Messages, Signs, and Meanings

A Basic Textbook in Semiotics and Communication

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Electronic aids, particularly domestic computers, will help the inner migration, the opting out of reality. Reality is no longer going to be the stuff out there, but the stuff inside your head. It’s going to be commercial and nasty at the same time.

*J. G. Ballard (1930–)*

**PRELIMINARY REMARKS**

In human life, there is virtually no object or artifact that is not imbued with meaning. Indeed, objects are signs that evoke a broad range of meanings across the world’s cultures. Although the terms *object* and *artifact* are often used interchangeably, they are distinguished in both semiotics and archaeology as follows: objects are things found in the environment, artifacts are things made by humans. This distinction, however, is not necessary here, since the purpose is to focus on the meanings that material things in general embody.

In this chapter, therefore, our trek through the landscape of the semiosphere takes us through the domain of objects. Like all the other dimensions and components of culture, the meanings of objects are coded with the same kinds of properties that characterize, say, clothing, bodily presentation, language, food, etc. Studying why people make things, how they design their objects, what role these play in the life of a culture, is another important aspect of contemporary semiotics.
The objects that are found in a culture are hardly perceived to be meaningless "things" by members of the culture. They cohere into a system of signification that mirrors, in microcosm, the meaning structures of the entire culture. This is why archaeologists reconstruct ancient societies on the basis of the artifacts they discover at a site. The jewelry, clothes, furniture, ornaments, tools, toys that they find there are signs that allow them to reconstruct the society's traditions, values, rituals to varying degrees of completeness. Artifacts provide truly valuable clues as to what an extinct culture was probably like. Especially significant are those that were thought to possess mysterious powers. The symbolism of objects, in fact, was the basis of the ancient craft of alchemy, defined as the art of transmuting materials that lasted well into the medieval ages and continues to have some adherents to this day. The principal activity of the alchemists was the search for the "philosopher's stone"—popularized as a unique object by the highly popular Harry Potter movies of the early 2000s—and the production of gold by artificial means. Gold meant (and continues to mean in many ways) power, deification, and immortality.

For the reasons just mentioned, archaeology can be defined as a semiotic study of objects and artifacts. It traces its roots to the Renaissance when antiquaries collected ancient artifacts and speculated about their significance. Near the end of the eighteenth century, Danish geological research led to the conception of the Stone, Bronze, and Iron ages. At the same time, Egyptian and Persian writing was deciphered. By the mid-nineteenth century, archaeology became a firmly-established science. Between World War I and World War II, many American archaeologists focused on local and regional areas. Significant work also occurred in Greece, Latin America, and Israel. At the same time, the development of the radiocarbon (carbon-14) dating method (1947) made archaeological conclusions more accurate.

The essence of archaeological method is semiotic. Archaeologists review ancient texts before they begin collecting data. They look for sites with undisturbed, layered deposits of artifacts that will allow them to establish a clear chronology, which will allow them, in turn, to reconstruct the cultural system of each layer. They then reconstruct cultural and ecological systems, because each artifact invariably indicates something about the culture and its ecosystem, reflecting activities during the period when humans occupied a site. Pots, for instance, reveal an awful lot of how early cultures cooked their food and, thus, organized their social systems. In the early Bronze Age (5000–2500 BC), several agricultural groups emerged, each with its own pottery
style. Asian sites from the subsequent Iron Age show the emergence of state-level organization, iron tools, and new pottery types. In China, 500,000 year-old hearths probably represent the earliest evidence for the use of fire by humans.

There is a common belief throughout the world that objects are not only signs standing for conventional social meanings, but that they also possess some inner force above and beyond the physical. An extreme manifestation of this belief is referred to as *fetishism*—the conviction that some inanimate objects, known as *fetishes* (from Portuguese *feitiço* "artificial, charm," from Latin *facticius* "artificial"), are imbued with supernatural attributes. The fetish is typically a figure modeled or carved from clay, stone, wood, or some other material, resembling a deified animal or some sacred thing. Sometimes it is the animal itself, or a tree, river, rock, or place associated with it. In some societies belief in the powers of the fetish is so strong that fetishism develops into idolatry. In such cases, the belief system is referred to as an extreme form of *animism*—the view that spirits either inhabit or communicate with humans through material objects. The term *fetishism* has been applied in our culture to describe sexual urges and fantasies that persistently involve the use of objects by themselves or, at times, with a sexual partner. Common fetishes in our society are feet, shoes, and articles of intimate female apparel.

Animism is not limited to tribal or pre-modern cultures. On the contrary, it is alive and well even in modern cultures, whether or not people realize it. In addition to the fetishes that incite sexual urges or fantasies in some people, there are many behaviors and trends that surface in the world today that can only be explained as the manifest effects of a latent form of animism. In the 1970s, for example, American society went mad for "pet rocks." Many considered the fad a ploy foisted upon a gullible public spoiled by consumerism by a craft manufacturer, and thus simply a quick way to make money. But to a semiotician, that craze could not have been perpetrated in the first place, unless some signification force was at work—and that force was animism. The same animistic tendencies can be seen in the common view held by people that some objects are unexplainably magical. This is why, if they are lost, then impending danger is feared. If, however, they are found serendipitously—as for instance when one finds a "lucky penny"—then it is believed that the gods or Fortune will look auspiciously upon the finder.

Animism is evidence that people perceive certain objects as special kinds of signs. This is why objects of all kinds are preserved and why they have historical value—the making of one leading to the making of another and then to the making of yet another, and so on. Like works of art, objects are felt to be reflections of innate forms of thought that seek expression in real-world
physical forms. Some objects are even perceived to be extensions of the Self. Consider, for instance, the automobile, which is experienced by many as an extension of the body and thus as a protective shell of the Self. In the public world of traffic, it creates a space around the physical body that is as inviolable as the body itself. Interestingly, but not unexpectedly, this perception is not confined to our culture. The anthropologist Basso (1990: 15–24) found that the Western Apache of east-central Arizona also perceive the car as a body, even going so far as to use the names of body parts to refer to analogous automobile parts: e.g., the hood is called a “nose,” the headlights “eyes,” the windshield “forehead,” the area from the top of the windshield to the front bumper a “face,” the front wheels “hands and arms,” the rear wheels “feet,” the items under the hood “innards,” the battery a “liver,” the electrical wiring “veins,” the gas tank a “stomach,” the distributor a “heart,” the radiator a “lung,” and the radiator hoses “intestines.”

Animism is also latent in the perception of toys as childhood objects—recall, from chapter 7, the mass hysteria caused by Cabbage Patch dolls in 1983. Children have always played with objects—broom handles can be imagined to be swords, rocks can be imagined to be baseballs, and so on. But a toy is different. It is an adult-made object that is given to children according to social traditions. Dolls are particularly interesting in this regard because they are icons of the human figure. As early as 600 BC dolls were made with movable limbs and removable garments so as to reinforce their resemblance to human anatomy. Dolls have been found in the tombs of ancient Egyptian, Greek, and Roman children. Evidently the objective was to provide the children with a lifelike human form, so that they could play with someone in the afterlife.

Interestingly, in many societies dolls have similar metaphysical meanings. In the aboriginal Hopi culture of the United States, for instance, *kachina* dolls are given as sacred objects to children as part of fertility rites. In many Christian traditions, dolls have been used since the Middle Ages to represent the Holy Family in the Nativity scene, as part of Christmas observations. In Mexico, dolls representing Our Lady of Guadeloupe are ceremonially paraded every year. And in some cultures of the Caribbean, it is believed that one can cause physical or psychological damage to another person by doing something injurious to a doll constructed to resemble that person.

The commercialization of dolls as both fashion “models” and playthings for children can be traced to Germany in the early fifteenth century. Fashion dolls were made on purpose to model clothing of German women. Shortly thereafter, manufacturers in England, France, Holland, and Italy also began to manufacture dolls dressed in fashions typical of their respective locales. The
more ornate ones were often used by rulers and courtiers as gifts. By the seventeenth century, however, simpler dolls, made of cloth or leather, were being used primarily as playthings by children.

During the eighteenth century, doll manufacturing became more sophisticated. The fashion dolls looked so lifelike that they were often used to illustrate clothing style trends and were sent from one country to another to display the latest fashions in miniature form. After the Industrial Revolution, fashion dolls became commonplace toys of little girls. By the early part of the twentieth century, it was assumed that all female children would want to play with dolls. Noteworthy design innovations in dolls manufactured between 1925 and World War II included sleeping eyes with lashes, dimples, open mouths with tiny teeth, fingers with nails, and latex-rubber dolls that could drink water and wet themselves. Since the 1950s, the association of lifelike dolls with female childhood has been entrenched further by both the quantity of doll types produced and their promotion in the media. Since their launch in 1959, the "Barbie" dolls, for instance, have become part of the experience of growing up for many little girls in North America. Incidentally, the Barbie dolls also started the trend of making fashionable clothing and accessories for dolls, thus enhancing their human iconicity even more.

TECHNOLOGY

The making of objects and artifacts with tools is known as technology. Technology has become a major force in human evolution. The great Canadian communications theorist Marshall McLuhan (1911–1980) claimed throughout his illustrious career that objects and tools are extensions of human anatomy and mentation. For instance, the telescope has extended the capacities of humans to see farther than their eyesight would otherwise permit; the wheel has extended the range and power of human locomotion; the computer has extended the speed and accuracy of logical thinking, and so on. The study of technology is thus a study in human evolution through the semiosphere, rather than the biosphere.

Technology is, more specifically, the general term used for describing the systematic processes by which human beings fashion objects and machines to increase their understanding of, and control over, the material environment. The term is derived from the Greek words *tekhne*, which refers to an "art" or "craft," and *logia*, meaning an "area of study," hence the meaning of technology as the "craft of object-making." Many historians of culture argue that technology
has not only become an essential condition of advanced civilizations, but also a “force” that now has its own dynamism, and that does not respect geographical limits or social systems. Technology, in a phrase, is transforming our perception of the human condition permanently.

Early human sites have been found to contain axes, scrapers, knives, and other stone instruments indicating that the ax was used as a tool for making tools. This capacity for creating tools to make other tools distinguishes human beings from other animals, although there is some evidence of advanced tool-use among elephants (Chevalier-Skolnikoff and Liska 1993), which may serve as a form of adaptation enabling elephants to cope with parasites and weather changes.

The next major step in the history of technology was the control of fire. Besides the benefits of light and heat, fire was also used to bake clay pots that were used for cooking. Early peoples also learned to create objects out of copper and bronze. Eventually human societies shifted from nomadic hunting to the practice of agriculture. The early agricultural societies constructed stone buildings, used sickles to harvest grain, developed a primitive plowstick, and advanced their skills in metalworking. They also built two-wheeled carts for transportation. After 4000 BC, the first cities were built within walls for defense reasons and thus designed structurally for battle and conquest. Greece came to power through its skill in shipbuilding, allowing it to effectively carry out the colonization of the places strewn along the Mediterranean Sea. The Romans’ skill at technology also allowed them to conquer and transform other civilizations. Using cement and the principle of the arch, Roman engineers built roads across their vast empire. They also built numerous arenas, aqueducts, sewers, and bridges. In the Middle Ages, a heavier plow with wheels, a horizontal plowshare, and a moldboard were developed, enhancing the ability of societies to provide a semi-permanent source of alimentation to larger and larger agglomerations of people. One of the most important inventions of medieval times was the windmill. This made it possible to increase grain and timber production. Two other medieval inventions, the clock and the printing press, also influenced all aspects of human life. The printing press set off a social revolution, as the written word became available to a wider audience. Intellectual life was no longer the exclusive domain of church and court, as literacy became a “commodity” for virtually everyone.

The Industrial Revolution introduced the first factories in 1740, concentrating on textile production. Factory workers were not required to be artisans and did not necessarily have to possess craft skills. Thus the work of men, women, and children became just another commodity in the production
process. Engineering achievements of the era included the development of telegraphic communications and railroads, which connected cities with one another. In the late nineteenth century the light bulb was invented by Thomas Edison (1847–1931). Shortly thereafter, every industrial nation started generating electric power for lighting and many of the other devices and activities based on electricity that now define modern life—such as radio, motion pictures, television, and so on. The development of computers and transistors and the accompanying trend towards miniaturization over the last few decades continues to have a profound effect on society. The opportunities it offers are enormous, but so are the possibilities for invasion of privacy and for unemployment caused by automated systems. The growth of technology since the Renaissance has, in a word, had profound consequences on the evolution of the semiosphere, creating the conditions for the coalescence of cultures into a worldwide global culture.

The event that made globalization a possibility in the first place was, no doubt, the invention of print technology in the fifteenth century and the subsequent widespread use of the book to codify knowledge. The forerunners of books were the clay tablets, impressed with a stylus, used by the Sumerians, Babylonians, and other peoples of ancient Mesopotamia. These were followed by the scrolls of the ancient Egyptians, Greeks, and Romans, which consisted of sheets of papyrus, a paper-like material made from a pith of reeds, formed into a continuous strip and rolled around a stick. The strip, with the text written with a reed pen in narrow, closely spaced columns on one side, was unrolled as it was read. Later, during the fourth to first centuries BC, a long roll was subdivided into a number of shorter rolls, stored together in one container. In the first century AD, this was replaced by the rectangular codex, the direct ancestor of the modern book. The codex, used at first by the Greeks and Romans for business accounts and schooling, was a small, ringed notebook consisting of two or more wooden tablets covered with wax, which could be marked with a stylus, smoothed over, and reused many times. It was easier for readers to find their place in a codex, or to refer ahead or back. In the Middle Ages, codices were used primarily in the observance of the Christian liturgy. Indeed, the word codex is part of the title of many ancient handwritten books on topics related to the Bible.

The spread of books made literacy a possibility for one and all, thus changing the evolutionary course of human cognition radically. Literacy introduces a level of abstraction in human thought that forces people to separate the maker of knowledge from the knowledge made. And this in turn leads to the perception that knowledge can exist on its own, spanning time and distance. This is
precisely what is meant by the term *objectivity*: knowledge unconnected to a knower. Before literacy became widespread, humans lived primarily in oral cultures, based on the spoken word. The human voice cannot help but convey emotion, overtly or implicitly. In such cultures, the knower and what he or she knows are seen typically as inseparable. On the other hand, in literate cultures, the written page, with its edges, margins, and sharply defined characters organized in neatly layered rows or columns, induces a linear-rational way of thinking in people. In such cultures, the knowledge contained in writing is perceived as separable from the maker of that knowledge primarily because the maker of the written text is not present during the reading of the text. The spread of print literacy since the Renaissance has, *ipso facto*, been the determining factor in the “objectification” of knowledge.

Marshall McLuhan characterized the world of knowledge shaped by print literacy as the “Gutenberg Galaxy” after the European inventor of the printing press, the German printer Johannes Gutenberg (1395?–1468?). Through books, newspapers, pamphlets, and posters, McLuhan argued, the printed word became, after the fifteenth century, the primary means for the propagation of knowledge and ideas. More importantly, given the fact that books could cross political boundaries, the printing press set in motion the globalization of culture. Paradoxically, however, as McLuhan (1962) also observed, this process did not simultaneously lead to the elimination of tribalism. On the contrary, he claimed that it was impossible to take the tribe out of the human being, so to speak, no matter how advantageous a global culture would seem to be. McLuhan insisted that tribal tendencies resonate continually within modern-day people. The impersonal global culture, on the other hand, is really an abstraction. Tribalism is also a means by which people cope with impersonal social systems. It is manifest in the formation of subcultures and parallel cultures within cultural mainstreams.

**COMPUTERS**

Objects are extensions of ourselves. Bicycles and cars extend the human foot, weapons our hands, nails, and teeth, clocks our internal rhythms, houses our body’s heat-control system, clothing our skin, the computer our central nervous system, and so on. These extensions are real and tangible. This extensive process can be called, simply, *objectification*. Today, this process is particularly evident in the role that computers have come to assume.
The first general-purpose all-electronic computer was built in 1946 at the University of Pennsylvania by the American engineer John Presper Eckert, Jr., and the American physicist John William Mauchly. Called ENIAC, for *Electronic Numerical Integrator and Computer*, the device contained 18,000 vacuum tubes and could perform several hundred multiplications per minute. ENIAC's program was wired into its processor, so that reprogramming required manual rewiring. The development of transistor technology and its use in computers in the late 1950s marked the advent of smaller, faster, and more versatile machines than those that were built with vacuum tubes. Because transistors use much less power and have a much longer life, they introduced "second-generation computers." Late in the 1960s the integrated circuit was invented, making it possible for many transistors to be fabricated on one silicon board with interconnecting wires plated in place. In the mid-1970s with the introduction of large-scale integrated circuits with many thousands of interconnected transistors etched into a single silicon board, the modern-day personal computer was just around the corner.

The computer is one of humanity's greatest technological achievements. It has had a definite impact on the human semiosphere, parallel to the one that the printing press had five centuries ago. It all started with the advent of the personal computer (PC), which can be traced to the *Apple II* in 1977 created by American computer designers Steven Jobs and Stephen Wozniak. It had a color video display and a keyboard that made the computer easy to use. Jobs and Wozniak later founded Apple Computer Corporation. Their initial plan was to manufacture PCs to run games software for people to pit their logical skills against those of software programmers. In 1984 the first Apple Macintosh was manufactured. That machine featured a graphical user interface (GUI), as mentioned in chapter 2. The Macintosh GUI combined icons with windows (boxes that contain an open file or program). The Macintosh user interface made computers easy and fun to use, eliminating the need to type in complex commands. They were characterized, appropriately, as "user-friendly."

PCs have since become as intrinsic to the system of everyday life as automobiles and TV sets. PCs now enable artists to create images. Musicians use them for composing and recording music. Businesses keep track of their finances and forecast performance using PCs. Journalists, students, instructors, and many more professionals can now compose their verbal texts on portable PCs and electronically communicate them to others from remote locations. Many people work at home and communicate with fellow workers with their PCs. PCs can also be used to interface with worldwide communication networks in order to find information on any subject.
The computer has also introduced a new form of text-making and text-usage known as hypertextuality. Reading a printed page is, at the level of the signifier (i.e., of deciphering the actual signs on the page), a linear process, since it consists in decoding the individual words and their combinations in sentences in the framework of a specific signification system (a novel, a dictionary, etc.). Information on any specific sign in the text must be sought out physically: for example, if one wants to follow up on a reference in the text, one has to do it by consulting other printed texts or by asking certain people. This is also what must be done when one wants to determine the meaning of a word found in a text. Dictionaries serve this very purpose.

The computer screen has greatly facilitated such tasks, by introducing a hypertextual dimension. The term hypertext was coined in 1965 to describe an interlinked system of texts in which a user can jump from one to another. This was made possible with the invention of hyperlinks—portions of a document that can be linked to other related documents. By clicking on the hyperlink, the user is immediately connected to the document specified by the link. Web pages are designed in this way, being written in a simple computer language called HTML (Hypertext Markup Language). A series of instruction “tags” are inserted into pieces of ordinary text to control the way the page looks and these can be manipulated when viewed with a Web browser. Tags determine the typeface or act as instructions to display images, and they can be used to link up with other Web pages.

As opposed to the linear structure of paper-produced texts such as books, hypertextuality permits the user to browse through related topics, regardless of the presented order of the topics. The links are often established both by the author of a hypertext document and by the user, depending on the intent of the document. For example, “navigating” among the links to the word language in an article contained on a website or a CD-ROM might lead the user to the International Phonetic Alphabet, the science of linguistics, samples of languages, etc. Hypertextuality was introduced as a regular feature of PCs in 1987 when Apple began distributing a new program called Hypercard with its new PCs. This was the first program to provide a linking function permitting navigation among files of computer print text and graphics by clicking keywords or icons. By 1988 compact disc players were built into computers, introducing CD-ROMs into the computer market.

Interpreting a text involves three types of cognitive processes. First, it entails the ability to access the actual contents of the text at the level of the signifier, that is, the ability to decode its words, images, etc. Only someone
possessing knowledge of the codes (verbal and nonverbal) with which the text has been assembled can accomplish this. If it is in Finnish, then in order to derive an interpretant (a specific kind of meaning) from it, the decoder must know the Finnish language, the conceptual metaphors that characterize Finnish modes of speaking, and so on and so forth. The second process entails knowledge of how the $X = Y$ relation unfolds in the specific text, that is, of how the text $(X)$ generates its meanings $(Y)$ through a series of internal and external signification processes. This requires some knowledge on the part of the interpreter of cultural codes other than the strictly verbal and nonverbal ones used to physically create the text. This is, in fact, the level of the signified that is alluded to in the question: What does it mean? Finally, various contextual factors enter into the entire process to constrain the interpretant. This will determine what the individual interpreter will get from the text. When viewed globally, these processes suggest that text interpretation is, de facto, hypertextual, because it involves being able to navigate among the three processes simultaneously. In effect, the physical structure of hypertextuality on the computer screen may constitute a kind of "mirror model" of how people process all kinds of texts.

THE DIGITAL GALAXY

In the 1960s, at the same time that computers were becoming faster, more-powerful, and smaller, networks were being developed for interconnecting them. The Advanced Research Projects Agency (ARPA) of the US Department of Defense, along with researchers working on military projects at research centers and universities across the country, developed a network called the ARPANET for sharing data and mainframe computer processing time over specially equipped telephone lines and satellite links. Used at first for military purposes, the ARPANET became the first functional major electronic-mail network right after the National Science Foundation connected universities and nonmilitary research sites to it. ARPANET was subsequently renamed the Internet—a term conveying that it was designed as an "interconnected" network serving many different functions, not just military ones.

Today, the Internet is the largest and most prevalent computer network in the world. Commercial online service providers—such as America Online, CompuServe, and the Microsoft Network—sell Internet access to individual computer users and companies. Smaller networks for specific utilization are
also available. People can now use computers to design graphics and full-
motion video, send electronic mail, make airline or hotel reservations, search
for all kinds of information, play games, listen to radio, watch some television
programs, and even visit “electronic rooms” to chat with other people over the
World Wide Web. In the history of human communications, no other device
has made it possible for so many people to interact with each other virtually
instantaneously, irrespective of the distances between them. We no longer live
in the Gutenberg Galaxy (as McLuhan called the world dependent upon print
technology for encoding and storing information and knowledge). Rather, we
now live in a “Digital Galaxy.” Documents and programs can now be
downloaded so easily that with some manipulation any text can easily be
appropriated and used as if it were one’s own. The Gutenberg Galaxy made
the notion of authorship a critical one; the Digital Galaxy is leading to a
fundamental reevaluation of this very notion.

Until the early 1990s, most information on the Internet consisted only of
printed text. The introduction of the World Wide Web (WWW) made it possible
to include graphics, animation, video, and sound. The WWW contains tens of
millions of documents, databases, bulletin boards, and electronic publications,
such as newspapers, books, and magazines in all media forms (print, visual,
etc.). The miasma of information it contains made it immediately obvious to
Internet users, shortly after its introduction, that appropriate technology was
needed for them to be able to locate specific types of information. This led to
the development of uniform resource locator (URL) technology. Using software
that connects to the Internet—called navigation or browser software—a
computer operator can select a URL that contains information he or she wishes
to access. The computer then contacts that address, making the information
available to the operator. With millions of separate URLs, classification and
indexing have clearly become critical Internet functions. Indexing services—
located on the Internet itself—enable users to search for specific information
by entering the topic that interests them. The URL of the main Web page for
the American White House, for instance, is http://www.whitehouse.gov/. The
http indicates that the document is on the WWW. The next part,
www.whitehouse.gov, is the hostname and identifies the computer, www.
The .gov extension identifies the computer as belonging to the United States
government. Next comes the path, or chain of directories, and finally the
document name.

There is no question that the Internet has already changed the way we
live. A new breed of worker, called the “teleworker,” has already emerged. He
or she works at his screen anywhere he or she desires to—not in any specific location, such as in an office room in a building. The computer has also become the primary reference tool in most areas of study, research, information, and entertainment. Unlike published print materials, the information on the Internet can be updated constantly. All the major newspapers now have an online version of their text. All kinds of music companies now also have their sites to which access will guarantee music content. Cyberspace is fast becoming the only kind of space to which some people will resort to interact socially and intellectually.

But perhaps the most radical influence the Digital Galaxy has had on human intellectual and social life is the perpetuation of the process that has been called objectification in this chapter. In movies, TV programs, comic books, and other media, it is now a common thing to find robots, cyborgs, and other “intelligent” machines featured as heroes or villains, and possessing qualities that the heroes and villains of myth and legend were once portrayed as embodying. The representation of machines as having human qualities has been a popular one in all media for some time. But the interest in intelligent machines is not limited to the media. In certain sciences of the mind, such as artificial intelligence (AI), the question is now raised with all sincerity if truly intelligent computers can be built to live alongside humans. This is why specific kinds of computers are being constructed with the sole purpose of duplicating the complex functions of human thought. But, amid all this “cyber excitement,” it is misguided, in my view, to assume a similarity between human and machine intelligence. The former grew out of lived experience and developed through historical forces; the latter has been literally invented by humans themselves.

The belief of AI researchers that computers can become truly intelligent is not something that has crystallized in the Digital Galaxy. It is, as a matter of fact, an ancient one. In some Sumerian and Babylonian myths, for instance, there are descriptions of inanimate matter being brought to life. The AI version derives its impetus, however, not from myth but from the mathematical concept of machine, which traces its roots to the work of the great mathematician Alan Turing (1912–1954). Turing showed that four simple operations on a tape—move to the right, move to the left, erase the slash, print the slash—allowed a computer to execute any kind of program that could be expressed in a binary code (as, for example, a code of blanks and slashes). As long as one could specify the steps involved in carrying out a task and translating them into the binary code, the Turing machine—now called a computer program—would be able to scan the tape containing the code and carry out the instructions.
Although Turing himself was well aware of the limitations of his notion, openly admitting that it could never come close to emulating the more spiritual aspects of human consciousness, to many AI theorists his insights suggested that humans too were, in effect, special kinds of protoplasmic machines, whose cognitive states, emotions, and social behaviors were not only representable in the form of computer programs, but that mechanical machines themselves could eventually be built to think, feel, and socialize like human beings. For such scientists, therefore, consciousness is really no more than a consequence of the workings of a biological program that allows individual human machines to express and modify the emotions of their brains and the impulses of their bodies.

The AI movement is really a contemporary outgrowth of the “Cartesian project” that ushered in the modern era of science. According to Descartes, all human problems, whether of science, law, morality, or politics could eventually be solved by developing a universal method of philosophy based on the laws of mathematics. This project seemed realizable when the engineer Claude Shannon demonstrated that information of any kind, in both animal and mechanical systems of communication, could be described in terms of binary choices between equally probable alternatives (see chapter 15). By the 1950s, enthusiasm was growing over the possibility that computers could eventually carry out human thinking processes, since the brain was thought to be really no more than a Turing machine operating on the basis of its own kind of biological binary code. By the 1960s, phenomenal advances in computer technology seemed to make the Cartesian project a reality.

But true intelligence by machines has never been realized, nor will it be realized in the future, because it is beyond the capacities of machines to feel, imagine, invent, dream, construct rituals, art works, and the like. These are derivatives of bodily and psychic experiences. AI theories and models of consciousness can perhaps give us precise information about the nature of the formal properties of mental states, but they tell us nothing about how these states were brought about in the first place.

In a fundamental sense, the AI movement is a product of metaphorical thinking: the mind = a machine (chapter 6). This is not to imply that technological discoveries are purely imaginary. On the contrary, technology is a product of human ingenuity; metaphor is a cognitive strategy for understanding the products of that ingenuity. Indeed, such metaphorical thinking extends across the various “media” we have invented to communicate ideas. Here are some examples:
From Print Media:
• He has a great character.
• I cannot read your mind.
• Make a mental note of what I just said.
• It is time to turn over a new leaf.
• His life is an open book.
• You must start over tabula rasa.
• Her story is written in my heart.

From Electronic, Photographic, and Cinematic Media:
• I just had a flashback.
• What mental picture do these words evoke?
• My mind is out of focus.
• He has a photographic memory.
• I am going over what you said in slow motion.

From the Computer Medium:
• He is hard-wired for action.
• My mental software no longer works.
• I can’t quite retrieve that memory.
• I haven’t yet processed what he said.
• Did your store away what I told you?

Such expressions suggest that we perceive our media as extensions of our mental selves. More importantly, they reveal that we know virtually nothing about the mind and, therefore, we are forced to resort to metaphor in order to fill in the signification gap. That is something, obviously, that some AI scientists have yet to realize.

POP ART

There is one other manifestation of objectification that merits some discussion here by way of conclusion. In a society where objects of all kinds are being produced for mass consumption, there arises an incessant craving for new objects. The semiotician Roland Barthes (1915–1980) referred to this excessive form of objectification as “neomania” (Barthes 1957). To encourage the acquisition of objects, obsolescence is, in fact, regularly built into the marketing strategies of a company, so that the same product can be sold again and again
under new guises. This is also why advertisers rely on a handful of Epicurean themes—happiness, youthfulness, success, status, luxury, fashion, beauty—to peddle their products.

Neomania has even spawned its own art forms and movements. One of these, called **pop art** (short for **populist art**), emerged shortly after World War II. It was inspired directly by the mass production and consumption of objects. For pop artists, the factory, supermarket, and garbage can become their art school. But despite its apparent absurdity, many people loved pop art, no matter how controversial or crass it appeared to be. In a certain sense, the pop art movement bestowed on common people the assurance that art was for mass consumption, not just for an élite class of cognoscenti. Some artists duplicated beer bottles, soup cans, comic strips, road signs, and similar objects in paintings, collages, and sculptures; others simply incorporated the objects themselves into their works. Using images and sounds that reflected the materialism and vulgarity of modern consumerist culture, the first pop artists sought to provide a view of reality that was more immediate and relevant than that of past art. They wanted the observer to respond directly to the object, rather than to the skill and viewpoint of the artist.

The pop art movement surfaced in the 1940s and 1950s, when painters like Robert Rauschenberg (1925--) and Jasper Johns (1930--) strove to close the gap between traditional art and mass culture. Rauschenberg constructed collages from household objects such as quilts and pillows, Johns from American flags and bull’s-eye targets. The first full-fledged pop art work was *Just What Is It That Makes Today's Home So Different, So Appealing?* (1956, private collection) by the British artist Richard Hamilton. In this satiric collage of two ludicrous figures in a living room, the pop art hallmarks of crudeness and irony are emphasized.

Pop art developed rapidly during the 1960s, as painters started to focus their attention on brand-name commercial products, producing garish sculptures of hamburgers and other fast-food items, blown-up frames of comic strips, or theatrical events staged as art objects. Pop artists also appropriated the techniques of mass production. Rauschenberg and Johns had already abandoned individual, titled paintings in favor of large series of works, all depicting the same objects. In the early 1960s the American Andy Warhol (1928–1987) carried the idea a step further by adopting the mass-production technique of silk-screening, turning out hundreds of identical prints of Coca-Cola bottles, Campbell’s soup cans, and other familiar subjects, including identical three-dimensional Brillo boxes (see chapter 4).
But the rage over pop art has, finally, subsided at the start of the twenty-first century. Along with pop music, blockbuster movies, bestseller novels, television programs, fashion shows, and most commercial products, it was destined to become quickly obsolete. It was both a product and a victim of neomania.

CONCLUDING REMARKS

Objects are hardly just that—objects. In the human semiosphere they become signs and sign systems. In a psychological sense they are extensions of human physical, sensory, and intellectual qualities. But in an almost completely objectified world today, something strange is happening. As digital technologies continue to advance the possibility of global communication “on the spot,” and as electronic devices and satellite systems allow people to break down barriers of nationhood, there is a strong desire in people to live in the “real” world. Indeed, the more the computer is used to conduct everyday affairs, the more people seem to resort to traditional forms of meaning-making and interaction. The paradox of everyday life in the Digital Galaxy is that it engenders both “globalism” and “tribalism” at once.