicting the character's rising and clambering movements.

Figure 4.2. Speaker 2's iconic gesture with "he tries climbing up the [drainspout] of the building." This speaker also shows a blob rising upward and, in addition, she depicts clambering movements.

Speaker 3 (see fig. 4.3):

Figure 4.3. Speaker 3's iconic gesture with "and he goes [up THROUGH] the pipe this time." The gesture shows a differentiated hand shape depicting the interiority of the path, combined with upward movement.

(4.3) and he goes [up THROUGH] the pipe this time
Iconic: hand rises up in basket-like shape, depicting the character rising up and the interiority of the pipe.
Speaker 4 (see fig. 4.4 at the top of page 108.)
(4.4) this time he tries to go up in[side] the rain gutter
Iconic: hand rises with index finger pointing (like speaker 1).
you know [. . .]
Iconic: fist-hand shows barreling.
[barrel]ing up through it
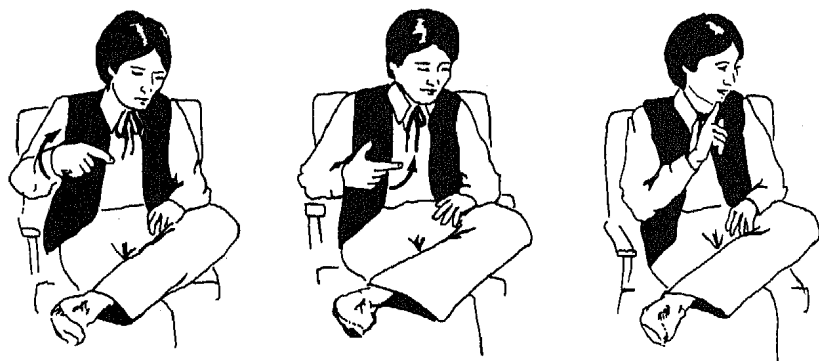*Iconic: fist-hand flexes backward at wrist, showing character rising.*

Figure 4.4. Speaker 4's iconic gesture with "you know [...] barreling up through it." The gesture shows the rotational movement of "barreling."
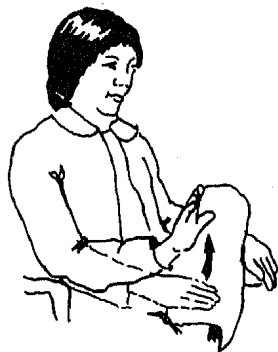
Speaker 5 (see fig. 4.5):

Figure 4.5. Speaker 5's iconic gesture with "he tries [climbing] up the rain barrel." This is a minimal gesture for the scene: just ascent (not even a blob).

(4.5) he tries [climbing] up the rain barrel
Iconic: hand flexes backward, showing the character rising upward.

Although a quantitative comparison of the gestures and speech is not realistic, there seems to be about as much variation among the linguistic choices in these examples as among the gestures. The words referring to the drainpipe include, for example, "drainpipe," "pipe," "drainspout," "rain gutter," and "rain barrel." This variation is not obviously less than the manner of moving the hands upward, pointing or not pointing, in a basket shape, rotating, or with a backward flexion. Each speaker highlights her own aspects of the situation (this explains much of the varia-

tion) but all retain the core meaning of the character rising upward. Here we have five people, five memories of the same event, and five gestural-verbal descriptions of the event that converge precisely because the hands are performing as symbols. Thus there coexist two linked symbol systems: speech and gesture, products of a single integrated process.

Interpretation of Iconic Gestures

Mind reading

By the title of this section I do not mean anything occult: I mean real mind reading. I mean noticing the gestures with which speakers unwittingly reveal aspects of their inner mental processes and points of view toward events when these are not articulated in speech. In gestures we are able to see the imagistic form of the speaker's sentences. This imagistic form is not usually meant for public view, and the speaker him- or herself may be unaware of it or think that it has been well hidden; but it is visible to those who would look at the gestures.

ICONICS IN A TV DOCUMENTARY. Here is an example of mind reading in which a concrete gesture is the key. I observed this during a BBC film about the Kayapo, a tribe of Indians of the Amazon who have lately come under severe ecological threat. At the time of the film (about 1970) they were still living in their traditional manner. The anthropologist, Terence Turner, was describing the Kayapo mode of life and said, regarding life in the village, that the women don't have a collective focus to their lives. At the same time, he made a gesture in which his hand moved toward his own body. Then he said that the men dominate the political life of the village, and made a gesture in which his hands moved away from his body. These were clearly not self-referring gestures, despite the use of the speaker's own body as a reference point, since they reversed gender roles. The gestures were in fact geographical. They suggest that the speaker was, in his mind, standing at the outer circle of houses in a typical Kayapo village and looking in at the center. Kayapo villages have a circular plan and the houses around the periphery are the exclusive property of the women (see fig. 4.6). At the center is the men's hut, open only to men, which is, in fact, the center of the village political life. Economic power and political power thus are separated and this separation is modeled by the Kayapo themselves in the layout of the village. We get a glimpse into the anthropologist's mind as he spoke. We see a picture of the village with the anthropologist visualizing himself at the outer edge looking in. This
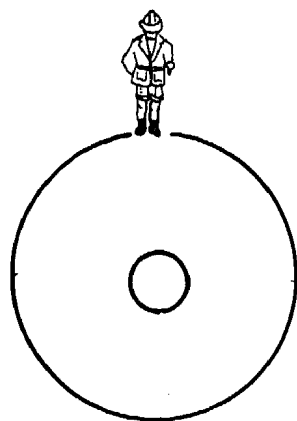
Figure 4.6. Layout of a Kayapo village. The anthropologist imagines himself on the outer ring where the women's houses are situated, looking inward to the inner ring where the men's hut is located.

picture was present even though he was talking about the political life of the village. He was thinking in terms of the Kayapo's own geographical metaphor and included himself in it. This image could have been the primitive form of the sentences whose final forms were about abstract ideas such as "collective focus" and "political life."

ICONICS IN THE UP-THE-PIPE SCENE. We can perform a similar mind-reading exercise with other gestures. By looking at the gestures, we can discover, for each person, what was highlighted, what was relevant and what not, and from this infer the imagistic side of their utterances. The five up-the-pipe gestures demonstrate how individual speakers made their own choices of what was salient. Some of these choices are revealed in speech but not necessarily all. All five speakers included upward movement and all omitted details of the character's appearance. But each speaker also emphasized other details that were not emphasized by the others. Thus, for every speaker we infer that upward movement was salient. For speaker 2 we also infer that clambering was salient; for speaker 3 that interiority was important; for speaker 4 that interiority and manner of movement was important, etc. The following remarks illustrate how the up-the-pipe gestures can be interpreted.

SPEAKER 1 (see fig. 4.1):
     The example was "he tries going [up the inside] of the drainpipe." The gesture presented a blob hand, upward movement, and an extended forefinger; and each of these features can be interpreted by referring to the cartoon scene. The upward motion corresponds to the upward trajectory

of the character, the blob corresponds to the character himself, and the extended forefinger corresponds either to the interiority of the path (the character compressed inside the pipe) or to the character's final destination—either way, something connected with the path. We infer that the salient elements of the scene for this speaker were upward movement and something about the path of movement. On the other hand, details about the character's person were unimportant—not even his limbs were hinted at.

SPEAKER 2 (see fig. 4.2):
     The example was "he tries climbing up the [drainspout] of the building." Like speaker 1, speaker 2 used a gesture that also presented a blob hand and upward movement, but added wiggling movements of the first and second fingers. The blob was equipped with feet, and we infer that the clambering up the pipe was salient for this speaker, whereas the first speaker had not selected this detail. The speaker, indeed, said "climbing," a verb conveying a clambering manner of movement, while the first had said "going"; thus both speakers' linguistic choices and gestures were coexpressive (as usual, their gestures slightly anticipated the speech in their preparation phases).

SPEAKER 3 (see fig. 4.3):
     The example was "and he goes [up THROUGH] the pipe this time." The gesture again presented something moving upward, but in addition strongly emphasized the interiority of the pipe path. This the speaker did with a "basket-hand," made with the palm facing up, the digits extended, separated, and slightly bent; all of this was the hand shape that moved up. The gesture thus included distinct semantic parts: a moving entity, upward movement, and a shape suggesting hollowness. Note that each semantic component was assigned to a different kinesic aspect of the gesture: thus each meaning was symbolized in its own part of the gesture; motion of the entity was conveyed by motion of the hand, direction by direction of the hand, and hollowness by shape of the hand. Yet all three were combined into a single gesture-symbol that presented the elements simultaneously. Such is a synthetic gesture: distinguishable meaning segments brought together into a single symbol-hand. The gesture took the basket form it did because of the immediately preceding gesture by this speaker. It thus shows the influence of previous gestures on later ones. In the cartoon Sylvester makes two attempts to reach Tweety, the first on the outside of the pipe, the second inside. Speaker 3 described the first by

saying: "he crawls [up a pipe]" and simultaneously performed a blob-rising gesture with no additional features for the path, for the manner of movement, or for anything else. Then she went on to describe the event: "and when he gets up to the bird the [grandma hits him] over the head with the umbrella," with a hitting gesture at the bracketed portion. Then she came to our example, "and he goes back and he goes [up THROUGH] the pipe this time," and the basket-shaped gesture. Thus this basket-shaped gesture highlighted exactly what was distinctive about the second ascent: that its path was inside the pipe in contrast to the previous path on the outside. It is true that the first ascent had "exteriority" just as much as the second had "interiority," but at the moment of the first ascent there was nothing noteworthy about the path; the ascent itself was the novelty. These gesture depictions thus spotlight the scene in a way that we can plausibly take to be how the speaker herself was thinking of it, that is, in terms of what is novel and contrastive. The speaker's mind was moving forward on a stream of contrasts and in her gestures we see this process externalized.

SPEAKER 4 (see fig. 4.4):

The example was "this time he tries to up in[side] the rain gutter, you know [. . .] [barrel]ing up through it." The first gesture depicted an undifferentiated blob moving up. The second depicted a rotational movement, coexpressive with (and anticipating) the verb "barreling" in speech. The third gesture depicted an undifferentiated blob moving up and anticipated the rest of the verb phrase, "up through it." Note that the rotational movement, like the clambering movement in the second speaker's gesture, is an inference: in the cartoon itself the character is invisible inside the pipe (see the Appendix for a line-by-line description of the cartoon). Nonetheless, the speaker inferred the manner of movement, and this inference appeared in the gesture.

SPEAKER 5 (see fig. 4.5):

The example was "he tries [climbing] up the rain barrel." The gesture depicted upward movement of an undifferentiated blob, but the speaker's thumb was tucked into her palm as her hand flexed upward, and this could have conveyed interiority; thus the gesture may have supplemented speech, which did not mention that Sylvester was inside the pipe. At the same time, however, there was nothing in the gesture to convey the manner in which Sylvester was moving and so the verb, "climb," included more information than the gesture. This example thus is unusual in that it illustrates speech supplementing gesture as well as gesture supplementing speech. If the primitive version of the sentence was an image

of clambering up the inside of the pipe, we have a case where some parts of this image were manifested in speech and others in gesture.

POINTING IN A CONVERSATION. Mind reading is also possible in non-narrative discourse. In the example of this section it is a conversation in which a speaker unwittingly reveals something that he was attempting to conceal. Pointing is really a form of abstract gesture (see chap. 6), but I include it here among the gestures of the concrete as another example of mind reading. I used this conversation in chapter 1 to illustrate deictic gestures, and now we see more of it. The participants were previously unacquainted male graduate students at the University of Chicago. The tape was made as part of a research project on face-to-face interaction by Starkey Duncan (Duncan and Fiske 1977). The two students were simply brought together before a video camera and told to have a conversation. This command typically elicits a series of maneuvers during which the participants try to find a common theme about which they can talk. The example we are considering is from this introductory phase; it ends with the participants' discovering a workable theme, but only after a cat-and-mouse game that is the substance of my example. In conversations no less than narrations the predominant gesture is pointing when a new theme is sought (this is explained in chap. 7). So it was here. One of the participants, H, was trying to find something that could serve as a topic of conversation. In the way of students he asked where the other student, O, had gone to school before. O, however, somewhat mysteriously held back; he did not wish to reveal certain details. In particular, he was avoiding the question of where he had been an undergraduate. His unexpected resistance led to the cat-and-mouse game over this issue. The excerpt begins with two questions by H (see figs. 4.7 and 4.8):

(4.6) H: is this your first year [here]?
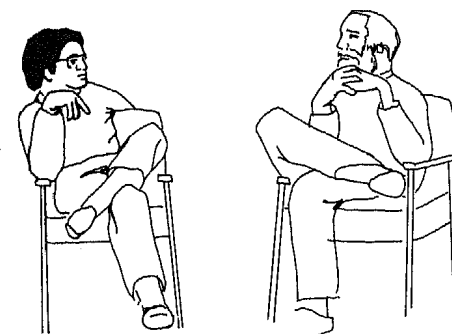
Points down to own space.

Figure 4.7. Pointing at the speaker's own space with the question "is this your first year [here]?" The space is for "here," a word used here both for space (the university) and time (one's time at the university). (Also see figs. 4.8–4.11.)

(4.8) H: or [where did you] come from before?
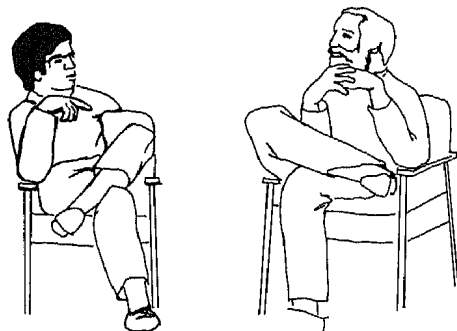*Points into shared interaction space and finger circles.*

Figure 4.8. Pointing at the shared space with "or [where did you] come from before?" Compare the finger angle to that in fig. 4.7. The speaker is now setting up a contrasting space for "before," drawing on the temporal sense of the "here" in the previous question.

The first pointing gesture in (4.6) marks as "here" the space where H is located. This "here" clearly means the University of Chicago, where the experiment was being conducted and where both H and O were students. The second gesture in (4.7) contrasts this "here" with the space it introduces, the space of "before." The new space was the neutral interaction space shared by H and O (viz., the space where their respective gazes intersected, H and O being seated at an angle). This use of the neutral space for "where did you come from before?" fits H's desire to find a shared topic of conversation. O, however, answers noncommittally:

(4.9) O: um Iowa. I lived in Iowa

The conversation next veered off into a brief exploration of Iowa as a possible topic. However, that eventually petered out and H returned to probing O's past (see fig. 4.9):

(4.9) H: did you [go to] school [there] or uh?
Points both times into the shared interaction space.

Figure 4.9. Pointing at the shared space with "did you [go to] school [there] or uh?" This gesture is consistent with the space in fig. 4.8 and contrasts with the space in fig. 4.7, now drawing out the spatial sense of "here."

Thus H is consistently using the shared space for the meaning "where you came from before." O answers (see fig. 4.10):

(4.10) O: I did go to school [there]
Points to upper level of shared interaction space.

Figure 4.10. The second speaker pointing at upper layer of shared space with "I did go to school [there]." The speaker uses the shared space, but introduces an upper story. This enables him to differentiate his "there" from the first speaker's dangerous "there."

O uses the shared space, but incorporates a revealing variation. He pointed at a space slightly above the shared space, as if to signal that while his "there" was indeed "where he came from before," it was outside the space that H had marked off as a topic of conversation. This clue is elaborated on in O's next gesture (see fig. 4.11):

(4.11) O: [I went to school] here also
Points to left periphery (i.e., away from H).

Figure 4.11. The second speaker now pointing outside of shared space altogether. This gesture immediately followed the one in fig. 4.10 and occurred with "[I went to school] here also." The speaker unwittingly maps the contrast between the city of Chicago and the University of Chicago onto space as a center space–left space contrast.

Clearly, this "here" is not the same as H's "here." Indeed, it is as far removed from H's "here" as possible. I do not believe that O was aware of tipping his hand (so to speak), but his gesture reveals that he had dichotomized the space differently from H: the *left* side was to be his "here" and this excluded the "here" of H, which was the University of Chicago.

It apparently arose from an image in his mind that assigned different spaces to the place where he had gone to school (another university in the city of Chicago) and the University of Chicago. Through the gesture we can read his mind to find a meaning which, at this moment, he was attempting to conceal. The drama had a happy ending: shortly after this crucial moment O capitulated and revealed that he had been a student at a Jesuit college; it then marvelously turned out that H also had been a student at another Jesuit college; so they talked about Jesuit education—a topic on which, ironically, O turned out to be the more enthusiastic participant!

The ability to mind read with gestures rests on the close connections of gesture and speech as expressions of meaning, coupled with the potential for gesture to display what is most relevant. That is, the two—speech and gesture—cover the same idea unit in the formation of an utterance, but become distinct in terms of relevance, and this is where the gesture channel can reveal what the speaker thinks is hidden.

Expression of Meaning in Gesture

In this section, I will analyze some of the ways in which gestures express meaning. The focus is semantic. The use of gestures to express pragmatic discourse content has a chapter of its own (chap. 7).

FEATURAL IDENTITY. To compare gestures to speech, Elena Levy and I analyzed each gesture into kinesic features that could be compared to the semantic features of the verbs in the accompanying speech (McNeill and Levy 1982). We defined altogether 44 kinesic features, such as, for example, Fingers Curled or Extended; Index Finger Extended; Palm Down, Up, Right, Left, Toward Self; motion Up, Down, Sideways (left or right), and so forth. This method was the distant ancestor to the current method of gesture transcription summarized in chapter 3. For verbs, we devised a set of 37 semantic features inspired by the semantic analysis methods of Miller and Johnson-Laird (1976). Our list included, for example, Entrance/Exit ("he swallows the bowling ball"); Downward ("he comes down the pipe"); Horizontal ("he runs ahead of it"); and End-State ("it catches up to him" and "he swallows the bowling ball" again). We intended the meaning features to capture the meanings of the verbs in the specific senses in which the narrators used them in the narratives.

There is no necessary reason why the two sets of features, kinesic and semantic, should correspond in any given gesture-speech combination. There is nothing built into the coding method that would force a Down-

ward verb to appear only with a Downward gesture, for example; it could just as well go with an Upward gesture or have no kinesic preference. In fact, however, we found a very good correspondence between the two arrays of features. For example, we found that 54% of verbs with the Downward meaning feature co-occurred with gestures in which there was Downward movement; 0% co-occurred with gestures in which there was Upward movement; 73% of verbs with the Horizontal meaning feature occurred with gestures that included a Left-Right movement feature, compared to only 8% of gestures that moved Downward and 17% that went Upward.

The Downward meaning feature not only went with Downward movements, but also with Curled Fingers more than 60% of the time. Curled Fingers seem to depict passive movement, such as falling under the influence of gravity. The Downward meaning feature did not appear with the contrary feature of Extended Fingers, nor with Both Hands Moving in the Same Direction, nor with Reduplicated arm movements suggesting running. This total pattern of positive and negative associations with Downward suggests a coherent picture in which there is falling, falling under the influence of gravity, only one object moving, and motion other than locomotion. Such a gesture occurred repeatedly in the cartoon narrations. It exhibits a prototypical situation in the cartoon story. The character was constantly falling from great heights, falling alone and involuntarily, definitely not moving in a way he would have been had he been locomoting on his own. The aggregate gesture profile that emerges from the correlations with Downward thus presents a picture that is typical of the cartoon narrative and conveys much more than a single verb could have done. So, even at the featural level, we can see a global picture emerging out of the gestural description.

USE OF TWO HANDS. Many gestures are performed with just a single hand. However, a significant number use two hands, and among the two-handed gestures there are two kinds. In some gestures the hands move in the same pattern but in mirror images. Such gestures do not seem to differ semantically or functionally from their one-handed counterparts. In other two-handed gestures, however, the two hands perform different movements. For example, one hand depicts a character's open mouth while the other hand depicts the bowling ball going inside (see fig. 4.12, for example, which also is line 33 of the narrative in chap. 3). The hands, considered separately, perform different movements but, jointly, create a scene in which there is a single event—the cat swallowing the bowling ball. This is a typical case of a gesture with two differentiated

Figure 4.12. Two-handed gesture for the accomplishment meaning of "[he swallows it]." The left hand enters the space formed by the hollowed out right hand, and this is an accomplishment in Vendler's (1967) sense.

hands. In one hand there is a motionless reference point: e.g., the hand for Sylvester's mouth. In the other hand, active motion: the bowling ball going into his mouth. A similar distinction appears in many ASL signs between a static reference point and an active transformation (Klima and Bellugi 1979). The verbs that went with these gestures, moreover, conveyed what Vendler (1967) termed accomplishments: "they proceed toward a terminus which is logically necessary to their being what they are" (101). Compare chasing and catching up to—the latter is an accomplishment. Two-handed gestures and their verbs thus also illustrate the integration of speech and gesture at the level of meaning. End-State verbs were accompanied with two coordinated hands 68% of the time, and Entrance/Exit verbs 90% of the time. (Verbs lacking the End-State or Entrance/Exit features went with two-handed gestures 40% of the time.) End-State and Entrance/Exit imply actions that reach a goal. This is the "accomplishment" referred to by Vendler. For example, "to swallow" means that something was not merely moving toward the appropriate aperture but that it enters it and goes inside irretrievably; otherwise one has not swallowed. "To catch up to" similarly requires not only movement toward a target but that a certain end state be reached, namely, that the target be reached; otherwise one has not caught up to but just chased. Thus the kinesic form of the gestures co-occurring with these kinds of verbs reflected the logical element of accomplishment. The speech and gesture forms were integrated around the theme of reaching a logical end point.

EXPRESSING THE VIEWPOINT. Another area of meaning where speech and gesture are coexpressive is the point of view, or the feeling of distance from the narrative. Consider the event in the cartoon story where Sylvester climbs up the pipe. This could be conveyed gesturally in either

of two ways. One would be to move one's arms up and down, as if climbing a ladder. Here, the viewpoint would be the character's: we imagine ourselves playing the part of Sylvester—the pipe is in front of us and we move our hands up and down as if clambering. Such a gesture has a Character Viewpoint, or C-VPT. With this viewpoint we feel that the narrator is inside the story. A different gesture for the same event would be to make the hand into Sylvester as a whole and cause it to rise upward. We see Sylvester before us, rising upward, but we are not part of the scene. This gesture will be said to have an Observer Viewpoint, or O-VPT. With this viewpoint, the narrator keeps some distance from the story. We have in the viewpoint distinction one of the most readily identified aspects of iconic gestures (Stephens and Tuite 1983 referred to this distinction as iconic$_1$ and iconic$_2$, respectively). A C-VPT incorporates the speaker's body into the gesture space, and the speaker's hands represent the hands (paws, etc.) of the character. Previous C-VPT examples in this book have included the gesture that accompanied "and he bends it way back." The speaker was seeing the event as if he were the person performing the act, rather than taking the viewpoint of an observer of the event. An O-VPT gesture excludes the speaker's body from the gesture space and his hands play the part of the character as a whole. Most of the earlier examples in this book have been of the O-VPT variety (e.g., figs. 4.1–4.5). Overall, in cartoon narratives, 60% of iconics have an O-VPT, 40% a C-VPT (Church et al. 1989).

VERBAL MANIFESTATION OF VIEWPOINT. There are also linguistic manifestations of viewpoint. The C-VPT tends to appear with transitive verbs and single clause sentences; the O-VPT with intransitive or stative verbs and multi-clause sentences. Church and her colleagues (1989) counted 80% of C-VPT event descriptions with transitive verbs and 100% of O-VPT event descriptions with intransitive verbs. In the narrative in chapter 3, 29% of C-VPT gestures were accompanied by multi-clause sentences, compared to 76% of the O-VPT gestures (overall in that narrative 53% of sentences were multi-clause and 47% were single clause). In all of these cases, then, the viewpoint parameter can be incorporated into the utterance's linguistic form. However, this is not at all obvious until the gestural manifestation draws our attention to it.

The viewpoint of the gesture and the form of the sentence achieve equivalent results in terms of distance. In the C-VPT narrators become participants and insert themselves into the gesture space. In the linguistic parallel there is a single clause and a transitive verb. The "he bends it way back" sentence, with its transitive verb and single clause, was thus a typi-

cal C-VPT example. Another typical C-VPT illustration is "and drops it [down] the drainpipe." In the gesture the hand appeared to grasp the bowling ball and shove it down the pipe—the viewpoint of the character—and the sentence was again a single clause with a transitive verb. With a single clause there is minimal grammatical separation of the event from the speaker, just as in the gesture the speaker enters directly into an enactment of the story. With a transitive verb the effect on distance is that there is analysis of the event as if under magnification—the role of the character is separated out from the rest of the event. Thus the form of the sentence, along with the gesture, expresses proximity to the story line.

The O-VPT correspondingly appears with complex sentences (multiple clauses) as well as intransitive or stative verbs. A complex sentence, in its own configuration, interposes distance from the action. An example is "he tries [climbing] up the side of the building," where the act of climbing is presented in the embedded clause and the upper clause ("he tries") implies an outside observer of the story who makes the judgment that Sylvester does not succeed. (Trying is an evaluation, not a description; it means trying without success.) In most of the O-VPT examples that we have seen, there is some such implicit distance interposed by the linguistic form of the utterance through the embedding of the action. In (4.12), for instance, the sentence is "he tries going up the inside of the drainpipe," and this was accompanied by an O-VPT gesture. The two clauses of the sentence have different relationships to the story structure. The upper one ("he tries") states an attitude that implies a judgment (the character isn't going to succeed), and this judgment implies narrative distance. The lower clause ("going up the inside of the drainpipe") refers to the actual event in the cartoon. Sometimes the O-VPT is not expressed syntactically in this way, but still there is the speech-gesture coexpression of distance. For example, "and then [you hear a s]trike" (line 38 of the narrative reproduced in chapter 3) was accompanied by an O-VPT gesture even though it is a single clause. But the pronoun "you" in this case codes the distance implied by the O-VPT. It is the general "you" of an unspecified observer.

VIEWPOINT AND EVENT STRUCTURE. The shifts between C-VPT and O-VPT are not at all random; they reflect the causal texture of the episode. More central events in this causal texture are given the C-VPT, while more peripheral ones are given the O-VPT. Statistical confirmation of this difference in centrality and peripherality is contained in the table below from Church and colleagues (1989), which is based on an analysis of three cartoon narrations. They used story grammar categories (Stein

Table 4.1 Gesture Viewpoint and Story Centrality

Event Type	Percentage of Events of Each Type			Number of Events
	C-VPT	O-VPT	Uncodable	
Central	71	24	5	66
Peripheral	6	93	1	72

and Glenn 1979) to classify events as Central or Peripheral. Central meant either (1) initiation of goal actions, (2) main goal actions, or (3) outcomes of goal actions; and Peripheral meant (4) setting statements, (5) subordinate actions, or (6) responses to actions and outcomes (Stein and Glenn had a seventh category—describing the goal—but this was never depicted in gestures and was rarely described in speech). Using these definitions the two gesture viewpoints can be seen to appear in quite different contexts (table 4.1). Seventy-one percent of C-VPT gestures appeared with Central events, and fully 93% of O-VPT gestures with Peripheral events. The examples in (4.12–4.15), successive lines in one speaker's narration, illustrate this association.

(4.12) he tries going [up the inside] of the drainpipe

O-VPT iconic: right blob hand rises up to show character rising up the pipe.

(4.13) and Tweety Bird runs and gets a bowling ball and drops it [down] the drain pipe

C-VPT iconic: both hands appear to shove ball down into open pipe.

(4.14) and [as he's com]ing up and the [bowl]ing ball's coming down
       (1)   (2)
he [sw]allows it and
    (3)

All O-VPT iconics:

(1) right blob hand rises up for ascending character.
(2) left blob hand moves down for descending ball, both into central space.
(3) right blob hand changes shape to form an opening for character's open mouth and left blob hand passes into it.

(4.15) he [comes out the bot]tom of the drainpipe
       (1)
and he's [got this] big bowling ball inside him
    (2)

(1) O-VPT iconic: left blob hand moves down and curves under right flat hand to right side of space (character with the bowling ball inside leaving the pipe).
(2) C-VPT iconic: both hands press bowling ball into own stomach.

The C-VPT and near distance exclusively appeared with the important events in this sequence of cause and effect: the first character's dropping the bowling ball down the pipe (initiation of the action) and the second character's ending up with it inside him (the outcome). These are the main points of the scene. The intervening events supported them but were not the main points, and they all got O-VPT gestures and far distance. All the gestures were iconics and all the clauses were at the narrative level, but the events and the clauses were not equal in terms of their importance for advancing the story line. The difference in centrality motivated the changes of distance, which were depicted in the gesture viewpoint.

VIEWPOINT AND COHESIVENESS. This link up of viewpoint with event centrality or peripherality can be explained as arising from how the narrator keeps up a sense of cohesion in the narrative. Cohesion is automatically produced with central events: each event has its place in the causal sequence of the story and cannot be moved without altering the story. If the speaker is thinking of event G this is automatically cohesive with the other causal events F, H, and so forth. No extra viewpoint is needed to introduce and refer to the chain. When the event is more peripheral, however, this definite location in a chain may be lacking. A peripheral event is precisely one not on the main causal sequence; it is supportive of but not part of the central thread. Thus a secondary chain of comments comes into being to carry its own cohesion and that of the peripheral events. This added chain interposes distance from the story line events. Thus an observer viewpoint appears. This observer, among other tasks, is asked to provide the cohesion that cannot be generated by the peripheral events on their own. In short, one way of explaining table 4.1 is by the need for cohesive consistency: this cohesion is not automatic with peripheral events, and that induces an observer's point of view and distance.

DUAL VIEWPOINTS AND THE IRONIC. The gestures we have seen thus far have had a single viewpoint. This is true even of two-handed gestures, such as "he [swallows it]." However, there also are *dual viewpoint* gestures. These present a scene simultaneously from two viewpoints, for ex-

ample, a C-VPT and an O-VPT. In cartoon narratives, at least, dual C-/O-VPTs tend to produce an ironic effect, by pitting one viewpoint against the other. This contrast requires, not a *shift* of viewpoint, but a *contrast* of viewpoints. In the example below, an observer is added to a C-VPT gesture at the very moment when Sylvester is presented as if he had captured Tweety, but the observer (the narrator) knows that this moment was in fact a prelude to disaster. The dual viewpoint of the gesture enables the narrator simultaneously to take Sylvester's role and to observe it. Sylvester has used a five-hundred-pound weight to catapult himself up to the window where Tweety is perched:

(4.16) and he [grabs] Tweety Bird

Iconic: grip handshape (a C-VPT).

and as he [. . . comes back] down he [lands on the ground]

Dual VPT iconic: a grip handshape in a downward trajectory (a C-VPT depicting the character gripping the other character, and an O-VPT depicting falling down to the ground). The gesture is then repeated on a smaller scale.

and he [starts running] away and at this time the five-hundred-pound

Dual VPT iconic: grip handshape moves to right.

weight comes down [and lands] on him

Dual VPT iconic: other hand falls on grip hand.

(See fig. 4.13). The downward trajectory is not the movement of the character's hand qua hand but movement of the whole assembly of the two characters plunging to the ground as seen from the outside. The viewpoints are kept separate since each viewpoint has its own kinesic fea-
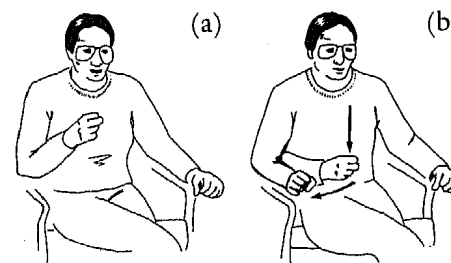

(a) (b)

Figure 4.13. A dual viewpoint in two panels. Panel (a) is a single viewpoint (C-VPT) gesture for grabbing with "[he grabs Tweety Bird as he]" and (b) is a dual C-VPT/O-VPT gesture with "[. . . comes back] down." Note that the hand remains in the grip that implies the C-VPT while it descends, which implies a trajectory from the O-VPT. There is an ironic comparison between the observer's view—who knows the upcoming denouement—and the character's—who thinks he has the bird at last.

ture(s) in the gesture, and these are nonoverlapping. The O-VPT had the trajectory in this example and the C-VPT had the handshape. Although there are two viewpoints and just a single hand, the gesture does not mix them up.

Confirmation of the irony implicit in the dual viewpoint gesture was the next step in the speaker's narration. She kept up the dual viewpoint while showing the character run off with the bird and then have the weight fall on him. Having two viewpoints was crucial to showing the character's grip on his (assumed) prize versus the reality of the weight falling on him. The narrator had set all of this up in the first dual viewpoint gesture above. Here we find the gesture channel carrying most of the meaning, for none of these ironic contrasts appears in speech. (This example appears in chapter 3 in the narrative, lines 47–52.)

Another type of dual viewpoint combines the C-VPTs of different characters. Such combinations appear when the speech of one character is quoted. The accompanying example is from the work of Evelyn McClave of Georgetown University (McClave, 1991; see fig. 4.14):

Figure 4.14. A dual C-VPT with "[you] had your doctor go over to check out that person's claim" (McClave, 1991). Two character's viewpoints are represented, one that of the student himself (using his own body) and the other that of his examiner (the pointing hand). A child's dual C-VPT gesture is shown in fig. 11.16.

(4.17) [you] had your doctor go over to check out that person's claim

Dual VPT deictic: hand points to own body.

This is being presented as a direct quote. The speaker, a student, was describing to another student a take-home final exam that he had just written, and was quoting the problem he had been given (in a course in the philosophy of law). Despite the use of the second person pronoun "you," the gesture pointed at the speaker himself; but this is part of the quote. Thus one C-VPT is that of the examiner who says the sentence in (4.17) and points at the trembling examinee; the other C-VPT is that of the speaker himself who is in the role of this examinee. The use of a deictic

gesture appears particularly apt in this context. It sets up a consistent use of space where both characters have a locus and provides a diagram of the interpersonal communication that is taking place. So far as I am aware dual C-VPTs are restricted to this context: the gestures are deictics at the speaker himself and the accompanying speech is a direct quote that is addressed to the speaker. We will see in chapter 11 that the dual C-VPTs of children are different in all these respects.

Dual voices were a key concept in Bakhtin's (1981) notion of the dialogic imagination, or hybrid construction, where, for example, "the subordinate clause is in direct authorial speech and the main clause is someone else's speech" (306). Two voices in a gesture present a very similar situation. In the gesture two voices are "heard," or rather seen. As in Bakhtin's analysis, the dual viewpoint enables the narrator to present "two narratives, two styles, two 'languages,' two semantic and axiological belief systems at once" (304).

RELEVANCE. Another manifestation of gesture-speech integration appears when we compare gestures on the dimension of internal complexity. This dimension gives us insight into what is important, relevant, or salient to the speaker in the specific context of the story, and is the basis of the mind reading examples earlier in the chapter. Some gestures are simple: the hand flexed back for Sylvester rising up the pipe. Others are more complex: the bends-it-way-back gesture, for example, had at least these differentiated parts: the character's hand, the character's body, the relationship of the hand to the body, the shape of the hand, the trajectory the hand followed, the shape of the tree, etc. (see fig. 1.1). In between are other iconics, such as the basket hand rising for Sylvester's ascending through the pipe.

At the simplest level, a gesture depicts just a moving blob with only direction as the highlighted feature; this was speaker 5's gesture (see fig. 4.5); it receives a score of 0 on the scale described below:

(4.18) (the same as 4.5)

he tries [climbing] up the rain barrel

Iconic: hand flexes backward, showing the character rising upward.

At a slightly more complex level, the blob can be provided with little feet:

(4.19)

he tries climbing up the [drainspout] of the building

Iconic: hand rises up with first and second fingers wiggling, depicting the character rising and clambering movements.

Also more complex, there can be a differentiated handshape that is combined with the movement (speaker 3, see fig. 4.3):

(4.20) (the same as 4.3)

and he goes [up THROUGH] the pipe this time

Iconic: hand rises up in basket-like shape, depicting the character rising up and the interiority of the pipe.

Finally there is the use of two hands to convey the End-State or accomplishment feature (see fig. 4.12):

(4.21)

and . . . as he's coming up and the bowling ball's coming down [he swallows it]

Iconic: one hand forms open space for a mouth, and the other hand passes into this space for the bowling ball.

Thus iconics cover a range of complexity. A method for partially quantifying gesture complexity has been devised by Kita (1990). He measured the elaboration of a gesture by adding one point for each of the following:

use of two arms (4.21)
movement of the fingers (4.19)
change of hand shape during the stroke (4.20 and 4.21)
other than a fist or open hand shape (4.20 and 4.21)
other than rest position (4.19, 4.20, and 4.21)

The swallows gesture, for example, involved two arms, a change of hand shape (opening up), a marked shape, and space other than rest; it thus earns a score of 4. The climbing gesture involved only movement of the hand (not even a departure from rest), and earned a score of 0.

This variation in the complexity of iconics suggests a way of determining what is salient or relevant to the speaker. Moreover, we find not only what is relevant, but the moment it becomes relevant. Adding a feature to a gesture implies a relevant detail. The exact moment the feature is added reveals when it is relevant. In example 4.21 (fig. 4.12) the gesture implies that Sylvester's open mouth was relevant. The immediately preceding gesture (not shown) was made with the hands in the same position but with the right hand, rather than being an open space, being a rising blob. The rising blob was Sylvester, and the later open space was his mouth. When his mouth became relevant the hand shape changed. Salience is

also important for interpreting the speech. The same linguistic choices have different implications depending on the gesture features that appear with them. In both (4.18) and (4.19) speech included the verb "climbs," but the gestures suggest that different features of the situation were relevant to the two speakers. The simple upward gesture in (4.18) suggests that the manner of moving was not relevant to this speaker, while the gesture with wiggling fingers in (4.19) showed that manner as well as movement were relevant to that speaker. For the speaker in (4.18), the important detail seems to have been the upward trajectory, not otherwise particularized, and "climbs" was used but its implication of a manner was not salient.

Relevance is convincingly displayed in gesture form when we find *sequences* of gestures in which the second gesture contrasts with the first on precisely the dimension that is relevant. Example (4.20), "he goes up THROUGH the pipe," is an illustration of this. The speaker was describing Sylvester's second attempt to climb the pipe; it was on the inside of the pipe, the first attempt having been on the outside. Example (4.20) thus supplied exactly the new factor: that the second attempt was on the inside of the pipe. The prosodic emphasis on "through" likewise highlighted interiority, and gesture and speech were coexpressive. Examining all the narrations of the cartoon, we can see that gestures highlight interiority only if they have been preceded by other gestures depicting the exterior scene. That is, the gestural feature of interiority appears only if it contrasts with an earlier gesture. Two speakers who omitted mention of the first attempt are represented in examples (4.2) and (4.5); neither emphasized interiority in their gestures for Sylvester's second attempt despite the fact that the path was on the inside. In (4.2) the speaker included clambering but no hint of interiority; in (4.5) there was pure ascent and, again, no interiority. The other speakers described both attempts and their gestures for the second ascent did, in every instance, highlight interiority of the path (examples 4.1, 4.3, and 4.4). (No speaker ever mentioned the first attempt and omitted the second.) Sequences of gestures thus demonstrate structuring in accord with a sense of what is relevant, that is, salient, in the momentary context.

The most important implication of the linkage of gestures to the salient and the relevant is that gestures can be used as a tool to infer the speaker's *psychological predicate* at the moment of speaking. In Vygotsky's (1962) use of this term, a psychological predicate (as distinguished from a grammatical predicate, which is not the same thing) is the novel, discontinuous, unpredictable component of the current thought. Thought itself, Vygotsky argued, is the formation of contrasts from the preceding

context, and this is the generation of psychological predicates. Consider coming up with the next utterance of a discourse. The gesture singles out what, to the speaker, are the utterance's least predictable, most discontinuous components. The crucial property that identifies gestures with psychological predicates is discontinuity from the ongoing context. Thus, we can infer that the speaker in (4.18) had a psychological predicate that represented only upward movement, while the speaker in (4.19) had one that represented this movement plus the manner of moving. In chapter 9 I will make extensive use of gestures for inferring psychological predicates.

Often, indeed, the gesture appears to be more capable than speech at showing shadings of relevance. I believe there is a good reason for this, which arises from the contrasting natures of gestures and speech. In speech there are obligatory elements, but gestures, precisely because they are idiosyncratic and not subject to a system of standards, are able to select only what is relevant or salient. This disparity between speech and gesture is evident when a complex sentence appears with a simple gesture. In terms of its linguistic structure, "he tries [climbing] up the rain barrel" is more complex than "[he swallows it]," but the first sentence was accompanied by a simpler gesture. In this way, we may *require* the gesture to know what was relevant in the context. This conclusion would apply to efforts to analyze relevance based purely on logical grounds (cf. Sperber and Wilson 1987, which limits the discussion of relevance to verbal contexts).

NEW MEANINGS. Finally, at the most extreme level of the gesture's contribution to meaning, we have gestures that create new meanings. It is possible for gestures to convey aspects of meaning that, in speech, cannot be expressed at all except through elaborate paraphrases. This is not paradoxical if such meanings are part of the initial "growth point" of the utterance (see chap. 8). They can be conveyed over the gestural channel, even if they are lost from the verbal one. In this section I show how gestures can bring out meanings that are quite inaccessible to the linguistic code (they have low "codability"; Brown and Lenneberg 1954). Certain actions, for example, can be referred to linguistically only by means of elaborate paraphrases, but they can be depicted visually in a single gesture. For example, in the following, a long pointed object is shown approaching and contacting a flat horizontal object from below. A linguistic construction can be found that roughly describes this situation (the preceding sentence, for example), but no single verb describes it. A gesture however does convey this action (see figure 4.15):

Figure 4.15. A single gesture with "and he steps on the part [wh]ere [the] [str]eet [car's] connecting." This gesture fuses movement with the shape of the thing in motion (resembling the Atsugewi pattern). The flat hand is the bottom of Sylvester's foot as it bounced up and down repeatedly on the upraised forefinger of the other hand, which is the trolley connector.

(4.22) and he steps on the part [wh]ere [the] / [str]eet [car's] connecting

Iconic: shows flat sole of character's foot stepping on streetcar electrical connector (flat open palm of left hand contacts upward extended index finger of right hand several times).

This gesture fills a logical gap in the English lexicon. It covers the situation in which there is the movement of *a particular shape* of thing: "a flat surface coming down on a pointed object." Verbs of English typically either convey the manner of movement or the cause of movement (for example, "hop" vs. "stride" for different manners; or "the napkin blew off the table" for the implication that moving air was the cause). English has a few verbs where the shape of the moving thing is included in the meaning—for example, "drip" (only something in a droplet shape can be said to drip) and a few others of scatological character—but the vast majority of English verbs tend in the two other directions. Leonard Talmy (1985), from whom this analysis and the verbal examples come, contrasted the situation of the English verbs to another language in which the shapes of moving objects are encoded directly. This is Atsugewi, an American Indian language spoken in Northern California. While Atsugewi does not code the specific motion-shape combination in the example, it does categorize actions by the shapes of the entities in motion, and has different words for distinct motion-shape categories. The above gesture combines shape with motion in the Atsugewi style and extends the coding capabilities of English at a place where the language lacks a linguistic category. To see the speaker's mental representation we must take into account the concurrent gesture and its potential for creating meanings.

ON BEING OF TWO MINDS. Thus far, one meaning divides between two channels. A more extreme case is when a speaker has two *distinct* mean-

ings, yet expresses only one through speech, presenting the other through gesture. Such a phenomenon has been observed with children by Church and Goldin-Meadow (1986) in what they call speech-gesture discordance. Discordance is seen in tests with Piagetian conservation problems, for example, and in solving arithmetic problems. In a Piagetian test (Piaget, [1941] 1965), a subject is presented with two jars of water and watches as one of the jars is poured into a low flat dish while the other jar is left as it is, and is asked which has more—the dish, the jar that was not poured, or do they have the same? The answer, from adults and other children, often delivered in incredulous tones, is that, obviously, the jar and dish have the same amount of water (you just poured it). Preschool children, however, might say that the dish has more water in it, or that the unpoured jar has more, citing the greater expanse of water in the dish or the greater height in the jar. Church and Goldin-Meadow also observed the child's gestures during these tests and found that, in some children, the gestures were discordant. For example a child might say that the dish has more water because it is wider (focusing on the expanse) but, at the same time, make a gesture that depicts the water level being lower (holding the thumb and forefinger close together). Relating height and width is the key for understanding that the amount of water is conserved after it is poured. A discordant child thus seems to have the two halves of this relationship but does not combine them. Rather, one half emerges in speech, and the other in gesture. Concordant nonconserving children, in contrast, have in mind only one dimension (say, width) and perform a gesture that emphasized only it.

Discordant nonconserving children appear to be at a transitional stage of their intellectual development, partway toward achieving conservation. Concordant nonconserving children, on the other hand, are at an earlier stage, not yet having begun the transition. In keeping with this possibility, Church and Goldin-Meadow found that discordant children are much more likely to become conservers after a brief lesson that emphasizes the reciprocal relationship of height and width in pouring water from the jar to the dish. If two nonconserving children are identified by the usual verbal criteria and each receives such a lesson, the one who initially showed discordant gestures is much more likely to become a conserver.

Not only are discordant children more likely to learn from instruction, but an ingenious experiment shows that they do have more on their minds as they solve intellectual problems (Goldin-Meadow, Nusbaum, and Garber, 1991). The children (of school-age in this experiment) were asked to remember short lists of words while they worked on arithmetic

problems. The words had no bearing on the problems, they just had to be recalled. A different set of words was assigned with each problem. Arithmetic problems such as "7 + 5 = ——— + 5" (fill in the blank) are usually accompanied by gestures as children talk about them. Again, concordant and discordant gestures can be identified (for example, adding the numbers on the left side of the equation, to get 12 for an answer, might be accompanied by pointing at the 7, the 5 on the left, the 5 on the right, and finally the blank, indicating all positions). The logic of the experiment is that the number of words the child remembers depends on how much spare cognitive "room" the child has while working on the arithmetic problem. The discordant and concordant children had the same number of right and wrong answers, but the discordant children remembered fewer words: they had less cognitive room. They indeed seemed to have more on their minds, and this is what was evident in their gestures.

Anticipation of Meaning by Gesture

A point of interest is where, in the flow of speech, the gesture preparation phase begins. The stroke is integrated into the speech stream in accordance with the phonological synchrony rule: the stroke is timed to end at or before, but not after, the prosodic stress peak of the accompanying spoken utterance (see chap. 1). The preparation phase, in contrast, might appear in a wide variety of speech environments. Table 4.2 shows the variety of utterance positions. This variety, of course, makes sense. The preparation phase, in contrast to the stroke phase, should *not* be associated with specific surface utterance features. At the start of the preparation, any coexpressive concurrent speech has not yet been produced. Eighty-three percent of preparation phases coincide with some grammatical constituent of the same clause that contains the stroke; thus the whole gesture takes place within a single clause. However, there is no special place in this clause where this preparation phase starts. Twenty-one percent start with a discourse marker (Schiffrin 1987) which makes an explicit reference to the discourse, 17% have preparations that occur in nongrammatical locales: pauses, middle of words, or the preceding clause (the bends-it-way-back gesture had such a preparation), and the rest are scattered among various grammatical constituents or single words. In sum, the preparation phase occurs on its own schedule. In contrast, the stroke phase is integrated into the utterance itself, as defined by the synchrony rules presented in chapter 1. The preparations that coincide with discourse markers suggest that the primitive forms of utter-

ances include attempts to establish cohesiveness with previous speech: this is simultaneous with beginning to construct the utterance to come next.

Table 4.2 Speech Segments at Start of Gesture Preparation Phase

Type of Segment	Percentage of Gestures
Grammatical Segments	
Start of Clause	19
Start of Noun Phrase	10
Start of Preposition Phrase	7
Start of Verb Phrase	14
Single Word[a]	12
Discourse Marker[b]	21
Total Grammatical Segments	83
Nongrammatical Segments	
Pauses	9
Middle of Words	2
Previous Clauses	6
Total Nongrammatical Segments	17

[a]A "single word" means any word within a phrase that is not itself a phrase.

[b]A "discourse marker" is any of the small words typically situated at the beginnings of sentences that refer, not to the internal semantic content of the sentence, but to the external context (Schiffrin 1987), such as "well," "so," "now," "then," "I mean," and so forth.

Conclusions

Perhaps the most important fact about iconic gestures is their ability to articulate what, from the speaker's point of view, are only the relevant features in the context of speaking. Thus the gesture lets us actually observe thoughts as they occur. Iconic gestures have this power precisely because they are unconstrained by systems of rules and standards. They are not forced, as is speech, to include features solely to meet standards of form. Thus they can limit themselves to what stands out. Not only are gestures free in this way to incorporate the relevant dimensions in thought, but they also cannot avoid incorporating these dimensions. We ask what forms the gesture, and it is the speaker's construction of meaning at the moment of speaking. The gesture does not manifest kinesic form of its own accord. It cannot *help* but expose the relevant dimensions

of the speaker's thought. So we can sum up iconic gestures by saying both that they are free to show only what is relevant, and also are unable to show anything else. For this reason, iconic gestures, together with the accompanying speech, offer a privileged view of thought. They are the closest look at the ideas of another person that we, the observers, can get.