

6 | Signaling

The right word may be effective,
but no word was ever as effective as a rightly timed pause.
Mark Twain

Language use could not proceed without signals – the acts by which one person means something for another – but what exactly are they? The question is crucial because signals help define what is and what isn’t language use – and language – and determine how communication is actually achieved. This chapter is addressed to what signals are and how they work.

The traditional assumption is that signals are “linguistic” objects – utterances of speech sounds, words, sentences – that work via their conventional meanings. That assumption is reflected in Austin’s and Searle’s terms *locutionary*, *illocutionary*, *perlocutionary*, and *speech acts* (Chapter 5). It is also reflected in the term *pragmatics*, the study of language use, which is treated as parallel to phonology, morphology, syntax, and semantics in the study of language. And it is reflected in the term *language use*, which I have felt obliged to use for this domain. More to the point, it is the working assumption of most students of language use.

That assumption, of course, isn’t right. Many signals aren’t “linguistic” at all (Chapters 3 and 5). The doctor waved his hand to signal Margaret that she had the measles. Sam waved a white flag to surrender. Elizabeth pointed at her mouth and an empty plate to ask for food. The sexton put one lamp in the belfry to signal Paul Revere that the Redcoats were coming by land. And as Grice (1957) noted, British bus conductors used to ring a bell twice to signal the bus driver to drive on. Everyday examples are also easy to come by. When I am offered a cup of coffee, I can assert I would like a cup – an “illocutionary” act – just as surely by nodding yes as by uttering “yes.”

From these examples, some might conclude that signals are *either*

linguistic *or* nonlinguistic. Saying “yes” is linguistic, and nodding yes is nonlinguistic. This wouldn’t be right either. It isn’t *signals* that are linguistic or nonlinguistic, but *methods of signaling*. Most signals are *composite signals*, the artful fusion of two or more methods of signaling. From these examples, some might also conclude that the nonlinguistic methods are crude, unsystematic, ad hoc, and marginal, and deserve to be relegated to the periphery of language use. This also wouldn’t be right. On the contrary, the nonlinguistic methods are subtle, highly systematic, and not at all ad hoc. And they are part and parcel of most signals that are usually classified as “linguistic.” Ignoring nonlinguistic methods has distorted people’s picture of language use, and it is important to put that picture right.

This chapter, then, is really about *methods of signaling*. It is tempting to start with linguistic methods and treat the others as mere additions. Instead, I will start with a general account of signs and signals, because that is the surest way to put all the methods in perspective.

Signs

Signals are built on signs that speakers deliberately create for their addressees—words, gestures, noises, and more. But what is a sign? For an answer, let us turn to a theory of signs, or semiotics, developed by the American philosopher Charles Sanders Peirce (1839–1914). Peirce applied his theory to a wide range of philosophical issues, including logic, inference, belief, perception, and metaphysics, but oddly enough, not directly to communication or language use. Still, his theory is useful in the analysis of signals.

ICONS, INDICES, AND SYMBOLS

Signs, for Peirce, are part of a relation among an *object*, a *sign*, and an *interpretant*. Holbein’s portrait of King Henry VIII, for example, is a sign. “The sign stands for something, its *object*” (p. 99).¹ In this case, the object is the historical figure Henry VIII. Something is a sign, however, only if it “addresses somebody,” creating in the mind of that person an idea, which Peirce called the interpretant of the sign. When I look at Holbein’s painting, I take it to be a likeness of Henry VIII. I am assumed to be acquainted with the object, Henry VIII, and the sign

¹ All citations to Peirce are from Buchler (1940).

simply conveys further information about it.² In this example, the three parts of Peirce's relation are these:

object	sign	interpretant
King Henry VIII	Holbein's portrait of King Henry VIII	the idea of King Henry VIII

Not all signs are alike. "A sign is either an icon, an index, or a symbol."

An *icon* resembles its object perceptually. Holbein's portrait of Henry VIII is an icon because it resembles Henry VIII in appearance. The prototypical icons are paintings and drawings – "such as a lead-pencil streak as representing a geometrical line." Philosophers have sometimes argued that the notion of similarity, resemblance, or likeness is empty because any arbitrary thing is similar to any other arbitrary thing in at least some respect (Goodman, 1968). But Peirce intended resemblance only in perceptual respects. The icon's "qualities resemble those of [its] object, and excite analogous sensations in the mind for which it is a likeness." When I look at Holbein's portrait, I perceive Henry VIII – his heavy face, regal clothes, and imposing presence – in many ways as if I were looking at Henry VIII himself (see Walton, 1973, 1990).

Icons vary in the qualities of the object they represent (p. 105). *Images* represent the "simple qualities" of the object. *Diagrams* represent "the relations, mainly dyadic, or so regarded, of the parts of one thing by analogous relations in their own parts." Peirce's notion of diagram was very broad. He considered an algebraic equation, for example, to be an icon "in so far as it exhibits, by means of the algebraical signs (which are not themselves icons), the relations of the quantities concerned." *Metaphors* signify their objects by "representing a parallelism in something else."

An *index*, in contrast, is a sign that designates its object "because it is in dynamical (including spatial) connection both with the individual object, on the one hand, and with the senses or memory of the person for whom it serves as a sign, on the other hand." Take a weathercock:

A weathercock is an index of the direction of the wind; because in the first place it really takes the self-same direction as the wind, so that there is a real connection between them, and in the second place we are so constituted that when we see a weathercock pointing in a certain direction it draws our attention to that direction,

² "The Sign can only represent the Object and tell about it. It cannot furnish acquaintance with or recognition of that Object; for that is what is meant in this volume by the Object of a Sign; namely, that with which it presupposes an acquaintance in order to convey some further information concerning it" (p. 100).

and when we see a weathercock veering with the wind, we are forced by the law of mind to think that direction is connected with the wind. (p. 109)

Many signs are indices because of a *spatial* connection between the sign and object. A weathercock indexes the wind direction, the pole star indexes north, and a plumbob indexes vertical. For these indices there is also a *causal* connection between sign and object. For other indices there is *only* a causal connection. A sundial, or clock, indexes the time of day, and the calluses on a man's thumb index his occupation as shoemaker. Many indices have what Grice called natural meaning (Chapter 5). When we say "Those spots mean measles" or "Those clouds mean rain," the spots and clouds are indices of the measles and the rain.

Indices work in part by capturing our attention. "A rap at the door is an index. Anything which focuses the attention is an index. Anything which startles us is an index, in so far as it marks the junction between two portions of experience" (p. 108-109). As Peirce put it, indices "direct the attention to their objects by blind compulsion" (p. 108). And again: "Psychologically, the action of indices depends upon association by contiguity" (p. 108).

A *symbol*, finally, is a sign "whose representative character consists precisely in its being a rule that will determine its interpretant. All words, sentences, books, and other conventional signs are symbols" (p. 112). Peirce noted:

Any ordinary word, as "give," "bird," "marriage," is an example of a symbol. It is applicable to whatever may be found to realize the idea connected with the word; it does not, in itself, identify those things. It does not show us a bird, nor enact before our eyes a giving or a marriage, but supposes that we are able to imagine those things, and have associated the word with them. (p. 114, Peirce's emphases)

"A symbol is a law, or regularity of the indefinite future." And like Lewis (1969), Peirce believed that symbols evolve (Chapter 3). "Symbols grow. They come into being by development out of other signs, particularly from icons, or from mixed signs partaking of the nature of icons and symbols" (p. 115).

Icons, indices, and symbols, then, differ in the connection they represent between sign and object, as summarized here:

Type of sign	Relation of sign <i>S</i> to its object <i>O</i>
Icon	<i>S</i> resembles <i>O</i> perceptually
Index	<i>S</i> is physically connected with <i>O</i>
Symbol	<i>S</i> is associated with <i>O</i> by rule

Symbols differ from icons and indices in another way too. An icon such as Holbein's portrait is an individual thing, not a type or a general class, and so is its object, Henry VIII. An index, like the weathercock, and its object, the direction of the wind, are also individual things. "A genuine index and its object must be existent individuals (whether things or facts)" (p. 108). Symbols and their objects, on the other hand, are *types* of things:

A symbol, as we have seen, cannot indicate any particular thing; it denotes a kind of thing. Not only that, but it is itself a kind and not a single thing. You can write down the word "star," but that does not make you creator of the word, nor if you erase it have you destroyed the word. The word lives in the minds of those who use it. (p. 114)

One final point. Many signs, according to Peirce, are "mixed signs" – mixtures of icons, indices, and symbols. One example he offered was this:

A man walking with a child points his arm up into the air and says, "There is a balloon." The pointing arm [an index] is an essential part of the symbol without which the latter would convey no information. But if the child asks, "What is a balloon," and the man replies, "It is something like a great big soap bubble," he makes the image [an icon] a part of the symbol. (p. 112)

That is, a single sign may have iconic, indexical, *and* symbolic properties. And for Peirce, most signs are parts of chains. The interpretant of one sign is the object of the next sign, and so on, so an interpretant of one sign may depend on a series of objects, signs, and interpretants.

DEMONSTRATING, INDICATING, AND DESCRIBING-AS

Signs can be either signals or symptoms, although Peirce didn't make this distinction. Icons include both drawings deliberately produced by one person for others, and markings, such as bullet holes, left by nature or accident. And indices include both gestures deliberately produced by one person for others, and natural signs such as weathercocks and plumbbobs that require no human intervention. Peirce also didn't distinguish between the type of thing a symbol (like "give" or "bird") could potentially signify and the type of thing a person actually uses it to

signify on a particular occasion. Peirce was missing several distinctions that were made only fifty years later.

A signal is really *the presentation of a sign by one person to mean something for another*. If Peirce is right, people must have three quite different methods of signaling – with icons, with indices, and with symbols.³ And they do. To distinguish among these methods, I will adopt the following terms:

Method of signaling	Sign created
demonstrating a thing	icon
indicating a thing	index
describing as a type of thing	symbol

The everyday meanings of these terms are roughly what we want. When I gesture to show you how Queen Elizabeth holds a teacup, I am creating an icon by which I mean something: I am *demonstrating* how Queen Elizabeth holds a teacup.⁴ When I point at a bicycle for you, I am producing an index by which I mean something. I am *indicating* the bicycle.⁵ And when I use *dog* in telling you “I see a dog,” I am producing a symbol by which I mean something. I am *describing* the type of thing I am seeing *as* a dog. At one point, Peirce argued for much the same functions (p. 111):

Icons and indices assert nothing. If an icon could be interpreted by a sentence, that sentence must be in a “potential mood,” that is, it would merely say, “Suppose a figure has three sides,” etc. Were an index so interpreted, the mood must be imperative, or exclamatory, as “See there!” or “Look out!” [Symbols] are, by nature, in the “indicative,” or, as it should be called, the declarative mood.

In conversation, most signals are discrete events that leave no physical trace. Words and gestures are audible and visible only while they are being produced. This is unlike many of Peirce’s signs, such as the painting or weathercock, which are static and open to repeated viewing. Not that all signals in conversation are evanescent events. Putting on a uniform or badge, drawing a diagram, and putting up a sign all leave static traces. And, of course, printed words and diagrams are

³ For an earlier analysis of demonstrating, indicating, and describing-as, see Clark and Gerrig (1990).

⁴ I intend *demonstrate* in its everyday sense of showing how, not its technical sense as in demonstrative references.

⁵ I intend *indicate* in the sense of “I indicated the man in the blue shirt,” not as “indicate that” as in “I indicated that I was happy.”

permanent. It is the discrete evanescent signals that pose the greatest challenge, for they are pervasive in conversation.

Demonstrating, indicating, and describing-as rarely occur in pure form. Just as most of Peirce's signs are "mixed signs"—mixtures of icons, indices, and symbols—most signals are *composite signals*. They rely on more than one method of signaling. That is why we must think of demonstrating, indicating, and describing-as, not as types of signals, but as *methods of signaling* that combine in various ways.

Describing-as

Describing-as—using symbols—is the most familiar method of signaling and has long dominated the study of language. The reason is clear. Established languages like English, Finnish, and Dakota are systems of symbols, in Peirce's sense,⁶ and characterizing these systems is the bread and butter of most students of language. Yet language use depends only partly on describing-as, and it cannot work without indicating or demonstrating as well.

SENTENCES AND UTTERANCES

Conventional words like *give*, *bird*, and *marriage*, as Peirce observed, are symbols par excellence, and so are the sentences they are constituents of. To use a word or sentence is, therefore, to describe-as. Linguists and philosophers have long investigated complex linguistic symbols such as these. They would note, for example, that the sentence *I like that one in the corner* consists of several noun phrases (*I*, *the corner*, *that one in the corner*), a verb phrase (*like that one in the corner*), a prepositional phrase (*in the corner*), and, ultimately, certain words and morphemes, all arranged in a tidy syntactic structure. They would also note that the meaning of the sentence is a composition of the meaning of its parts. So much is known about sentences and their constituents that I will say little more about them.

Utterances, however, are not sentences. Recall that signs are types, and they signify types of things, not individual things. Whereas sentences are entirely symbolic, utterances of sentences can never be,

⁶ *Symbol* is sometimes used in the sense of Peirce's sign, or human-created sign, which would include icons and indices as well (see, e.g., McNeill, 1992, p. 105, "Gestures Are Symbols"). The precision of Peirce's terminology, however, has much to recommend it, especially once we add the contrast between signs and signals, so I will continue to use *symbol* in his sense.

because they are particular occurrences and are used to refer to particular objects, states, and events. The word *I* in the sentence *I like that one in the corner*, for example, means “whoever is uttering a token of this symbol,” which is a type of thing. It doesn’t designate any actual speaker, which is a particular thing. As it happens, this sentence was used in 1969 by Alva in talking to Brenda about paintings hanging in the room they were in (1.8.90), so when Alva used *I*, she was referring to herself, a particular thing. Her use of *I* on that occasion, in short, had both symbolic and indexical features: She used it both to describe-as and to indicate. And to understand Alva’s use of *I*, Brenda combined what Alva was describing something as (in using “I” Alva was describing something as “the person uttering this item”) with what she was indicating (in emitting “I” Alva was indicating herself).

Every word and construction in Alva’s utterance depended on both symbolic and indexical elements and couldn’t have been understood without both:

Symbol	Object of symbol	Object of index
I	“oneself”	the self indicated by origin of voice
like	“enjoy” “now”	the time indicated by moment of speaking
that	“the one singled out there”	the location indicated by nodding
one	“single element of a kind”	the kind indicated by what we have just talked about
in	“within the area of”	the area indicated by the corner referred to
the	“particular, specified within the participants’ common ground”	the participants indicated by the current conversation
corner	“area enclosed by meeting of two walls”	the two walls indicated by participants’ orientation

If Brenda had heard “in the corner” without its index, she would have imagined very different locations depending on what she thought the corner was of – a room, a wall, a sheet of paper, Connecticut, a billiards table. Even if she knew it was a room, she could have imagined different locations depending on what she thought was in the corner – a mouse, spider, shelf, group of ten people, broom, or Persian rug. To complete her interpretation, Brenda had to register Alva’s indication of both the room and the picture and, even then, infer that the picture was on the wall some distance from the corner proper. Alva’s sentence, as a complex

symbol, signified only types of things. Her concurrent indications were needed to complete the picture.

Not all symbols have meanings in the sense that *give*, *bird*, and *marriage* do. The words *yes*, *well*, and *oh*, for example, don't belong to any of the major or minor syntactic categories (like noun or preposition), hence cannot take part in syntactic constructions. They have to be used solo. I will call these words *atomic words* or *symbols*. The dictionary defines *yes* as "used to express affirmation, agreement, positive confirmation, or consent," *well* as "used to express surprise," and *oh* as "used to indicate understanding or acknowledgment of a statement" (see also Heritage, 1984). They have conventional uses but no literal meanings (Chapter 5). As we will see, their use depends crucially on concurrent indications: All utterances of atomic symbols are composites of describing-as and indicating (Wilkins, 1992).

GESTURES

Many gestures are signals, but only some are symbolic, and they have been called *emblems* (Ekman and Friesen, 1969). Here are ten common North American examples:

Gesture	Meaning	Gesture	Meaning
head nod	"yes"	head shake	"no"
thumb up	"I approve"	thumb down	"I reject"
greeting wave	"hello"	farewell wave	"good-bye"
shoulder shrug	"I don't know"	wink	"I'm kidding"
thumb and index	"that's excellent"	index finger to finger in circle	"be quiet"
		protruding lips	

This is only a small sample. According to Adam Kendon (1981), emblems tend to be used for interpersonal control (e.g., "Hello" and "Be quiet"), personal states (e.g., "I approve" and "I don't know"), and evaluations of others (e.g., "He's crazy"), but rarely for objects or actions.

Emblems are really atomic symbols – gestural equivalents of atomic words such as *yes*, *no*, and *hello*. Emblems don't divide into component symbols, and they are regularly used as complete utterances. Waving good-bye is atomic in the same way that saying "Good-bye" is. Many atomic words have emblem counterparts – nodding for "yes," shaking the head for "no," waving for "hello" and "good-bye" – and the emblems can often be used in place of the words.

Emblems are symbols because they are associated with their objects

by rule. For most emblems, the rule is a convention, making them interpretable only against the common ground of particular cultural communities. As Desmond Morris and his colleagues (1979) showed, for example, crossing the fingers – putting the middle finger over the index finger – means “May I be protected” in England, Scandinavia, parts of Sicily, and Yugoslavia, but “I am breaking a friendship” in Turkey and Corfu. It appears to mean “May I have good luck” in North America. What it is a symbol for is common ground within these communities, and to use it, people must establish that common ground first. The same goes for the nineteen other common emblems Morris and colleagues studied – from the cheek screw to the chin flick. Many of these emblems can be traced to icons – crossing the fingers derives from the Christian cross – but are now used and interpreted by convention.

When we think of emblems, we think of gestures, but there are *auditory emblems* too (these are North American):

Gesture	Gloss	Gesture	Gloss
clap	“I approve”	hiss	“I disapprove”
wolf whistle	“How beautiful!”	rise-fall whistle	“How surprising!”
raspberry	“I dishonor you”	tongue-click	“Shame on you!”

Many of these may have iconic origins, but are now conventional and used the way any other emblem would be used.

Another class of symbolic gestures are what I will call *junctions* – certain joint physical actions by pairs of people. These include shaking hands, hugging, and kissing used for expressing affection in greetings and farewells. The details of shaking hands, hugging, and kissing vary enormously from one cultural community to the next, and so does what they mean. Junctions have been ignored as signals probably because they are joint actions – generally symmetrical – that require behavior from two participants at once. They are no less symbolic for that. Every signal requires the coordination of actions between speaker and addressees. With junctions it is just that both participants express their feelings simultaneously.

Indication

Every signal, every actual bit of language use, occurs at a particular place and time. They need to be *anchored* to that place and time, and that is done by their indexical elements. Indicating is the method of signaling by which people create indices for the objects they want to refer to. When we

think of indicating, we usually think of pointing, but there are many other methods as well.

INDICES

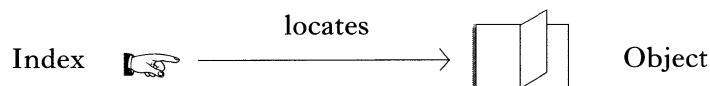
When speakers want to indicate an object, event, or state for other people, they must present an index, a sign that is “physically connected” to the thing they want to refer to. The index must satisfy these requirements:

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|------------------------|--|
| 1. Attention | The index is in the participants' <i>joint focus of attention</i> . |
| 2. Location | The index <i>locates</i> the object in space and in time. |
| 3. Physical connection | The index locates by means of a <i>physical connection</i> with the object. |
| 4. Description | The object is specified under a particular description. |
| 5. Computability | The speaker presupposes that the addressees can work out 1 through 4 based on their current common ground. |

The first four requirements embody Peirce's notion of index; the fifth holds for all signals.

Suppose George points at a book for Helen and says “That is mine.” His act of pointing is the index (*index* is Latin for “forefinger”) and the book is the object. His intention is to get Helen to recognize that he is using that index to locate the book for her. To that end, he must point while she is attending. He must locate the book for her by the direction of his forefinger – a physical connection. And he must get her to see that he is pointing at the object *qua* “book” and not *qua* “example of blue,” “piece of junk,” or whatever.

George's index isn't a static sign, but an event. In the course of conversation, his forefinger is aligned with many things – but not



deliberately. It is only when he is manifestly pointing that Helen is to construe him as indicating the book. And his act locates a region not only in space but in time. The object is the book at the moment of indicating. Some indications locate things primarily in space and others primarily in time.

CREATING INDICES

Most indices can be divided into two components – the *instrument* used, and the *locative action* performed with it. George's instrument was his forefinger, and his locative action was pointing it at the book. People exploit a variety of instruments and locative actions depending on how available and useful they are. I will mention only a few.

The most obvious instruments are body parts that people can orient. In the following examples, I stands for instrument, and O for object:

Instrument	Locative Action	Example
finger	pointing at O with I	" That [on shelf] is the book I want."
finger	touching O with I	In photograph: " This is my sister."
hand	displaying O in I	" This cup of coffee is for you."
arm	sweeping at O with I	Of books on table: " All of these books are mine."
eyes	gazing at O with I	"I want you [person A] and you [person B] to come with me."
head	nodding at O with I	"Connie was standing right over there ."
torso	turning toward O with I	"Let us talk."
body	occupying O with I	In chair: "I am going to sit here "

George can direct Helen's attention to the object with his finger, hand, arm, eyes, head, torso, or entire body. All of these are exploited in face-to-face conversations.

A less obvious instrument is the voice. When George speaks, he realizes that his voice reveals his identity ("I"), the moment of speaking ("now"), his location ("here"), and even, by its loudness, who he is talking to ("you"). That makes the voice an effective instrument for indicating "I," "now," "here," and "you," as in these examples:

Instrument	Locative action	Example
voice	identifying O with I	To roomful of people: "Who wants to come along?" " I do."
voice	identifying O with I	On telephone: "Who's there?" " It's me. "
voice	locating O with I	In dark room: "Where are you, Helen?" " Here I am."
voice	timing O with I	At start of race: "Ready, set, go! "
whisper	identifying O with I	To the nearest of several people: "Do you want to come along?"

loud voice	drawing attention to O with I	Shout at a distance: "Hey, Helen!" Or by drowning person: "Help!"
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The voice indexes “I” in the first two examples, “here” in the third, “now” in the fourth, and “you” in the fifth. It seems to index all four (“I,” “here,” “now,” and “you”) in the sixth.

People also exploit artificial instruments such as door bells, telephone rings, pager beeps, alarm clocks, starting pistols, church bells, school bells, ambulance sirens, and turn signals on a car. When George causes Helen’s telephone or doorbell to ring, he is indicating, pointing to, a person who at that moment is on the telephone or at the door waiting for an answer. A school bell indicates the opening of class, and a siren the location of an ambulance or police car in a hurry. The waving of a checkered flag indicates the start of a car race. These instruments are like prosthetic extensions of the speakers’ arms and voices.

People are opportunistic in their choice of indices and may even exploit fortuitous events. When George hears a loud crash, he can ask Helen, “What was that?” He assumes the crash was in their joint attention and locates the source of the crash by a physical connection – the source caused the crash – and he appropriates the fortuitous index for the demonstrative reference “that.” Almost any event will do – sudden sounds, conspicuous sights, salient smells, another person’s silly actions – as long as it can be brought to the joint attention of speaker and addressees (Clark, Schreuder, and Buttrick, 1983).

People can also indicate by performing an action in a manifestly conspicuous manner. When a clerk in a drugstore says “Can I help you?” I can respond by conspicuously placing the items I wish to buy on the counter. That is, I don’t simply place the items on the counter. I place them in such a conspicuous or stylized manner that I intend the clerk to recognize that I am indicating the placement for her (so she will recognize those as the items I wish to buy). My action isn’t coincidental, but a response to her offer.⁷

I will call the added features of my action a *manifesting* action, which is distinct from the action it manifests. Such an action tends to look like this:

Index. Manifesting an action has all the properties of an index to that action.

Stylization. Manifesting an action makes use of stylized, exaggerated, or

⁷ I am indebted to Janet Bavelas for the notion of stylization in gestures.

conspicuous movements that distinguish the manifested action from the same action not being manifested.

Timing. Manifesting an action often depends on its timing.

The idea here, though subtle, is essential. Placing items on a drugstore counter isn't itself a signal. Yet when I take the action in a stylized manner at just the right moment, I am using the extra features of my behavior to manifest that action, and manifesting the action *is* a signal—an indication.

COMPOSITE SIGNALS

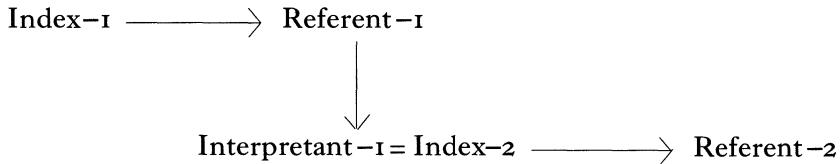
In language use, indicating is usually combined with describing or demonstrating. The most obvious example is the demonstrative pronoun *this* or *that* (Clark, Schreuder, Buttrick, 1983; Nunberg, 1979). Suppose George points at two women in a photograph and says “This is a woman from San Francisco, and that is my neighbor.” His pointings are indices, and the perceptual images are the objects of those indices—their referents. Note that the women themselves aren’t the referents, for George cannot say “This now lives in San Francisco, and that lives next door to me.”⁸ The descriptive content of *this* and *that* signify that the perceptual images are near and far from him, not that the women themselves are near and far—which would contradict what he says.

References with demonstrative adjectives, in contrast, embody *two* indices and *two* referents. Suppose George points at a copy of Wallace Stegner’s novel *Angle of Repose* and says:

1. *That man was a friend of mine.*
2. *I find that period of American history fascinating.*
3. *That publisher has brought out some great books.*
4. *That book is mine.*

In 1, the gesture indexes the perceptual object, but it is that object, under its description “copy of a novel by Wallace Stegner,” that indexes its author Wallace Stegner. The gestures index the same perceptual object in 2, 3, and 4, but that object indexes a “period in American history” in 2, a “publisher” in 3, and a “book” in 4. What emerges is a chaining of indices, a pattern that Peirce himself argued for. We might picture the system of references this way:

⁸ He could have said “She [pointing] now lives in San Francisco, and she [pointing] lives next door to me.” *She* can refer to people, but *this* and *that* cannot.



The descriptive content of the expression *that man* also divides into two parts. The content of *that* helps identify referent-1, the perceptual object George is locating for Helen, as an inanimate object relatively far from him. The content of *man*, in contrast, helps identify referent-2 as the man who wrote the book – namely Stegner. The same division of labor applies to *that period of American history*, *that publisher*, and *that book*, the descriptions in 2, 3, and 4. Even when George makes the demonstrative reference with a pronoun, “He [pointing at the book] was a friend of mine,” he is using the gesture to index the perceptual image of the book (referent-1), and the masculine pronoun to describe Stegner (referent-2). In a demonstrative reference, the *primary index* (often a gesture) locates the immediate perceptual object, which serves as a *secondary index* that locates the ultimate referent.

I, here, and now are what John Perry (1979) called the *essential indexicals*, and their uses also depend on indicating. As I noted earlier, when George utters a word, he is necessarily indexing who is speaking (“I”), where he is (“here”), and when this is happening (“now”), and he expects Helen to recognize this.⁹ *I, here, and now* are really demonstrative references for which the accompanying “gestures” are performed with the voice. Indicating “I,” “here,” and “now” is essential to other parts of language use as well. “I” is needed for specifying the agent of all locutionary, illocutionary, and perlocutionary acts. “Here” is needed for interpreting such deictic expressions as *in front of, behind, beyond, to the right of, straight ahead, next, and the other side* – not to mention *here, there, this, and that*. “Now” is needed for interpreting such temporal expressions as *now, then, today, yesterday, once, already, and soon*, and for specifying the time referred to in the various tenses – as in “I will have left” and “I had left.”

⁹ Since the invention of audio recording, the place and time Helen hears George’s utterance may be different from the time and place he produced it, so George has to reckon with the disparities. He may even identify now and here as the time and place of Helen’s reception: “As you listen to this, I am lying on a beach in the Riviera” (Fillmore, 1975).

Most definite references are composites of descriptions and indications. Suppose George tells Helen, “I just met the principal,” using “the principal” to refer to Gretel. To make this reference, he must presuppose that Gretel’s identity is inferable from what is jointly salient in Helen’s and his common ground at that moment,¹⁰ and for that he must indicate whose common ground at what time (“the salient principal in *your* and *my* common ground *now*”). He uses his voice and eye gaze to index himself as speaker, Helen as addressee, and the time of utterance as “now.” The same utterance in different circumstances would have indexed a different referent. At the same time, George uses the description “principal” to help specify the referent qua principal. Definite descriptions, then, are also like demonstrative references: They are composites of indications and descriptions, and embody a chain of indications.

What holds for definite reference holds for every feature that is based on speakers’ presuppositions – what is in “*your* and *my* common ground *now*.” That includes, for example, all appeals to conventions, from choice of language – English vs. Dutch vs. Japanese – down to choice of jargon and technical terms. When George says “The difference is significant,” he presupposes mutual knowledge of the statistical jargon *significant*. For Helen to realize this, he must indicate their mutual knowledge of its specialized meaning (Chapter 3). The paradox is that George cannot use the word *significant*, a symbol, without indicating, via an index, the rule it is to be interpreted by. There can be no symbol use without indices, though there can be index use without symbols.

TEMPORAL PLACEMENT

The placement of a signal in time – its *temporal placement* – is often used to indicate things, as we have seen with “now.” Time can be viewed at three levels of measurement:

Ordinal scale: events are merely ordered in time

Interval scale: events are ordered with measurable intervals between them

Ratio scale: events lie on an interval scale that has a zero or origin

Temporal order, or *order*, is the mere sequence of two signals – say, word 1 comes before word 2. Yet two signals can be also measured on an interval scale – say, word 2 begins 1.262 seconds after word 1 ends – or on a ratio scale – say, word 3 is delayed 1.53 times as long as word 2 from the

¹⁰ Notice that George couldn’t say “I just met the person someone saw” and make any sense, precisely because the referent of “the person someone saw” cannot be indexed to anything in George and Helen’s current common ground.

end of word 1. I will call temporal placement on interval or ratio scales *timing*. Order in language use has been studied for a long time, but timing has not. One reason is that order is represented in written language, but timing is apparent only in spoken language. In conversation, timing is as important as order.

Temporal order has been studied as word order, clause order, and sentence order. Word order is essential in indicating syntactic function – compare “Man bites dog” and “Dog bites man.” Clause order is used in indicating emphasis and topics – compare “Lou Ann ate dinner before she left” and “Before she left, Lou Ann ate dinner.” Sentence order lies behind certain implicatures – compare “Jack took a pill; he got sick to his stomach” and “Jack got sick to his stomach; he took a pill.” It is also important for ellipsis (Hankamer and Sag, 1976; Sag and Hankamer, 1984), as in the second of this pair (1.8.233):

Brenda: but they're too big you know
 Alva: yes, of course **they are**

Alva indicates what “they are” is elliptical for – namely “they’re too big” – by placing it immediately after Brenda’s utterance “but they’re too big you know.”

Speakers are expected to deliver words not just in the right order, but with the right timing. People can achieve and perceive timing with such precision that they can exploit it for many purposes (Chapter 9), as in this example (1.1.1191):

Sam: but you daren't set synthesis again you see, . you set analysis, and
 you can put the answers down, and your assistant *examiners will
 work them,*
 Reynard: *yes quite, yes, yes*
 Sam: but if you give them a give them a free hand on synthesis, and they'd
 be marking all sorts of stuff, . because they don't do the stuff *them-
 selves, . *
 Reynard: *quite, m*

Reynard deliberately initiates his acknowledgment “yes quite, yes, yes” to overlap with the last few words of Sam’s clause. Why? To indicate which clause he is acknowledging and, at the same time, to signal that he isn’t taking a turn. The timing was essential to what he did (Chapters 8, 9).

Timing is also essential for atomic utterances such as “yes,” “well,” and “oh.” Since these are in the present tense (Wilkins, 1992), speakers must indicate the precise “now” they are referring to. Consider Alva’s *oh* in her

discussion with Brenda about paintings along the wall of the room (1.8.65):

- Brenda: that green is is not bad, is it, that landscape
 Alva: what the bright one, -
 Brenda: yes,
 Alva: *it's*
 Brenda: *well it's* not very bright, no I meant the *second one along*
 Alva: *oh that one over* there

When Brenda refers to “that landscape,” Alva isn’t sure which painting Brenda meant and guesses “what the bright one.” Once Brenda discovers the mistake, she corrects her, “no I meant the second one along.” Alva places “oh” in the middle of that correction to indicate precisely *when* she has grasped it. If she had waited until the end, she wouldn’t have displayed how quickly she had understood (see Jefferson, 1973). Alva’s “oh” indexes four things: “I” (Alva), “you” (Brenda), “now precisely,” and what her “oh” is about (the painting). She needs all four to establish what she meant: “I have just now discovered which painting you were referring to.” One could tell similar stories for Brenda’s “yes,” “well,” and “no.”

Emblems – the gestural counterparts of atomic utterances – have many of the same indexical elements. When there is a good-bye wave, it is always one person (“I”) waving good-bye to one or more others (“you”) at a precise moment (“now”). The gesturer indicates all three in the timing and direction of the gesture. So it goes for all emblems.

Another type of spontaneous gesture is the *beat*, or baton (Efron, 1941; Ekman and Friesen, 1969; McNeill, 1992), in which “the hand moves along with the rhythmical pulsation of speech” (McNeill, p. 15). The typical beat is a quick flick of the hand or fingers up and down, or in and out. In its purest form, its function is to indicate moments in time. The beat “indexes the word or phrase it accompanies as being significant, not for its own semantic content, but for its discourse-pragmatic content” (*ibid.*, p. 15). It is used to emphasize events being mentioned, points being introduced, and other types of information. Think of the orator pounding a fist on the podium to emphasize a point. Beats, then, are indexical signals *par excellence*.

Demonstrations

The final method of signaling is demonstrating. Suppose George tells Helen, “Elizabeth drinks tea like this.” He holds an imaginary saucer in his left hand. Then, with his right hand, pinkie up, he picks an imaginary cup off the saucer, lifts it to his lips, tips it, purses his lips with eyes half closed,

and pretends to drink. Then he returns his hands, relaxed, to his lap. With these actions, George demonstrates to Helen how Elizabeth drinks tea. He *means* that Elizabeth drinks tea in such and such a way, and that makes his action a signal. What distinguishes demonstrating from describing and indicating is the use of icons. To demonstrate is to signal with icons. At first glance, demonstrating seems to play little role in language use. But on a closer look, it is ubiquitous and essential.

WHAT ARE DEMONSTRATIONS?

Demonstrations, Richard Gerrig and I have argued (Clark and Gerrig, 1990), are *selective depictions*. Each demonstration divides into four types of aspects:

1. *Depictive aspects*. These are the aspects of a demonstration that are intended to depict aspects of the referent. George depicts the way Elizabeth holds her hands, sticks out her pinkie, purses her lips, holds her head, and closes her eyes; he also depicts the trajectory of her hand from the saucer to her mouth. Yet he doesn't even try to depict a great many other things – the way she sits, holds her shoulders, or licks her lips. The depictive aspects define the *demonstration proper*, the actions essential to the demonstration.
2. *Supportive aspects*. These are the aspects of a demonstration that aren't intended to depict, but to support or enable the performance of the depictive aspects. George doesn't use a real cup and saucer, or sip actual liquid, or swallow, or become small and female. And Helen, for her part, doesn't assume that Elizabeth drinks tea without a real cup and saucer, without sipping or swallowing, or by becoming a large man. She merely takes these as the aspects George has to include to perform the depictive aspects.
3. *Annotative aspects*. These are the aspects of a demonstration that are included as simultaneous commentary on what is being demonstrated. When George exaggerates the daintiness of Elizabeth's gestures, the pursing of her lips, the closing of her eyes, Helen isn't to take these as depictive. The exaggerations are merely commentary on what he *is* depicting. The annotative aspects are sometimes as important as the depictive ones.
4. *Incidental aspects*. These are the aspects of a demonstration that are incidental to the demonstrator's purpose, what is left over once he or she has chosen the depictive, supportive, and annotative aspects.

Effective demonstrating is an art, for speakers must enable their

addressees to decouple the depictive, supportive, and annotative aspects. George had to make it clear to Helen that his lack of cup, saucer, tea, swallowing, and gender change were supportive aspects, and his daintiness was an exaggeration. If Helen had construed these as depictive, he would have failed. There has been little investigation of how people engineer all this, even though they do it all the time.

HOW TO DEMONSTRATE

The point of demonstrating a thing is to enable addressees to experience selective parts of what it would be like to perceive the thing directly. When Helen sees George demonstrate, she has a partial experience of what it would be like to see Elizabeth herself drinking tea. The demonstrator's problem is how to arrange for this experience.

The act of demonstrating, like the act of indicating, generally encompasses an *instrument* and *depictive actions* performed with it. George used his arms, hands, mouth, and eyes to mime Elizabeth's tea drinking. People exploit a variety of instruments and depictive actions. The list I offer is hardly exhaustive.

People use their bodies as instruments, choosing parts for what they can readily depict. Here are examples (in which I stands for instrument and O for object):

Instrument	Depictive action	Example
forefinger	drawing O in air with I	"Utah is shaped like this [demo]."
two hands	measuring O with I	"I caught a fish this long [demo of length]."
hand	forming I into O's shape	"He held out a gun [demo of gun]."
arm	swinging I like O	"The drawbridge swings up like this [demo of movement]."
legs	moving I like O	"George limps like this [demo]."
entire body	miming O with I	"You serve a volleyball like this [demo]."

When George traces the outline of Utah in the air, the shape of the tracing is a depictive aspect, and its size, orientation, and tracing direction are supportive aspects. People also depict things with their face, as in these examples:

Instrument	Depictive action	Example
mouth	mimicking O with I	"He smiled like this [demo of smile]."
face	mimicking O with I	"I caught my thumb in a door [demo of wince]."

head, eyes mimicking O with I "He looked me up and down [demo]."

People are surprisingly creative in how they use their body to depict things.

The perceptual experiences induced by demonstrations may be auditory or tactal as well as visual. People are skillful, for example, at demonstrating with their voices:

Instrument	Depictive Action	Example
voice	mimicking O with I	"She sang Yankee Doodle like this [demo of singing]."
voice	mimicking O with I	"Paris ambulance sirens go [demo of siren sound]."
voice	mimicking O with I	"Garbo was famous for the line, 'I want to be alone' [demo of Swedish accent]."

People can selectively depict all manner of speech characteristics – speed, gender, age, dialect, accent, drunkenness, lisping, anger, surprise, fear, stupidity, hesitancy, power. Many demonstrations combine sights and sounds, as when George demonstrates Greta Garbo's "I want to be alone" in a Swedish accent while clutching his arms to his chest in a Garboesque pose.

One of the commonest forms of demonstrations is direct quotation (Clark and Gerrig, 1990). Take these examples:

- So my mom said, "[Whiny voice] You can't go out until you make your bed."
- "Nothingth *changed!*" he yelled. "By God, Thally, you're the meaneth, thtubborneth, bitchieth, mule-headedeth, vengefulleth cold-blooded therpent in the Thtate of Vermont." [John Gardner, *October Light*]
- The car engine went [brmbrm], and we were off.
- The boy went [rude gesture] and ran away.

What speakers do in quotations is demonstrate selected aspects of what someone or something did or could have done. In the first example, a child is depicting not only the content of her mother's utterance but her whiny tone. In the second, the narrator is demonstrating the original speaker's lisp as well as his scornful assertion. In the third and fourth, we find nonlinguistic quotations depicting a car sound and a gesture. What is depicted in quotations isn't necessarily linguistic or even auditory, but any perceptible thing, state, or event.

In conversation, people often don't have access to tennis rackets, volley balls, teacups, or pencils. They make do with the instruments at

hand – their limbs, body, faces, and voices – so most demonstrations are manual, facial, vocal, or some combination.

ICONIC GESTURES

People gesture in telling stories, giving directions, explaining how things work, and many of these gestures depict what is being talked about (Goodwin, 1981; Kendon, 1980; McNeill, 1992; Schegloff, 1984). These have been called *iconic gestures*.¹¹ Most iconic gestures are by speakers, although addressees may gesture in response to speakers, as with smiles, looks of surprise, or grimaces. In an example analyzed by Kendon (1980), Fran tells a joke based on the movie *Some Like it Hot*. Her speech is on the left, her gestures in the middle, and the aspects they depict on the right:

Speech	Gestures	Depicted Aspects
1 they wheel a big <i>table</i> in	F sweeps her left arm inward in a horizontal motion.	height and forward movement of table
2 with a big with a big [1.08 sec] <i>cake</i> on it	During pause F makes series of circular motions with forearm pointing downward and index finger extended.	shape and orientation of horizontal dimension of cake
3 and the <i>girl</i>	F raises her arm until it is fully extended vertically above her.	vertical movement of girl jumping out of cake
4 jumps up		

While describing the scene in words, Fran uses her hands and arms to portray selective pieces of it. The example illustrates several features of iconic gestures.

Iconic gestures generally have three main stages: (1) *preparation*; (2) *stroke*, the peaking of effort within the gesture; and (3) *recovery* (Kendon, 1980; McNeill, 1992). Within these stages, one can identify other points

¹¹ They have also been called *illustrators* (Ekman and Friesen, 1969). What I am calling iconic gestures are divided by McNeill (1992, p. 145) into two types: *iconic gestures*, which “exhibit images of events and objects in a concrete world (real or fictive),” and *metaphoric gestures*, which “create images of abstractions.” Since both are iconic in Peirce’s sense, I will keep *iconic gestures* as the cover term for both.

in time: the onset of movement; the moment of peak thrust or energy; the acme or point of maximum extension; the beginning of retraction; and the moment the limb reaches the position from which it originally started, its rest or home position (Schegloff, 1984).

Iconic gestures are tightly synchronized with speech (Goodwin, 1981; Kendon, 1980; McNeill, 1992; Schegloff, 1984). Fran's speech divides into four units Kendon called *tone units* (see Chapter 9). Each is a short clause or phrase under a single intonation contour, usually with a single prominently accented word or syllable (marked with italics in the example). Gestures tend to be associated with tone units, one gesture per unit, or one spanning two units (Kendon, 1980; McNeill, 1992). The stroke, or peak thrust, of a gesture ordinarily falls on the accented syllable. In tone unit 3, the stroke of Fran's gesture falls on *girl*. In tone unit 2, when Fran's speech is disfluent, delaying the word *cake*, the stroke of her gesture falls in the pause before *cake* – perhaps where she projected *cake* would occur.

Iconic gestures tend to anticipate the words they go with (Butterworth and Beattie, 1978; Kendon 1980; McNeill, 1992; Morrel-Samuels & Krauss, 1992; Schegloff, 1984). Fran portrayed the girl jumping out of the cake in tone unit 3, but described it in tone unit 4. It is sometimes possible to single out a word or phrase – a *lexical affiliate* – that corresponds to the content of the gesture. In tone unit 2 the lexical affiliate of Fran's gesture might be *cake*, and in tone unit 3, *jump up*. In one study of sixty iconic gestures (Morrel-Samuels and Krauss, 1992), all were initiated before their lexical affiliates – by an average of 1.0 seconds. In no instance was the gesture initiated *after* its lexical affiliate.¹² The same gestures were terminated an average of 1.5 seconds after their lexical affiliates. Iconic gestures are timed to peak on the stressed words they are affiliated with.

FUNCTIONS OF ICONIC GESTURES

Most iconic gestures are genuine signals by which speakers mean things. This point isn't trivial, for it has led to heated debate (Kendon, 1980, 1983; Krauss, Morrel-Samuels, and Colasante, 1991). The main alternative is that speakers produce iconic gestures merely to help them formulate utterances – a facilitative function. Although iconic gestures may be facilitative,

¹² The sample didn't include *component* demonstrations, which have quite different properties, as we will see.

I will argue that they are primarily communicative.

Iconic gestures, like other demonstrations, divide into two kinds (Clark and Gerrig, 1990), *component* and *concurrent* gestures. Component gestures are embedded as parts of other utterances, just as the word *table* is embedded as part of the utterance “they wheel a big table in.” Now, Fran means something by “table” because she means something by “they wheel a big table in,” of which it is a component. The same holds for component gestures.

One class of component gestures are those in quotations, as in this example (Polanyi, 1989, p. 92):

Kate: I went out of my mind and I just screamed and I said “Take that out! That's not for me!”...And I shook this I-V and I said “I'm on an I-V, and I can't eat. Take it out of here!”

In delivering her quotation Kate “shakes her arm as if shaking the I-V and shouts in the conversational setting as she shouts in the story.” Her gestures are as much a part of her quotation as her words. In some quotations, all there is is the iconic gesture, as in “The boy went [rude gesture] and ran away.” Another class of component gestures are those that complete utterances, as in this example (Clark and Gerrig, 1990):

Damon: I got out of the car, and I just [demonstration of turning around and bumping his head on an invisible telephone pole].

A third class are those indicated by *this*, as in “Lilian caught a fish this [extending hands apart] long” and “He walked like this [tracing a crooked path with hand].” All of these gestures are components of complex signals, so they are themselves signals.

Concurrent iconic gestures are produced at the same time as other utterances. When Fran utters “they wheel a big *table* in,” she also gestures, depicting the height and forward movement of the table. She clearly intends the gesture as a signal. It expresses information that is not found in her words, but is necessary to her narrative. Her audience wouldn't fully understand what she meant without identifying it. Her gesture, as I will put it, is *informative*. In fact, she produces the speech and gesture as part of a *single* composite signal, timing its stroke to fall on *table*, the main accent in the phrase. It seems wrong to say she is making *two* assertions at the same time, one with her words and another with her gesture. She is making a *single* assertion, but with a composite of words and gesture. Schematically: composite signal = spoken utterance + iconic

gesture. Although the gesture isn't a component of the utterance, it *is* a component of the composite signal, which makes it a signal too. The gesture is *integral* to the composite signal.

There is good evidence that most concurrent iconic gestures are informative. When people are asked to tell others how a lock works, they rely heavily on iconic gestures, almost all expressing at least some information not found in the accompanying words (Engle and Clark, 1995). When people are asked to describe cartoons for others, they too use a plethora of iconic gestures, most of which are patently informative (McNeill, 1992). Many iconic gestures, indeed, are uninterpretable by outside viewers without the accompanying speech (Krauss, Morrel-Samuels, and Colasante, 1991), and that would follow if they were designed to be informative, to be interpreted as part of the ongoing discourse and adding to it.¹³ And, finally, speakers gesture less when their addressees cannot see them. In one study (Cohen and Harrison, 1973), speakers produced twice as many iconic gestures in face-to-face conversation as over an intercom.

There is also good evidence that concurrent iconic gestures are integral to composite signals. If they are truly integral, it should be difficult to produce the speech without the gestures, and vice versa. For one thing, speakers should find it difficult to speak when they are prevented from gesturing—especially when they would be most likely to gesture. Imagine sitting on your hands while telling someone how to tie a double bowline. Indeed, when gestures are prevented, speakers become less fluent, slower, and less vivid (Rimé, Schiaratura, Hupet, and Ghyselinckx, 1984), especially in spatial descriptions (Bilous, 1992; Krauss, 1991).

On the same grounds, speakers should find it difficult to eliminate gestures even when they don't need to use them. As an analogy, imagine trying to eliminate intonation when dictating a letter that won't be heard by your addressee. Indeed, on the intercom speakers still use some gestures (Cohen and Harrison, 1973). Similarly, in Japan, people sometimes bow at the end of a telephone conversation, and in America, they sometimes nod on the telephone. Now, bows and nods, as emblems, are quintessentially communicative, and if anything should be eliminated on the telephone, they should be. But if, like intonation, they are integral

¹³ Krauss et al. (1991) used the data instead to argue that, if the gestures aren't interpretable, they couldn't have been intended to be communicative. But this argument isn't decisive. Most words aren't fully interpretable when isolated from their spoken contexts, yet words are patently communicative. Gestural utterances are no different.

to composite signals, it should take special effort to eliminate them.¹⁴ So people should be more fluent on the linguistic half of a composite signal if they don't have to suppress the gestural half.

Most iconic gestures are easier to formulate and execute than the words they are to be integrated with. Recall that iconic gestures invariably anticipate their lexical affiliates. And the rarer the lexical affiliate (the longer it takes to retrieve the word), the longer it lags behind the gesture (Morrel-Samuels and Krauss, 1992). Because of this asymmetry, iconic gestures might help speakers formulate utterances – especially in retrieving words (DeLaguna, 1927; Ekman and Friesen, 1972; Krauss, Morrel-Samuels, and Colasante, 1991). Fran, for example, appears to have trouble finding the word *cake*: “with a big with a big [1.08 sec] *cake* on it.” When she gestures during the pause, she may be trying to help herself retrieve *cake* from memory. Hence the idea that iconic gestures are facilitative.

But iconic gestures may be facilitative only as a side effect of their communicative function. Suppose George is gesturing something integral with a word he is about to use, but has trouble retrieving the word. He might proceed with the gesture anyway for one of three reasons. First, he may find it easier to continue a gesture than to restart or delay it. Second, he may use the gesture to let Helen know he is searching for a word; speakers ordinarily account for delays in speaking, and gestures provide an ideal account (see Chapter 9). Or third, George may be inviting Helen to help find the word, and he intends the gesture to help her do that.

FACIAL GESTURES

People also produce facial gestures, many of which are clearly demonstrations (Bavelas, 1992, 1994; Bavelas, Black, Lemery, MacInnis, and Mullett, 1986; Bavelas, Black, Lemery, and Mullett, 1986). Janet Bavelas illustrated one such gesture in a lecture:

I walked into a sports store and asked whether they had Merco squash balls. The clerk said, “No, we have Dunlops.” I responded with [Bavelas does a facial gesture for her audience]; that is, I wrinkled my nose, laughed, and said, “No thanks,” and he laughed and said “OK.” The nose-wrinkle in this context meant (and was understood to mean) “It is AS IF Dunlop squash balls are disgusting to me.” It used the *metaphor* of physical disgust to convey dislike for something not at all rotten or smelly. (Bavelas, 1992, p. 2)

¹⁴ I'm indebted to Scott Mainwaring for this point.

The nose-winkle *depicted* a person in a state of disgust, by which Bavelas meant that she disliked Dunlop squash balls. So it is communicative, a type of demonstration. When Bavelas wrinkled her nose in the lecture itself, she depicted what she did in the sports store, as she would in any quotation. Her second nose-winkle was a demonstration of a demonstration. Other examples are winces and grimaces (meaning “That’s scary” or “That’s awful”), raised eye-brows (meaning “I’m surprised” or “I’m skeptical”), and looks of dejection or sadness (meaning “How sad!”) (Chovil, 1991, 1991/2; Chovil and Fridlund, 1991; Ekman, 1979).

Although many facial gestures depict pain, disgust, surprise, happiness, they don’t depend on speakers’ being in those emotional states. When Bavelas wrinkled her nose at the store clerk, she wasn’t actually in a state of disgust. The point is illustrated in an experiment by Bavelas and her colleagues (1986). A student watched an experimenter carry a large television set into the room and, in a carefully staged accident, drop it on his finger. Then the experimenter, showing pain, either made eye contact with the student, or hunched over the television set. The scene was videotaped. Most students began to form a grimace within a fraction of a second of the accident. If the experimenter looked up, they continued to develop the grimace, displaying it to the experimenter. But if he didn’t look up, most of them dropped it. So the students prepared and displayed grimaces to communicate sympathy to the injured experimenter (see also Chovil, 1991). The grimaces weren’t automatic expressions of their emotional states.

In conversation, most facial gestures don’t express emotional states, so must have other origins anyway. Consider Nicole Chovil’s (1991/2) study of more than 1,000 facial displays in conversation (excluding smiles). Although 25 percent of the displays were judged incidental to the conversation, the rest were tightly organized with the talk. Some were associated with the illocutionary acts being performed; one speaker raised his eyebrows while asking “Are we supposed to eat this meal too?” and another did a “facial shrug.” Others depicted what the speakers were talking about; one speaker wrinkled her nose while saying “I think liver is disgusting.” Most of the displays were performed by speakers, but a few were performed by addressees in reaction to them. Some of the facial gestures (e.g., nodding, rolling the eyes) were emblems; others were like beats. But many of the rest were depictive, serving much the same purpose as iconic hand gestures.

What, finally, about smiles? They are used the world over to express

happiness (Ekman et al., 1987), so in conversation they might be thought to be purely expressive: I smile when I'm happy, and not when I'm not. In fact, most smiles are *not* merely expressive. They are demonstrations. In one study (Kraut and Johnston, 1979), bowlers were observed to smile nine times as often when facing their friends as when facing the pins. They almost never smiled when bowling alone, nor did they smile more often after a strike or spare – which should have made them happy – than after other scores. That is, they used smiling to communicate with their friends. And in conversation, smiles by both speakers and addressees are tightly organized with the talk and mostly disappear when the participants cannot see each other (Fridlund, 1991, 1994). They are often used by interlocutors at the ends of clauses, like nods and “uh huh,” to signal understanding (Brunner, 1979). So many facial gestures are demonstrations – signals that work by selective depiction.

VOCAL GESTURES

In spoken language, people have to deliver an utterance with intonation or prosody. Intonation is very different from words and syntax. Although some aspects may be conventional and therefore symbolic (see Pierrehumbert and Hirschberg, 1990), many aspects appear to be indexical or iconic. This point has been argued by Dwight Bolinger (1985). As he put it, “intonation is part of a gestural complex whose primitive and still surviving function is – however elaborated and refined – the signaling of emotions and their degrees of intensity” (p. 98). He went on, “It assists grammar – in some instances may be indispensable to it – but is not ultimately grammatical” (p. 106).

Bolinger’s idea was that intonation is iconic. Pitch is a central element in intonation. “Suppose,” he said, “we take the obvious emotive correlation as basic: high pitch symptomizes a condition of high tension in the organism, low pitch the opposite... When we come to elements in an utterance that interest or excite us, we mark the spot with a rise in pitch – the more interesting and exciting they are, the greater the rise” (pp. 99-100). Although Bolinger illustrated the idea with many intonation patterns, the point is especially clear with atomic utterances – “hi,” “oh,” “ah,” “okay,” “yes,” etc. – because they get so much of their interpretation from intonation. When you greet someone with “hi” or “hello,” the more you raise your pitch, the more pleasure you signal. And when you say “oh,” the greater the rise in pitch, the more surprise

you signal. When you produce a heightened “hi” or “oh,” you are depicting a person evincing pleasure or surprise and, in that way, mean “I am *very* delighted” or “I am *very* surprised.” As with facial gestures, you don’t have to feel what you are demonstrating. You can merely pretend pleasure or surprise. Still, people may be mostly truthful with their intonation, just as they are with their words.

Tone of voice is a vague term for other vocal gestures that are used to communicate emotion and attitude. People can communicate anger, mystery, boredom, disdain, or sadness by selecting a tone of voice that mimics someone in that state. In reading “Little Red Riding Hood” to a five-year-old, you might speak in a low, whispery voice when the wolf enters the scene. You communicate mystery by depicting how a person would speak in sharing a secret.

Demonstrations, in summary, take many forms. They can be performed by means of any available part of the body – arms, legs, face, eyes, voice – or by extensions of the body – pencil and paper, computers, musical instruments. All demonstrations depict selected aspects of an object, property, or event. They are icons created to mean something for addressees.

Signaling processes

How do people select and interpret signals? According to the standard picture, speakers begin with communicative intentions, and they encode these in linguistic symbols – in words and constructions. Their addressees in turn decode these symbols and infer their intentions. The process is complicated because words and constructions are complex, and so are the inferences required (Chapter 5). Still, in the standard picture, selecting and interpreting signals deals primarily with symbols – their choice and interpretation. Indices play a secondary role that is largely unspecified, and icons play no role at all.

The standard picture is radically incomplete. In conversation, most utterances are composites of the three methods – describing-as, indicating, and demonstrating – not just one or two. What is more, the three methods depend on fundamentally different processes, and these have to be integrated. For a realistic picture of language use, we must characterize the three processes and their integration.

THREE PROCESSES

The processes people recruit in describing-as, indicating, and demonstrating are different every step of the way. Recall that symbols, indices,

and icons are associated with their objects in different ways – by rule, by physical connection, and by perceptual resemblance. When people talk, they have to coordinate in establishing these associations, and the processes they need change with the connection they have to establish. Here are the main contrasts:

Method	Sign created	Memory resource	Basic process
describing-as	symbols	mental lexicon, grammatical rules	activating rules
indicating	indices	representation of spatial, temporal surroundings	locating entities
demonstrating	icons	memory for appearances	imagining appearances

In describing-as, speakers and addressees coordinate on *activating* the same rule for each symbol (Chapter 3). Suppose George uses the word *hold* in talking to Helen. To select the word, he must consult his *mental lexicon* – a vast memory store of information about the conventional meanings of all the symbols he knows – and activate a representation of the word shape, /hold/, corresponding to the type of thing he wants to denote. Helen, in turn, must consult her own mental lexicon and, working in reverse, activate a representation of the type of thing that is conventionally denoted by the word shape /hold/. None of this is simple. *Hold* has many conventional meanings both as a noun and as a verb, so it takes subtle coordination for George and Helen to activate one in common.

In indicating, speakers and addressees coordinate instead on *locating* entities in their immediate surroundings. When George points at a dog, he must be confident his gesture will lead Helen to locate and attend to the dog *qua* dog, and in interpreting George's gesture, Helen must do just that. Coordinating on spatial and temporal locations is just as delicate a process as coordinating on conventional symbols, but in a fundamentally different modality.

In demonstrating, speakers and their addressees coordinate on something different again: imagining the way things appear. By appearance, I mean the way something looks, sounds, feels, tastes, or smells, and by imagining, I mean creating a mental representation of those appearances. When George gestures that he caught a fish “this long,” he must be confident that his gesture depicts the fish’s length, and that Helen will be able to perceive that information in imagining the fish’s length.

So describing-as, indicating, and demonstrating rely on very different cognitive resources for both speaker and addressee. Describing depends on a vast memory store of conventional symbols – the mental lexicon – and the grammatical rules for their combination. Indicating depends on a representation of the surrounding space and time. And demonstrating depends on a knowledge of perceptual appearances.

COMPOSITE SIGNALS

Most signals, as we have seen, are composites that are knitted together from the three methods. George sees Helen and says “Hello.” He uses the conventional meaning of *Hello* to *describe* his action as a greeting. He uses his voice and eye gaze to *indicate* himself as speaker, Helen as addressee, and now as the time of greeting. He uses his smile, open eyes, and magnified intonation to *demonstrate* his enthusiasm. Helen, in turn, not only interprets each of these methods, but integrates them to understand him as meaning, roughly, “I, George, now greet you, Helen, enthusiastically.” The point is this: “Hello” is treated not as three *parallel* signals with separate interpretations, but as a *single* signal with a unified interpretation (see Bavelas, 1994).

The composition of signals, however, is usually more complex, as illustrated by a spontaneous example recorded by Nicole Chovil (1991/2, p. 180). Jane is telling Ken about her son’s incessant questions and how they irritate her at times:

Jane: Sometimes I find them amusing, other times I find them *exasperating*.

As Jane said *exasperating*, she “raised her eyebrows, and widened and rolled her eyes.” Here Jane used words and morphemes – elementary symbols – to compose a sentence – a complex symbol – whose meaning is a composition of the meanings of its parts. She also created indices to establish who she was referring to with *I*, *them*, and other elements. Already, this poses an issue of integration. Jane’s index to her son’s questions went with *them* and not other expressions, and this she had to coordinate with Ken.

The same goes for her demonstrations. When Jane raised her eyebrows and widened and rolled her eyes – and may have spoken in a weary voice – she was demonstrating an especially exasperated person. Her demonstration elaborated on what she meant by *exasperating*, and not what she meant by *amusing*, or *find*, or *other times*. She indicated this in part by the timing of her demonstration. Ken was to integrate what

she meant by the gesture – roughly “what is a person to do!” – with the conventional meaning of *exasperating* just as he was to integrate the interpretation of each index with the right expression.

Many demonstrations have no lexical affiliates. Some elaborate on an entire clause (McNeill, 1992). Some are constituents of a clause, as when Damon said “I got out of the car, and I just [demonstration of turning around and bumping his head on an invisible telephone pole].” Some are performed alone, as when Bavelas wrinkled her nose at the sporting store clerk. It won’t be easy to specify how speakers and addressees integrate descriptions, indications, and demonstrations.

CHOICE OF COMPOSITE

The final issue is how to choose the right composite. Jane, for example, chose a description *exasperating* plus a demonstration of an exasperated person. She *could* have chosen a description alone (“really exasperating”), or a demonstration alone (“other times I find them [demonstration of an exasperated person]”). And Kate, in telling her story, chose a direct quotation – a demonstration:

I went out of my mind and I just screamed and I said “Take that out! That's not for me!”

She *could* have chosen an indirect quotation – a description plus indication:

I went out of my mind and I just screamed and I said that they should take it out, that that was not for me.

How speakers make their choices is part of their broader decisions about what they are doing and why.¹⁵ Here I will merely point to three dimensions of their decision – purpose, availability, and effort.

The choice of composite always depends on people’s *purposes*. Some choices are obligatory. If George wants to refer to an individual – himself, his house, his son’s fall off a bicycle – he cannot do it by description alone. He must anchor the reference, which requires an indication. Other choices are optional. Kate’s story was more vivid with direct quotation (“Take that out! That’s not for me!”) than it would have been with indirect quotation (“that they should take it out, that that was not for me”)

¹⁵ For choices in direct vs. indirect vs. so-called free indirect quotation, which is one area in which speakers choose type of composite signal, see Clark and Gerrig (1990), Cohn (1978), Macaulay (1987), Sternberg (1982), Tannen (1989).

(Clark and Gerrig, 1990; Tannen, 1989). In so far as describing-as, indicating, and demonstrating serve different purposes, speakers' choices of composite must conform to their purposes.

Yet people's choice of composite is constrained by the *availability* of the method. When George and Helen are face to face, he can point at objects and make iconic manual and facial gestures. When they are on the telephone, he cannot. If George wants to buy paté from a Parisian charcutier and his French is shaky, he must resort to indication and demonstration. Written language is particularly constraining. Print cannot represent voice pitch or identity, manual or facial gestures, or pointing, and it has only crude ways of representing intonation, tone of voice, timing, and vocal demonstrations.¹⁶ Writers are forced to rely on description and a few types of indication.

The final factor is *effort*. It is far easier to demonstrate than describe how to tie a double bowline, or how large a fish you caught. On the other hand, it is far easier to indicate than describe the taste of a fine burgundy, and it may be impossible to demonstrate it. Effort is related to availability. The more fluent George is in French, the more easily he can pick out the paté by describing than by indicating or demonstrating. What is the metric for effort? At the moment there is no obvious answer.

A proper theory of signal composition faces at least two challenges. The first is to say how speakers design descriptions, indications, and demonstrations to make clear how they are to be knitted together. The second is to account for speakers' choice of composite – what is the most effective available mix of description, indication, and demonstration for current purposes.

Conclusions

Signaling is often viewed as a homogeneous process. Speakers represent what they mean in symbols, which they intend their addressees to interpret. In this view, signaling is largely or solely the use of symbols. In reality, signaling is a mixture of three methods – describing-as, indicating, and demonstrating. Describing-as is the only method that uses symbols, and it never works alone. In conversation, indicating is always

¹⁶ Two examples of vocal demonstrations represented in print are: "The pounding of the cylinders increased: ta-pocketa-pocketa-pocketa-pocketa-pocketa" (James Thurber, "The Secret Life of Walter Mitty"), and "The room reeked of camphor. 'Ugf, ahfg,' choked Briggs, like a drowning man" (James Thurber, "The Night the Bed Fell"). See Clark and Gerrig (1990).

required too. Of the three methods, demonstrating is the most neglected, yet is essential to everything from quotations to intonation to iconic gestures. What is more, these methods rely on different processes: Describing-as works by activating rules in memory, indicating by locating individuals in the spatial and temporal surroundings, and demonstrating by imagining appearances. Signaling can never be understood without accounting for all three methods.

Signaling is also often viewed as a solely linguistic process – the use of words and phrases from a language like English. In reality, it has both linguistic and nonlinguistic features. Indeed, it is better characterized by the methods and instruments used, as summarized here:

Method of Signaling			
Instrument	Describing-as	Indicating	Demonstrating
Voice	words, sentences, vocal emblems	vocal locating of "I" "here" "now"	intonation, tone of voice, onomatopoeia
Hands, arms	emblems, junctions	pointing, beats	iconic hand gestures
Face	facial emblems	directing face	facial gestures, smiles
Eyes	winks, rolling eyes	eye contact, eye gaze	widened eyes
Body	junctions	directing body	iconic body gestures

"Linguistic" methods comprise only the upper left-hand corner of this classification.

The view of signaling that emerges here challenges the traditional notion of "language." It is fine to speak of "a language" such as English, Urdu, or Tzeltal as a system of signals that are conventional within a speech community – what Lewis (1969) called a conventional signaling system (Chapter 3). It is this system that supplies what is traditionally called the "linguistic" methods of signaling. But these linguistic methods work only in combination with nonlinguistic methods, and even many parts of "linguistic" signals – aspects of intonation, tone of voice, the vocal location of the speaker, here, and now – are not properly part of "a language." If so, "language" must be taken to be broader than "a language." At least in the notion of "language use," it must include every method by which one person means something for another – describing-as, indicating, and demonstration – regardless of the instrument used – voice, hands, arms, face, eyes, or body. To assume anything less would beg the question of what language use is.