2 Signs

Everything ideological possesses meaning: it represents, depicts, or stands for something lying outside itself. In other words, it is a sign. Without signs there is no ideology.

V.N. Volosinov (1905–60)

2.1 Introduction

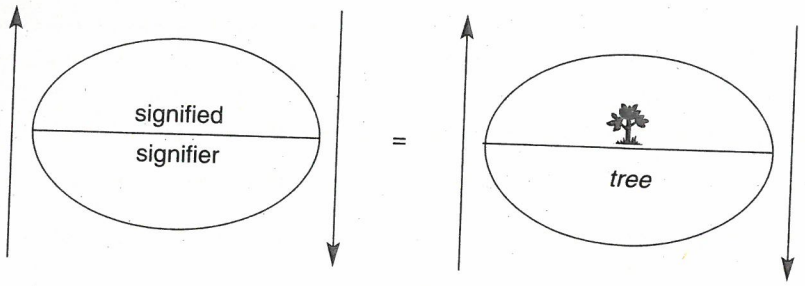
When we gesture, talk, write, read, watch a TV program, listen to music, look at a painting, we are engaged in primarily unconscious sign-based behaviours of various kinds. As Peirce aptly remarked, human life is characterized above all else by a 'perfusion of signs.' Without them we would have to resort to a purely instinctual form of existence. Perhaps the most important function of signs is that they make knowledge practicable by giving it a physical and thus retrievable and usable form. Although we process information about the world through our sensory apparatus, the cognitive uses of such information would quickly vanish without signs to encode and preserve it in some reusable way. Knowledge is 'signed information.' Modern humans are more a product of semiosis than they are of evolutionary instinctual processes. However, there is a price to pay for all this – the sign systems we acquire in cultural contexts constitute powerful mental and emotional filters for interpreting the world, guiding us constantly in our attempts to grasp the meaning of that very world. That there are dynamic interactions among signs, knowledge, and meaning is a basic axiom of semiotic theory (see §1.5).

Before any attempt at a systematic description or explanation of the nature of this interaction, it is essential, clearly, for us to have at our disposal a consistent and coherent terminology for differentiating among the various types of signs created and used by humans in their different spheres of existence. Imagine chemistry (or any science, for that matter) without an appropriate terminology. The study of physical matter would end up being a highly subjective and anecdotal one indeed, making it a practically useless intellectual endeavour. Similarly, without a basic terminology, studying the role of signs in human life would be solipsistic at best, and utterly pointless at worst. The first task of semiotic science, then, is to identify, name, and classify signs and their functions. Although there are as many as sixty-six distinct types of sign, as Peirce showed (§1.4), these can be grouped into six broad categories – symptoms, signals, icons, indices, symbols, and names – as the late Thomas Sebeok argued.[1] This chapter describes these categories.

2.2 Defining the Sign

The term *sign* has different senses in English. It is used, for example, to designate a traffic signal (as in 'stop sign') or a business premise (as in 'shop sign'). Stop signs and shop signs are not trivial matters to a semiotician. They are 'signs' in the semiotic sense, since people perceive them not as physical objects in themselves, but as standing for something other than themselves. Similarly, the V-sign (§1.1) does not constitute a mere shape made by two fingers; rather, it represents certain social concepts (victory, peace, greeting, femininity, etc.). As these examples suggest, a sign can be defined simply as 'something that stands for something else in some way.'

In order for somebody to recognize 'something' as a sign, however, that 'something' must have *structure* – that is, some distinctive, recognizable, and recurring physical form. As we saw in the previous chapter (§1.4), Saussure referred to this component of sign structure as the signifier. The other component – the 'something else' for which a physical structure stands – is the signified. The connection between the two, once established, is bidirectional or binary – that is, one implies the other. For example, the word *tree* is a word sign in English because it has a recognizable phonetic structure that generates a mental concept (an arboreal plant):



When we utter the word *tree*, the image of an arboreal plant inevitably comes to mind, and in fact, such an image cannot be blocked; vice versa, when we see an arboreal plant, the word *tree* seems to come also automatically to mind. In effect, both components exist in tandem, not separately. This model of the sign traces its origin back to the Scholastics (§1.2), who also viewed the sign (*signum* in Latin) as an identifiable form composed of two parts: a *signans* ('that which does the signifying') and a *signatum* ('that which is signified'). Although the psychological relation that inheres between signs and the concepts they evoke has come under several terminological rubrics, the term *semiosis* is the preferred one today (§1.2).

Saussure argued further that the binary connection established between the physical structure of a sign (the signifier) and its meaning (the signified) is an arbitrary one, developed over time for some specific social purpose. There was no evident reason for using, say, *tree* or *arbre* (French) to designate 'an arboreal plant,' other than to name it as such. Indeed, any well-formed signifier could have been used in either language – *tree* is a well-formed signifier in English; *tbee* is not (for obvious phonetic reasons). Saussure did admit, however, that some signs were fashioned in imitation of some sensory or perceivable property detectable in their referents. Onomatopoeic words (*drip*, *plop*, *whack*, etc.), he granted, were indeed put together to simulate real physical sounds. But he maintained that the coinage of such words was the exception, not the rule. Moreover, the highly variable nature of onomatopoeia across languages proved that it was itself a largely arbitrary sign-making process. For instance, the expression used to refer to the sounds made by a rooster is *cock-a-doodle-do* in English, but *chicchirichì* (pronounced 'keekkeereekee') in Italian; and the expression employed to refer to the barking of a dog is *bow-wow* in English, but *ouaoua* (pronounced 'wawa') in French. Obviously, representing what a rooster or a dog sounds like when it

crows or barks is largely an arbitrary process, one that depends on culture.

Yet the fact remains that such words are highly suggestive of actual crowing and barking, no matter how different they may seem phonetically. Moreover, Saussure's claim that onomatopoeia is a sporadic and random phenomenon in word-formation does not stand up to closer scrutiny. Many words possess a latent sound-imitative quality built right into their structure. Consider the word *duck*. The combination of sounds used in its make-up is, to be sure, one of an infinite number of permissible phonetic assemblages that can be envisioned in English, as Saussure would have it. But the final /k/ of that word hints at the kind of sound the animal in question is perceived to make. Its use constitutes a case of 'sound modelling.' Such modelling is well known in both linguistics and semiotics, coming under the name of *sound symbolism*. Saussure was obviously unaware of the pervasiveness of sound symbolism in the formation of the basic vocabularies of languages, nor could he have been, since its discovery as a primary force in language origins was made several decades after his death.[2] Here are a few examples of English words whose final consonants model sonorous properties in referents:

Consonants	Words	Sonorous Properties Modelled
/p/	*dip, rip, sip ...*	a quick abbreviated sound
/k/	*crack, click, creak ...*	a sharp truncated or snapping sound
/b/	*rub, jab, blob ...*	an abrupt resonant sound
/l/	*rustle, bustle, trickle ...*	a soft fluttering or crackling sound
/z/	*ooze, wheeze, squeeze ...*	a hissing sound
/f/	*puff, huff, cough ...*	a short, forced sound

In line with sound symbolism theory, it is plausible to infer that the word *duck* was constructed with /k/, rather than some other final consonant, in order to call attention to the actual sounds that a duck is perceived to emit – a feature captured more explicitly by the word *quack*. Although we probably do not experience the word *duck* consciously as a sign 'motivated' in its formation by a sound-modelling process, we certainly seem to feel intuitively that it is better suited to represent the animal in question than alternative word candidates do. (As the old saying goes, 'If it quacks like a duck, it's a duck.') Motivated struc-

tures, such as the words created through sound symbolism, have always been of general interest to semioticians because of the insights they provide into the nature of semiosis.

In contrast to Saussure, Peirce saw motivated structure as the 'default' type of structure. As we saw in the previous chapter (§1.4), Peirce called the sign a *representamen* in order to bring out the fact that a sign is something that 'represents' something else in order to suggest it (i.e., 're-present' it) in some way. He defined the representamen as follows:[3] 'A sign, or representamen, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object not in all respects, but in reference to a sort of idea.'

A key notion in this definition is that a sign invariably generates another sign, or interpretant, which in turn becomes itself a source of additional semiosis. This process does not continue indefinitely, however. Eventually it must resolve itself into a set of forms that allow us to classify and understand the world in a relatively stable fashion. This set, Peirce claimed, generates a system of beliefs that guides our actions and shapes our behaviours unconsciously. Doubt arises when our current beliefs are not accounted for through the set – that is, when the character of signs in the set does not fit our understanding of the experience. To remove doubt, we resort to inference, and this leads, in turn, to new sign creations. Thus, according to Peirce, it is doubt that drives the making of knowledge.

2.3 Symptoms and Signals

As we saw in the previous chapter, since antiquity a basic distinction has always been made between natural and conventional signs. For most of the early and middle part of the twentieth century, the study of natural signs held a minor place in semiotics proper. However, due mainly to the efforts of Thomas A. Sebeok and other members of the biosemiotic movement (§1.5), the study of such signs became an intrinsic part of semiotic theory and practice towards the latter part of the century. This continues to be so.

What is a natural sign? Simply put, it is a sign produced by Nature. Consider *symptoms*. These are natural signs produced by the body to alert an organism to the presence of some altered physical state within

it. Symptoms range from painful sensations (such as headaches or backaches), to visible marks (such as swellings or rashes) and changes in body temperature. The bodies of all animals produce characteristic symptoms as warning signs. A cluster of symptoms that collectively exemplify a disease or disorder is called a *syndrome*. A syndrome is, essentially, a composite sign with a fixed meaning. As von Uexküll (§1.3) demonstrated, symptoms and syndromes vary according to species and thus can be used to define a species biologically. The bodies of animals with similar physiological and anatomical structure will produce similar types of symptoms; those with widely divergent anatomical structures will manifest virtually no symptoms in common.

As mentioned, before the biosemiotic movement semioticians tended to exclude symptoms from their purview, viewing them as products of natural processes and thus as bearing little relevance to the study of signs as socially meaningful structures. Barthes, for instance, dismissed symptoms as 'pure signifiers' with no meanings other than physiological ones. Symptoms, he argued, become true signs – signifiers tied to signifieds – only in the context of clinical discourse, when the interpreter of a symptomatic form is a physician or, by extension, a veterinarian. But in actual fact, the interpreter need be none of these. It could, for example, be a speechless creature, since human symptoms are commonly perceived and acted upon by such domesticated animals as dogs and horses, in a variety of situations in which human discourse plays no mediating role.

A type of natural sign studied much more extensively than symptoms by semioticians today is the *signal*. The bodies of all animals produce signals automatically for conveying specific physical needs or simply as reactants to specific stimuli. Birds, for instance, are born prepared to produce a particular type of coo, and no amount of exposure to the songs of other species, or the absence of their own, has any modifying effect on their cooing signals. A bird reared in isolation, in fact, will sing a very simple outline of the sort of song that would develop spontaneously in that bird born in its natural habitat. This does not mean, however, that animal signalling is not subject to environmental conditioning and experience. Many bird species have, in fact, developed location-based cooing 'dialects,' apparently by imitating one another. Similarly, vervet monkeys are born with the ability to use a specific set of signals to express their particular types of needs, but they also have developed a set of situation-based predator calls –

one alerting the group to eagles, one to four-legged predators such as leopards, another to snakes, and one to other primates. These calls are not innate; they are learned through the observation of older monkeys and by trial and error. An infant vervet may at first deliver an aerial alarm to signal a vulture, a stork, or even a falling leaf, but eventually comes to ignore everything airborne except the eagle.

Because animal signals are truly remarkable in themselves, it is little wonder that people are often tricked into reading much more into them in human terms than is actually there. A well-known example of how easily people are duped by animal signalling behaviour is the case of Clever Hans. In 1904, Clever Hans was heralded the world over as a German 'talking horse' because he appeared to understand human language, devising answers to the questions of its trainer by tapping numbers or the alphabet with his front hoof – one tap for the number one or for the letter A, two taps for the number two or the letter B, and so on. A panel of scientists ruled out deception by the horse's trainer. The horse, it was claimed, could talk! Clever Hans was awarded honours and proclaimed an important scientific discovery. Eventually, however, an astute member of the scientific committee that had examined the horse, the Dutch psychologist Oskar Pfungst, started suspecting that Clever Hans would probably not tap his hoof without observing his questioner, since the horse had probably figured out – as most horses can – what the signals that his owner was unwittingly transmitting meant. The horse, Pfungst asserted, tapped his hoof only in response to inadvertent cues from his human handler, who would visibly relax when the horse had tapped his hoof the proper number of times. To show this, Pfungst simply blindfolded Clever Hans, who, as a consequence, ceased to be so clever. The 'Clever Hans Effect,' as it has come to be known in the annals of psychology, has been demonstrated over and over with other animals (e.g., a dog will bark in response to unconscious helping cues emitted by its trainer).

A large portion of communication among humans also unfolds in the form of unconscious instinctive signals. It has been shown, for example, that men are sexually attracted to women with large pupils, because they are felt to convey a strong sexually-tinged interest, besides making females look younger.[4] This fact was obviously known, or at least intuited, by the manufacturer of a popular eye-drop cosmetic used in central Europe during the 1920s and 1930s, which was made with a crystalline alkaloid liquid appropriately called bella-

donna ('beautiful woman' in Italian). The cosmetic was advertised as enhancing facial appearance and sexual attractiveness by dilating the pupils. But human signalling is not limited to instinctual forms. Humans are capable of deploying signals for social intentions or purposes – for example, nodding, winking, glancing, looking, nudging, kicking, and head tilting are all signals that have conventional sign value in that they encode specific kinds of social meanings. In effect, human semiosis is characterized by a constant interplay among nature, inventiveness, and culture.

The general study of body signals is called *kinesics*. It was first developed by the American anthropologist Ray L. Birdwhistell (1918–94), who used slow-motion films of people interacting during conversations to analyse the body signals that surfaced in them.[5] Birdwhistell borrowed terms and techniques from linguistics to characterize the recurring motions that made up meaningful signalling, in the belief that these motions cohered into a system that was similar to the grammar of language. For this reason, that system came to be called (and continues to be called) 'body language.' Kinesic signals can be innate (unwitting), learned (witting), or a mixture of the two. Blinking, throat clearing, and facial flushing are innate (involuntary) signals, as are facial expressions of happiness, surprise, anger, disgust, and other basic emotions. Laughing, crying, and shrugging the shoulders are examples of mixed signals. They may originate as instinctive actions or behaviours, but cultural rules enter into the picture to shape their structure, timing, and uses. Winking, raising a thumb, and saluting with the hands are all learned signals. Logically, their meanings vary from culture to culture. These signals often accompany vocal speech, imparting a sense to a conversation remembered long after spoken words fade away. Conversely, they can be used to lie or conceal something.

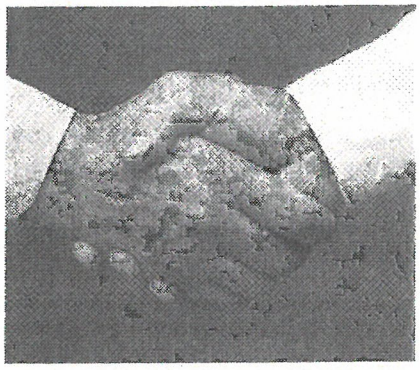
Some kinesic signals have a regulatory function; that is, they are designed to inform people how to behave in certain social situations. Such signals are products of culture and thus largely conventional. Take, for example, the signals used in courtship displays, which range from obsequious laughter to varying forms of kissing and hugging. These may look comical or absurd to outsiders, but to the members of a social group they constitute crucial modes of sexual-romantic communication at key stages in the enactment of courtship. They make sense only if the appropriate social contexts are present during their enactment. So, while courtship displays may be residues of some

ancient animal mechanism – as some evolutionary psychologists suggest – the great diversity that is evident in them across cultures indicates that they are not simple biological reflexes, but rather also products of history and tradition. Human signalling systems are the outcome of nature and culture cooperating in a type of partnership that is found nowhere else in the animal realm.

Facial expressions in human beings are other exemplars of this unique partnership. In 1963, psychologist Paul Ekman established the Human Interaction Laboratory in the Department of Psychiatry at the University of California at San Francisco for the purpose of studying facial expressions across the world. He was joined by Wallace V. Friesen in 1965 and Maureen O'Sullivan in 1974. Over the years, work at the laboratory has been crucial in documenting both the universal (biologically based) and cultural forces at work in facial expression.[6] One of the most important findings of the laboratory is that the face is itself a sign – more specifically, a 'sign of Selfhood.' This explains why personality and attractiveness are typically evaluated across cultures on the basis of facial appearance. This is also the most likely reason why humans use facial decorations and make alterations to their faces, especially at crucial stages in their development and maturation. The cosmetics that we use today have, in fact, a long and unbroken connection to ancient courtship practices. From the beginning of time, human beings have made up their faces to convey identity and to make themselves attractive to others.

The eyes have received particular attention from facial researchers because of the central semiotic role they play around the world. Eye contact constitutes a mixed signalling system. Like other species, humans perceive a direct stare as a threat or challenge, and like dogs and primates, they will break eye contact as a signal of surrender. However, many types of eye contact patterns are shaped by culture, not nature. For instance, the length of time involved in eye contact indicates the kind of relationship that exists (or is intended) among people, as does early or late eye contact. This varies, moreover, according to culture. Southern Europeans tend to look more into the other person's eyes during conversation than do North Americans; in some cultures a male does not look into a female's eyes unless he is married to her or is a member of the same family. In many societies, there exists the concept of the 'evil eye,' which is perceived to be a certain kind of stare that is purported to have the power to harm or bewitch someone. No such concept exists in animal species (at least to the best of my knowledge).

Touch patterns are yet another interesting area of kinesic inquiry, falling more specifically under the rubric of *haptics* (from the Greek *haptikos*, 'grasping,' 'touching'). A common social function of touch is greeting. The zoologist Desmond Morris indicates that the Western form of handshaking may have started as a way to show that neither person in the handshake was holding a weapon.[7]



It thus became a 'tie sign' because of the social bonding function it was designed to have. And in fact, handshaking is perceived as a sign of equality among individuals and is often performed to close agreements. Indeed, refusing to shake someone's outstretched hand tends to be interpreted as a 'counter-sign' of aggressiveness or as a challenge. Predictably, haptic greeting behaviours reveal a high degree of cross-cultural variation. Some people squeeze the hand (as Europeans and North Americans do), or shake both hands, or lean forward or stand straight while shaking, and so on. Other haptic forms of communication include patting someone on the arm, shoulder, or back to indicate agreement or praise; linking arms to designate companionship; putting an arm around the shoulder to indicate friendship or intimacy; holding hands to express intimacy; hugging to convey happiness; and so on.

Anthropologists are not sure why haptic forms of communication vary so much across cultures. Perhaps the variation is related to how the body is perceived as a sign of Selfhood. In many parts of the world, people perceive the skin as a surface 'sheath' and the body as a 'container' of the individual's persona. Such people tend to think of themselves as being 'contained' in their bodies and enveloped by their skin.

Others feel instead that the Self is located only within the body shell. Such differences in perception are the sources, arguably, of differential haptic behaviours.[8]

The hands are used not only for haptic or tactile communication but also for gesturing. Although there are cross-cultural similarities in gestures, substantial differences exist regarding both the extent to which gestures are used and the interpretations given to their particular uses. In 1979, Desmond Morris, together with several of his associates at Oxford University, examined twenty gesture signs in forty different areas of Europe.[9] The research team discovered some rather fascinating things. For instance, they found that many of the same gestures had radically different meanings, depending on culture. For example, a tap on the side of the head indicated completely opposite things – 'stupidity' or 'intelligence' – according to culture.

Gestures are not unique to human beings; they are found in primates as well. Chimpanzees raise their arms in the air as a signal that they want to be groomed; they stretch out their arms to beg or invite; and they point to things to indicate their location. Apparently these gestures are purposeful as well as regulatory of the actions of other chimps. But the number of gesture forms of which chimpanzees are capable is limited. Human gesturing, on the other hand, is productive and varied. It is often used to replace vocal speech, as can be seen in its use as a 'sign language' by hearing-impaired people. In American Sign Language (ASL), for instance, the sign for 'catch' is formed with one hand (in the role of agent) moving across the body (an action) to grasp the forefinger of the other hand (the patient). Sign languages are also used for various communicative purposes. One of the best-known examples is the one developed by the Plains people of North America as a means of communication between tribes with different vocal languages. The manual signs represent things in nature, ideas, emotions, and sensations. For example, the sign for a white person is made by drawing two fingers across the forehead, indicating a hat. Special signs exist also for each tribe and for particular rivers, mountains, and other natural features. The sensation of being cold is indicated by a shivering motion of the hands in front of the body; the same sign is used for 'winter' and for 'year,' because the Plains people count years in terms of winters. Slowly turning the hand, relaxed at the wrist, means vacillation, doubt, or possibility; a modification of this sign, with a quicker movement, constitutes a question sign.

Gestures are also used for sacred purposes; this points to the sym-

bolic value of purposeful hand movements. For example, in Christianity the 'sign of the cross' is a gesture intended to represent the central event of Christianity – the Crucifixion. In Buddhism gestures known as *Mudras* are used during ceremonies to represent meditation, reasoning, protection, entreaty, enlightenment, unification of matter, and spirit. The 'devil's hand,' made by raising the index and little fingers, belongs to the domain of superstition, symbolizing, in some cultures, a horned figure intended to ward off the evil eye, in others a sign of 'cuckoldry,' and in still others, 'F--- you.'

Gesture is a more instinctive form of communication than is vocal language. When we do not speak the language of our interlocutor, we instinctively resort to gesture in order to get a message across or to negotiate some meaning. For example, when we want to refer to an automobile, we can use our hands to portray a steering wheel and the back-and-forth motion used to steer a car, accompanying this gesture, perhaps, with an imitative motor sound. This instinctive type of interactive behaviour suggests that gesture is a more basic mode of communication than vocal language. Some truly fascinating research by the American linguist David McNeill has shown, moreover, that gesture is a complement to vocal language.[10] McNeill videotaped a large number of people as they spoke, gathering a substantial amount of data on the gesture signs that accompany speech, which he termed *gesticulants*. His findings suggest that these are used in tandem with words because they exhibit images that cannot be communicated overtly in speech. In psychological terms, they are traces to what the speaker is thinking about. Speech and gesticulation, it would seem, constitute a single integrated communication system in which both cooperate to express the person's meanings.

McNeill identified five main types of gesticulants. First, there are iconic gesticulants, which (as their name suggests) bear a close resemblance to the referents of words and sentences. For example, when describing a scene from a story in which a character bent a tree back to the ground, one speaker that McNeill observed performed a 'gripping' gesture as if grasping something and pulling it back and down. The speaker's gesticulant was, in effect, a simulation of the action he was describing vocally, revealing both his mental image of the action and his point of view (he could have taken the part of the tree instead). Second, McNeill identified metaphoric gesticulants, which are also pictorial but much more abstract in form than their iconic counterparts. For example, McNeill recorded a male speaker recounting his recollection of a certain cartoon, raising up his hands as he did so, as if offering his listeners a kind of object. The speaker was clearly not referring to the cartoon itself, but rather to the genre, as if it were an object that he intended to offer as a gift to his listeners. This type of gesticulant typically accompanies utterances that contain expressions such as 'presenting an idea,' 'putting forth an idea,' 'offering advice,' and so on. Third, McNeill observed speakers using hand movements that resembled the beating of musical tempo. He called these, logically, beat gesticulants, since they accompany the rhythmic pulsation of speech, usually in the form of a simple flick of the hand or of fingers moving up and down or back and forth. Beat gesticulants mark the introduction of new ideas or characters in a story; that, or they accompany summaries or rundowns. Fourth, McNeill recorded hand movements designed to show how the separate parts of an utterance are supposed to hold together. He named these cohesive gesticulants. They are performed typically through a repetition of the same hand action. It is the repetition itself that is meant to convey cohesiveness. Fifth, McNeill noted that speakers often used pointing movements, which he called deictic. Such gesticulants are aimed not at an existing physical place, but rather at an abstract concept that was introduced earlier in the conversation.

McNeill's gesticulant categories are actually subtypes of the more generic category of gestures known as *illustrators*. Four other categories have been identified by gesture researchers. They are as follows:

Emblems. These are gestures used to translate words or phrases. Examples: the *okay* sign, the *come here* sign, the hitchhiking sign, waving, and obscene gestures.

Affect displays. These communicate emotional meaning. Examples: the hand actions and movements that accompany expressions of happiness, surprise, fear, anger, sadness, contempt, or disgust.

Regulators. These are designed to regulate or control the speech of someone else. Examples: the hand movements for *keep going*, *slow down*, and *What else happened?*

Adaptors. These indicate some need or state of mind. Examples: scratching the head when puzzled, rubbing the forehead when worried.

2.4 Icons

Conventional signs are those made by human beings for their particular intellectual, cognitive, emotional, aesthetic, and social needs. How are they made? Are there any general patterns noticeable in the construction process? It was Peirce who answered these questions in an insightful way, pointing out that humans create signs in accordance with three general psychological tendencies: resemblance, relation, and convention. He called signs resulting from resemblance *icons*, those from relation *indexes*, and those from convention *symbols*.

Icons can be defined simply as signs that have been constructed to resemble their referents in some way. Photographs, portraits, and Roman numerals such as I, II, and III are visual icons because they resemble their referents in a visual way. Onomatopoeic words such as *drip*, *plop*, *bang*, and *screech* are vocal icons created to simulate the sounds that certain things, actions, or movements are perceived to make. Perfumes are olfactory icons manufactured to imitate natural scents. Chemical food additives are gustatory icons simulating the taste of natural foods. A block with a letter of the alphabet carved into it is a tactile icon allowing the user to figure out the letter through the medium of touch. Peirce called the actual referent that is modelled in a direct way the 'immediate' object; the infinite number of referents that can be modelled in similar ways he termed the 'dynamical' objects.

It is relevant to note that before Peirce began using the term in semiotics, *icon* was employed to refer to a religious painting, sculpture, or token. It is still used with this meaning today. In some religions the religious icon is thought to be sacred and thus to aid believers in contacting the represented figure. Beginning in the eighth century, *iconoclasm*, a movement that condemned the worship of icons as idolatrous, contributed to the destruction of much religious iconic art throughout the Byzantine Christian world. Not until the following century was the making of icons restored to its former position of honour in many kinds of religious observances.

Iconicity (or the making of iconic signs) is simulative semiosis. It is evidence that human understanding is guided initially by sensory per-

ception and is thus sensitive to recurrent patterns of colour, shape, dimension, movement, sound, taste, and so on. Put simply, humans tend to model the world as they see, hear, smell, taste, and touch it. The prehistoric inscriptions, cave drawings, and pictographic signs of humanity indicate that iconicity played an important role in early sign systems and cultures. The earliest of these go back more than thirty thousand years. They took two main forms: the vivid paintings of animals that today still cover the roofs and walls of caves, such as Lascaux in France and Altamira in Spain; and the small sculptures and relief carvings of animals and female figures found in caves throughout Europe. The anthropologist Denise Schmandt-Besserat has shown that the earliest precursors of modern writing systems were such carvings and figures. A number have been discovered as well in western Asia dating back to the Neolithic era.[11]

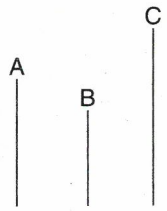
Iconicity also marks early learning behaviours. Children invariably pass through an initial stage of imitative gesticulation and imitative vocalism before they develop full verbal language. It is relevant to note that although the latter eventually becomes the dominant form of communication in humans, the gestural and vocalic modalities do not vanish completely. Throughout life, they remain functional subsystems of human communication that can always be utilized as more generic forms when linguistic interaction is impossible or limited. Iconicity also shows up in the instinctive desire of children to make scribbles and elemental drawings at about the same time they utter their first true words. If given drawing materials around the age of one or two, children impulsively start scribbling on any available surface. As time passes, their scribbles become more and more controlled; geometrical shapes such as crude circles, crosses, and rectangles, at first accidentally produced, are repeated and gradually perfected. Although children, with adult prompting, may learn to label circles as 'suns' or 'faces,' they do not seem inclined at first to name them in any way. The act of making shapes appears to be pleasurable and satisfying in itself. Of course, shapes eventually suggest 'things' to the child as his or her ability to use language for naming purposes develops; but in the beginning, the child seems to engage in drawing solely for the pleasure of it, without attaching explicit associations of meaning to it. It is truly an example of 'art for art's sake.'

In the adult world, iconicity serves a vast range of social functions. Pictures on washroom doors representing males and females, for example, are independent of language and thus much more universally understood. And vocalism is an inbuilt feature of language

whether we realize it or not. Vocalism can be defined, simply, as the use of sounds to model something through imitation or resemblance, or to emphasize or call attention to something. Vocalism manifests itself in such common linguistic phenomena as these:

- Alliteration, or the repetition of initial sounds, for various imitative effects. Examples: *ding-dong, no-no.*
- Sound lengthening and intonation to simulate emotions. Examples: *Yesssss! Noooooo!*
- Sound symbolism (§2.2), which can be seen, for example, in the sound-modelling language of comic books: *Zap! Boom! Pow!*
- Onomatopoeia. For example, describing a snake as *slithery* or *slippery*, in imitation of the sounds that snakes are perceived to make.
- Increasing or decreasing loudness levels during vocal delivery in order to convey, for example, anger or excitement or their opposites (calmness, composure).
- Increasing the rate of speech to simulate (for example) urgency or agitation, and decreasing it to convey the opposite states (placidness or indolence).

Iconicity is also a factor in the construction of diagrams in mathematics and science. In mathematics, for instance, diagrams modelling the given conditions (called *heuristic devices)* are often used to make problems more understandable. If a problem says that A is taller than B and that C is taller than A and then asks us to identify who the tallest is, the following diagram, which constitutes a picture of the given information in outline form, can help make the problem more understandable:



The diagram reveals to the eye that C is the tallest. Many diagrams used in science to model physical phenomena – such as the model of the atom as a miniature cosmos – are iconic in nature.

Today the term *icon* is often used to designate a tiny picture on a computer screen representing a command. The icons, cursor, and mouse together constitute what is called a *graphical user interface* (GUI), a system that provides a user-friendly way of interacting with a computer. People can usually tell from icons how to get the computer to do what they want. Without a GUI, the computer screen would be black, and the only way to tell the computer what to do would be to type in commands. There is little doubt that GUIs contributed to the rise in use of personal computers, starting in 1984, when Apple introduced the Macintosh, the first personal computer to include a GUI. GUIs quickly became standard throughout the computer industry. Today, most users encounter only GUI-based programs and never have to type in commands to control their computers.

As a final word, iconicity is not limited to human semiosis. Indeed, it manifests itself in the cross-species propensity to engage in camouflage, the phenomenon whereby some aspect of a species' physical appearance undergoes changes that make it seem to be part of its surroundings. For instance, the adult females of scale insects (*Icerya purchasi* and *Quadraspidiotus perniciosus*) attach themselves by their mouth parts to plant and tree surfaces, secreting a waxy substance that makes them appear to be part of those surfaces. The common leaf insect (*Phyllidae*) has the capacity to enlarge its legs and abdomen so as to make itself resemble leaves. Similarly, any of several species of long-horned grasshoppers called katydids (*Tettigoniidae*) use their broad wings to blend in with leaves in their environment. Sometimes a creature even has the capacity to fabricate a number of dummy copies of itself so as to misdirect predators away from its body to one of the copies. This capacity is possessed, for instance, by various species of a genus of spiders known as orb-weavers.

2.5 Indexes

An *index* is a sign that involves relation of some kind. Unlike icons, which are constructed to resemble things, indexes are designed to place referents in relation to one another, to sign-users, or to the context or contexts in which they occur. A perfect example of an indexical sign is the pointing index finger, which we use instinctively from birth to point out and locate things, people, and events. This sign emphasizes, again, the importance of the hands in knowledge making and communication. Many words, too, have an indexical function – for

example, *here, there, up,* and *down* allow speakers of English to refer to the relative location of things when speaking about them.

There are four main types of indexes:

1. *Location indexes.* These relate referents to sign users in spatial contexts. Manual signs like the pointing index finger, demonstrative words such as *this* or *that*, adverbs of place like *here* or *there*, figures such as arrows, and maps of all types are common examples of location indexes. Essentially, these allow sign users to indicate their physical location with respect to something (*near, far, here, there,* etc.), or else to indicate the relative location of some referent in spatial terms.
2. *Temporal indexes.* These relate referents to one another in terms of time. Adverbs such as *before, after, now,* and *then*, timeline graphs representing points in time, time units (days, hours, minutes, etc.), and dates on calendars are all examples of temporal indexes.
3. *Identification indexes.* These relate the participants involved in a specific situation or context to one another. Personal pronouns such as *I, you, he, she,* or *they* or indefinite pronouns such as *the one*, or *the other* are examples of identification indexes. So are surnames (which identify individuals in terms of ethnic and familial membership).[12]
4. *Organizational indexes.* These allow us to organize, classify, or categorize things in relation to one another or to other things. The arrangement of books in alphabetical order on library shelves is a perfect example of what organizational indexicality allows us to do. In mathematics, an organizational index – such as a number or symbol written as a subscript or superscript – can indicate an operation to be performed, an ordering relation, or the use of an associated expression.

Indexicality is behind several diagramming techniques. For example, flow chart diagrams and the algorithms employed in mathematics and computer science to indicate the procedures required to perform a task are indexical in nature. So are the time-line diagrams used by scientists to portray temporal relations. DNA profiling diagrams, used in forensic investigations, are also indexical. DNA profiling is a method of identification that compares fragments of deoxyribonucleic acid (DNA), the genetic material found within the cell nuclei of all living things. Except in cases of identical siblings, the complete DNA of each individual is unique. A DNA 'fingerprint' is constructed

by first extracting a DNA sample from body tissue or fluid. This is then segmented using enzymes. The segments are marked with probes and exposed on X-ray film, where they form a pattern of black bars. These constitute the fingerprint, which is an identification index. When the fingerprints produced from two different samples match, the samples must have come from the same person.

2.6 Symbols

A *symbol* is a sign that stands for something in a conventional way. For example, the cross figure stands for 'Christianity,' the V-sign for 'peace,' white for 'purity,' and dark for 'impurity.' These symbols have meaning in specific ways. Symbols are the building blocks of social systems. For example, all societies have national symbols. Familiar symbols of the United States include Uncle Sam and the Statue of Liberty. Symbols for other countries include the Maple Leaf for Canada, John Bull for England, and the *fleur-de-lis* for France. Political parties also use symbols for identification purposes. In the United States, a donkey symbolizes the Democratic Party and an elephant the Republican Party. Artefacts such as coats of arms, flags, heraldic emblems, university seals, and the like are symbolic signs of specific kinds. Known more specifically as *emblems*, they indicate membership or ownership. Certain symbols serve as shorthand forms for recording and recalling information. Every branch of science has its own symbols. Thus, in astronomy a set of ancient symbols is used to identify the sun, the moon, the planets, and the stars; in mathematics, Greek letters are used to represent certain constants and variables; and so on.

A perfect illustration of symbolism can be found in the use of colours to refer to various abstract concepts. Take, for example, the symbolic meanings associated with the colours red, blue, and green in English. These are understandable only to those who know English colour terminology and the symbolism it encodes:

red

red carpet treatment ('preferential treatment')
into the red ('in debt')
red herring ('something used to draw attention away from the real issue')

red light district ('area of a city with sexual activities and places such as brothels')
red tape ('overly bureaucratic')

blue

the blues ('type of music')
once in a blue moon ('rarely')
true blue ('loyal')
blue funk ('rut')

green

green envy ('great envy')
greenhorn ('inexperienced person')
green thumb ('having the ability to grow things in a garden')

Interestingly, symbolism is not absent from other species. A rhesus monkey, for instance, shows fear by carrying its tail stiffly out behind. Baboons convey fear by carrying a vertical tail. Such behaviours are clearly symbolic, even though they are different from the type of symbolism that is involved in human behaviours and rituals. The behaviour of the insects of the carnivorous family *Empididae* is similarly symbolic, again in a specific kind of way. In a species of dipterans of this family, the male offers the female an empty balloon prior to copulation. The evolutionary origin of this seemingly bizarre gesture has been unravelled by biologists – it reduces the probability that the male himself will fall prey to his female partner. But the fact remains that the gift of an empty balloon is a symbolic act.

2.7 Names

Names are signs that have both indexical and symbolic value: they are indexical in that they identify a person in some relational way (in relation to a kinship group, to a particular social context, etc.), and they are symbolic in that they are based on specific cultural traditions. The study of *names* falls under a branch of both semiotics and linguistics called *onomastics* (from Greek *onoma*, 'name').

In Anglo-American culture, given (or first) names can stand for such things as a month or object (*May, June, Ruby, Daisy*), a religious figure

(John, Mary), popular contemporary personalities (*Elvis, Angelina*), or classical mythic personages (*Diana, Jason*), among many others. Until the late Middle Ages, one personal name was generally sufficient as an identifier. Duplications, however, began to occur so often that additional differentiations became necessary. Hence, *surnames* were assigned to individuals (literally 'names on top of names'). These were at first either indexical, in that they identified the individual in terms of place of origin or parentage (descendancy), or descriptive, in that they identified the individual in terms of some personal or social feature (e.g., occupation). For example, in England a person living near or at a place where apple trees grew might have been called 'Mary who lives nearby where the apples grow,' hence, *Mary Appleby*. Surnames such as *Woods, Moore, Church,* and *Hill* have been coined in a similar way. Descriptive surnames such as *Black, Short, Long,* and so forth were coined instead to highlight various characteristics of individuals. Descendant surnames were often constructed by prefixation – for example *Mac-*, or *Mc-* in Scottish or Irish names, or *Ap-* in Welsh names – or by suffixation – for example, *-son* in English surnames and *-sen* in Scandinavian surnames (*Johnson* or *Jensen*, 'son of John,' *Maryson*, 'son of Mary,' *Jakobsdottir*, 'daughter of Jacob'). Surnames describing a person's occupation – *Smith, Farmer, Carpenter, Tailor, Weaver,* and so on – also assumed identifier function in the medieval period.

Among the first known people to use more than one name were the ancient Chinese. The Emperor Fuxi is said to have decreed the use of family names about 2852 BCE. The Romans initially used only single names, but later started using three: (1) the *praenomen*, which stood first as the person's given name; (2) the *nomen*, which indicated the *gens*, or clan, to which the person belonged; and (3) the last name, or *cognomen*, which designated the family. A person sometimes added a fourth name, the *agnomen*, to commemorate an illustrious action or remarkable event in his or her life. Family names gained widespread use in northern Italy in the late tenth century. Nobles were the first to adopt them, in order to set themselves apart from common people, and passed them on to their children. A family name thus became the mark of a well-bred person, and so all classes of people aspiring to ascend the social ladder began adopting this practice as well.

In traditional African societies, the circumstances at time of birth (time of day, birth order, and the parents' reaction to the birth) influence the act of name giving. Names such as *Mwanajuma* ('Friday'), *Esi*

('Sunday'), *Khamisi* ('Thursday'), and *Wekesa* ('harvest time') refer to the day or time when the child was born. *Mosi* ('first born'), *Kunto* ('third born'), and *Nsonowa* ('seventh born') are names given to acknowledge the birth order of the newborn. And *Yejide,* ('image of the mother'), *Dada* ('curly hair'), and *Zuberi* ('strong') are names reflecting the parents' reactions to the newborn.

Names are perceived throughout the world to be much more than simple 'identifier signs.' They are laden with all kinds of symbolic meaning. Across cultures, a neonate is not considered a full-fledged member of society until he or she is given a name. The act of naming newborn infants is, in fact, a semiotic rite of admission into society. The ancient Egyptians believed that a name was a living part of an individual, shaping him or her throughout the life cycle and even beyond. They also believed that if an individual's name was forgotten on earth, the deceased would have to undergo a second death. To avoid this danger, names were written multiple times on walls, tombs, and papyri. Political rulers would sometimes erase the names of past monarchs as a means of rewriting history in their favour, since removal of a person's name meant the extinction of the person from memory. In Hebrew culture, the ancient art of *gematria* was based on the belief that the letters of any name could be interpreted as digits and rearranged to form a number containing secret messages encoded in it. The Romans, too, thought that names were prophetic, believing that *nomen est omen* (a 'name is an omen'). Would the Roman view explain names such as Cecil Fielder, who was a fielder in baseball, Rollie Fingers, who was a pitcher, William Wordsworth, who was a poet, Francine Prose, who was a novelist, and Mickey Bass, who was a musician? Perhaps such occurrences simply indicate that some people are inspired subliminally by their names to gravitate towards occupations suggested by them.

Naming trends are remarkably stable in most societies. This is because names link people to culture and tradition. However, in contemporary Western societies, temporary fashion trends often play a role in name giving. This notwithstanding, the trends are never really far-fetched. According to the U.S. Social Security Administration, one-quarter of the top twenty names given in 2004 in America were the same as those given way back in 1880. The top five names for girls and boys in the two eras, according to that governmental agency, are as follows:

Girls
1880 Mary, Anna, Emma, Elizabeth, Minnie
2004 Emily, Emma, Madison, Olivia, Hannah
Boys
1880 John, William, James, Charles, George
2004 Jacob, Michael, Joshua, Matthew, Ethan

In 1880 the top twenty boys' names were given to more than half of all the boys born; in 2004 they were given to around 20 per cent. The top twenty girls' names were given to around 34 per cent of all girls born in 1880; in 2004 they were given to 14 per cent. Among the ostensible reasons for this differential pattern is that families are smaller today. Nevertheless, the names given today, even in a highly trendy pop culture milieu such as ours, tend in the end to be those that are consistent with tradition.

Interestingly, many animals use signals that have comparable naming functions (at least as we humans interpret them). In birds, for example, it has been found that when partners are absent, the remaining bird will use the sounds normally reserved for the partner, with the result that the partner will return as quickly as possible.[13] Whales emit clicks that seem to have the same purpose of beckoning a partner to come back speedily.

2.8 Further Reading and Online Resources

Further Reading

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Online Resources

A good website for information on biosemiotics is that of the International Society for Biosemiotic Studies (http://www.biosemiotics.org). For more information on Saussure, the website http://www.revue-texto.net/Saussure/Saussure is recommended; and for Peirce, the Pierce Society site is recommended (http://www.peircesociety.org). The *Sites of Significance for Semiotics* (http://www.chass.utoronto.ca/french/as-sa/EngSem1) is also very useful for its linkages to other websites that deal with sign typologies.