Introduction

The human species is consumed by a need to unravel the reason for its existence on this planet. This has led it to create “signs” and “sign systems,” such as languages, myths, art forms, sciences, and the like, to help it do exactly that. The study of these and the laws that govern them in cultures throughout the world comes under the rubric of semiotics.

This is a basic textbook in semiotics. It has been designed specifically for use by students taking introductory courses in semiotics, communications, media, or culture studies. It can be used, additionally, by those taking courses in cognate disciplines (psychology, mythology, education, literary studies, anthropology, linguistics) as a complementary or supplementary text. Its organization and contents are based on a first-year course in semiotics and communication theory I have been teaching at Victoria College of the University of Toronto since 1987. I have composed it so that a broad audience can appreciate the fascinating and vital work going on in this relatively unknown area of scientific-philosophical inquiry, most of which is often too technical for general consumption. I have thus made every attempt possible to build upon what the reader already knows intuitively about signs. Nevertheless, the style is not so diluted as to make it a popular “all-you-wanted-to-know-about-semiotics-but-were-afraid-to-ask” book. Some effort to understand the subject matter of each chapter on the part of readers will be required.

Since the focus of this book is practical, the usual critical apparatus of references to the technical literature is kept to a minimum. I have also provided opportunities for readers to do “hands-on” semiotics through the exercises and questions for discussion that accompany each chapter. These are found in Appendix A at the back. Biographical sketches of a few major figures in the field are also included in Appendix B. There is also a convenient glossary of technical terms.
The overall plan of the book is as follows. Part I (Signs) consists of six chapters dealing with the basic semiotic notions and techniques. The first two introduce the foundational concepts of the discipline, and may require more effort to grasp than all subsequent chapters. Chapter 3 discusses nonverbal signs, chapter four visual signs, chapter five verbal signs, and chapter six metaphorical signs. The topics dealt with in Part II (Messages and Meanings) constitute areas of application—myth and narrative, art, clothing, food, space, television, advertising, communication, and media. In other words, the nine chapters that make up this part are meant to illustrate how message-making and meaning-making can be studied from the specific vantage point of the discipline of semiotics.

I must warn the reader, however, that the topics chosen for treatment, as well as the specific contents of each chapter, reflect my own particular approach to the teaching of semiotics. The presence of the “author in the text” is inevitable. But whether the reader agrees or disagrees with any of the comments made throughout the book, it is my sincere hope that he or she will nevertheless be stimulated enough to know more about the interrelation of signs, messages, and meanings in human life. That and that alone will have made the writing of this book worthwhile.
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A science that studies the life of signs within society is conceivable. It would be part of social psychology and consequently of general psychology. I shall call it semiology (from Greek *semeion* "sign"). Semiology would show what constitutes signs, what laws govern them.

*Ferdinand de Saussure (1857–1913)*

**PRELIMINARY REMARKS**

Semiotics is the science that attempts to answer the following question: What does X mean? The X can be anything from a single word or gesture, to an entire musical composition or film. The “magnitude” of X may vary, but the basic nature of the inquiry does not. If we represent the meaning (or meanings) that X encodes with the letter Y, then the central task of semiotic analysis can be reduced, essentially, to determining the nature of the relation \( X = Y \). Let’s take, as a first case-in-point, the meaning of *red*. In this case, our X constitutes an English color term. As it turns out, there is hardly just one answer to the question of what it means. At a basic level, it refers of course to a primary color located at the lower end of the visible spectrum. However, that very color can have a host of other meanings. Here are few of them:

- If it appears as a traffic signal, it means “stop” to anyone facing the signal at an intersection.
- If it is the armband color worn by someone at a political rally, then the wearer is perceived to be an individual who espouses a particular kind of political ideology, often labeled as “left-wing” or “radical.”
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- If it is the color of the flag used by someone at a construction site, then it is a signal of “danger.”
- If it is used in an expression such as “turning red,” then it is a figure of speech that allows people to refer to emotional states without naming them precisely.

In sum, red is an example of a sign. It is something, \(X\) (a color), that stands for something else, \(Y\) (a traffic signal, a political ideology and so on). Describing and investigating the nature of the \(X = Y\) relation constitutes, tout court, the subject matter of semiotics. The distinguishing characteristic of our species is its remarkable ability to portray the world in this way—that is, to use \(X\)’s such as colors, pictures, vocal sounds, hand gestures, and the like to refer to things. This ability is the reason why, over time, the human species has come to be regulated not by force of natural selection, but by “force of history,” that is, by the accumulated meanings that previous generations have captured, preserved, and passed on in the form of signs. As opposed to Nature, Culture is everywhere “meaningful,” everywhere the result of an innate need to seek meaning to existence.

Since the middle part of the twentieth century, semiotics has grown into a truly enormous field of study, encompassing, among other endeavors, the study of body language, art forms, rhetorical discourse, visual communication, media, myths, narratives, language, artifacts, gesture, eye contact, clothing, advertising, cuisine, rituals—in a phrase, anything that is used, invented, or adopted by human beings to produce meaning. The purpose of this chapter is to sketch a general picture of what semiotics is and purports to do, introducing its fundamental notions and principles.

SIGNS

A sign is anything—a color, a gesture, a wink, an object, a mathematical equation, etc.—that stands for something other than itself. The word red, as we saw, qualifies as a sign because it does not stand for the sounds \(r-e-d\) that comprise it, but rather for a certain kind of color and other things.

Actually, the term semeiotics (spelled in this way) was coined by Hippocrates (460–377 BC), the founder of Western medical science, as the science of symptoms. The symptom, Hippocrates claimed, was a semeion—the Greek word for a physical “mark” or “sign.” Unraveling what a symptom
stands for, how it manifests itself physically, and why it is indicative of certain ailments or conditions is the essence of medical diagnosis. Now, while the goal of semiotics today is to investigate something quite different (a sign such as red), it nevertheless has retained the same basic method of inquiry. As a case in point, observe the following figure:

![Image of a light bulb with a bubble around it.]

What does it mean? The answer is “a bright idea.” How does it present this meaning? It does so by showing a light bulb inside a bubble. Why is it indicative of this meaning? Answering this last question entails unraveling the cultural roots of each component of the sign. The use of light in the sign is consistent with the general view in our culture of light as an analogue for intellect and intelligence. This can be seen, for instance, in such expressions as “to become enlightened,” “to shed light on something,” and so on. The use of a “bubble” to enclose the light bulb (the source of light) is derived from the comic book tradition of putting words and thoughts into bubbles. This simple example illustrates the sum and substance of semiotic method. The same triad of questions is used to understand everything from a simple visual figure (such as the one above) to a complex narrative or scientific theory.

The thing to which a sign refers is known, logically, as the referent. There are two kinds of referents: (1) a concrete referent, such as the animal designated by the word cat, and (2) an abstract referent, such as the “bright idea” concept designated by the light bulb figure above. The former is something that can be shown to exist in the real world—e.g., a “cat” can be indicated by simply pointing to one. The latter is imaginary and cannot be indicated by simply pointing to it—how would you point to a “bright idea” inside the brain? Signs allow us to refer to things and ideas, even though they might not be physically present for our senses to perceive. When we say or hear the word cat the image of the animal in question comes instantly to mind, even if the actual animal is not around for us to perceive with our senses.
The image itself is called a *concept*. There are three types of concepts. Consider the word *cat* again. If one were to ask you what kind of animal it is, you might answer that it is a type of *feline*, as is a *lion* or a *tiger*. If one were to ask you to specify the type of cat, you might say that it was a *Siamese* or a *Persian* cat. The word *feline* encodes what is known today in psychology as a *superordinate* concept. Such a concept has a general classificatory function. The word *cat* encodes instead a *basic* or *prototypical* concept. Cats, lions, and tigers are examples of basic (feline) concepts. Finally, the word *Siamese* encodes a *subordinate* concept. This is a subtype of cat. The three kinds of concepts can be shown in relation to each other as follows:

```
  feline (superordinate concept)
   /    \
  cat    lion    tiger    etc. (basic concepts)
       /      \
  Siamese    Persian    etc. (subordinate concepts)
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After determining what kind of concept a sign elicits, the semiotician then focuses on the concept itself, attempting to unravel what it entails culturally and personally. In our own culture, the concept that *cat* elicits is that of an animal that we have domesticated as a household companion. But in other cultures, it may elicit instead the concept of a sacred animal, of a scavenger, or of edible meat.

From the foregoing discussion it can be seen that there are three dimensions to a sign: (1) a physical, such as the sequence of sounds *c-a-t*, which (2) elicits a concept (“a type of feline”), which (3) is given culturally conditioned form (“a household companion,” “a scared animal,” etc.). A sign can now be defined, more precisely, as *something that stands to somebody for something else in some respect or capacity*.

Incidentally, *sign* was a word slow to enter the English language. It came into usage in the thirteenth century, referring at first to a gesture or motion, and by the end of the century to either the sign of the cross or a figure on a banner or shield. As early as the 1390s English merchants were required to label their premises with “signs.” By the sixteenth century, there emerged a tradition throughout Europe of placing a sign over the door of a house bearing the owner’s name. Such “place signs” have since become common.
As mentioned, in its oldest usage the term *semiotics* meant essentially medical diagnosis. The term was not applied, as far as I know, to the study of the relation between human symbols and reality. It was Plato (c. 428–c. 347 BC) who indirectly dismissed such study because he argued that human forms were deceptive things that did not stand for reality directly, but rather as mental idealizations of it. As an example of what Plato meant, consider the geometric figure called the *circle*. Circles do not really exist in Nature. They are human constructs. When geometers define a circle as a series of points equidistant from a given point (called the center), they are referring to an idealized form. They are not referring to actual physical points. Objects existing in the physical world are called “circles” insofar as they resemble or approximate the geometric form. Thus, the concept encoded by the word *circle* is unlikely to have been pried out of Nature directly. Unconvinced by his teacher’s particular perspective, Plato’s illustrious pupil Aristotle (384–322 BC) took it upon himself to investigate the relation between forms and reality more closely. He pointed out that words, for instance, do indeed refer to real things, allowing us at the same time to classify the world into real categories—e.g., *plants* vs. *animals* vs. *objects*, and so on.

The first true sign theory is due to St. Augustine (AD 354–430), who did not, however, use the term *semiotics* to identify it. He defined a *natural sign* as one that is found, literally, in Nature. Bodily symptoms, the rustling of leaves, the colors of plants, etc., are all natural signs, as are the signals that animals emit in response to physical and emotional states. He distinguished this type of sign from a *conventional sign*, which is a sign made by humans. Words, gestures, and symbols are examples of conventional signs. In modern-day semiotic theory, these are divided into *verbal* and *nonverbal*—words and other linguistic structures (expressions, phrases, etc.) are examples of *verbal signs*; drawings and gestures are examples of *nonverbal signs*. As St. Augustine emphasized, conventional signs serve a fundamental psychological need—they allow humans to encode and, thus, remember the world. They make thinking and recognition fluid and routine. Finally, St. Augustine defined *sacred signs*, such as miracles, as signs containing messages from God. These can only be understood on faith. He also emphasized that the whole process of understanding what signs mean is partly based on social conventions and partly on individual reactions to them. This idea was consistent with the hermeneutic tradition that had already been established by Clement of Alexandria (AD 150?–215?), the Greek theologian and early Father of the Church. *Hermeneutics* was (and
continues to be) the study of texts by taking into account their linguistic features and the historical contexts in which they were written.

St. Augustine’s views lay largely unknown until the eleventh century, when interest in human signs was rekindled by traveling Arab scholars, who had translated the works of Plato, Aristotle, and other Greek thinkers. The result was the movement known as Scholasticism. Using Aristotle as their inspiration, the Scholastics asserted that signs captured truths, not constructed them. But within this movement there were some—the so-called nominalists—who argued that “truth” was a matter of subjective opinion and that signs captured, at best, only illusory and highly variable human versions of it. John Duns Scotus (c. 1266—1308) and William of Ockham (c. 1285—c. 1349), for instance, stressed that signs only referred to other signs, rather than to actual things. The great theologian St. Thomas Aquinas (1225—1274) countered, however, that signs referred to real things, since they were derived from sense impressions. But, like St. Augustine, he asserted that sacred signs revealed truths that were beyond rational comprehension and, therefore, had to be accepted on faith.

Almost four centuries later, the British philosopher John Locke (1632—1704) finally introduced the formal study of signs into philosophy in his Essay Concerning Human Understanding (1690), calling it semeiotics for the first time (at least to the best of my knowledge). Locke clearly anticipated that it would allow philosophers to study the relation between concepts and reality much more precisely. But the task he laid out for philosophy remained virtually unnoticed until the late nineteenth century, when the ideas of the Swiss linguist Ferdinand de Saussure (1857—1913) and the American philosopher Charles S. Peirce (1839—1914) became the platform on which an autonomous field of inquiry was gradually constructed in the twentieth century. In his Cours de linguistique générale (1916), a textbook put together after his death by two of his previous university students, Saussure used the term semiology to designate the field. He coined it in obvious analogy to other scientific terms ending in -logy, such as psychology, biology, anthropology, (from Greek logos “word,” “study”). Saussure’s term betrayed a belief in the supremacy of language among sign systems. Here is what he had to say about it:

Language is a system of signs that expresses ideas, and is therefore comparable to a system of writing, the alphabet of deaf-mutes, symbolic rites, polite formulas, military signals, etc. But it is the most important of all these systems (Saussure 1916: 16).

Nowadays, the term semiotics is the preferred one, and it is the one that will be used throughout this text. This is probably due to the strong influence
of Charles Peirce on modern-day theory and practice. Peirce reintroduced Locke's term because he saw it as being consistent with previous traditions. My own sense is that those who prefer to use *semiology* perceive the discipline as similar in overall method to other sciences such as psychology; while those who use *semiotics* perceive it as a more philosophically oriented form of inquiry. My view is that both are complementary perspectives that can easily be integrated into an overall "science of the sign," however we wish to name it. Incidentally, Peirce also provided the most comprehensive typology of signs so far devised. He identified 66 species of signs, according to their function. For example, he defined a *qualisign* as a sign that draws attention to some quality of its referent. In language, an adjective is a qualisign since it draws attention to the qualities (color, shape, size, etc.) of objects. In nonverbal domains, qualisigns include the colors used by painters and the harmonies and tones used by composers.

Semiotic method includes both the *synchronic* and the *diachronic* study of signs—terms introduced by Saussure. The former refers to the study of signs at a given point in time, normally the present, and the latter to the study of how signs change, in form and meaning, over time. As a case in point, consider the word *person*. Today, we use it to refer to any human being. But a diachronic analysis reveals that this was not its original meaning. In ancient Greece, the word *persona* signified a "mask" worn by an actor on stage. Subsequently, it came to have the meaning of "the character of the mask-wearer." This meaning can still be found in the theater term *dramatis personae* "cast of characters" (literally "the persons of the drama"). Eventually, the word came to have its present meaning, probably because of the perceived importance of the theater in Western society in portraying human character. This is why we still say that people "play roles in life," "interact," "act out their feelings," "put on a proper face [mask]," and so on.

In the twentieth century, a number of key figures developed semiotics into the discipline it has become today. Only a few will be mentioned here. The American semiotician Charles Morris (1901–1979) divided semiotic method into: (1) the study of the relations between a sign and other signs, which he called *syntactics*; (2) the study of the relations between signs and their basic meanings, which he called *semantics*; and (3) the study of the relations between signs and their users, which he called *pragmatics*. The Russian-born American semiotician Roman Jakobson (1896–1982) put forward the pivotal notion of "motivated signs," which he defined as the tendency to make signs represent the world through simulation. The French semiotician Roland Barthes (1915–1980) illustrated the power of using semiotics to unravel the meaning structures
hidden in everyday spectacles, performances, and common concepts. French
semiotician Algirdas J. Greimas (1917–1992) developed the branch of semiotics
known as narratology, which he defined as the study of how human beings in
different cultures invent similar kinds of narratives (myths, tales, etc.) with
virtually the same stock of characters, motifs, themes, and plots. Greimas
also characterized the sign as a four-component relational structure, whereby
we purportedly come to understand the meaning of a specific sign (e.g., rich)
by relating it to its contradictory (not rich), its contrary (poor), and its
contradictory (not poor). Thomas A. Sebeok (1920–2001) was influential in
expanding the semiotic paradigm to include the study of animal signaling
systems, which he termed zoosemiotics, and the comparative study of
symptoms, signals and signs in all living things, which he called biosemiotics.
He also stressed that semiotic method should always unfold in an
interdisciplinary fashion. The interweaving and blending of ideas, findings,
and scientific discourses from different disciplinary domains was, Sebeok
claimed, the distinguishing feature of the semiotic approach. Finally, Italian
semiotician Umberto Eco (1932–) has contributed significantly to our
understanding of the relation between signs and reality. He has also single-
ha ndedly put “semiotics” on the map of contemporary pop culture, so to speak,
with his best-selling 1982 novel, The Name of the Rose, which became a
major movie shortly thereafter.

Semiotics is often confused with communication science. Although the
two fields share much of the same theoretical and methodological territory,
the latter focuses more on the technical study of how messages are transmitted
(vocally, electronically, etc.) and on the mathematical and psychological laws
governing the transmission, reception, and processing of information. Semiotics
pays more attention to what messages mean, and on how they have been put
together with signs. This is why it also includes the study of purely fanciful,
misleading, or deceitful signs and messages. The capacity for artifice, as Eco
argues, is a powerful one indeed, allowing us to conjure up nonexistent referents.
When we use words such as unicorn, mermaid, and elf, for example, we are
doing exactly this. We can also get people to act dangerously by misusing
signs—we can cause serious problems on the road by intentionally wiring the
traffic lights to flash green on all sides at once; we can incite people to hate
others by telling them deceitful lies; and so on. As Prometheus stated in
Aeschylus’ (525?–456 BC) great ancient drama Prometheus Bound, the capacity
for lying with signs has ensured that “rulers would conquer and control not by
strength, nor by violence, but by cunning.”
The term communication theory, as used in this book, refers to the study of how messages are put together so that they can be exchanged effectively. In effect, it is an extension of semiotics proper, since it deals with the “negotiation” of meaning in specific ways. It is based on Jakobson's idea that communication is regulated by personal, social, and purely semiotic factors.

**SIGNIFICATION**

Semioticians seek answers to the what, the how, and the why of meaning. But what is meaning? In their 1923 work, titled appropriately The Meaning of Meaning, Ogden and Richards came up with 23 meanings of the word meaning, showing how problematic a term it is. Here are some of them:

- She *means* to watch that show = “intends”
- A red light *means* stop = “indicates”
- Happiness *means* everything = “has importance”
- His look was full of *meaning* = “special import”
- Does life have a *meaning*? = “purpose”
- What does love *mean* to you? = “convey”

Compounding the problem is the fact that when we try to “define” the meaning of something, we invariably end up going around in circles. Take the dictionary definition of *cat* as “a small carnivorous mammal domesticated since early times as a catcher of rats and mice and as a pet and existing in several distinctive breeds and varieties.” The first problem that emerges with this definition is the use of *mammal* to define *cat*. In effect, the dictionary has made the unwarranted assumption that we are familiar with the meaning of this term. So, what does the dictionary have to say about the meaning of *mammal*? A mammal, it states, is “any of various warm-blooded vertebrate animals of the class Mammalia.” But this definition now assumes that we already know the meaning of *animal*. So what does the dictionary have to say about the meaning of *animal*? A mammal, it states, is “any of various warm-blooded vertebrate animals of the class Mammalia.” But this definition now assumes that we already know the meaning of *animal*. So what does the dictionary have to say about the meaning of that term? It defines an *animal* as an *organism*, which it defines, in turn, as an individual form of *life*, which it defines, in turn, as the property that distinguishes living *organisms*. Alas, at that point the dictionary has gone into a loop, since it has employed an already-used concept, *organism*, to define *life*.

This looping pattern surfaces with all definitions. It arises because words are used to define other words. So, like the axioms of arithmetic or geometry,
the notion of *meaning* is best left undefined. It is something of which everyone has an intuitive understanding, but which virtually no one can really explain. On the other hand, the term *signification* has a specific meaning in semiotics, even though the terms *meaning* and *signification* are often used interchangeably by semioticians (as will be done in this book as well). Essentially, *signification* is what happens in our mind when we use or interpret a sign. The process of signification is, thus, the relation $X = Y$ itself. It unfolds in one of two ways, known as *denotation* and *connotation*. Take, for example, the word *house*. This elicits in our mind an image that can be characterized as a “structure for human habitation.” The evocation of this type of basic image is known as *denotation*. It allows us to determine if a specific real or imaginary object ($Y$) to be labeled *house* is, in its basic outline, a “structure for human habitation,” no matter what its dimensions are, what specific shape it has, and so on. Similarly, the word *square* denotes a figure consisting of “four equal straight lines that meet at right angles.” It is irrelevant if the lines are thick, dotted, 2 meters long, 80 feet long, or whatever. If the figure has “four equal straight lines meeting at right angles,” it is identifiable denotatively as a *square*.

Now, the word *house* can be extended to encompass a whole range of other referents. This extensive process is called *connotation*. Here are just three examples of the connotative uses of *house*:

- The *house* is in session = “legislative assembly, quorum”
- The *house* roared with laughter = “audience in a theater”
- They sleep at one of the *houses* at Harvard = “dormitory”

Note, however, that the basic concept of “structure for human habitation” is either implied or suggested in all three uses—a legislative assembly, a theater audience, and a dormitory imply “structures” of certain kinds that “humans” can be seen to “inhabit” in some way. Connotation allows humans to expand the application of signs creatively. It is, in fact, the operative mode of signification in the construction and interpretation of all creative texts—poems, novels, musical compositions, art works, and the like. And, any interpretation of culture-specific concepts, such as *motherhood*, *masculinity*, *friendship*, and *justice*, invariably involve connotation. In 1957, Osgood, Suci, and Tannenbaum invented an interesting technique for fleshing out the connotations that such concepts entail, known as the *semantic differential*. It consists in posing a series of questions to subjects about a specific concept, using opposites—*Is it good or bad? weak or strong?* etc.—as seven-point scales,
with the opposites at each end. The answers are then analyzed statistically in order to sift out any general pattern. Suppose that subjects are asked to evaluate the concept President in terms of the following scales:

\[
\begin{array}{c|ccccccc}
\text{Young} & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\text{Practical} & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\text{Modern} & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\text{Attractive} & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\text{Friendly} & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\end{array}
\]

A subject who feels that a President should be more youngish than oldish would place a mark towards the young end of the top scale. One who feels that a President should be bland, would place a mark towards the bland end of the attractive-bland scale, and so on. If a large number of subjects were asked to rate President in this way, we would get a “culture-specific profile” of the presidency in terms of the statistically significant variations in connotation that the concept evokes.

Interestingly, research utilizing the semantic differential has shown that, while the meanings of most concepts are subject to personal interpretation and subjective feelings, the range of variation is not simply a matter of randomness, but forms a socially based pattern. In other words, the experiments have shown that the connotations of many (if not most) concepts are constrained by culture: e.g., the word noise turns out to be a highly emotional concept for the Japanese, who rate it consistently at the ends of the scales presented to them; whereas it is a fairly neutral concept for Americans, who tend to rate it on average in the mid-ranges of the scales.

The study of connotation constitutes the core of contemporary semiotics. This is because most of the meanings that signs bear in cultural settings are connotative. Rarely is denotation evoked in the interpretation of signs in such settings, as will become obvious throughout this book. In a fundamental sense,
culture can be characterized as a huge system of connotative meanings that cohere into an associative "macro-code" that allows members of the culture to interact purposefully and to represent and think about the world in specific ways. This is why some semioticians prefer to call it the *semiosphere*. In biology, a region that sustains life is called the *biosphere*. By analogy, the semiosphere is the region of social life that sustains knowledge-making and representational activities.

**STRUCTURE, TEXT, AND MESSAGE**

In order to extract meaning from a form $X$, one must be able to recognize it as a sign in the first place. This means that signs have *structure*. Specifically, a form $X$ is a sign if: (1) it is distinctive; and (2) it is constructed in a predictable way. The former is called, more specifically, *paradigmatic* and the latter *syntagmatic* structure. For instance, what keeps the words *cat* and *rat* recognizably distinct? It is, of course, the initial sound. The articulatory difference between $c$ ($=/k/$) and $r$ ($=/r/$) is, in fact, what allows us to recognize that the two words are different signs. Paradigmatic structure is a feature of all types of signs, not just words. In music, a major and minor chord of the same key are perceivable as distinct on account of a half tone difference in the middle note of the chord; the left and right shoes of a pair are identifiable as different in terms of the orientation of each shoe; raising the index and middle fingers in a vertical orientation can mean "victory," "peace" (among other meanings), but aiming the same two fingers in a horizontal way at someone would be interpreted instead as a threat, and so on.

Now, note that the words *cat* and *rat* are legitimate signs, not only because they are recognizable as different in a specific way, but also because the combination of sounds with which they are constructed is consistent with English syllable structure. On the other hand, *pfat* would not be recognized as a legitimate word in English because it violates an aspect of such structure—English words cannot start with the cluster *pf*. Syllable structure is an example of *syntagmatic* structure. Syntagmatic structure too is found in the composition of all kinds of signs. In music, for instance, a melody is recognizable as such only if the notes follow each other in a certain way (e.g., according to the rules of harmony); two shoes are considered to form a pair if they are of the same size, style, and color, and so on.

Something is a sign if it has both a discernible (repeatable and predictable) form and if it is constructed in a definable (patterned) way. Signs are comparable...
to the pieces of a jigsaw puzzle. These have visual features on their “faces”
that keep them distinct from each other, as well as differently shaped “edges”
that make it possible to join them together in specific ways to complete the
overall picture.

Because of the predictability of their structure, some signs can replace
each other—a relation known as analogy. For example, European cards can
replace American cards for playing solitaire, because a structural match can
be easily made between European and American suits. Analogy constitutes a
force of change in sign systems. Words are often re-formed or created on the
model of existing patterns in a language. For example, in Old English the plural
of name was naman. This was changed over time to names on the model of
nouns like stone—stones. Analogy is the operative force when children utter a
form like goed, rather than went. This is created in analogy with forms like
played, stayed, etc.

The X part of a sign can take any form, or “size,” we desire to give it, as
long as it does not violate paradigmatic and syntagmatic structure, and it
assumes signification \( X = Y \) in some way. It can thus be something “small,”
such as a word or two fingers raised in a vertical way; or it can be something
much “larger,” such as a mathematical equation or a narrative. If we ask a
mathematician what \( c^2 = a^2 + b^2 \) means, he or she would instantly recognize it
as an \( X = Y \) relation, namely as an equation standing for the Pythagorean
Theorem (“the square on the hypotenuse of a right-angled triangle is equal to
the sum of the squares on the other two sides”). If we ask someone who has
just read a novel what he or she got out of it, we would receive an answer that
reveals a perception of the novel as an \( X = Y \) structure—that is, as something
containing a message.

In contemporary semiotic theory, such “larger X’s” are called texts, rather
than simply signs; and the meanings, or “larger Y’s” that they encode are
called messages. The term text embraces such things as conversations, letters,
speeches, poems, myths, novels, television programs, paintings, scientific
theories, musical compositions, and so on. A novel, for instance, is a verbal
text constructed with language signs (“smaller X’s) in order to communicate
some overarching message (the “larger Y”). Texts are composite phenomena—
they are not interpreted in terms of their constituent parts (the smaller X’s), but
holistically as single signs—as \( X = Y \). This is why when we ask someone what
a novel means, he or she couches the answer in terms of the message he or
she extracts from it: e.g., “The novel Crime and Punishment paints a grim
portrait of the human psyche.”
The term *message* is not synonymous with meaning. Consider a simple greeting such as “Nice day, today!” It encodes, of course, a simple message. However, the meaning of that message can be literal, whereby the speaker is acknowledging the kind of day it is simply to make contact; on the other hand, it could be ironic, if uttered on a rainy and miserable day. As this example shows, a message can have more than one meaning, and several messages can have the same meaning. In the mass media, as in art, it is often the case that many layers of meanings are built into the same message. These can only be determined or deciphered in reference to other meanings. Needless to say, this creates problems of interpretation and comprehension of various sorts. To avoid such problems, semioticians often employ the technique of *binary opposition* to flesh out what something means in relation to something else. This approach assumes that meaning is something that cannot be determined in the absolute, but only in relation to other signs: e.g., *cat* vs. *dog*; *cat* vs. *bird*; etc. From such oppositions we can see, one or two features at a time, what makes a *cat* unique among animals. In effect, such oppositions cumulatively allow us to pinpoint what *cat* means by virtue of how it is different from other animals.

**SEMIOSIS, REPRESENTATION, AND INTERPRETATION**

The brain’s capacity to produce and understand signs is called *semiosis*, while the knowledge-making activity this capacity allows all human beings to carry out is known as *representation*. The latter can be defined more precisely as the use of signs (pictures, sounds, etc.) to relate, depict, portray, or reproduce something perceived, sensed, imagined, or felt in some physical form. It is, in other words, the process itself of putting X’s and Y’s together. Figuring out the meaning of $X = Y$ is not, however, a simple task. The intent of the form-maker, the historical and social contexts in which the representation was made, the purpose for which it was made, and so on and so forth, are complex factors that enter into the picture. One of the main objectives of semiotics is, in fact, to study those very factors. Charles Peirce called the actual physical form of a representation, $X$, the *representamen* (literally, “that which does the representing”); he termed the $Y$ to which it calls attention, the *object* of the representation; and the meaning or meanings that can potentially be extracted from the representation ($X = Y$), the *interpretant*. The whole process of deciding the meaning of the representamen is, of course, called *interpretation*. 
As an example of what representation entails, consider sex, as an object. This is something that exists in the world as a biological and emotional phenomenon. Now, as an object, it can be represented (literally “presented again”) in some physical form. For example, in our culture, common representations of sex include: (1) a photograph of two people engaged in kissing romantically; (2) a poem describing the various emotional aspects of sex; or (3) an erotic movie depicting the more physical aspects of sex. Each of these constitutes a specific kind of representamen. The meanings that each captures are built into each representamen not only by its maker, but also by certain preexisting notions relative to the culture in which the representamen was made. Representations of sex in, say, Paris are thus going to be different from representations of the same object that are made, for instance, in Bombay or San Francisco. Moreover, the type of representamen used to portray the object also shapes the meaning. Photographs can show fairly limited views of sexual activities, whereas movies can provide much more graphic detail. Finally, the ways in which people living in Paris, Bombay, or San Francisco will derive meaning from the representations will vary widely. This is because they have become accustomed in their specific cultures to different perceptions of what sex is.

Interpretation is a crucial aspect of the human condition. The instant children start to interpret the world with signs, they make a vital psychosocial connection between their developing bodies and conscious thoughts to that world. To put it figuratively, signs constitute the “conceptual glue” that interconnects their body, their mind, and the world around them in a holistic fashion. Once the child discovers that signs are effective tools for thinking, planning, and negotiating meaning with others in certain situations, he or she gains access to the knowledge domain of his or her culture. At first, the child will compare his or her own attempts at interpreting the world against the signs he or she is exposed to in specific contexts. But through protracted usage, the signs acquired in such contexts will become cognitively dominant in the child, and eventually mediate and regulate her or his thoughts, actions, and behaviors. Most of the raw, unorganized sensory information that comes from seeing, hearing, and the other senses is organized into meaningful wholes by signs. Our understanding of the world is thus not a direct sensory one. It is mediated by signs and, thus, by the images that they elicit within our mind-space.

The semiotic interconnection between the body, the mind, and culture can be shown graphically as follows:
Charles Peirce referred to these three dimensions as *firstness*, *secondness*, and *thirdness*. A sign starts out as a sensory structure, that is, as something that has been made to simulate an object in terms of its sensory properties. It is then used by the sign-user to establish a connection to the object, even if the actual object is not present for the senses to perceive (= secondness). Finally, the sign itself becomes a source of knowledge about the world, once it enters the world of culture and distributed for general usage (= thirdness). Cultures are, essentially, “sign-preserving” systems that distribute signs to people for various kinds of practical purposes.

The research of the Swiss psychologist Jean Piaget (1896–1980) and the Russian psychologist L. S. Vygotsky (1896–1934) on the nature of the child’s mind has largely confirmed this three-dimensional model of human development. Piaget’s research showed that children progress from a sensory and concrete stage of mind to a reflective and abstract one. Around the age of two, they develop representational abilities derived from constant exposure to words and symbols in cultural context. As these become more dynamic, they prepare the child for more abstract thinking. Vygotsky showed that human development goes from an unconscious “feeling” that the world has meaning to a cogitation of the world with the resources of language (“thinking in words”). This is why he defined speech as a “microcosm of consciousness.”

**CODE**

The signs that we use to make messages are not randomly chosen structures. When we enter into a conversation, for example, we will be able to encode and decode messages only if we know the language used. Language is a system that provides the structures and specifies the relations that these bear to each other for the purpose of making messages. But messages can also be made
with music, painting, and other kinds of nonverbal systems. The term used in semiotics to refer to all such systems is *code*. Language, dress, music, and gesture are examples of codes. These can be defined as systems of signs (verbal, visual, gestural, etc.) that have specific properties and, thus, can be used over and over to encode and decode texts and their messages. Indeed, the words *encode* and *decode* reveal, by themselves, that the making and interpreting of messages involves use of a code.

A simple example of a code is the type used in secret communications. Take the following combination of letters:

JGNNQ

If told that each letter represents another letter of the alphabet and that the combination stands for an actual word, then it is easy to see that the actual English word is *Hello*, and thus that the code used consists in replacing each letter with the second letter after it in the normal alphabetic sequence: hence, H = J, E = G, L = N (twice), and O = Q.

There are many kinds of codes used by human beings, each with a specific kind of function. For example, *intellectual codes* allow for representational and message-making activities of a logical, mathematical, scientific, or philosophical nature, providing the appropriate resources (numerical, geometrical, etc.) to represent certain kinds of objects. A perfect example of an intellectual code is trigonometry, which is based on the relations between the sides of a triangle. The six trigonometric functions are defined in terms of a given acute angle in a right triangle:

![Diagram of a right triangle with labels A, B, C, x, h, y.](image-url)
The *sine* (sin) of the angle at C is the ratio of the opposite side to the hypotenuse, \( x/h \); the *cosine* (cos) is the ratio of the adjacent side to the hypotenuse, \( y/h \); the *tangent* (tan) is the ratio of the opposite side to the adjacent side, \( x/y \); the *cotangent* (cot) is the ratio of the adjacent to the opposite side, \( y/x \), the *secant* (sec) is the ratio of the hypotenuse to the adjacent side, \( h/y \), and the *cosecant* is the ratio of the hypotenuse to the opposite side, \( h/x \). For any angle the numerical values of the trigonometric ratios can be easily approximated by drawing the angle, measuring, and then calculating the ratios. While this code appears to have little relevance to real-world situations, the remarkable thing is that it can be applied to solve real-world problems. By envisioning an unmeasurable distance as one side of a triangle, measuring other sides or angles of the triangle, and applying the appropriate trigonometric ratios, the distance can be easily determined.

Another type of code is called a *social code* (dress, gender, food, space, etc.). Such codes provide the structures for making messages about oneself in socially appropriate ways and for regulating interpersonal activities. We will discuss social codes in more detail in Part II of this book. Food codes, for example, underlie how people prepare food and when and how they eat it. Many Christians say grace before starting a meal together; Jews say special prayers before partaking of wine and bread. At a formal meal, the order in which dishes are presented, what combinations can be served in tandem, how the foods are to be placed on the table, who has preference in being served, who must show deference, who does the speaking and who the listening, who sits where, and what topics of conversation are appropriate are all based on an appropriate food code, steeped in cultural history and tradition. All cultures, moreover, have a discrete set of table rituals and manners that are inculcated into the members of the culture from birth. If one does not know the *table-manner code*, then he or she will have to learn it in order to continue living in the culture without censure and disapprobation.

While intellectual codes tend to be more or less stable and fixed (e.g., mathematical theorems vary very little over time, if at all), social codes are adaptive and can be recycled in various ways. For example, the "mythic code of the hero," which was embodied in ancient world figures such as Achilles, Prometheus, Samson, and many others is recycled by contemporary pop culture into comic book or movie heroes. Such heroes must be strong, superhuman, have a tragic flaw, etc., just like their mythic predecessors. For example, the comic book and movie Superman comes from another world (the planet Krypton); he has come to help humanity overcome its weaknesses; he has a tragic flaw (exposure to the fictitious substance known as kryptonite takes
away his power), and so on. In the figure of Superman, thus, the code of the mythic hero reverberates in modern guise.

Codes guide interpretation in a context. In semiotics, the term context is defined as the environment, situation, or process—physical, psychological, and social—in which interpretation unfolds. Consider a discarded and damaged beer can. If you were to come across this item on a sidewalk on a city street, you would no doubt view it as a piece of garbage or rubbish. But if you saw the very same object on a pedestal, displayed in an art gallery, “signed” by some artist, and given a title such as “Waste,” then you would be inclined to interpret it in a vastly different way. You would, in fact, be predisposed to interpret it as an artistic text, descrying a throw-away or materialistic society. Clearly, the can’s physical context of occurrence and social frame of reference—its location on a sidewalk vs. its display in an art gallery—will determine how you will interpret it. The art gallery is, in effect, a social code. This is why we interpret anything that is put on display within it as “art,” rather than as something else.

The network of interconnected meanings that constitute a culture is configured with codes. These can be characterized as “organizational grids” within the network. Utilization of the codes for various representational reasons will, of course, vary, but the basic structure of the code will remain intact and be recognizable. As a concrete example, take 1950s rock and roll music. This constitutes a specific type of musical code, providing a system of musical structures with which songs can be composed. Differences in the actual songs composed are attributable to differences in style, that is, to the peculiar way in which a particular song has been composed. Thus, one can talk of an “Elvis Presley style” or a “Little Richard style,” which are characteristic uses of the same musical code by particular artists. Nevertheless, all 1950s songs retain an essential recognizable form because they are based on the same musical code.

**CONCLUDING REMARKS**

A sign selects what is to be known and memorized from the infinite variety of things that are in the world. Although we create new signs to help us gain new knowledge and modify previous knowledge—that is what artists, scientists, writers, for instance, are always doing—by and large, we literally let our culture “do the understanding” for us. We are born into an already-fixed semiosphere that will largely determine how we view the world around us. Only if,
hypothetically, all our knowledge (which is maintained in the form of codes) were somehow erased from the face of the earth would we need to rely once again on our instinctive meaning-making tendencies to represent the world all over again.

As an example, consider the concept of health. Although this might at first appear to capture a universally shared meaning, in actual fact what is considered to be “naturally healthy” in one culture may not coincide with views of health in another. Health cannot be defined ahistorically, aculturally, or in purely absolute terms. This does not deny the existence of events and states in the body that will lead to disease or illness. All organisms have a species-specific bodily warning system that alerts them to dangerous changes in bodily states. But in the human species bodily states are interpreted in culture-specific ways. This is why in American culture today a “healthy body” is considered to be one that is lean and muscular. Conversely, in others it is one that Americans would consider too plump and rotund. A “healthy lifestyle” might be seen by some cultures to inhere in rigorous physical activity, while in others it might be envisaged as inhering in a more leisurely and sedentary lifestyle.

Moreover, as the writer Susan Sontag cogently argued in her compelling 1978 book *Illness as Metaphor*, the semiosphere predisposes people to think of specific illnesses in certain ways. Using the example of cancer, Sontag pointed out that in the not-too-distant past the very word cancer was said to have killed some patients who would not have necessarily succumbed to the malignancy from which they suffered: “As long as a particular disease is treated as an evil, invincible predator, not just a disease, most people with cancer will indeed be demoralized by learning what disease they have” (Sontag 1978: 7). Sontag’s point that people suffer more from interpreting their disease in cultural terms than from the disease itself is, indeed, a well-taken and instructive one.

Medical practitioners too are not immune from the influence of cultural symbolism. The body, as we shall see in chapter 4, is as much a source of symbolism as it is organic substance. Several decades ago, Hudson (1972) showed how this affects medical practices. He found that medical specialists trained in private British schools were more likely to achieve distinction and prominence by working on the head as opposed to the lower part of the body, on the surface as opposed to the inside of the body, and on the male as opposed to the female body. Hudson suggested that the only way to interpret such behaviors was in cultural terms: that is, parts of the body, evidently, possessed a symbolic significance that influenced the decisions taken by medical students: “students from an upper-middle-class background are more likely than those from a lower-middle-class background to find their way into specialties that are seen for symbolic reasons as desirable” (Hudson 1972: 25).
Basic Sign Theory

The basic tool for the manipulation of reality is the manipulation of words. If you can control the meaning of words, you can control the people who must use the words.

*Philip K. Dick (1928–1982)*

**PRELIMINARY REMARKS**

Human intellectual and social life is based on the production, use, and exchange of signs. When we gesture, talk, write, read, watch a TV program, listen to music, look at a painting, we are engaged in using and interpreting signs. As Charles Peirce aptly remarked, human life is characterized by a “perfusion of signs.” The primary task of semiotics is to identify, document, and classify the main types of signs and how they are used in representational activities. Since they vary from culture to culture, signs constitute mental templates that invariably condition the worldview people come to have. The study of signs thus reveals that the age-old idea of an “objectively knowable reality” is something that may be elusive. This chapter will introduce basic sign theory, and end with a discussion of culture as a system of signs that invariably shapes perception of reality.

**DESCRIBING THE SIGN**

As stated in the previous chapter, Ferdinand de Saussure and Charles S. Peirce are the founders of contemporary semiotic theory and practice. Their ideas
make up the basic framework for describing and classifying signs, as well as for applying semiotics to the study of knowledge and culture systems.

Saussure was born in Geneva in 1857. He attended science classes at the University of Geneva before turning to language studies at the University of Leipzig in 1876. As a student he published his only book, *Mémoire sur le système primitif des voyelles dans les langues indo-européennes* ("Memoir on the Original Vowel System in the Indo-European Languages," 1879), an important work on the vowel system of Proto-Indo-European, considered the parent language from which the Indo-European languages descended. Saussure taught at the École des Hautes Études in Paris from 1881 to 1891 and then became a professor of Sanskrit and Comparative Grammar at the University of Geneva. Although he never wrote another book, his teaching proved to be highly influential. After his death, two of his students compiled their lecture notes and other materials, writing the seminal work, *Cours de linguistique générale* (1916), that bears his name.

In the *Cours*, Saussure described the sign as a binary structure, that is, as a structure made up of two parts: (1) a physical part, which he termed the *signifier*, and (2) a conceptual part, which he called the *signified*. In terms of the $X = Y$ relation discussed in the previous chapter, the signifier corresponds to the $X$ and the signified to the $Y$:

**Naming the Parts of the Sign**

$X = Y$

\[
X = \text{signifier} \ (\text{= the physical part})
\]

\[
Y = \text{signified} \ (\text{= the conceptual part})
\]

Saussure considered the link between the signifier and the signified, $X = Y$, to be an arbitrary one established over time for some specific social purpose. To make his point, he noted that there was no evident reason for using, say, *tree* or *arbre* (French) to designate "an arboreal plant." Indeed, any well-formed signifier could have been used in either language—*tree* is a well-formed word signifier in English; *tbky* is not. Saussure did admit, however, that there were some signs fashioned so as to make the signifier imitate some sensory or perceivable property of the signified. Onomatopoeic words (*drip, plop, whack*, etc.), he granted, did indeed mirror real physical sounds. But Saussure maintained that this was the exception, not the rule. Moreover, the highly
variable nature of onomatopoeia across languages showed that it was itself an arbitrary phenomenon. For instance, the word used to refer to the sounds made by a rooster is *cock-a-doodle-do* in English, but *chicchirichi* (pronounced "keekkeereekkee") in Italian; the word employed to refer to the barking of a dog is *bow-wow* in English, but *ouaoua* (pronounced *wawa*) in French; and the list could go on and on.

But Saussure may not have noticed that the sounds in a language are themselves suggestive of actual sounds, and that many words are "latently onomatopoeic," so to speak. Consider the word *duck*. The combination of sounds used to construct this signifier is indeed one of an infinite number of permissible combinations that can be envisioned in English, as Saussure would have it. But the final /k/ sound suggests that it has something sonorous in common with *quack*—the actual onomatopoeic word used to represent the sounds made by the animal in question. The use of linguistic sounds to model sonorous referents is called *sound symbolism* in both linguistics and semiotics. Here are few examples of the sound symbolism of English consonants that, when used to make actual words, suggest or model specific types of real sounds:

<table>
<thead>
<tr>
<th>Consonant Sound</th>
<th>Examples</th>
<th>Type of Sound Modeled</th>
</tr>
</thead>
<tbody>
<tr>
<td>/p/</td>
<td>dip, rip, sip, ...</td>
<td>a quick abbreviated explosive sound</td>
</tr>
<tr>
<td>/k/</td>
<td>crack, click, creak, ...</td>
<td>a sharp abbreviated guttural sound</td>
</tr>
<tr>
<td>/b/</td>
<td>rub, jab, blob, ...</td>
<td>an abrupt explosive sound</td>
</tr>
<tr>
<td>/l/</td>
<td>rustle, bustle, trickle, ...</td>
<td>a lingering liquid sound</td>
</tr>
<tr>
<td>/z/</td>
<td>ooze, wheeze, squeeze, ...</td>
<td>a smooth hissing type of sound</td>
</tr>
<tr>
<td>/f/</td>
<td>puff, huff, cough, ...</td>
<td>a constricted type of sound</td>
</tr>
</tbody>
</table>

In line with this kind of reasoning, it can now be suggested that the signifier *duck* was probably constructed with /k/ rather than some other final consonant (*dup, dut, dun*, etc.) in order to call attention to the actual sounds emitted by a
duck—a feature captured more explicitly by the word *quack*. Although we probably do not experience the signifier consciously as sound symbolic, we certainly seem to feel (unconsciously) that it is better suited to represent the animal than alternative candidates that could in theory have been chosen arbitrarily (e.g. *glop, jurp, flim*, etc.).

Charles Peirce argued that a phenomenon such as sound symbolism revealed, in actual fact, a fundamental unconscious tendency in sign creation; namely, a tendency to make the X part of any type of sign—verbal or nonverbal—imitate the concept or object it stood for in some way, to lesser or greater degrees. Thus, while Saussure viewed the sign as an arbitrarily devised structure, Peirce saw it instead as a structure that tended to be “motivated” by some form of simulation.

Peirce was born in Cambridge, Massachusetts, in 1839. He was educated at Harvard University, and lectured on logic and philosophy at Johns Hopkins and Harvard universities. He conducted experiments to determine the density and shape of the earth and expanded the system of logic created by the British mathematician George Boole (1815–1864). But Peirce is best known for his philosophical system, later called *pragmatism*, which maintains that the significance of any theory or model lies in the practical effects of its application. His model of the sign has become highly influential, shaping a large portion of contemporary work in contemporary semiotics.

As discussed in the previous chapter, Peirce called the sign a *representamen* and the concept, things, idea, etc., to which it refers the *object*. He termed the meaning (impression, cogitation, sense, etc.) that we get from a sign the *interpretant*. These three dimensions are always present in signification. Thus, the Peircean viewed the sign as a triadic, rather than binary, structure:

**THE “PEIRCEAN” SIGN**

```
Representamen (X)
```

```
Object (Y)  Interpretant (X = Y)
```
He also identified 66 different types of signs, of which three are used commonly in all kinds of semiotic work today. They are called icons, indexes, and symbols. An icon is a sign that stands for a referent through some form of replication, simulation, imitation, or resemblance. Sound symbolism is an example of iconicity in language, as is onomatopoeia. But iconicity is found as well in the domain of nonverbal representation—a photo resembles its referent visually, as does a painting of a natural scene. An index is a sign that stands for a referent by pointing to it or by relating it (explicitly or implicitly) to other referents. Manifestations of indexicality include a pointing index finger, adverbs such as here and there, and diagrams known as maps. A symbol is a sign that stands for its object by convention or agreement in specific contexts. For example, a rose is a symbol of love in some cultures; the letter δ stands, by agreement among mathematicians of the world, for the number 3.14; and so on. Iconicity constitutes an attempt to simulate the sensory properties perceived in things. Indexicality constitutes a strategy for referring to the existence and location of objects in time-space. And symbolism is the result of historical and social conventions, agreements, or pacts:

<table>
<thead>
<tr>
<th>Sign Type</th>
<th>Relation between the Sign and Its Referent</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>icon</td>
<td>the sign is designed to represent a referent by simulation or resemblance (i.e., the referent can be reseen, reheard, etc., in the icon)</td>
<td>drawings of all kinds (charts, diagrams, etc.), photos, onomatopoeic words, etc.</td>
</tr>
<tr>
<td>index</td>
<td>the sign is designed to indicate a referent or to put referents in relation to each other</td>
<td>the pointing index finger, adverbs such as here, there, pronouns such as I, you, he, etc.</td>
</tr>
<tr>
<td>symbol</td>
<td>the sign is designed to encode a referent by convention or agreement</td>
<td>social symbols such as the rose, math symbols, etc.</td>
</tr>
</tbody>
</table>
Iconicity abounds in all domains of human representation. Photographs, portraits, maps, Roman numerals such as I, II, and III are iconic forms designed or created to resemble their referents in a visual way. Onomatopoeic words such as *drip*, *plop*, *bang*, *screech* are vocal icons simulating the sounds that certain things, actions, or movements are perceived to make. Perfumes are olfactory icons imitating 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’s shape by touch. Peirce called the object of an icon the “immediate” object. He termed the actual referent, which lies outside the sign and may be represented in an infinite number of ways the “dynamical” object.

It is relevant to note that, before Peirce’s use of the term to refer to a specific type of sign, icon was used in art to refer to the image of a religious figure or event. The word is still used with this meaning today. The icon is believed to be sacred in itself and, thus, to aid believers in contacting the represented figure. Few early painted icons survive, but a small group of sixth- and seventh-century encaustic paintings on wooden panels, from the Monastery of Saint Catherine on Mount Sinai, remains. Beginning in the eighth century, iconoclasm, a movement that condemned the worship of icons as idolatrous, contributed to the destruction of much religious art throughout the Byzantine Christian world. It was not until the next century that making of icons was restored to its former position of honor in religious observance.

Iconicity is evidence that human perception is highly attentive to recurrent patterns of color, shape, dimension, movement, sound, taste, etc. The first inscriptions, cave drawings, and pictographic signs of humanity indicate that iconicity has always played an important role in human development. The imitative hand movements used to portray shapes were transferred to a cave wall or to an object by means of some sharp cutting tool, constituting our first genuine works of art. The earliest of these goes back some 30,000 years. They took two main forms: (1) the vivid carvings of animals that cover the roofs and walls of caves, such as those at Lascaux in France and Altamira in Spain; and (2) the small sculptures and relief carvings of animals and female figures found in caves throughout Europe. As the hand movements used to make such works of art became more abbreviated, the figures became more condensed and abstract. This led to the invention of writing. The earliest form of writing was, thus, vastly different from the alphabetic or syllabic writing systems that we use today. The work of Schmandt-Besserat (1992) has shown,
in fact, that the earliest precursors of modern writing systems were pattern-making forms, such as those found on clay tokens discovered in western Asia from the Neolithic era. The tokens were used as image-making objects.

Iconicity is also evident in childhood development. The relevant scientific literature makes it saliently obvious that children invariably pass through an initial stage of gesticulation and vocal sound imitation before they develop full language. Gestures are used for practical purposes (e.g., pointing to something desired) and are probably reinforced by osmosis with adult gestures. It is relevant to note that, although vocal language eventually becomes the dominant form of communication among human beings, the gestural modality does not vanish completely. It remains a functional subsystem of human communication that can always be utilized as a more generic form when vocal interaction is impossible or limited. This happens typically when two interlocutors speak different languages. And, of course, for individuals with impaired vocal organs, gesture constitutes the only possible mode of communication.

Iconicity also shows up in the tendency of children to make scribbles and elemental drawings at about the same time that they utter their first words. If given drawing materials around the age of two or three, young children instinctively start scribbling on the drawing surface. As time passes, their scrawls 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 draw anything in particular. 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, icons serve a vast range of social functions. They are found on posters, on toilet doors indicating “male” and “female,” and so on. In our digital world, the very term icon is used to designate a tiny picture on a computer screen. Each icon represents a command. The system of icons, pointer, and mouse is known as a graphical user interface (GUI), a system that provides a user-friendly way of interacting with a computer. Users can usually tell by the icons how to get the computer to do what they want. Without a GUI, the computer screen is black, and the only way to tell the computer what to do is to type in commands. There is little doubt that GUIs contributed to the rise of the personal computer in the mid-1980s, starting in 1984 when the
Apple Computer company introduced the Macintosh, the first personal computer to include a GUI. Because they make computers easy to use, GUI’s 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.

INDEXICALITY

Indexicality manifests itself in all kinds of representational behaviors. Its most typical manifestation can be seen in the pointing index finger, which humans the world over use instinctively to point out and locate things, people, and events in the world. Many words, too, have been devised as indexes—for example, here, there, up, down allow speakers of English to refer to the relative location of things when speaking about them.

There are three basic types of indexes:

- **Spatial Indexes.** These refer to the spatial locations of objects, beings, and events in relation to the sign-user. Manual signs like the pointing index finger, demonstrative words such as this or that, adverbs like here or there, and figures such as arrows are all examples of spatial indexes.

- **Temporal Indexes.** These relate things to each other in terms of time. Adverbs such as before, after, now, or then, timeline graphs representing points in time as located to the left and right of each other, and dates on calendars are all examples of temporal indexes.

- **Person Indexes.** These relate the participants taking part in a situation to each other. A personal pronoun such as I, you, he, she or an indefinite pronoun such as the one, the other are examples of person indexes.

Indexicality is evidence that human consciousness is not only attentive to patterns of color, shape, etc., resulting in iconic signs, but also to the recurrent relational and cause and effect patterns that are contingent on time and space. In this case, Peirce referred to the object of the sign as a “reagent,” since it constitutes a reaction to an agent that allows us to infer its whereabouts, its relation to other objects, and so on.

Incidentally, the word index is used commonly and appropriately to refer to classification and referential practices. For example, an index at the end of a book is an alphabetized list of names, places, and subjects treated in a printed work, giving the page or pages on which each item is mentioned. In
A symbol stands for its referent in a conventional way. Words in general are symbols. But any signifier—an object, a sound, a figure, etc.—can be symbolic. A cross figure can stand for the concept “Christianity;” a V-sign made with the index and middle fingers can stand for “peace;” white can stand for “cleanliness,” “purity,” “innocence,” and dark for “uncleanness,” “impurity,” “corruption,” and the list could go on and on. These meanings are all established by social convention or through the channel of historical tradition.

Iconic, indexical, and symbolic modes of representation often converge in the creation of a sign or text. As an example, consider the common traffic sign standing for a crossroad:
The signifier of this sign consists of two straight lines intersecting at right angles. The vertical line has an arrowhead. This cross figure is, clearly, iconic because its shape visually resembles a "crossroads." But since the cross figure could easily be used to represent a "church" or a "hospital" in other situations (without the arrowhead of course), it is also symbolic insofar as we need to know that it has been chosen, by convention, to constitute a particular type of traffic sign. Finally, the sign is also an index because when it is placed near an actual crossroads it indicates that one is about to reach it physically, as indicated by the arrowhead.

Nowhere has symbolism borne more remarkable fruits than in mathematics and science. The science of geometry, for instance, has helped human beings solve engineering dilemmas since ancient times. Here is a simple demonstration of this. Suppose that a tunnel is to be dug right through the middle of a mountain. Since the length of the tunnel cannot be measured directly, the Pythagorean Theorem suggests a plan for doing so without direct measurement. A point A on one side of the boulder and another point B on the other are chosen such that both points remain visible from a point C to the right. C is chosen so that angle ACB is a right angle (90°). Then, by aligning A with A' (the entrance to the mountain on one side) and B with B' (the entrance to the mountain on the other side) the required and "unmeasurable" length can be seen to be \( A'B' \):

![Diagram](image)

How can \( A'B' \) be determined without actual measurement? First, we measure AC and BC. We plug the values into the equation \( AB^2 = AC^2 + BC^2 \), the relevant Pythagorean equation in this case. This yields a measure for \( AB \). Next we measure the distances \( AA' \) and \( BB' \). When we subtract these two
distances from $\mathbf{AB}$ we get the length of $\mathbf{A'B'}: AB = (\mathbf{A'A} + \mathbf{B'B'}) = \mathbf{A'B'}$. That is the length required to dig a tunnel through the mountain.

It is important to note, however, that even though the symbols used to represent the whole situation were based largely on conventional practices, the use of a diagram reveals a need to supplement symbolic reasoning with iconicity. Knowledge of how to represent a real-life physical situation in a symbolic way is a truly remarkable achievement of the human mind. It allows us to eliminate physical intervention through representations of the real world by means of symbols and diagrams that allow us, in turn, to experiment mentally with that very world to see what they yield.

Symbolism is everywhere. It plays, for instance, an important part in religious life—the cross symbolizes Christ's death and all Christian beliefs; the Star of David represents Jewish teachings, and so on. People throughout the world have agreed on certain symbols to serve as a shorthand system for recording and recalling information. Every branch of science has its own system—astronomy uses a set of ancient symbols to identify the sun, the moon, the planets, and the stars; in mathematics, Greek letters and other symbols make up an abbreviated language; and so on and so forth. Specific kinds of symbols appear in such fields as commerce, engineering, medicine, packaging, and transportation. The chart on page 34 shows some common visual symbols used in various fields of human endeavor and enterprise:

All countries have official or unofficial national symbols. A flag or an anthem may symbolize a nation. 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. In the United States, a donkey symbolizes the Democratic Party, and an elephant represents the Republican Party. Throughout early history, many people considered the swastika a good luck charm. But in 1920, the Nazi Party of Germany adopted it as its symbol. The swastika came to represent the Nazi attempt to conquer Europe. Today, it ranks as one of the most hated symbols of history.

CULTURE

The emergence of culture onto the evolutionary scene can be traced originally to the development within the human species of an extremely large brain, averaging 1400 cc/85.4 cu. in., more than 2 million years ago. Humankind's ability and disposition to think and plan consciously, to transmit learned skills
to subsequent generations knowingly, to establish social relationships, and to modify the environment creatively are the felicitous consequences of that momentous evolutionary event. The brain’s great size, complexity, and slow rate of maturation, with connections among its nerve cells being added through the pre-pubescent years of life, has made it possible for *Homo sapiens* to step outside the slow forces of biological evolution and to meet new environmental demands by means of conscious rapid adjustments, rather than by force of genetic adaptation: that is, it has bestowed upon the human species the ability to survive through intelligent activities in a wide range of habitats and in extreme environmental conditions without further species differentiation. However, in balance, the prolonged juvenile stage of brain and skull development in relation
to the time required to reach sexual maturity has exposed neonatal human beings to unparalleled risks among primates. Each new infant is born with relatively few innate traits yet with a vast number of potential behaviors, and therefore must be reared in a cultural setting so that it can achieve its biological potential. In a phrase, Culture has taken over from Nature in guaranteeing the survival of the human species and in charting its future evolution.

Evidence from the field of paleontology, the science of fossil interpretation, suggests that cultures have ancient origins. The fashioning of tools, the earmark of early cultures, was accomplished at least 2.5 million years ago, as was, probably, the use of gesture for communication. Gradually, planned hunting, fire-making, the weaving of cloth, and the ritualized burial of the dead became well-established characteristics of hominid groups. By about 100,000 years ago, the making of art, communication by means of vocal language, and communally established systems of ethics became the distinctive attributes of the first human tribes. Since then Culture, in the sense of individuals living together, thinking and planning consciously, transmitting skills and systems of social relationships to each other through language, and working together to modify the environment, has become the defining attribute of the human species. Simply put, without culture human beings would have great difficulty surviving. Anthropologist Clifford Geertz (1973: 23) has perhaps best expressed the paradox of the human condition by stating wryly that without culture human beings would be “unworkable monstrosities, with few useful instincts, few recognizable sentiments, and no intellect.”

So, the question of what is culture is hardly a trivial one. To understand human nature is to unravel the raison d'être of culture. Although interest in culture is as old as human history, the first scientific definition of culture had to await the nineteenth century, when the British anthropologist Edward B. Tylor (1832–1917) defined it in his 1871 book Primitive Culture as “a complex whole including knowledge, belief, art, morals, law, custom, and any other capability or habit acquired by human beings as members of society.” Tylor’s definition was also one of the first ever to differentiate qualitatively between culture and society. Although these terms continue to be used commonly as synonyms in many languages, in actual fact they refer to different things. Within a social collectivity, there can, and frequently does, exist more than one culture. In an opposite manner, several societies can be thought of as belonging to the same general culture—for example, European culture, Asian culture, African culture, etc. Societies are simultaneously the geographical and historical “reifications” (manifestations) of cultures: that is, they have existence in time and space.
General philosophical interest in the phenomenon of culture is as old as civilization itself. It can be seen, for instance, in the written descriptions of the first travelers of the ancient world who were captivated by the behavioral diversity that they saw among the peoples they visited. Those who have made it their objective to study culture have tended to do so by means of an essentially descriptive, or so-called *ethnographic*, method. This consists in chronicling first-hand the characteristics of each culture’s language, artifacts, modes of dress, rites of passage, religious and mythological systems of belief, rituals, ceremonies, and indigenous art forms. The starting point for the study of culture is the Greek historian Herodotus (c. 484–425 BC), who spent a large part of his life traveling through Asia, Babylon, Egypt, and Greece, noting and recording for posterity the differences he perceived (with respect to Athenian culture) in the language, dress, food, etiquette, legends, and rituals of the people he came across. The annotations he made constitute the first significant accounts of the cultures of virtually the entire ancient Middle East, including those of the Scythians, Medes, Persians, Assyrians, and Egyptians. Inspired by Herodotus, other ancient historians, like the Roman Tacitus (c. AD 55–117), also made it a point to describe systematically and comparatively the languages, character, manners, and geographical distribution of the peoples they visited.

In the nineteenth century, German social theorist Karl Marx (1818–1883) argued that new forms of culture emerged not as reflexes of genetic adaptations, but as consequences of individuals struggling to gain control over their personal and social lives. At the turn of the twentieth century, the American anthropologist Franz Boas (1858–1942) argued that culture was so powerful that it shaped worldview. Boas’s account came shortly thereafter to be known as *cultural relativism*. Among Boas’s students at Columbia University in the 1920s and 1930s, Edward Sapir (1884–1939), Margaret Mead (1901–1978), and Ruth Benedict (1887–1948) became well-known cultural relativists. Sapir (1921) devoted his career to determining the extent to which the language of a culture shaped the thought patterns of its users. Mead (1939, 1950) sought to unravel how child-rearing practices influenced the behavior and temperament of the maturing individual. Benedict (1934) was fascinated by the fact that every culture developed its own particular canons of morality and lifestyle that largely determined the choices individuals made throughout their life cycle. From the moment of birth the customs into which an individual is born shape his or her behavior and worldview. By the time the child can talk, he or she has become a creature of his or her culture—its habits are his or her habits, its beliefs his or her beliefs, its challenges his or her challenges.
The Polish-born British anthropologist Bronislaw Malinowski (1884–1942) argued that cultures came about so that the human species could solve similar basic physical and moral problems the world over. Malinowski claimed that the symbols, codes, rituals, and institutions that humans created, no matter how strange they might at first seem, had universal structural properties that allowed people everywhere to solve similar life problems. The British anthropologist Alfred Radcliffe-Brown (1881–1955) similarly noted that in a specific cultural context even a physical response like weeping could hardly be explained in purely biological terms. Among the Andaman Islanders, in the east Bay of Bengal, he found that it was not primarily an expression of joy or sorrow, but rather a response to social situations characterizing such meaningful events as peace-making, marriage, and the reunion of long-separated intimates. In crying together, the people renewed their ties of solidarity.

The basic question of the relation between Nature and Culture continues to bog down a lot of scholarship to this day. On the side of Nature today are so-called sociobiologists, who claim that Nature has Culture on a leash. The emergence of culture, sociobiologists assert, has taken place as a survival strategy—the body's survival mechanisms have been gradually replaced by the survival formats provided by culture.

The sociobiological perspective has gained widespread popularity beyond academia in large part as a result of the publication of accessibly written books such as those by the contemporary British biologist Richard Dawkins—e.g., *The Selfish Gene* (1976), *The Blind Watchmaker* (1987), *River Out of Eden* (1995). With great rhetorical deftness and aplomb, Dawkins portrays cultures as collective adaptive systems that emerged in the human species to enhance its survivability and future progress by replacing the functions of genes with those of cultural units that he calls *memes*—a word he coined in direct imitation of the word *genes*. Dawkins defines memes as replicating patterns of information (ideas, laws, clothing fashions, art works, etc.) and of behavior (marriage rites, love rituals, religious ceremonies, etc.) that people inherit directly from their cultures. Like genes, memes involve no intentionality on the part of the receiving human organism. Being part of culture, the human being takes them in unreflectively from birth, and then becomes part of a collective system that passes them on just as unreflectively to subsequent generations, which improve adaptively over preceding generations. The *memetic code* is thus responsible for cultural progress, advancement, and bettermen, having become the primary agent in the human species' evolutionary thrust forward. Dawkins's clever proposal poses an obvious challenge to virtually everything that has been written in traditional philosophy, theology, and the social sciences on
human nature. If Dawkins is correct, then the search for meaning to existence beyond physical survival is essentially over. Any attempt to seek metaphysical meaning to life would be explained as one of the intellectual effects of culturally inherited memes such as soul, God, and afterlife. To sociobiologists, memes have arisen simply to help human beings cope with their particular form of consciousness, thus enhancing their collective survivability as a species—no more, no less.

In my opinion, Dawkins’s case is, at its core, a deceptive metaphorical one. Genes can be identified and separated from organisms, and then studied, altered, and even cloned physically. All this is scientific fact. Memes, on the other hand, are figments of Dawkins’s imagination. Only in a technological society that is being constantly exposed to the convincing discourse of evolutionary biology, to advancements in cloning and genetic engineering, is the portrayal of human ideas, information, and behavioral patterns as if they were genes a believable one. Indeed, even before Dawkins put forward his meme theory, the parallelism between ideas and genes was already a firmly entrenched one.

The key figure behind sociobiological theory and research is the American biologist E. O. Wilson (1929–), known for his work on the effects of natural selection on insects. Since the mid-1950s, Wilson has constantly maintained that the psychological capacities and social behaviors that humans manifest are genetically based, enhancing reproductive success and survival. Thus, characteristics such as heroism and altruism, for instance, should be understood as evolutionary outcomes, not as the result of the particular psychic nature of humanity. Moreover, he sees the creative capacities undergirding language, art, scientific thinking, etc., as originating in the same pool of genetic responses that have helped the human organism solve physical problems of survival and species continuity. But so far, all Wilson has produced is a theory. He has not produced any empirical evidence to substantiate any of his claims. Moreover, one can legitimately ask: What do such things as paintings, musical compositions, marriage rites, burial rites have to do with survival or reproductive success? To paraphrase the French philosopher Michel Foucault (1926–1984), human beings have, since their origins, sought to understand and define their identities and their states of consciousness. They have done so by ascribing them to Nature, human effort, or God. As others have done in the past, Wilson has simply placed most of his bets on Nature.

Finding hard scientific evidence to explain why culture emerged from the course of human evolution has proved to be a monumental challenge. So, scholars have understandably resorted to speculating or reasoning inferentially. What would happen if modern human beings were somehow forced to survive
without culture? The best examples of this form of inferential thinking have, actually, come not from scientists or philosophers, but from writers of fiction—Daniel Defoe’s novel *Robinson Crusoe* (1719) and William Golding’s *Lord of the Flies* (1954), for instance, deal with intriguing fictional “test cases” of people forced to live outside of a cultural ambiance, inferring what would happen to them because of it and how they would respond to it. In all such “cases” a tribal-like form of living is the one that is assumed to be the default one. And indeed tribalism has hardly disappeared from contemporary cultures. In complex city-societies, where various cultures, subcultures, countercultures, and parallel cultures exist in constant competition with each other, where the shared territory is so large that it constitutes a mere abstraction, the tendency for individuals to relate to tribal-type groupings that exist within the larger societal context manifests itself regularly. People continue to perceive their membership in smaller groups as more directly meaningful to their lives than allegiance to the larger society and/or nation. This inclination towards tribalism, as the great Canadian communications theorist Marshall McLuhan (1911–1980) emphasized, reverberates constantly within modern-day humans, and may be the source of the angst and sense of alienation that many city-dwelling individuals feel, living as they do in large, impersonal social systems.

**THE SEMIOSPHERE**

The semiosphere—a concept originating in the work of the great Estonian semiotician Jurij Lotman (1922–1993)—is the term used in semiotics, as indicated in the previous chapter, to refer to culture as a system of signs. The semiosphere, like the biosphere, regulates human behavior and shapes evolution. But although they can do little about the biosphere, humans have the ability to reshape the semiosphere any time they want. This is why cultures are both restrictive and liberating. They are restrictive in that they impose upon individuals born into them an already-fixed system of signification. This system will largely determine how people come to understand the world around them—in terms of the language, music, myths, rituals, technological systems, and other codes that they learn in social context. But cultures are also liberating because paradoxically they provide the textual resources by which individuals can seek new meanings on their own. The artistic, religious, scientific, and philosophical texts to which individuals are exposed in social contexts, moreover, open up the mind, stimulate creativity, and engender freedom of thought. As a result, human beings tend to become restless for new meanings, new messages. For this reason, codes are constantly being modified by new generations of artists,
scientists, philosophers, and others to meet new demands, new ideas, new challenges.

Leaving aside this knack for creativity for the moment, the fact remains that cultures influence beliefs, attitudes, worldview, and even sensory perception to varying degrees. As a concrete example, the reader should look at the following classic visual illusion. As he or she can confirm for himself or herself, the line AB appears to be longer than line CD:

\[ \begin{array}{c}
\text{A} \\
\text{C} \\
\text{D} \\
\text{B}
\end{array} \]

In actual fact the lines are equal in length, but the orientation of the arrowheads fools the Western eye into seeing AB as longer than CD. In other areas of the world, on the other hand, psychologists have found that people see the lines as equal in length. The factor behind this illusion is cultural, not biological—Western individuals are accustomed to seeing drawings in perspective. The arrowheads “add” or “subtract,” according to their orientation, to the length of the line. This forces the eye to make an adjustment accordingly. In painting, this is the technique of creating an illusion of depth or length in two-dimensional surface drawings. As a historical footnote, it should be noted that the craft of perspective drawing dates back to the Renaissance, after the Italian artist Filippo Brunelleschi (1377–1446) discovered and then entrenched this technique in Western painting. Visual illusions provide strong evidence to support the notion that signs mediate perception. The great Swiss psychologist Carl Jung (1875–1961) was fond of recounting how visual perception was intrinsically intertwined with representational practices. During a visit to an island tribal culture that had never been exposed to illustrated magazines, he found that the people of that culture were unable to recognize the photographs in the magazines as visual representations of human beings. To his amazement, he discovered that they perceived them, rather, as smudges on the paper. Jung understood perfectly well, however, that their erroneous interpretation of the photographs was not due to defects of intelligence or eyesight; on the contrary, the tribal members were clear-sighted and highly intelligent. Jung perceptively understood that their primary assumptions were different from his own and from those of individuals living in Western culture, because they had acquired
a different system of signs that blocked them from perceiving the pictures as visual signs.

The semiosphere always leaves gaps, offering up only a portion of what is potentially knowable in the world. Indeed, an infinite number of signifiers could be created without any signifieds attached to them. This is exactly what young children do when they make up “nonsense words,” creating them seemingly only for the pleasure of making imitative, pleasant, or humorous sound effects. The great British writer of children’s books Lewis Carroll (1832–1898) invented his own nonsense language, in his poem *Jabberwocky*, to show that the English language as constituted does not tell all there is to tell about reality. Using signifiers such as *brillig, slithy, tove, wabe* and others (from *Through the Looking Glass*, 1871: 126–129), Carroll showed that it is an easy thing to make up legitimate words that seem to beg for legitimate meanings:

```
Signifiers  →  brillig  slithy  tove  wabe
              ↓       ↓       ↓    ↓
Signifieds  →  ?       ?       ?    ?
```

In effect, Carroll had coined signifiers without signifieds; that is, words that suggested ideas by virtue of the fact that they were structured like English words. Actually, Carroll provided his own signifieds for the words as follows to make his point even stronger:

```
Signifiers  →  brillig  slithy  tove  wabe
              ↓       ↓       ↓    ↓
Signifieds  →  the time of broiling dinner, i.e., the close of the afternoon
                      smooth and active
                              a species of badger with smooth white hair, long hind legs, and short horns like a stag
                                   side of a hill
```
Analogously, there are infinitely many potential signifieds that are not captured by a specific language such as English. Indeed, there are still no words in English for “side of a hill,” “smooth and active,” and other such concepts. Here are a few other examples of potential signifieds not captured by existing English words:

- The hole in a coffee cup handle
- Body temperature below normal
- A half-full container
- A pie without the top crust

However, even though gaps exist in a cultural system, humans have the ability to fill them any time they wish. They do this typically by inventing new signs, altering already-existing ones to meet new demands, borrowing signs from other cultures, and so on. One can always find ways to refer, for instance, to the above signifieds by paraphrase or some other verbal strategy—e.g., a pie without the top crust = a top-crustless pie. But the lack of signifiers to enshrine these concepts in a direct way implies that they will not be anticipated by speakers of English within the scheme of things.

The foregoing discussion in no way purports to lay out a theory of mind or of culture; it simply acknowledges that the semiosphere shapes human thinking. In actual fact, there are creative forces constantly at work in individual human beings. The Neapolitan philosopher Giambattista Vico (1688–1744) termed these the fantasia and the ingegno. The former is the capacity that allows human beings to imagine literally anything they desire freely and independently of biological or cultural processes; it is the creative force behind new thoughts, new ideas, new art, new science, and so on. The latter is the capacity to convert new thoughts and ideas into representational structures—metaphors, stories, works of art, scientific theories, etc. So, although human beings are indeed shaped by the cultural system in which they are reared, they are also endowed with creative faculties that allow them to change that very system.

Culture can be compared to the default mode of computer software. A computer is formatted in a way that is known as its default mode. This format
can, of course, be changed intentionally by a human programmer. But if there are no changes made, the computer will automatically operate according to its original format. Analogously, culture is the human being’s default mode for knowing the world. But in the same way that a human programmer can always choose to change a computer’s format, so too, the individual human being can always decide to alter his or her own “format” at any time. Indeed, therein lies the paradox of the human condition—throughout the life cycle, there is an unexplainable need within each person to transcend the categories of knowing provided by existing sign systems. Changes to the format, in fact, are what lead cumulatively to cultural change and evolution. Sign systems are products of human intelligence and, therefore, subject to being changed constantly by them to suit any new need or demand. As the philosopher of science Jacob Bronowski (1977: 25) remarked, this is the feature of the human mind that makes it unique among all species:

The images play out for us events which are not present to our senses, and thereby guard the past and create the future—a future that does not yet exist, and may never come to exist in that form. By contrast, the lack of symbolic ideas, or their rudimentary poverty, cuts off an animal from the past and the future alike, and imprisons it in the present. Of all the distinctions between man and animal, the characteristic gift which makes us human is the power to work with symbolic images.

CONCLUDING REMARKS

Signs allow us to represent the world in various ways—by simulation, indication, and conventional agreements. In a sense, they allow humans to imprint their own mark on Nature. At the same time, they serendipitously unravel patterns within Nature itself. The invention of the mathematical ratio \( \pi = 3.14 \) was motivated by the need to calculate the area of a circle. But, as it turns out, this very same ratio appears to be an unexpected “descriptor” of such physical phenomena as the motion of a pendulum or the vibration of a string. This synergy between the semiosphere and the biosphere is a remarkable one indeed.

From the dawn of civilization to the present age, it has always been felt that there is an intrinsic connection between the two. The \textit{raison d’être} of semiotics is, arguably, to investigate whether or not reality can exist independently...
of the signs that human beings create to represent and think about it. Is the physical universe a great machine operating according to natural laws that may be discovered by human reason? Or, on the other hand, is everything “out there” no more than a construction of the human mind deriving its categories from the world of sensations and perceptions? Although an answer to this fundamental question will clearly never be possible, one of the important offshoots of the search for an answer has been a systematic form of inquiry into how the mind’s products and the body’s natural processes are interrelated.