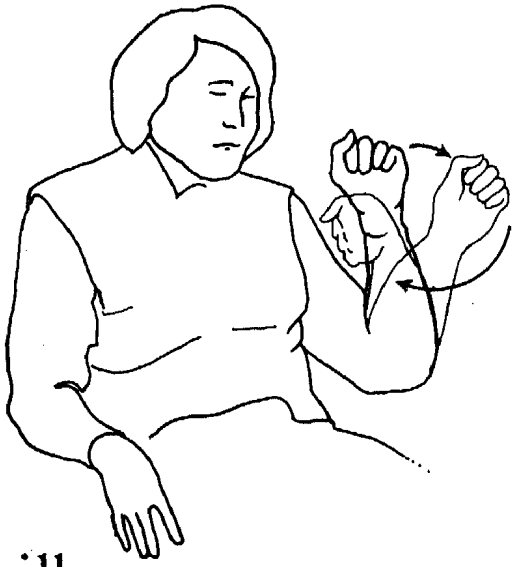
HAND AND MIND

What Gestures Reveal about Thought



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3 *Guide to Gesture Classification, Transcription, and Distribution*

Introduction

With this chapter I begin my description of the varieties of gestures. In the course of Part 2, I will discuss the different kinds of gestures and the coding scheme that we have used to transcribe and analyze them. I will present information on the contexts in which they appear and on how they relate to semantic meaning and pragmatic function. I will also present statistics of their distribution.

This particular chapter describes the coding scheme, our methods for collecting and coding gestures, and the basic statistics of gesture occurrence. It also reproduces the transcript of a full narrative by an adult speaker, including all of the gestures. Chapter 4 is devoted to the variety of gestures of the concrete (iconics of different degrees of elaboration). Chapter 5 presents an experiment on gestures and how they effect listeners to narratives. Chapter 6 explains the gestures of the abstract (metaphorics, beats, abstract pointing). The four chapters together form a kind of encyclopedia of the gestures and their effects at the gesticulation end of Kendon's continuum.

Types of Gesture

Classification Schemes

A number of gesture classification schemes have been proposed over the years. I will mention three in addition to our own. All four are summarized in table 3.1. The justification for our own scheme is that it does not require overly fine distinctions and that it is gauged to identify the types of gesture that appear in narratives. All of the schemes are basically the same, a fact explained by their common descent from Efron's (1941) classification. Efron (1941) and Ekman and Friesen (1969) subdivide gestures more finely than we have; Freedman and Hoffman (1967) have built in a somewhat different orientation—toward the gestures that take place during psychotherapy sessions rather than during storytelling. While each scheme has its own special usefulness, they are interconvertible in the sense that they regard the same movements as gestures and differ only in their grouping and subdividing strategies. An investigator

Table 3.1 Four Gesture Classification Schemes

Present Categories	Efron	Freedman and Hoffman	Ekman and Friesen
iconics	physiographics kinetographics	literal-reproductive	kinetographs pictographs
metaphorics	ideographics	concretization minor and major qualifying	ideographs underliners spatials
deictics	deictics		diectics
beats	batons	punctuating	batons rhythmics
Butterworths		speech failures	

could, if he wished, employ all three schemes or start with one and switch to another and cover the same gestural movements.

In our approach we classify gesture movements into four major categories: iconic, metaphoric, deictic (pointing), and beat gestures; definitions are provided later in the chapter. The gesture classifications we have used have validity inasmuch as the four types are *not* uniformly divided among discourse functions, but some are strongly associated with metanarrative functions, other with narrative, and so forth. All of this is shown in table 3.7 and explained in detail in chapter 7. Also, the four categories have different histories of development in children (chap. 11) and different breakdown patterns in aphasia (chap. 12).

The scheme was have used has the goal of identifying the referential values of gestures. The orientation of the scheme is toward the entities, actions, spaces, concepts, relationships, etc., that the gestures refer to. The classification scheme thus requires asking what meanings and functions a gesture possesses. It provides a guided, systematic, and disciplined method for inferring these meanings and functions. (It thus differs from schemes that make physical form differences into the primary basis of categorization.) The gesture categories, iconic, metaphoric, deictic, and beat, distinguish references to concrete events, to abstract concepts and relations, to orientations and reorientations, and to discontinuities: these are the goals of the scheme. The classification also makes essential linkage to the accompanying speech. A gesture category is formulated only in coordination with the speech content. An iconic gesture, for example, is one that, in its execution and manner of performance, refers to a concrete event, object, or action that is also referred to in speech at the same time. The iconic category expresses directly a category of meaning that must be compared to speech, and the other gesture categories are meant to have their own linkages to speech functions as well.

Our purpose is thus to bring out semiotic values, and this has led us to build semiotic distinctions directly into the gesture classification; that is, to classify the gesture by means of asking (a) is the movement a symbol? and (b) what type of symbol is it? The categories of iconic, metaphoric, deictic, or beat correspond to the fundamental types of semiotic sign (Peirce 1931–58).

One category requires a bit of explanation. This is the "Butterworth," corresponding to the "speech failure" category in Freedman and Hoffman's scheme (neither Efron nor Ekman and Friesen included such a category). I have named this category after Brian Butterworth, a scholar in Britain who has argued that many gestures arise in response to speech failures (see, e.g., Butterworth and Beattie 1978; Butterworth and Hadar 1989). I do not agree with this view that speech failures are a necessary or even an important condition for gesture occurrence in a general sense, but I would not deny that there are gestures that occur specifically as part of an effort to recall a word and/or find an appropriate sentence structure. However, they are a small fraction of all gestures, at least in narratives. A prototypical instance of a Butterworth is a hand grasping or plucking in the air while the speaker is trying to recall a word. Typically, there is no speech and this not-speaking places the Butterworth away from the leftward, gesticulation, end of Kendon's continuum (see chap. 2).

Experimental Paradigm

Basic Situation

Most of our gesture examples have been recorded during narrative discourse. Some other examples are taken from video recorded conversations, anthropological films, TV broadcasts, and naturally observed academic discourse. The narrative situation is quasi-experimental in that a speaker is shown a "stimulus"—a film, animated cartoon, or comic book—and then after this exposure the speaker immediately recounts the story of the stimulus from memory to a listener, and we videotape the performance. The listener is a genuine listener who does not have prior knowledge of the stimulus and does not see it. The speaker is told to present the story in as clear and complete a fashion as possible, for the lis-

tener will have to retell it later to a third person. Neither the speaker nor the listener knows that gestures are of interest and the instructions do not even mention the word. The speakers have been adults and children, and a number have been speakers of non-English languages (German, French, Italian, Georgian, Swahili, Chinese, and Japanese—the last four non-Indo-European). In addition, we have tested both Broca-type and Wernicke-type aphasics and two commissurotomy patients (so-called split-brains; see chap. 12). A major methodological advantage of this procedure is that, since we know the source of the narration independently of the narration itself, comparisons among speakers narrating the same episodes are possible. A detailed description of the methods used in this research will be found in the Appendix.

Coding

The following is a sketch of the methods that we have developed for coding iconic, beat, metaphoric, and deictic gestures. The Appendix gives the details.

DEFINITIONS. All visible movements by the speaker are first differentiated into gestures and non-gestures; the latter comprise self-touching (e.g., stroking the hair) and object-manipulations. The rest are considered gestures and are classified as to type. Gestures are distinguished basically as imagistic and non-imagistic types, depending on whether they depict imagery. In addition, the imagistic types are often triphasic (preparation-stroke-retraction), while the non-imagistic type, the beat, is biphasic.

A gesture is *iconic* if it bears a close formal relationship to the semantic content of speech. As noted previously, an iconic gesture displays, in its form and manner of execution, aspects of the same scene that speech also presents (McNeill and Levy 1982). An example is a gesture that accompanied the utterance, "he tries going up inside the pipe this time," in which the hand rises upward: this depicts, in its manner of execution, a feature also referred to in speech, namely, upward motion. The gesture omits other features (interiority, the identity of the character, etc.) but is classified as iconic because of the upward trajectory. Another iconic gesture is the "bends it way back" example (ex. 1.1). As the speaker described this scene he appeared to grip something in his own hand and pull it back toward his shoulder. The grip shape of the hand and the backward trajectory displayed aspects of the scene that speech also was presenting ("and he bent it way back"). Thus the gesture is classified as iconic:

(3.1) and he [bends it way back]

Iconic: right hand appears to grip something and pull it back from front to own shoulder.

Note that to judge this or any other gesture iconic, we compare it to our knowledge of the scene, not just to the speech. Speech is necessary inasmuch as we rely on the spoken text to know which scene the speaker is describing, but the iconicity of the gesture is determined by whether it exhibits aspects of the same scene described in speech, not the speech itself. It is our independent knowledge that a character seized hold of and bent back a tree that enables us to recognize the iconicity in the gesture above. This may seem like an overly precious distinction, but it is logically important. It underlies the concept of gestures and speech presenting overlapping but different aspects of the same scene. Since we refer the gesture to the independently known scene, we can logically define cases of complementarity of speech and iconic gesture.

The "bends it way back" gesture in fact complemented speech, in that it presented explicitly an aspect of the scene that is only implicit in the utterance. We note that the gesture was performed with a single hand; from this we can infer that the object being bent back was fastened down at one end (in fact, it was a tree). A two-handed gesture would have been used to depict an object like a stick or ruler that had to be held in place to be bent back. Speech does not convey this detail explicitly (it may be implicit in the verb and particle "bends way back"), but it is from his gesture that we see most clearly that it was part of the speaker's representation of the scene.

It is examples such as this that imply that gesture and speech jointly comprise a single integrated expression of meaning (chapter 1 presented arguments in support of this view). Gesture and speech convey information about the same scenes, but each can include something that the other leaves out. The bending way back example is in no way unique. Many other iconic gestures display this relationship to speech, coexpression combined with complementation.

While the semiotic definition of iconic gestures refers to the content of the gesture, it is possible to identify iconic gestures without any reference to the accompanying speech. Gestures have been coded as beat or iconic based solely on formal movement characteristics. This method has been crucial for coding the gestures of aphasic speakers for whom we cannot assume that speech presents meaning in a normal manner (Pedelty 1987). Because we have repeatedly used the same narrative stimuli we have been able to examine the gestures of many normal speakers narrat-

ing these stories, and to derive "canonical" gesture forms used to depict certain scenes. Gestures of special populations of subjects (such as aphasics) can then be classified with high reliability by comparing their movement features with the movement features of the canonical gestures.

Metaphoric gestures are similar to iconics in that they present imagery, but present an image of an abstract concept, such as knowledge, language itself, the genre of the narrative, etc. Metaphorics are, therefore, intrinsically more complex than iconics. Whereas an iconic gesture depicts some concrete event or object by creating a homology to aspects of the event/object, a metaphoric must depict two things. There is the Base (this term is from Mandel 1977), which is the concrete entity or action that is actually presented in the gesture. An example is a gesture presenting the concept of a question as a cupped hand: the Base is this cup, iconically depicted in the gesture. There is also the Referent (Mandel 1977), which is the concept that the metaphoric gesture Base is presenting: the concept of a question or of the answer (in either case, an abstract concept). Thus, a cupped hand accompanying the question, "I wanted to ask you something," presents a Base (the cup) and the Referent (the concept). The coding of metaphorics takes this dual structure into account.

Deictic gestures are pointing movements, which are prototypically performed with the pointing finger, although any extensible object or body part can be used, including the head, nose, or chin, as well as manipulated artifacts. The deictic gestures that appear during narratives rarely if ever point to concrete entities. They select a part of the gesture space and the meaning of the gesture depends on the referential value attached to this region.

Beats are defined as movements that do not present a discernible meaning, and they can be recognized positively in terms of their prototypical movement characteristics. They are typically biphasic (two movement components), small, low energy, rapid flicks of the fingers or hand; they lack a special gesture space, and are performed indeed wherever the hands happen to find themselves, including rest positions (the lap, next to the cheek, etc.). Some of the positive movement properties of beats have been organized into a "beat filter," which I describe below.

CODING METHODS. The coding of gestures is hierarchical in the sense that some coding categories are introduced only for gestures of the imagistic type (iconics, metaphorics). The Appendix presents the coding scheme in detail, along with example transcriptions. Coding proceeds by answering a series of questions. For those gestures considered to be iconic or metaphoric, each is coded in terms of

1. hands, which includes handedness, shape of hand, palm and finger orientation, and gesture space;
2. motion, which includes shape of trajectory, space where motion is articulated, and direction;
3. meaning, which is coded for hands, motion, and body separately:
   a. For the hand, what does it represent, and what viewpoint does it entail?
   b. For the motion, what does it represent and what viewpoint does it entail? In addition, are there any marked features, such as manner, direction, kind of path, or locus?
   c. For the body, is it representing a different entity from the hand or motion?

For metaphoric gestures, we specify both the vehicle of the metaphor (the image—the Base—that the gesture is depicting) and the tenor (what the abstract meaning is—the Referent—that is being presented in the metaphoric image). If the gesture is a beat, we code timing with respect to speech but not the form of the gesture, unless this varies from the typical (i.e., if the shape is other than an open palm and the movement other than short and up-and-down or side-to-side strokes. If the gesture is deictic, we code only the handedness, shape, and the locus where the hand (finger) is directed.

To time gestures in relation to speech, a movement is located using slow motion, the tape stopped, and then the tape released and the speech recorded: this provides the alignment within a syllable (it is crucial to have a VCR modified so that it reproduces sound in slow motion). To aid the temporal alignment, we add to each video field a sequential number and oscilloscope trace of the speech wave form. With such data, based entirely on visual information, speech and gesture can be lined up to an accuracy of 1/30th sec. (one video field). The auditory and visual methods can be used jointly. The duration of pauses, both filled and silent, and pauses for breath can be measured from sound spectrographs.

BEAT FILTER. This is a formal method of differentiating imagistic (iconic and metaphoric) from non-imagistic (beat) gestures. It is called a beat filter because it filters out the imagistic gestures: what passes through are the beats. The filter is a series of questions, and a score of 1 is added for each yes answer: (1) Does the gesture have other than two movement phases (i.e., either one phase or three phases, or more)? (2) How many times does wrist or finger movement or tensed stasis appear in any movement phase not ending in a rest position? (add this number to the score).

(3) If the first movement is in a non-center part of space, is any other movement performed in center space? (4) If there are exactly two movement phases, is the space of the first phase different from the space of the second?

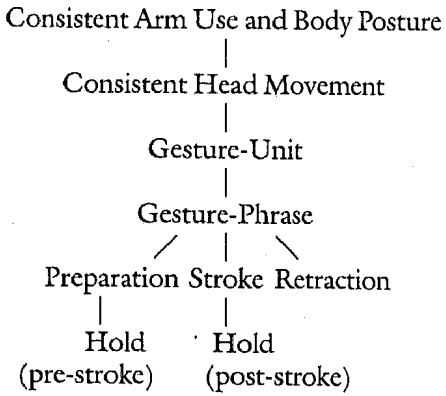
A score of 0 means no imagery on formal grounds, and the gesture probably is a beat. A score of 5 or 6 means high imagery on formal grounds, and the gesture is probably iconic or metaphoric (which it is depends on the relationship to meaning).

In addition, meaning judgments can be rated on a confidence scale with 1=marginally convinced and 5=totally certain.

Kinesic Structure

Gesture Form

Kendon (1972, 1980) wrote of the hierarchy of gesture movements that it "may be seen to provide at least a partial diagram of the relations between the units of the speaker's discourse" (207); we have found ample reason to agree with this statement. The following diagram summarizes the hierarchy (from McNeill, Levy, and Pedelty 1990).



ARM USE AND BODY POSTURE. Within units on this level, the speaker adopts different body postures and arm usage patterns. Kendon observed stretches in which all gestures were made with the right arm or left arm, or both. Shifting between arm options and body postures defines a kinesic unit on this level. The discourse stretches marked by consistent arm usage and body postures correspond roughly to a "paragraph" (Kendon 1972).

HEAD MOVEMENTS. Within stretches of a consistent arm and body use shorter sketches occur in which the same head movements take place; for example, first the head moves from the center of the gesture space to the right, and this occurs several times.

GESTURE-UNIT (G-UNIT). The G-unit is defined as the period of time between successive rests of the limbs; a G-unit begins the moment the limb begins to move and ends when it has reached a rest position again.

GESTURE-PHRASE (G-PHRASE). The G-phrase occurs within a G-unit (several G-phrases may cluster together within one G-unit).

A G-phrase in turn consists of one or more movement *phases* (preparation, various holds, stroke, retraction):

1. *Preparation* (optional), in which the limb moves away from its rest position to a position in gesture space where the stroke begins. The preparation phase typically anticipates the linguistic segments that are coexpressive with the gesture's meaning.

1h. *Pre-stroke hold* (optional) is the position and hand posture reached at the end of the preparation itself; this may be held more or less briefly until the stroke begins (cf. chap. 10; the terms "pre-stroke" and "post-stroke hold" are from Kita 1990). Pre-stroke holds occur when, for some reason, the stroke onset is delayed (chap. 10).

A *hold* in general is any temporary cessation of movement without leaving the gesture hierarchy (in contrast to a rest, which means exiting the hierarchy).

2. *Stroke* (obligatory) is the peak of effort in the gesture. It is in this phase that the meaning of the gesture is expressed. The stroke is synchronized with the linguistic segments that are coexpressive with it. It typically is performed in the central gesture space bounded roughly by the waist, shoulders, and arms; the head also becomes involved occasionally.

2h. *Post-stroke hold* (optional) is the final position and posture of the hand reached at the end of the stroke; this may be held more or less briefly until the retraction begins. Post-stroke holds occur when, for some reason, the coexpressive spoken utterance is delayed (chap. 10).

3. *Retraction* (optional) is the return of the hand to a rest position (not necessarily the one occupied before the G-phrase).

While a G-phrase cannot exist without a stroke, by definition, the other phases are optional. However, the option to omit the preparation phase is rarely taken in our narratives. Virtually all gestures contain a preparation component, and one may be added, apparently superfluously. Retraction phases are often omitted when one gesture passes directly into a succeeding gesture. The preparation and the two stroke-hold phases can compensate for mismatches of speech-gesture synchrony.

To illustrate these phases I will use the following examples from Kendon (1980):

1. The hand rises up and takes an umbrella form, and then moves down sharply.
   Preparation: hand rising up and taking umbrella form.
   Stroke: hand moving down sharply.
   Post-stroke hold: hand held in position reached at end of stroke.
   Retraction: fingers relax into loose bunch.
2. The arm rises up and sweeps side-to-side two times.
   Preparation: arm rises upward.
   Stroke: arm swings in and out twice. Note that this is considered to be one stroke even though the arm moves in and out two times.
   Retraction: arm returns to the rest position it was in before the gesture.

In this book most of our observations refer to the lowest level of the kinesic hierarchy, and within this level, to the stroke phase. (The strokes in the examples appear within square brackets except when the example also shows the preparation and retraction phases; in this case the brackets mark the beginning and end of the entire gesture and the stroke is in boldface.) The stroke is the phase that carries the gesture content. The preparation phase is crucial for the question of gesture timing. I discussed this earlier, in chapter 1; experiments on timing are described in chapter 10.

GESTURES AND SPEECH PHONOLOGY. In an analysis of the relationship of gesture movements to speech sounds, Kendon (1972) compared the kinesic hierarchy above to the tone units comprising a natural conversation. He could define a phonological hierarchy (Kingdon 1958) and observed that the two hierarchies—sound and gesture—were remarkably parallel to one another. On the lowest phonological level is the *most prominent syllable,* the phonological peak within a single clause. Just above this is the *tone unit,* a grouping of syllables over which there is a complete intonation tune (e.g., rise-fall, etc.). Tone units in turn form *locutions,* mapping typically onto complete sentences. A locution is separated from its neighbors by distinct pauses and begins with increased loudness. A series of locutions forms a *locution group.* At this level there may be phonological variation but some common phonological feature will be preserved throughout, such as the same, e.g., low-rise, tune. The highest level is the *locution cluster,* which is marked by pauses, repeated or repaired phrases, altered pitch and/or voice quality, and a thematic shift of content.

Table 3.2 Kinesic and Phonological Hierarchies Combined

Kinesic Hierarchy	Phonological Hierarchy
Consistent Arm Use and Body Posture	Locution Cluster
Consistent Head Movement	Locution Group
One G-Unit	Locution
One G-Phrase	Tone Group
One Stroke	Most Prominent Syllable

The phonological and kinesic hierarchies line up such that boundaries between the highest, middle, and lowest levels of each hierarchy co-occur in time (table 3.2, based on Kendon 1972, 1980). It appears from table 3.2 that each speech unit has its equivalent unit of body motion, and the larger the speech unit, the greater the change in the kinesic sphere, perhaps as a form of working memory control (Kendon 1972).

LENGTH OF G-UNITS. Given that G-units can encompass more than one G-phrase, or gesture, how long in fact do G-units tend to be? Table 3.3 answers this question for six cartoon narratives, and shows the percentage of G-units that contain one, two, three, etc., G-phrases. About half of all G-units consist of a single gesture, a few of two successive gestures, and the rest of a range of longer sequences.

Table 3.4 gives the converse distribution, the empty spans between G-units. These were stretches of speech where there were no gestures; the length of a span is indexed in terms of clauses. Most G-units had no clauses between them. This means that 70% of the time the hands returned to rest between successive clauses and then immediately returned to action to make a new gesture. Of the remaining spans, two-thirds contained just one clause. Thus, while gesture activity is fairly continuous, there are almost as many rests as there are gestures.

From tables 3.3 and 3.4 we learn that most gestures occur one gesture at a time. Gestures tend to occur as singletons and between gestures the hands return to a rest position. (Along with the obligatory presence of speech, this predominance of singletons also differentiates gestures from pantomime.)

Table 3.3 Percentage of G-Units of Different Lengths

	Number of G-Phrases in G-Unit							Number of G-units
	1	2	3	4	5	6	>6	
Percentage of G-units	56	14	8	8	4	2	8	254

Table 3.4 Percentage of Non-Gesture Intervals of Different Lengths

	Number of Clauses between G-Units								Number of Intervals
	0	1	2	3	4	5	6	>6	
Percentage of Intervals	70	19	5	3	1	2	—	1	275

GESTURE HAND SHAPES. Table 3.5 summarizes the hand shapes that have appeared as iconic gestures in the six cartoon narratives. The ASL shapes in the table are only approximated by spontaneous gestures; we describe the gesture with the ASL shape that the gesture most closely resembles, but nearly all gestures are deficient from an ASL point of view (too loose, not clearly enough marked). Narratives in other genres (such as films) would undoubtedly produce a different distribution of shapes, but the most common hand shapes are likely to occur in all narratives. Indeed, the most frequent of all is the 5-hand, which is the ASL approximation to a relaxed, semantically unmarked hand in the loose way it is made. The bent 5-hand, in contrast, is semantically motivated: it can be used to depict removing a hat from a character's head, for example. Over the six narratives twenty different shapes were used. Different speakers had individual favorites: for example, speaker 1 preferred the G-hand; speaker 3 the O-hand; speaker 4 the C-hand; speaker 6 the S-hand; and so forth. Most shapes, whether the favorite of one speaker or of all, correspond to semantic distinctions, and these are described in chapter 4.

Gesture Space

The gesture space can be visualized as a shallow disk in front of the speaker, the bottom half flattened when the speaker is seated (see fig. 3.1). Adults usually perform gestures within this limited space (with children the space is larger; see chap. 11). Figure 3.2 shows the density of gesture occurrence in this space (all six speakers combined). The fore-aft dimension is shorted and almost never extends behind the body; gestures behind the frontal plane of the body are rare and have marked status. Speakers from different cultures appear to organize their gesture spaces somewhat differently. Turkana speakers, for example, make more use of the space around the head than speakers of European languages (see chap. 6). The latter, in turn, do not noticeably differ from one another (this includes observations of speakers of English, French, German, Italian, and Georgian).

For transcription purposes, the gesture space can be divided into sectors using a system of concentric squares; the sector directly in front of the chest is Center-Center; surrounding this is the Center, then the Pe-

Table 3.5 Hand Shapes Used for Iconics in Six Cartoon Narratives (ASL hand shapes from Friedman 1977)

		Speaker						
		1	2	3	4	5	6	All
Number of Iconics		56	63	83	77	70	67	416
ASL Hand Shape		Percentage of Iconics						
A		4	11	11	8	23	13	12
S		5		4	3		33	7
O		4	6	14	1	1		5
tapered O		9			1			1
baby O		5	6	4	1	3	9	5
B		4	3		1	3	9	3
B spread		7	6	6	1	3		4
C		7	10	16	24	6	9	12
5		21	42	31	34	49	10	31
4				1				<1
bent 5		5	3	7	10	4	12	7
F			2	1				<1

continued

Table 3.5 Continued

		Speaker						
		1	2	3	4	5	6	All
Number of Iconics		56	63	83	77	70	67	416
ASL Hand Shape		Percentage of Iconics						
G		12			3	4		3
X1		5		2		3		2
L				2	5			1
bent L		4			8	1		2
H		4	2					1
bent 3			10					1
7							4	1
D		4						<1

riphery (divided into upper, lower, right, left), and finally, at the outer limit, the Extreme Periphery (also divided).

The panels in fig. 3.2 are filled in different regions depending on the type of gesture. Iconics fill the Center-Center space. Metaphorics congregate below in the lower Center space. Deictics extend to the Periphery. Beats form bunches at several places and each bunch is due to a different speaker. That the four types of gesture utilize space in such different ways is, in itself, a strong justification for subdividing gestures according to the iconic, metaphoric, deictic, and beat scheme.

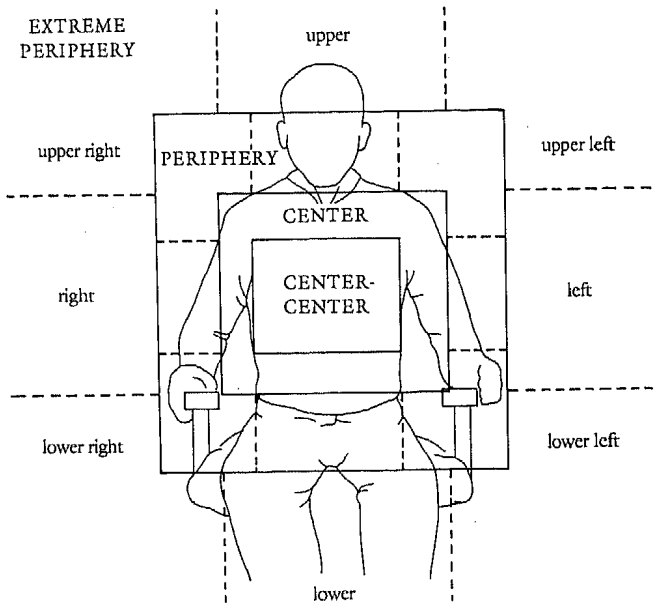


Figure 3.1. Drawing of the typical gesture space of an adult speaker.

Statistics

The following statistics of gesture occurrence are based on the six cartoon narratives mentioned earlier by young adult English-language speakers (university students). Such statistics provide a general orientation to the incidence of gestures and their distribution in relation to speech during narrative discourse.

CO-OCCURRENCE OF GESTURE WITH SPEECH. In many hours of recorded narratives, we have observed only one instance of a gesture by a listener. The passive comprehender role does not evoke gestures to anything like the same degree as the active producer role. The cause of this huge difference is unclear. The listener is experiencing the same content and linguistic forms and presumably is constructing imagistic representations of the narrative in parallel with the speaker; yet there are no gestures. It is possible that gestural production is suppressed along with speech as part of the turn-taking conventions regulating face-to-face interactions, where a sharp distinction obtains between the speaker and the listener (Duncan and Fiske 1977). It is also possible that gesture production requires motor activity in the speech channel. Whatever the explana-

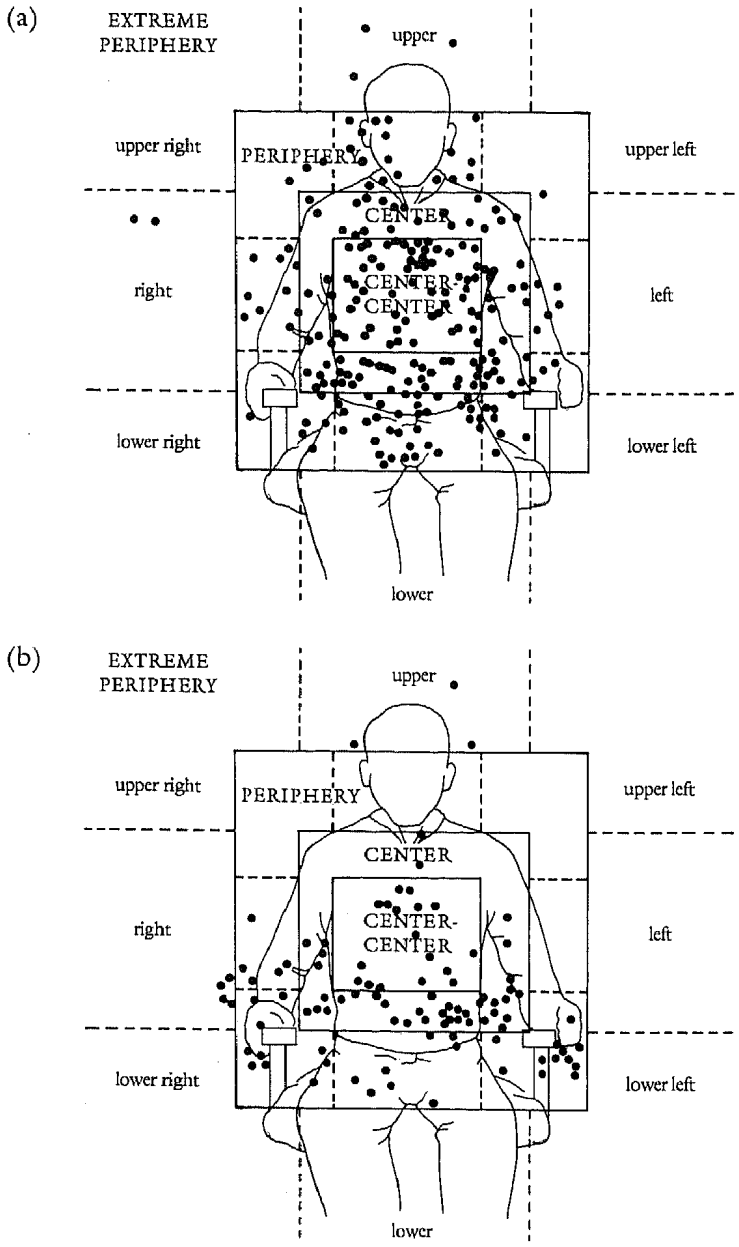


Figure 3.2. Density of space usage in six cartoon narratives. Panel (a) shows iconics, most of which are in the C region; (b) shows metaphorics, mostly in lower C region; (c) shows deictics and they tend to be in more peripheral regions; (d) shows beats and they are bunched up into tight clusters (each cluster is from a different speaker, who has her own favorite part of space for this gesture).

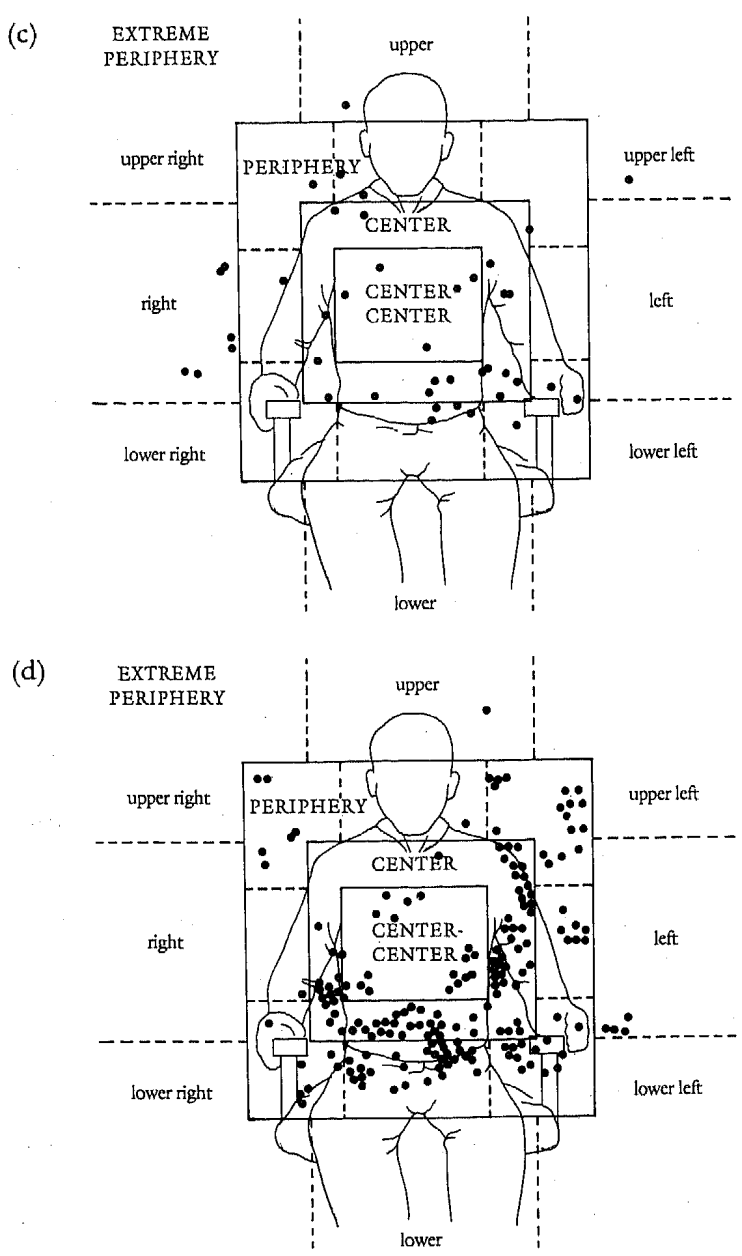


Figure 3.2. continued

tion, the production of gestures and speaking are virtually restricted to the same situations.

Focusing, then, on the speaker we find that the majority of his or her gestures occur during actual speech articulation. Gestures during hesitant periods (pauses, silent or filled) are in a distinct minority. Table 3.6 shows the distribution of gestures in five categories: co-articulated speech, filled pauses ("um," "uh," and extended phonation of the vowel portions of words), unfilled pauses, breath pauses (i.e., audible breathiness during an unfilled pause), and false starts (the speaker interrupts his or her utterance and immediately begins a repair). The decisive component of the gesture in table 3.6 is the stroke phase. If the stroke coincided with speech, the gesture was counted as coinciding with speech even if there was silence during the preparation or retraction phase; conversely, if the stroke coincided with silence, the gesture was counted as coinciding with silence even if there was speech during the preparation or retraction phases. With beats (which have only two phases), the entire gesture had to coincide with speech to be counted as occurring during speech. Table 3.6 shows that 90% of all strokes occurred during the actual articulation of speech. Slightly less than 4% took place during false starts and slightly more than 3% during breath pauses; only between 1% and 2% occurred during filled and unfilled pauses respectively.

This result superficially contrasts with that of Butterworth and Beattie (1978), who found nearly identical *rates* of gestures per 1000 seconds of speech and 1000 seconds of hesitation. However, their way of presenting data is not directly comparable to that in table 3.6, which shows the percentage of gestures made during speech and hesitation, not rates per unit of time. To normalize during hesitations and speech to get equal baselines of time might be useful for some purposes but it gives a grossly distorted picture of the actual distribution of gestures during narrations since speech is, by far, more copious than hesitation.

FREQUENCY OF GESTURE TYPES. Table 3.7 is an expanded version of a table in McNeill and Levy (1982). It shows the relative frequency of iconics, beats, metaphorics, and deictics, as well as the frequency of clauses with no gestures accompanying them at all.

Table 3.6 Speech and Gesture Co-Occurrence

Percentage of Gestures in Category					
Co-articulated Speech	Filled Pauses	Unfilled Pauses	Breath Pauses	False Starts	Total
90	1	2	3	4	100

The type of clause in table 3.7 will be explained briefly; more details are given in chapter 7; also McNeill and Levy (1982). A narrative level clause presents a step in the plot-line development of the story; it is therefore subject to sequential constraints (Labov and Waletsky 1967; Hopper 1979; Hopper and Thompson 1980). An extranarrative clause is any other clause in the storytelling act that is not on the plot line (e.g., describing the setting, summing up the action, introducing characters, forecasting what is to come, mentioning the video, etc.) and is not subject to sequential constraints. Extranarrative clauses will eventually be differentiated into subvarieties (metanarrative and paranarrative), but this distinction is not crucial in this chapter and will be overlooked (see chap. 7). More than half of the clauses in narratives were accompanied by gestures, and narrative and extranarrative clauses did not differ in the frequency of gestures that occurred with them.

One generalization that fits table 3.7 is this: although there are similar numbers of iconics and beats, iconics occur overwhelmingly in narrative clauses, while beats can occur in both narrative and extranarrative clauses. Thus, iconic gestures are limited by the sequentiality constraint, but beats can appear anywhere. The difference in distribution reflects the different functions of the two kinds of gesture. The events that iconics illustrate inherently progress in temporal and causal sequences in the real or fictive world, while beats occur at points of significant discontinuity in discourse and function to highlight atemporal relationships (Silverstein 1984). Another generalization we can make is the following: abstract pointing occurs chiefly with narrative clauses, whereas metaphorics appear chiefly with extranarrative clauses.

Thus, while each type of gesture has its own way of correlating with narrative and extranarrative contexts, the gestures fall into two larger groups:

1. *Sequence related* iconics and deictics appear in narrative contexts.
2. *Structure related* beats and metaphorics appear in extranarrative contexts. Of these structure related gestures, beats appear in all contexts, while metaphorics appear primarily in extranarrative contexts.

Table 3.7 Frequency of Gesture Types in Different Contexts

	Type of Gesture					
Type of Clause	Iconic	Beat	Metaphoric	Deictic	None	Total
Narrative	226	134	12	25	146	543
Extranarrative	35	134	31	3	44	247
Total	261	268	43	28	190	790

GESTURE TO CLAUSE CORRESPONDENCE. As a general rule there is one gesture, one clause. Narrators, nonetheless, depart from this rule and depart in both directions. Some clauses have more than one gesture and some gestures cover more than one clause. Table 3.8 (based on a similar table for aphasic speakers in Pedelty 1987, which appears later as table 12.2) tallies the correspondence of gestures and clauses in the six cartoon narrations.

As can be seen, most departures from a one-to-one ratio are in the multiple gesture to one clause direction. If we equate gestures with "idea units" (Kendon 1980), we can say that the speaker is attempting to cover more than one idea unit with a single clause. Not surprisingly, given the overloading of the linguistic program this implies, multiple gesture to single clause utterances are often accompanied by dysfluencies. For example, one speaker performed two distinct gestures during the following: "[and she . . .][grabbed a knife]." A lengthy pause interrupted the speech flow before the gesture boundary, as if the speaker were waiting for the next gesture. The multiple clause for one gesture combinations are, by comparison, rare, but they occur frequently in the gestures of Wernicke's aphasics (chap. 12).

Example of a Narration by an Adult Speaker

To provide an extended example of adult narrative performance, I reproduce in full one speaker's narration of the cartoon story. The narration will illustrate the full range of gestural phenomena, including the inevitable residue of gestures that are difficult to classify. Such difficulties are pointed out in the comments. The narrative is typical of an adult performance in most respects. It lasted slightly more than four and a half minutes. The speaker has a high proportion of iconics relative to other gesture types, and in this respect goes farther than other adults. Her beats almost never appear in isolation but are superimposed on other gestures, and her deictics are usually combined with iconics; in these respects she also differs somewhat from other adults, but the differences are of proportion, not of kind. In common with other narrators she pro-

Table 3.8 Correspondence of Gestures to Clauses[a] (as a percentage of total gestures)

	Gesture to Clause Ratio						
	1:4	1:3	1:2	1:1	2:1	3:1	N (g)
Normal Speakers	<1	1	4	67	19	8	433

[a]Based on a method devised by Pedelty,(1987).

duces no emblems. She also has no Butterworths, although her speech has many hesitant phases, and the hesitations are characterized by an *absence* of gesture of every kind (cf. Butterworth and Beattie 1978, who seemingly observed the opposite). Also, as is common in narratives, the listener is not entirely passive, but asks questions and reacts to the speaker's narrative, to which the speaker in turn responds. Worth noting in particular is the variety of semantic relationships and shifts of viewpoint conveyed in the iconic and metaphoric gestures, and the variety of pragmatic references conveyed in the metaphoric beats, and deictics. I have indicated the gesture strokes with brackets but not the other gesture phases (thus the boldface convention for indicating the stroke is not used). All hesitations and false starts are shown, as well as their durations in tenths of a second. The transcript is the work of many individuals. It was prepared in this very full version by Karl-Erik McCullough with the assistance of Desha Baker. The conventions are as follows:

[ ]	stroke phase of gesture
#	audible breath pause with duration in seconds
/	silent pause with duration in seconds
*	self-interruption
=	other interruption
<>	filled pause with duration in seconds
C-VPT	character viewpoint of an iconic gesture
O-VPT	observer viewpoint of an iconic gesture

Comments are in boldface.
Post-stroke holds are indicated by dots (...)

1. [ok] / (.4) and it was <was> (.3) a cartoon called Canary Row # (.8)

Beat

2. <and> (.3) it was Sylvester and Tweety Bird # (.3)
3. <and uh> (1.0) / (.1) it starts out with Sylvester sitting in
4. the Birdwatcher's Society
5. whi[ch is way] up in a building several floors up

O-VPT iconic: hands rise up at center to show height.

6. and he looks out with binoculars
7. and he sees Tweety Bird across the street
8. on a [window sill] # (.4) in his little bird cage # (.4)

O-VPT iconic: hand flattens and pats down to show window sill.

9. and Tweety Bird has binoculars
10. and he looks back
11. and ["I tawt I taw a putty cat"]

C-VPT iconic: head shakes back and forth. (voice changes)

12. <and uh> (1.4) ǂ (.7) <uh the> (.4) whole cartoon / (.1)
13. is / (.2) Sylves[ter / (.2) of course]

Metaphoric: hands rotate up and forward to present "of course."

14. trying to get Tweety Bird like he always does
15. and Tweety Bird / (.1) <is> (.5) / (.5) the pet of this old lady
16. called Granny ǂ (.7)
17. and Granny is pretty mean {laughs} for a Granny ǂ (.7)
18. <um> (.6) ǂ (.8) Sylvester tries a number of ways to get him
19. <he uh> (.7) ǂ (.9) tries [going in the front door

. . . . . .

20. of the] building / (.1)

. . . . .

O-VPT iconic and deictic: hand tilts forward and to side for going in, and indicates building's direction. **This illustrates a case where one gesture seems to convey both an event and a location at once and thus belongs to two categories.**

21. there's a little [sign that says [no dogs] or [cats]] allowed
(1) (2) (3)

(1) O-VPT iconic: hands form sign shape. (2) and (3) are superimposed beats.

22. 'n im[mediately] he's thrown out

C-VPT iconic: left hand throws object to right space.

23. <he> (.5) tries / (.1) climbing up the drainpipe ǂ (1.0) <uh> (.7) / (.5)
24. and he gets all the way up there / (.1)
25. <and> (.7) / (.2) the little Tweety Bird starts screaming
26. and then Granny comes
27. and [throws him] off the window sill down back to the ground ǂ (1.2)

O-VPT iconic: hand tilts forward and to side to show trajectory.

28. <he tries> (1.0) going [up] the in[side] of the [drain pipe]
(1) (2) (3) . . . .

(1) O-VPT iconic: hand rises up in loose point.
(2) O-VPT iconic: hand rises further in more precise point.
(3) O-VPT iconic: repeats (2).

29. and Tweety Bird runs and gets a bowling ball
30. and drops it [down] the drain pipe ǂ (.8)

C-VPT iconic: both hands appear to shove bowling ball down. **Note the shift from O-VPT in (28) to C-VPT in (30).**

31. <and> (.4) / (.4) [as he's com]ing up and the [bowling] ball's
(1) (2)

32. coming down

(1) O-VPT iconic: right hand rises straight up from lap into center for Sylvester coming up.
(2) O-VPT iconic: left hand drops down from head level into center for the bowling ball coming down. **This iconic is best regarded as a single gesture with two hands performing different roles. By calling it a single gesture we can understand the significance of the center space to which each of the hands is sent: it is here that the crucial interaction of Sylvester and the bowling ball will take place.**

33. he [swallows it]

. . . . . .

O-VPT iconic: left hand moves straight down into center, while right hand moves straight up into center and forms space around left hand, to show the bowling ball passing into Sylvester's mouth. **Space is used here in a way consistent with the preceding gesture, and now it is clear that a single gesture exists with the two hands performing different roles. Also note that the meaning of the right hand has slightly shifted: whereas in the preceding gesture it was Sylvester as a whole, here it has become Sylvester's open mouth.**

34. and he [comes out the bottom of the drain]pipe

. . . . . .

O-VPT iconic: left hand arcs down and to right, passing under right hand which is extended to the left at waist level, to show Sylvester coming out. **The meaning of the left hand has shifted: whereas it had been the bowling ball, now it is Sylvester with the bowling ball inside him.**

35. and he's [got this big bowling ball in side him]

. . . . . .

C-VPT iconic: both hands press against own stomach, to show the location of the bowling ball. **Note the second shift to C-VPT. This shift and the one at (30) occurred, respectively, at the beginning and end of a causal sequence of events: bowling ball into pipe → bowling ball inside Sylvester. The steps in between were presented from the observer point of view.**

36. [and he rolls on down] into a

O-VPT iconic: both hands roll over one another, to show rolling down the street.

37. [bowling alley]

Metaphoric: both hands spread open, as if to show completion.

38. and then [you hear a s]trike

Metaphoric: both hands spread open.

39. <uh> (.8) he <tries> (1.0) / (.1) <a> (.9) / (1.6) few other

40. things
41. he* / (.2) he tries to <um> (.5) / (.2)
42. set [down] a* / (.2) <a*> (.5) a [crate]]

(1) (2)

(1) C-VPT iconic: both hands appear to place crate down.
(2) Beat superimposed on the word that refers to the crate gesture in (1). **Note that the scene transition was marked by abundant hesitation, suggesting confusion and memory difficulties, and during this period of confusion all gesture activity ceased. As soon as the next scene was recalled, speech became fluent and gestures resumed.**

43. and put [a board] across it like a seesaw ǂ (.4)

Iconic: left hand moves horizontally, to show board. **The viewpoint of this gesture is indeterminate.**

44. and then he [throws] a five-hundred-pound weight

Dual C-VPT iconic and O-VPT deictic: hands move forward and down, showing throwing motion, and end in points, showing the direction of the weight. **The gesture begins as a character viewpoint of throwing and ends in pointing, which has the viewpoint of an observer. This is a gesture with two viewpoints.**

45. on the [other] end

Deictic: right hand points to left.

46. and that / (.4) [catapults] him up

O-VPT iconic: hand rises up to show catapulting.

47. and he [grabs] Tweety Bird ǂ (.8)

C-VPT iconic: hand grabs something.

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

(1) (2)

(1) dual C-VPT iconic and O-VPT iconic: the hand appears to grip something (the character's point of view) and at the same time falls straight down to show coming back down (an observer's point of view). **Another gesture with two viewpoints. The gestures in (48), (49), and (51) should be regarded as a unit in the sense that they depict a continuous narrative text and utilize a consistent space and combination of viewpoints to do it.**
(2) repeats (1).

49. and he [starts running] away

Dual C-VPT iconic and O-VPT iconic: hand, still gripping something, moves laterally to right, to show running away.

50. and at this time the five-hundred-pound weight comes down
51. [and lands] on him

Dual C-VPT iconic and O-VPT iconic: left hand arcs through air and onto right hand, still gripping something.

52. and [Tweety] Bird gets away

?Metaphoric: both hands spread apart, possibly a metaphor for disappearance. **The difficulty in interpreting this gesture as metaphoric is that the opening of the right hand, the gripping hand, could be a C-VPT iconic for the cat letting the bird go. The right hand in fact did open slightly before the left. It is also possible that there are two gestures, the first iconic.**

53. <he uh*> (1.2) you see [him [drawing] up / (.4) [lots of]

(1) (2) (3)

54. blueprints and Tweety Bird says ["I wonder what he's up to" ǂ (.8)]

(1 continues) (4)

(1) C-VPT iconic: both hands appear to hold onto blueprints.
(2) and (3) beats: superimposed on words that refer to the blueprints in (1).
(4) C-VPT iconic: superimposed on continuing blueprints gesture, head tilts, voice changes to play the bird's part. **We have two character viewpoints, although only one is active at a time.**

55. <and uh> (1.0) / (.1) the next thing] you know

(1 ends)

End of blueprints gesture (1).

56. he comes [swinging thr]ough on a rope

O-VPT iconic: hand swings across body from periphery to opposite side, showing the cat swinging.

57. and then [he [just] [misses] [the] window]

(1) (2) (3) (4)

(1) Iconic or metaphoric: both hands show open space, either for the window or for "just missing."
(2), (3) and (4) beats: superimposed on words that refer to and modify the "just missing" gesture. **This is a case where either a metaphoric or iconic interpretation would be appropriate, although the metaphoric meaning of "just missing" seems the more plausible.**

58. and he [smashes] into the brick wall beside it ǂ (.9)

O-VPT iconic: flat hand pivots down and to front, to show smashing into the wall from the perspective of an observer looking on at the rear.

59. <um> (.6) ǂ (1.5) then he tries* / (.4)
60. and I wasn't really clear on why he thought [this would work]

Metaphoric: both hands seem to support object for concept of next episode.

61. they've got [streetcars] in this ǂ (.7)

Metaphoric: both hands close around something for reference to streetcars.

This metaphoric is made to contrast to the previous one by an arbitrary kinesic change.

62. {Listener: uh huh}
63. <um> (.6) / (.4) no wait [bef∗ / (.1) before the [street] car

(1) (2)

(1) Spatial metaphor: finger raised and points to right space for previous episode.
(2) Beat: superimposed on the word that refers to the episode that is going to be postponed.

64. there's another one

(1 continues)

(1) Continuation of metaphor for previous episode.

65. <he um∗> (.7) / (.2) the old lady calls down

(1 continues)

(1) Continuation of metaphor.

66. to the desk clerk / (.1) of this] hotel

(1 ends)

(1) End of metaphor. **The spatial metaphor in which the right space was set up to be the previous episode continues through the entire introduction of this new episode.**

67. and says she's checking out
68. and would / (.1) he please send someone up for the bags
69. well‖ (.6) <uh> [Sylves]ter's sitting in the [mail boxes / (.3)

(1) (2)

(1) Metaphoric: left hand appears to hold up object, for introduction of character into scene.
(2) C-VPT iconic: both hands clasp together at heart, acting part of Sylvester in the mail box.

70. [behind] the <uh> (.1) [hotel] desk]‖ (.6)

(3) (4)

(3) and (4) beats: superimposed on words that refer to the small box gesture in (2).

71. and he hears this
72. so he goes [scra]mbling up to <um> (.4)‖ (.8) the room / (.2)

O-VPT iconic: both hands flick forward and up, to show scrambling up.

73. [dress]ed like a bellhop

C-VPT iconic and deictic: left hand points to own torso.

74. <and> (.5) / (.2) she∗ <um> / (.6) he [knocks] on the door

C-VPT ?iconic and deictic: loose hand moves slightly forward. The direction is that of the door from the character's viewpoint. **The hand shape is not appropriate for knocking, and thus the iconic component is dubious; the movement forward, however, is clear.**

75. and she's / (.1) [in] transom / (.1) [look]ing down‖ (.7)

(1) (2)

(1) C-VPT iconic: head tilts forward to show Granny looking down.
(2) C-VPT iconic: both hands move down from own eyes. **The second gesture shows 'eidola,' rays leaving the eyes. This could qualify it as a metaphor of vision, but the gesture was classified as iconic since the speaker continues to play the part of the character.**

76. <and uh> (.8) she∗ / (.2) he says you know I'm here for your bags
77. and she says on [OK just a minute‖] (.4)

C-VPT iconic: head tilts to side, playing Granny.

78. <uh> they're right [behind] the door

C-VPT iconic: head tilts forward, playing Granny.

79. and I'll meet you [down] in the lobby‖ (.5) and so-

C-VPT iconic: head tilts forward, playing granny.

The quoted utterances (lines 77–79) were accompanied by head movement gestures, which seems quite reasonable; if gestures were to be made they would have to be the *character's* gestures, since the speaker was enacting the character, and this is the kind of gesture the speaker performed.

80. {Listener: what's she doing in the transom?}
81. she [crawls] up in the transom

O-VPT iconic: hand rises up with wiggling fingers, to show crawling up. **Now the speaker speaks for herself and gestures shift to O-VPT, which serves to mark the change of voices.**

82. she's [look]ing down at him outside

C-VPT iconic: head tilts forward to show Granny looking down. **Cohesive repetition of the earlier gesture for looking down.**

83. and he doesn't see her
84. [she's checking I] assume to see that it's Sylvester

Metaphoric: both hands hold object representing the explanation

85. <so he> opens the door
86. and he grabs the bag and the bird cage
87. and the bird cage is covered up
88. and he tosses the bag away
89. and he starts to run off with <the uh> (.4)‖ (.5) bird cage
90. and as soon as he gets outside the building‖ (.4)

Gestures disappear. Perhaps this stretch had been pre-planned when

the listener asked a question. Unlike the answer, it may have seemed repetitious and this explains the absence.

91. he [opens it] up ǂ (.6)

C-VPT iconic: both hands open in front of body.

92. <and uh> (.9) [she's in the cage [not the bird]]

(1) (3)

93. she [beats] him up ǂ (.4)

(3)

(1) Metaphoric: both hands flip over with palms up for revelation of Granny.

(2) Beat: superimposed on the metaphoric at the contrasting word.

(3) Metaphoric: new gesture similar to (1) for the denouement.

The metaphoric gestures in (92) and (93), plus the iconic in (91) for opening up the cage, are basically the same; the movements are similar and all were performed with both hands. The repeated use of the same type of gesture may have influenced the way the speaker structured (94) and (95). That is, gesture may have affected speech. Once the two-handed gesture appeared, the speaker kept using it and had to find a semantic thread that supported it. The metaphoric gestures provided the thread but imposed their own effects of shifting the perspective to a metanarrative level. The first metaphor conveys that something was a revelation, the beat highlights a contrasting referent, and the last metaphor comments on something as a predictable conclusion—comments on the narrative as a structure from the outside. The iconic gesture in (91) for opening up the cage thus may have induced the metanarrative conclusion in (94–95).

94. [she beats] him up [a lot] (laughs)

Beats: highlight the words that refer to the predictable conclusion.

95. you know like [any time] [she sees him] she [beats] him up ǂ (.5)

Beats: more of the same as in (94).

96. another thing he does is <um> (.4) ǂ (1.0)

97. [he <see]s> (.5) an organ grinder [with a little monkey ǂ (.8)]

(1) (2)

(1) Beat: beginning of episode.

(2) C-VPT iconic: hand rotating, to show working an organ.

98. well he en[tic]es the monkey away from the organ grinder

C-VPT iconic: head tilts back for "come hither."

with a banana

99. and then [mugs] the monkey to get his little [uniform]

(1) (2)

(1) C-VPT iconic: left hand appears to strike a blow.

(2) Deictic and C-VPT iconic: hands point to clothes on own body.

100. [little] hat

Deictic and C-VPT iconic: points to own head.

101. and his [little] <uh> (.3) ǂ (.8) <uh> (.2) jacket ǂ (.7)

Deictic and C-VPT iconic: hands point to clothes on own body. **All of these gestures are ambiguous over who is wearing the uniform; there is little in the gesture to indicate if it is Sylvester or the monkey.**

102. <and uh> (.7) / (.1) he goes [crawl]ing up the drainpipe again

O-VPT iconic: both hands rise up for ascending the drainpipe.

103. dressed like the monkey and he's [trying to mas quera]de ǂ (.4)

Metaphoric: both hands spread apart and forward with a rotation, to represent the concept of trying. **Rotation is a frequent gestural metaphor for trying.**

104. and he gets in <the uh> apartment / (.4)

105. and he's looking for Tweety Bird

106. and / (.1) you know

107. when[ever] she looks at him he tries to make monkey noises

Beat: summary statement.

108. and scratch himself and all ǂ (.7)

109. <and uh> (.8) she catches on very quickly

110. and beats the hell out of him again ǂ (.9)

111. <uh> (.4) and the last thing he does / (.1) is <um> (.5) ǂ (1.2)

112. he's tight* / (.5) like walking on a tightrope / (.3)

Again, gestures largely disappear; the passage is metanarrative, yet does not introduce a new episode until the end, and the lack of novelty on both the narrative and metanarrative levels may explain the absence.

113. on the* / (.1) [the [wires] [that the] [trolley]]

(1) (2) (3) (4)

(1) O-VPT iconic: both hands flat, palms down, point at each other, to show the wires.

(2), (3) and (4) beats: superimposed on wires gesture at words that refer to it.

114. is [connec]ted to / (.5) {with questioning intonation}

O-VPT iconic and deictic: right hand moves back and forth next to head while pointing up.

115. {Listener: uh huh}

116. <um> the street cars {questioning intonation} you know that th*

117. [where they] / (.2) [connect] above [to get] their power ǂ (.9)

(1) (2) (3)

(1) Deictic: points at "wires" above, next to head.

(2) O-VPT iconic and deictic: hand rises and tilts to horizontal, to show wires as well as location. Also, head tilts toward hand to show wires overhead.

(3) O-VPT iconic: in same position next to head, hand moves backward to describe the form of the connecting wires.
118. and he's [walk]ing on it / (.1)
Beat: resumption of story.
119. and the streetcar comes up behind him / (.7)
120. and he* so [he's running] along the wire
O-VPT iconic: left hand moves away while fingers wiggle, to show running away.
121. and every time the [street car] catches up to him
O-VPT iconic: right hand loops forward and back to show the street car catching up. **Looping out and back can be explained by the accomplishment semantics of "catches up." This verb implies having reached a goal (Vendler, 1967); the gesture, by reversing direction, deliberately marked the end of its trajectory and this corresponds to the end state meaning of the verb.**
122. and he steps on the part where [the / street car's connecting]
O-VPT iconic: the left-hand palm faces down, making a flat surface, while the right-hand index finger repeatedly jabs into this palm from below, to show the trolley connector contacting Sylvester's foot. **The gesture conveys more complete information than speech in this example—the shapes of the foot and connector.**
123. [he] gets a shock‖ (.6)
Metaphoric: both hands, loosely curled, move apart with palms facing. **The metaphoric aspect of this gesture is the separation of the hands, which represents violent explosiveness, and the loose curvature of the hands, which often appears when a passive transformation is depicted.**
124. and the [cam]era moves down
?Deictic: both hands point to own torso and move down. **One possibility is that the hands indicate the viewer of the cartoon or the camera and its viewpoint. This mysterious gesture is a fitting way to close the narration, since it shows the kind of puzzle that can remain after the most careful study.**
125. and it's Tweety Bird / <uh> (.2) [driving] the street car and
C-VPT iconic: left hand appears to grip trolleyman's control.
126. {Listener laughs}
127. the little ol' lady next to him‖ (.4) <uh> ringing the bell‖ (.8)
128. <uh> / (.1) and that's basically it
129. it's really very violent in a way
130. [but] / (.1) that's* that's what it is
Conduit: both hands present cartoon as object.