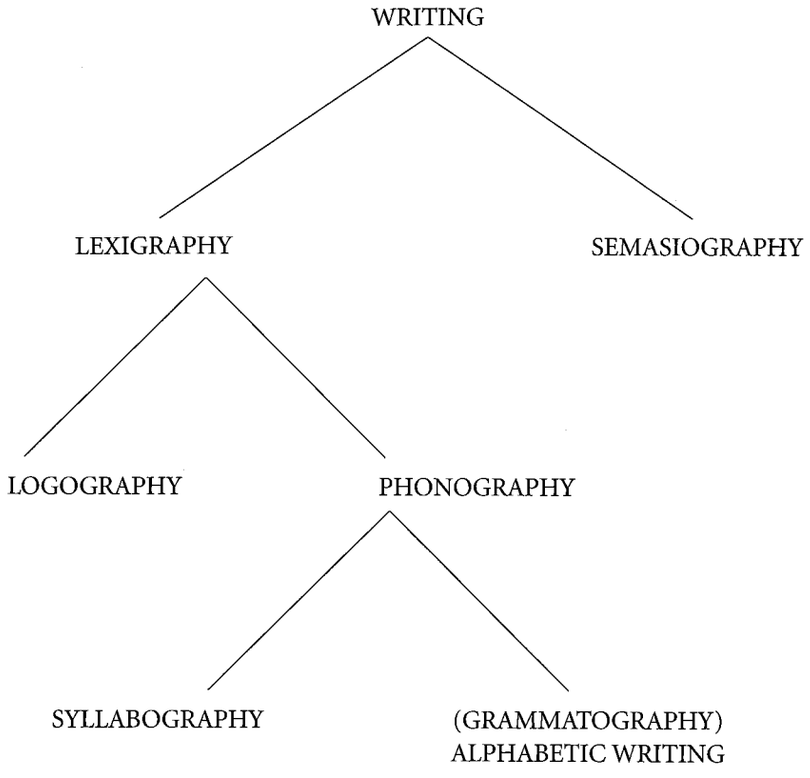

THE CATEGORIES OF WRITING

Writing

Theory and History of the Technology of Civilization

Barry B. Powell

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The problem of consistency in transliteration is not solvable, and in this book I have chosen, as much as possible, to use systems of transliteration traditional within a discipline, explaining myself as I go, but cautioning the reader about the need for flexibility and attention to sometimes subtle distinctions.

1

What Is Writing?

Writing, writing, it is everywhere, yet few have much to say about it, few know about it. Writing is an inherently difficult topic because discussion of it takes place by means of the very medium being discussed. As fish who know nothing of water, scholars who spend their lives studying different traditions of literature, and of writing, rarely reflect on the actual technology that makes their study possible: how it works, where it came from, and what relation it bears to other formal systems of thought.

Writing is magical, mysterious, aggressive, dangerous, not to be trifled with. Although it takes many forms, it is always a technology of explosive force, a cultural artifact based not in nature (whose rules we did not create) but sprung from the human mind. Human groups who possess writing triumph over those who do not, without exception and swiftly. If humans had existed a year, writing was invented not even yesterday, but some time this afternoon, as far as we know. Writing cast a veil across the human past, separating the million human years that came before from the turbulent last five thousand years. In the brief period since the discovery in Sumer around 3400 BC of the phonetic principle in graphic representation – when conventional markings first represented sounds of the human voice – the cultures encoded in this and subsequent related traditions of writing have changed human life forever.

Writing is the most important technology in the history of the human species, except how to make a fire. Writing is the lens through which literate peoples see the world, feel the world, hate the world, love the world, defy the world, and imagine change. What is writing that, like the lens you never see, creates the world? The difficult topic is muddled and mixed up with other things that have their own life – religion, artistic expression, speech, and human thought.

The Magic, Romance, and Danger of Writing

The holy Quran, encoded in the holy, even divine, script that the prophet himself used, is a sacred document that can never be changed or corrected or amended or mutilated or abused or transliterated into Roman characters: That would be an offense to God and punishable by death. Thus a book can be a fetish, as when one swears when placing a hand on a Bible or Quran: If the swearer is foresworn, he will suffer evil consequences. The text of the sacred Quran justifies mass murder, according to some interpretations, but you can never be sure because of the surprising obscurity of the wholly phonetic Arabic script, its distance from speech. What does it really say? The Jewish religion similarly depends on written documents in whose holy, magical, emotive symbols cabbalists discover secrets of the universe. Fortunately, the rabbi ("my master") can explicate textual obscurities to the ignorant, the less learned, as do the wise mullahs to the faithful.

Ancient Egyptian civilization, too, was bound to the forms and expectations of hieroglyphic writing to an extraordinary degree. The conventions of hieroglyphic writing influenced the posture of statues and the shapes and layout of temples, and, in the revelator Akhenaten's sacred city of Akhetaten ("Horizon of the Aten," near the modern village of Amarna), the design of the whole city described the form of the hieroglyph for "horizon," over which the sun god daily rose. Egyptian writing could also make one live forever, a signal advantage.

Mao Zedong (1893–1976), who pretended to hate the past, hoped to replace the obscurantist Chinese system of writing with an alphabet, but even his unlimited power could not accomplish the change. To change the writing would change the sacred ancient culture that the Chinese adore, which the mysterious and beautiful writing encodes. By changing the writing, one loses everything. That was precisely the intention of Kemal Atatürk when, in the 1920s, he outlawed the traditional Arabic script and ordered that Roman script now encode the Turkish language – thus did he break with the corrupt and ruinous past of the Ottoman sultans.

Jesus wrote in the sand (John 8), but in stark wisdom left nothing behind for followers to kill themselves over. They found other reasons. He must have understood how writing, and writings, can lead to fanaticism, social division, oppression, and the tyranny of the mad and the intolerant over the common man. So great is the power of writing.

We would like to know why writing has such exaggerated effects on human life and where it gets its power. The common definition of civilization as

"human life in cities in the presence of writing" may be a historical judgment, but it is also a speculation on the superiority of a cultural practice that symbolizes human thought and carries it beyond the place and time of its origin. Writing enjoys intimate affection with the human faculty to create symbols, when one thing stands for another. Without this faculty, we would not be human. The relationship between the sounds of human speech and graphic material symbols that represent such sounds in lexigraphic writing is a central problem.

A Definition of Writing

Writing is hard to see because it governs our thoughts, and hard to talk about because of the lack of consistent names for real categories. We know that writing is there to be read, but are not sure what we mean by "writing," so that it is fashionable in criticism to "read" works of art or to "read" Greek culture or manners of dress or almost anything, as if in understanding a work of art or a building or a social practice we are doing the same thing as when we read a text. Writing has been defined time and again, always in different ways, but let us say that writing is *a system of markings with a conventional reference that communicates information*, like the signs on this page. Where does such a definition take us?

Because writing is made up of markings it is material (not spiritual or emotional or mental). The meaning of such markings, their conventional reference, we might say their intellectual dimension, never comes from nature, as does the human faculty for symbolization and speech, nor from God (as many have believed), but from man. The elements of writing, the markings, are related in an organized way, in a conventional way, in order to tell the reader something, to communicate with the reader. Where there is writing there is a reader who understands the system of conventions, even if the reader is God or a god (as often).

Change and Evolution in Systems of Writing

General principles appear to govern how any writing can work, as they appear to underlie the formation of speech. The possibilities of organization are limited and in some way predetermined. Hence, the history of writing is

a history of the discovery of these principles, drawn in intelligible patterns. Because systems of writing are conventional and exist by agreement rather than coming from nature or God, there is no right or wrong to how a system imparts its meanings. Systems of writing serve different purposes for different peoples at different times. It is wrong to imagine that the Bronze Age Mycenaean Greeks would have been better off with the later Greek alphabet or with Chinese writing or anything else. Linear B did what it was called to do, to keep economic accounts in a palace-centered redistributive economy, and no one required more.

Nonetheless, because the history of writing is a history of discovery, we are tempted to compare writing systems as if they were in a competition for greatness and to say, for example, that the Greek alphabet is superior to Japanese writing, so complex that less than a dozen non-Japanese in the United States of America could read it when the Imperial Japanese Navy struck on December 7, 1941. Within the historical competition between human groups and the struggle for political and cultural dominion such comparisons are probably justified and fairly belong to an evaluation of the past. The Greek alphabet in its Roman form has in three thousand years become the dominant writing system by far, whereas Japanese writing remains confined to a small archipelago. Apologists for scripts unrelated to the Greek alphabet like to point out that it was not so much the Roman script as Western political power behind the script that brought the alphabet's hegemony, as if the script did not itself make possible (though not inevitable) such power.

Because among the users of any writing the system will satisfy the needs placed upon it, we cannot expect to find improvement or radical change within a developed lexigraphic writing system except in its earliest stages of formation. Both Sumerian cuneiform and Egyptian hieroglyphs appear to undergo evolution in the several hundred years between the first clear evidence of phoneticization, c.3400–3200 BC, and the creation of texts that reflect grammar and syntax, c.2700 BC; hundreds of years more must pass before we find extended texts. We must, of course, depend on evidence from haphazard finds. In the Eastern civilizations of the ancient world, it was not so much that the scribes who developed the first complex lexigraphic systems served the power elite as that they themselves were that elite; once their systems were in place, they could hardly have imagined, let alone desired, developments that would simplify their systems and undermine their power, or even make them irrelevant in the scheme of things. The Egyptian schoolbook taught that one should

> Be a scribe! . . .
> You are one who sits grandly in your house;
> your servants answer speedily;
> beer is poured copiously;
> all who see you rejoice in good cheer.
> Happy is the heart of him who writes;
> he is young each day.
>
> from Papyrus Lansing, c.1000 BC, a schoolbook
> (Lichtheim 1976: 173–74)

Yes, for

> The scribe, whatever his place at the Residence [pharaoh's court],
> he cannot be poor in it.
>
> from *Satire on the Trades* (or *Instructions of Dua-Khety*), c.1800 BC

The scribe is wealthy and content and always in the ancient world male (but some women, especially in Rome, could read and write). Change within developed systems of writing, where it is found, is a kind of tinkering, and then, ordinarily, toward greater complexity and obscurity, more of the scribal art. Egyptian hieroglyphics managed with about 700 signs for most of its history, but, in a quirky development of the self-conscious Ptolemaic period (323–30 BC), increased its repertory to 5,000 signs. Attempts to "improve" a system of writing threaten the conventional basis by which it exists and diminish its intelligibility so that everything worsens.

For example, many have complained about the famously inept – that is, nonphonetic – English or French spellings. The American Philological Association was founded in 1869 to study the world's languages; it boldly encouraged spelling reforms much in the air in the late nineteenth century by publishing its proceedings in a reformed spelling. Today, they can scarcely be read. When Mao Zedong found he could not impose the Roman script, in the interests of the people he simplified the bizarrely intricate Chinese writing by omitting strokes from many characters to improve readability. He thereby rendered Chinese writing unintelligible to Chinese living in Taiwan, San Francisco, and Southeast Asia, whose traditional Chinese characters are now unreadable on the mainland.

Major changes in the structure of writing systems took place when the idea of writing passed from one people to another, always foreign people. Not bound by sacred tradition and the interests of a social class and intellectual elite, illiterate foreigners could make important changes. In the changes

made in this way we can speak of the evolution of writing, of a process proceeding from less able to more able systems of writing.

Writing Is Material

Because writing has a material basis it can be created and destroyed, as book-burners throughout history understand. In the ancient Near East the origin of this life-transforming technology seems to be connected in some way with the use of material *objets*, abstract "counters" or tokens made of clay that represented commodities, according to a famous argument by Denise Schmandt-Besserat. One carried such material, tangible things in a pouch or on a string around the neck or dropped them accidentally on the ground or exchanged them during a transaction or wrapped them up in a hollow ball of clay, to preserve details of a commercial transaction. After five thousand years of such token use in the Near East, between c.8000 and c.3000 BC, the abstract shapes of some portable material tokens seem to have become characters in the first lexigraphic writing (see Chapter 3).

Even such obsolete systems of communication based on writing as semaphore require material flags moving in someone's hands. Morse code seems immaterial. Consisting of an ON/OFF digital mode, it is the only digital-modulation mode that humans can understand without a computer. Nonetheless, messages transmitted by Morse code are directly transferred into written documents. As a property protected by law, writing in cyberspace is in an awkward position, because the relationship of cyberspace to the material world is not clear, and we are unsure how laws of copyright apply to a medium you cannot control. The power of hardcopy, whose doom many predicted, remains strong in comparison to electronic documents because the tangible hardcopy is not endlessly permutable and easy to lose. Contracts, wills, and certificates of marriage, anything having to do with money, remain in hardcopy. Even as pixels on a computer screen, even when floating in cyberspace, writing retains its material basis.

Speech and Writing

In seeking a definition of writing, scholars sometimes take account of writing's materiality but nonetheless emphasize writing as a *secondary representation of the primary speech*. The influential L. Bloomfield, in a book called *Language* (1933), wrote that "writing is not language, but merely a way of recording language by means of visible marks" (Bloomfield 1933: 21). By "language" he must mean "speech," which writing obviously is not. But is not writing really a language in its own right?

The distinguished Mayanist Michael Coe, writing on progress in the decipherment of Maya glyphs, notes that "writing is *speech put in visible form* in such a way that any reader instructed in its conventions can reconstruct the vocal message. All linguists are agreed on this, and have been for a long time" (Coe 1992: 13, my italics). Coe agrees with Bloomfield, but sees that language and speech are different things. By having "visible form" writing must be material, but "vocal message" nonetheless lies at the heart of the definition.

A. Parpola, the distinguished scholar of the Indus Valley writing, calls writing "a visual communication system based on the representation of spoken language by conventional marks of some durability" (Parpola 1994: 29). Is Braille a "visible communication system"? Certainly it is writing. Parpola's "durability" implies materiality, but still writing represents "spoken language."

The great Assyriologist and historian of writing I. J. Gelb thought along similar lines, declaring that "writing is *written language* . . . I agree entirely with the linguists who believe that fully developed writing became a device for expressing linguistic elements by means of visible marks" (Gelb 1963: 13). Because in Gelb's view the phonographic element, "a device for expressing linguistic elements," is the essence of "fully developed writing," or "full writing," the Greek alphabet, beyond which the art of writing has not progressed, came at the apex of a long development. The Greek alphabet is even the *telos*, the immanent goal, toward which "writing" has always striven, because in the Greek alphabet the phonographic element is overriding.

P. L. Daniels, in his and P. T. Bright's useful book *The World's Writing Systems*, thinks that "writing is defined as *a system of more or less permanent marks used to represent an utterance in such a way that it can be recovered more or less exactly without the intervention of the utterer*" (Daniels and Bright 1996: 3, original italics). By this definition he agrees that writing is bound up with speech (an utterance) and, in company with other scholars, excludes from "writing" communication by means of symbols or representations not couched in a specific linguistic form. However, in his insistence on recovering an utterance "more or less exactly" Daniels's surprising formulation would exclude all forms of writing up to the Greek alphabet, and even, strictly speaking, the Greek alphabet itself, because

no writing before or including it permitted the recovery of an original utterance "more or less exactly." When such recovery took place in actual usage it did so on the basis of a shared language between writer and reader and shared expectations based on the context of the message, not on the basis of the phonetic and semantic information encoded in the script.

Such understandings of writing as being a secondary representation of the primary speech are always re-expressions of F. Saussure's famous dictum: "A language and its written form constitutes two separate systems of signs. The sole reason for the existence of the latter is to represent the former" (Saussure [1922] 1983: 24). Saussure only echoed Aristotle's formulation: "Spoken words are the symbols of mental experience and written words are the symbols of spoken words" (Aristotle, *de Interpretatione* 1.1).

First comes "language," then comes its "written form," which depends on "language." Yet in its dependence on a material basis, writing is fundamentally unlike speech, which is never tangible. The relationship between written form and speech is more complicated than such commentators believe.

Writing is a technology with a material basis, while speech is never a technology and never material but an essentially human aptitude. If dolphins could speak, they would be humans with an odd-shaped nose. In our own definition that writing is *a system of markings with a conventional reference that communicate information*, we do not refer to speech, language, or utterance. In the definitions of commentators quoted above, the words "speech" and "language" are treated interchangeably and in the clumsy way we complained about earlier. How writing functions will depend on the innate faculty of humans to communicate by means of symbols. A *language* is any system of symbols that serves this innate faculty to communicate through symbols: *speech* is one such system of symbols, *writing* is another (**see diagram opposite title page**).

2

Writing with Signs

Such common thoughts about "writing" as those quoted in the last chapter may be more reflections of our own experience with alphabetic writing, tied with unprecedented intimacy to speech, than they are satisfactory descriptions of "writing" itself. For it is easy to see that many kinds of material signs with a conventional reference that communicate information do not refer to human speech at all, even when they appear within a system of lexigraphic writing. Are such signs not writing?

When we see a road sign with the picture of a cow falling from a cliff, we quickly realize how, as drivers, we should beware of cows tumbling down upon our car (Fig. 2.1). The falling cow, the cliff, and the car is a picture designed to communicate information, not to provide aesthetic pleasure (or amusement!). Were the word not ruined by careless use, we might want to call this a *pictogram*, "picture writing," understanding that "writing" does not require the intercession of elements of speech. Instead we will say that the iconic elements in the sign are strong. However, the meaning of the sign also depends on its abstract shape according to a North American convention (different in Europe) that an upended square bordered in black means *This is a warning!* Cows could fall from cliff at any time.

In the same way, by conventional agreement, a circle and slash means *not allowed* (see Fig. 2.2). The ubiquitous  is understood everywhere in the world without regard to what language one speaks. We would like to say that here is a "worldwide language," a writing that everyone from everywhere understands – if only all writing worked that way.

Obviously, in such examples *communication* takes place by means of *visible marks with a conventional reference*, but without the intervention of speech. The cow falling from the cliff onto the car, like the dump truck, is

Figure 2.1 Road sign warning of cows falling from cliff
Figure 2.2 A sign prohibiting dumping

a picture of something recognizable, it is iconic. Nonetheless, if you are from Mars, you will be unsure what either sign means because the black-bordered upended square and the circle with a slash have conventional, not natural references.

Gelb's Category "Forerunners of Writing"

The desire to tie "full writing" to speech implies that there are forms of writing that are not tied to speech – "partial writing"? "half writing"? – and we have just seen two examples. Of course, something came before writing, which did not always exist. Gelb categorized representations that precede "full writing" as "forerunners of writing." Let us consider several examples.

Primitive art

We could scarcely say when forerunners of writing began because we find similar kinds of signs all over the world in Paleolithic and later sites. Throughout the world, including America, are found petroglyphs made by pecking with a small stone on a boulder. Seemingly, these signs communicate information, though we are rarely sure what that is. In Figure 2.3,

Figure 2.3 Petroglyph from Newspaper Rock State Historic Park, Utah

from a wall in Utah entirely covered with petroglyphs, we recognize in the upper right-hand corner a man on a horse shooting at a deer (this petroglyph was therefore made after the Spanish conquest). In the bottom left is another mounted man, perhaps hunting a mountain goat. We recognize other mounted men, deer, humans, goats, snakes, perhaps a bear print, and such abstract designs as concentric circles. But we can never understand these remnants of the past because we do not know why they were made or what they meant to their maker. Does the man shooting from horseback commemorate a mighty deed, or does the picture magically assist the performance of such a deed? Or does it express an artistic impulse, someone's desire to make a picture of something in his experience? Even so children take up paper and create abstract designs and crude representations for no other reason than the pleasure of doing it. This type of "forerunner of writing" Gelb called *primitive art*. Although sometimes abstract, and perhaps meant to communicate something, there is no writing because there is no conventional system.

Nonetheless, the intimacy between art and writing is initial and strong. Far older representations are found in the celebrated caves at Lascaux, in southern France, c.20,000 BC, perhaps the earliest art ever found and unquestionably "primitive." Contemporary lovers of art nevertheless easily admire the realistic and artistically "modern" horse in one cave, reminiscent

Figure 2.4 The "Chinese Horse," prehistoric cave painting, c.20,000 BC. Lascaux Caves, Perigord, Dordogne, France. (Photograph from Art Resource, NY ART99863.)

of horses in Chinese art from the Tang Dynasty (seventh to tenth centuries AD), and for this reason called the "Chinese Horse" (Fig. 2.4). No one knows the purpose of these paintings found deep in caves, but perhaps a horse drawn on the wall in the womb of the earth makes horses in the plain above more plentiful, more of them to hunt and eat. Perhaps the plantlike objects to the front of the horse and across its white underbelly are arrows or some kind of missile meant to kill the horse: even so may the hunter meet with success in the field. But what is the highly abstract "pitchfork" design made of four lines and a rectangle above the horse? Is this the diagram for a trap, or is it an abstract cue to a ritual, or a name, something to be done or said? Did artist shamans work their magic here, recording their visions on the walls of the caves?

The pitchfork design looks like writing because it is abstract and does not appeal to our pleasure in seeing, but we cannot place it within a conventional system. We will never understand the meaning of the sign. We are never sure what we are dealing with in the illustrations in the Lascaux caves because of our oceanic ignorance of the past, in general, and of what happened then.

The descriptive-representational device

Primitive art has a wide range and maybe does not belong in the category forerunners of writing, but a narrower category is representations called by Gelb the "descriptive-representational device." In a descriptive-representational device the picture tells you something, unlike the pitchfork-like design in the Lascaux cave, which tells you nothing. Descriptive-representational devices can be close to what we think of as simply art because they follow conventions for figurative art, but pictures that are *art* serve to satisfy the aesthetic pleasure of the artist and beholder and not to communicate explicit information. The two goals can combine, as in Chinese and Japanese lexigraphic writing, meant to be beautiful. In early societies artistic pleasure is inseparable from magical power, and Chinese writing and ancient Egyptian writing, were agents of magical practice. Still today we think of strong art as having "magic." (An art dealer described to me that American Indian art is widely collected because it has "magic.") The purpose of the descriptive-representational device, artistic or not, is to communicate information.

A famous example (because Gelb first cited it) appears on a nineteenth-century letter written by a southern Cheyenne Indian called Turtle-Following-His-Wife who lived in Indian Territory (now Oklahoma) to his son Little Man at the Pine Ridge Reservation (now in South Dakota) (Fig. 2.5). The name of each man is written as little pictures above his head, attached by a thread. Lines proceed from the mouth of Turtle-Following-His-Wife then bend back in two forks over a second picture of a small man. Fifty-three circles are drawn between the two men, but closer to Turtle-Following-His-Wife. The meaning is that Turtle-Following-His-Wife had sent $53 to the Pine Ridge Agency to cover Little Man's expenses, a message, confirmed by the Indian agent, that Little Man at once understood.

The descriptive-representational device may be a useful category, but we should not think of it as being a primitive one, something that people did before "full writing" came along. For example, Figure 2.6, printed in 2007, explains how one is to remove the crating from around a refrigerator. In box 1, two schematic men show that this is a two-man job. The men lower the crated refrigerator to the ground on its back, a direction of motion indicated by the arrows. In box 2, the scissors and a now visible cinch around the lower portion of the crating indicate that this cinch is to be cut with scissors. In the remaining boxes the men remove the bottom of

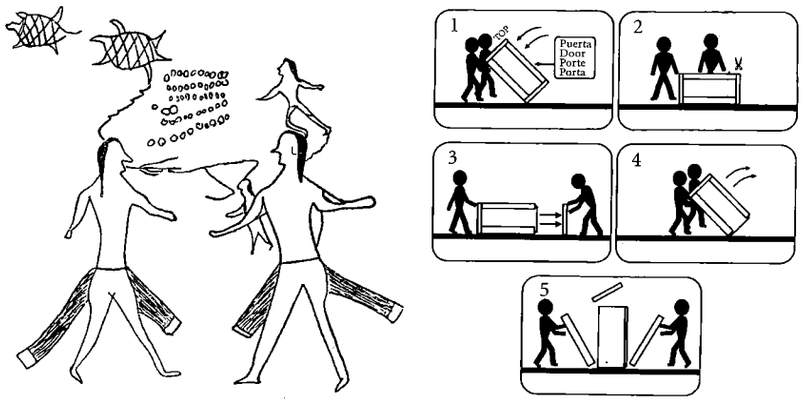


Figure 2.5 Turtle-Following-His-Wife writes to Little Man. (After Mallery, 1893, p. 364.)
Figure 2.6 Instructions for uncrating a refrigerator, 2007

the crate (3), re-erect the refrigerator (4), then remove the top and sides of the crate (5).

In box 1, alphabetic characters, a form of "full writing" closely tied to speech, impart vital information not easily pictured, telling us in four languages which side the DOOR should be on when the refrigerator is lowered, then in English alone where the TOP is. One might think that whoever understood *puerta* would also understand *porte* and *porta*, but a direct appeal to Hispanics, Anglos, French, and Italians reflects the artist/scribe's conviction that with his picture-story he is communicating in a universal European language independent of linguistic forms. Perhaps laziness explains the simple Anglophone TOP, or suggests that in the prejudgment of the artist/scribe mostly Anglos will buy this fridge. The numbers in the boxes are not really needed and do not belong to the category of descriptive-representational device, because they refer to elements of human speech (as we will see), although differing according to the consumer's native language.

In a second example, an international audience learns how to assemble a portable iPod player. The instructions are a descriptive-representational device, and like the instructions for unpacking the refrigerator make use of other kinds of elements: Arabic numerals, the conventional circle-with-a-slash, and a question mark (Fig. 2.7). In (1) we learn to remove from

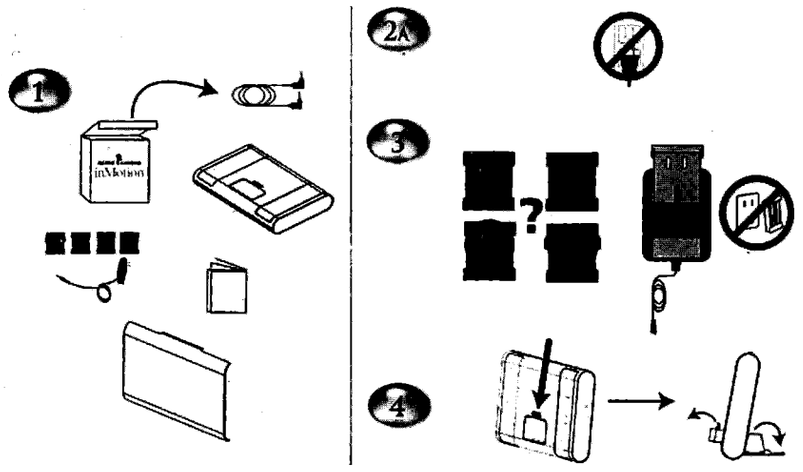
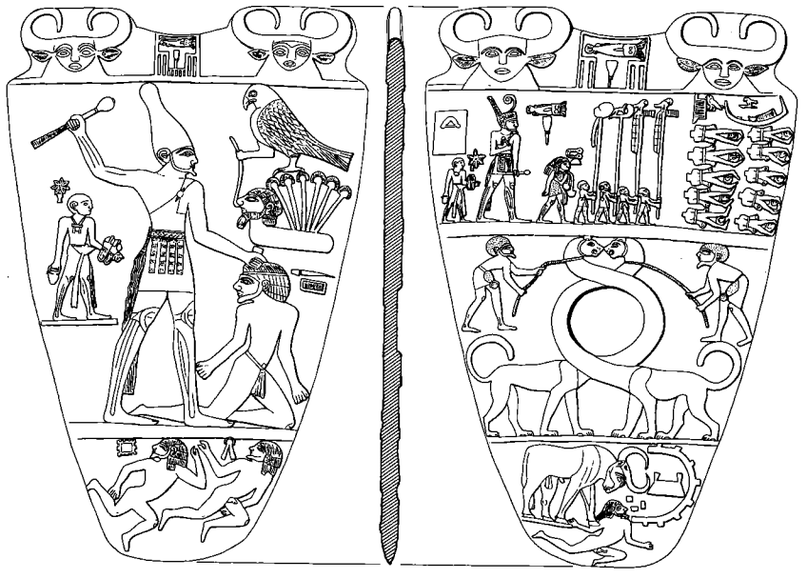


Figure 2.7 Assembling a portable iPod player

the packing five dissimilar objects and four similar objects. In (2A) (but where is 2B? oops!) we learn that we are not to plug in the iPod player as we would plug in an ordinary appliance, following the convention of the circle-with-a-slash indicating prohibition (not a descriptive-representational device). In (3) the question-mark sign (?) (not a descriptive-representational device) in the midst of the four squares we met in (1) seems to explain that we are puzzled about the four similar objects, which turn out to be different kinds of plug, each used in a different country. Also in (3) a new object appears – the artist/scribe omitted to draw it in (1) – of unclear significance; examination of what was really in the packing reveals it to be a plastic holder for whichever plug suits the international purchaser of this portable iPod player. To this holder you must attach the wire with jack pictured beneath the mysterious objects in box 1. For some reason the plug changes color from black to white (the actual plug and holder are white). In (3) we also learn that we are not supposed to do something with the plug, evidently plug it in if it is the wrong plug. Finally, in (4) we learn how to open up little panels that support the speakers.

We never learn the meaning of the cable in the upper right in (1), nor discover what is the little booklet pictured in (1), unless it is these very instructions written in "the universal language of pictures." The object at the bottom of (1) is the cover, but we are not told how to install it.



(a) (b)

Figure 2.8 Drawing of the Narmer Palette, First Dynasty, c.3100 BC. (After Quibell, 1898, pls. 12, 13.)

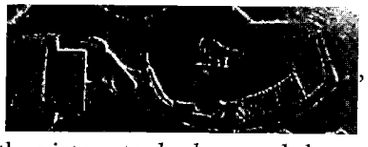
Figure 2.7 well exemplifies the ability of the descriptive-representational device to communicate complex information, but also the frustration that comes from inept explication in this form. In fact, the pamphlet cannot be understood without holding in hand the objects to which it refers, and even then we are not always sure what is meant.

We might compare such examples with the oldest monument of pharaoh's power, the Narmer Palette, c.3100 BC, an elaborate stone votive object made in the form of a practical tool for grinding kohl, a black eye-makeup (Fig. 2.8). The palette was found in 1898 in a cache near an early temple at the site of Hierakonpolis ("Hawk City") in southern Egypt, with which the first pharaohs had a close connection. It is the most important monument to survive from the beginning of the pharaonic period. College courses in art history always study the Narmer Palette as an example of early Egyptian art. On the obverse (a), Narmer, wearing the white crown of Upper Egypt, raises his right hand to execute a subject prisoner. Others lie dead in the lower register. On the reverse (b), the followers of

Narmer, who now wears the red crown of Lower Egypt, carry standards surmounted by a hawk, another hawk, a standing jackal, and a placenta (?). They oversee a field of 10 dead, whose severed heads lie between their legs. A boat stands nearby. Fantastic beings restrained by bearded men surround a central cup made to imitate a depression for grinding the kohl. In the lower register the pharaoh as bull destroys a town.

This famous monument appears to memorialize an actual battle between north and south Egypt, and many have understood it to memorialize the very battle that resulted in the "union of the two lands," the creation of the Egyptian pharaonic monarchy. To support that interpretation the main figure wears the white crown of Upper Egypt on side (a) and the red crown of Lower Egypt on side (b). In this case the "descriptive-representational device" does not communicate practical information, as does the letter of Turtle-Following-His-Wife, or the instructions how to open a crate or assemble an iPod player; rather, it places in permanent form testimony to one man's achievement. Such use of the descriptive-representational device is found throughout the ancient world and is in common use now.

The creator of the Narmer Palette wishes not only to represent a historical event but to clarify its meaning by marks that refer to elements of human speech, very much as the creators of the fridge and iPod instructions. Some of the very earliest Egyptian hieroglyphs appear on this palette, but we cannot always be sure of their meaning. They appear to encode names and titles. The signs of "city walls" and "special knot"(?) over the heads of the dead men at the bottom of (a)  may give their names. The "harpoon" and "pool" beside the head of the executed prisoner on (a) should spell his name too, which we can read as *Wesh* according to the classical readings of hieroglyphs  . Within the walls at the bottom of (b)  must be the names of tribes or places. The marks near

the head of the sandal-bearer on (a) and side (b)  , a "rosette" and an "inverted pot" (?), probably refer to words in the Egyptian language that mean "servant of the king." The "skin-float" in the rectangle in the upper left of side (b)  may designate the name of the king's house, if the rectangle is a palace. The word encoded by "tethering rope" over "bread loaf" above the wigged figure striding in front of pharaoh on side (b)  , with hunting bolas (?) suspended from his neck, may mean "vizier," or it may be the man's name *Tchet*. The signs above the decapitated prisoners on (b) – "door," "sparrow," "hawk," "harpoon," "boat" – we cannot interpret with confidence (the boat may not be lexigraphic writing at all)  , perhaps the name of the place where the victory took place, and the name of the boat.

At least we can easily read "catfish" and "chisel" at the top of both sides of the palette  as *Nermer*, "Striker," that is, Narmer, contained within a schematic palace-façade design. In later times this design was called a *serekh* and enclosed the first name in a five-fold royal titulary, the name of pharaoh as the incarnation of Horus. A cow-goddess flanks either side. The name, probably an abbreviation for "[Horus] the Striker," is repeated at the top of side (b) and for a third time in front of the king.

A rather different form of communication appears on side (a) of the Narmer Palette. A hawk holds by a nose-rope a human-headed flat oval from which spring six papyrus plants. The descriptive-representational device – white-crowned pharaoh executing a prisoner – tells us that a man from Upper Egypt overcame an enemy force, but now we learn that it was "the man who embodies the power of Hawk [that is, Horus] who overcame the men in the papyrus marshes [that is, the delta]." The design communicates by symbols, then, not by descriptive representation. The hawk symbolizes Horus; the nose-rope symbolizes subjection; the rectangle with papyrus plants symbolizes the delta. In classical Egyptian lexigraphic hieroglyphs the flat oval is a word-sign for "land" or "marsh," and the papyrus plants is a word-sign for "1,000," so there may have been 6,000 men in the delta army, if these signs had the same meaning in the late fourth millennium as they did in the second.

Evidently at the dawn of "full writing," or "true writing," attested by the partly understood hieroglyphs on the Narmer palette, different ways of imparting information are happily rolled into a single document. Today we understand the "message" not through the hieroglyphs, which are opaque, but through the descriptive-representational device: pharaoh executing an enemy (a) and overlooking their decapitated heads (b); and through a form of symbolization: the hawk holding a personalized hieroglyph by means of a nose-rope. In crossing linguistic barriers, as we must do to understand the Narmer Palette, "full writing" brings a loss of intelligibility, not enhancement.

The identifying-mnemonic device

Closely related to the descriptive-representational device is Gelb's third category of the "forerunners of writing," which he called the identifying-mnemonic device. The identifying-mnemonic device makes clear who is meant or what event is meant, by isolating a conspicuous feature of the person or the event. We might include the hawk holding the nose-rope in this category because it reminds the viewer of a specific man who accomplished a specific thing. Such devices were widely used by American Indians; we have already seen examples in the drawing of two turtles and a little man in Figure 2.5, which identify certain individuals. The Winnebago Indians of Wisconsin had a system of written signs to remind them of various songs, if we consider them events, and Indians of the northern plains tracked the passing of years by means of the winter count, whose signs reminded the keeper of a signal event from that year. Good examples of the winter count survive thanks to the efforts of one Garrick Mallery, a Union officer during the American Civil War who lived in the northern plains at the end of the century and wrote numerous books about the "picture-writing" of the American Indians.

Figure 2.9 shows an example drawn by a Lakota Indian whose name meant "Flame." The winter count on muslin is a copy made from the original kept

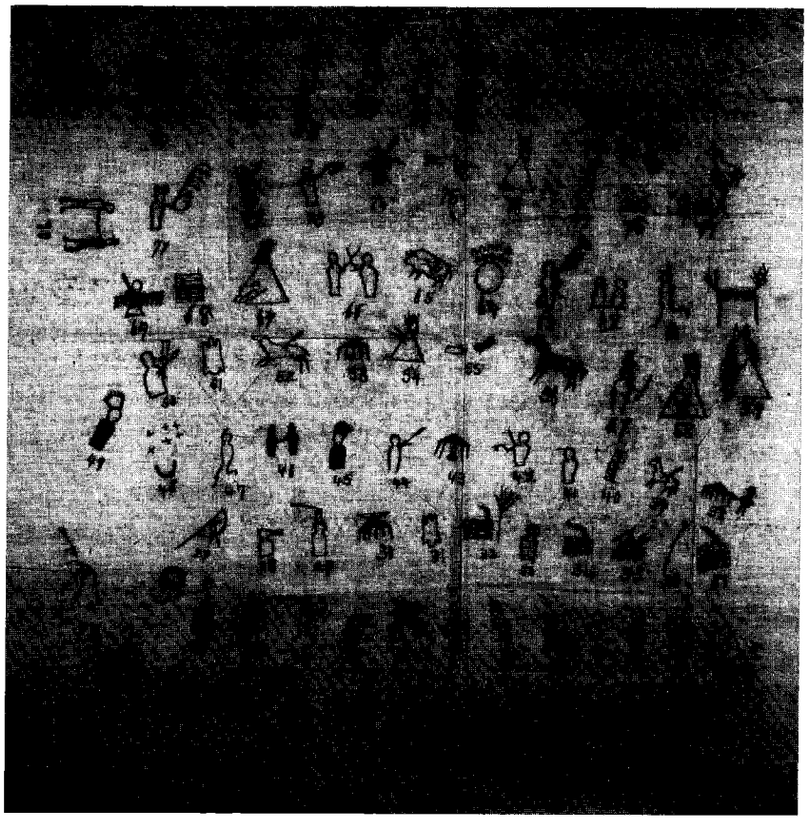


Figure 2.9 Winter count by Flame, a Lakota Indian from the Yanktonai band, a copy on muslin made by Lt. Hugh T. Reed from the original covering the years 1786–1877. 35" × 35½". (National Anthropological Archives, Smithsonian, National Museum of Natural History, Ms. 2372 [08633800].)

by Flame. Arabic numerals have been assigned in the copy. The count begins in the lower-left corner, runs left to right then turns the corner and runs right to left, back and forth in *boustrophedon* style ("as the ox turns," like early Greek writing), covering the years 1786–1877. To each year was assigned an image that, in consultation with tribal elders, embodied a significant event. In this way, the event was itself remembered and a kind of history recorded.

In the northern plains each band had its own keeper of the count who could expound to listeners what happened a long time ago and in what

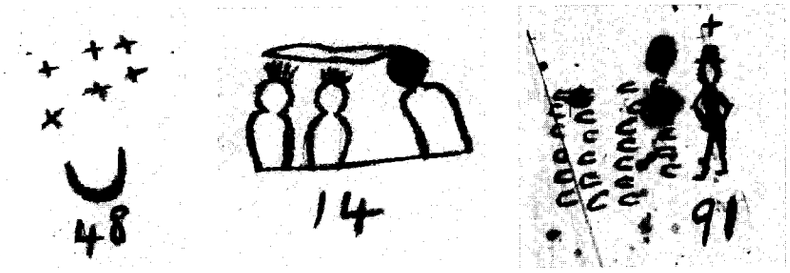


Figure 2.10 Figure number 48 in the winter count of Flame representing the great meteor shower of 1833 by means of stylized stars and a stylized moon
Figure 2.11 Figure 14 from the winter count of Flame showing an Indian from the Hunkpapa band killing two Arikaras
Figure 2.12 Figure from the winter count of Flame for the year 1876 showing an Anglo official wearing a top hat and 25 horse tracks. The cross above the man's head indicates that he is a Christian

order, but of course there was no absolute point of reference. Mallery recognized that counts by keepers from different bands reflected one spectacular event in a similar way, the great meteor shower of 1833, and so was able to assign to individual signs absolute dates in the Western calendar (see Fig. 2.10). Often the years were counted by a martial exploit, for example number 14 (1799–80), the year when "a man from Hunkpapa band killed two Arikaras" (Fig. 2.11). The special hairdo shows the two men on the left to be Arikaras and the bow coming from the Hunkpapa's head indicates that he shot them with arrows. We might imagine that the count for 1876 would refer to the Battle of the Little Big Horn, fought in June of that year, about which more has been written than any battle in history, but instead the count pictures the government capture of some horses (Fig. 2.12).

The winter counts, which do not belong to a conventional system, are mnemonic devices for the keeper of the count, and the form of the counts differs from band to band, although they sometimes share similar images. They are private symbol systems and they do not refer to elements of speech. Among the northern American Indians there never was development of any kind from such pictorial and schematic representations to writing tied to speech, calling into question whether such representations are "forerunners" to anything.

Gelb's category "forerunners of writing" seems in any event an unsatisfactory formulation, because such means of communication are ubiquitous in modern traditions of writing, no matter how developed such traditions might be (compare Figures 2.1, 2.6, 2.7, 2.15, 2.16).

Semasiography

We cannot doubt that the attachment of graphic signs to sounds in human speech was epoch-making in the history of writing, but earlier forms of graphic communication persisted. Rather than omit them from the exclusive club "full writing," where they remain honored guests, we may call all such representations *semasiography*, "writing with signs." The descriptive-representational device and the identifying-mnemonic device and, in some cases, primitive art are kinds of semasiography. Such nonphonetic signs can be abstract, like the circle with a diagonal slash, or the hoofprints in the winter count of Flame, or representational, like the cow falling from the cliff or the Anglo with the top hat, but in semasiography the marks on the material basis always *communicate information without the necessary intercession of forms of speech.* Such signs are a form of writing according to our definition because they communicate information by means of material marks with a conventional reference. However, they represent concepts and meanings directly and may themselves to some extent constitute a language independent of speech, though such signs can sometimes be interpreted in speech.

Musical notation

Once we agree that semasiography is a form of "writing," we realize that we are dealing with an enormous category for study. As always, forms of writing open gates to power and to the refinement of human thought and creative expression. Musical notation provides a good example. Guido d'Arezzo, an Italian Benedictine monk of the eleventh century (AD 995–1050), invented the four-line staff, which he used in combination with a notation earlier developed in the eastern Roman Empire for the recitation of Christian scriptures by means of marks called *neumes* (from Greek *pneuma*, "breath"). The *neumes*, similar to markings in the Quran to assist oral presentation, were written over the text and later

used to notate Gregorian chant. They appear to descend in some way from the Greek system of notation whereby different relative pitches were notated by letters of the alphabet (a few examples survive, poorly understood). In the fourteenth century the staff was increased to its present five lines.

The earlier forms of musical notation in Greece, and even ancient Mesopotamia, in India, China, and Japan, did not permit the recreation of the rhythm, pitch, and inflection of a composer, but were an identifying-mnemonic device that reminded a singer of a song whose rhythm, melody, and intonations he learned aurally. Guido d'Arezzo's refinement of these earlier mnemonic devices soon made possible previously unimaginable forms of music and of thinking about the inner laws of musical expression, the technological foundation for academic musicology. His achievements made possible modern "classical music" and the modern notion of "the composer."

For example, in Figure 2.13, from a trumpet concerto by Vivaldi, two trumpets play against each other in elegant counterpoint visible on the page

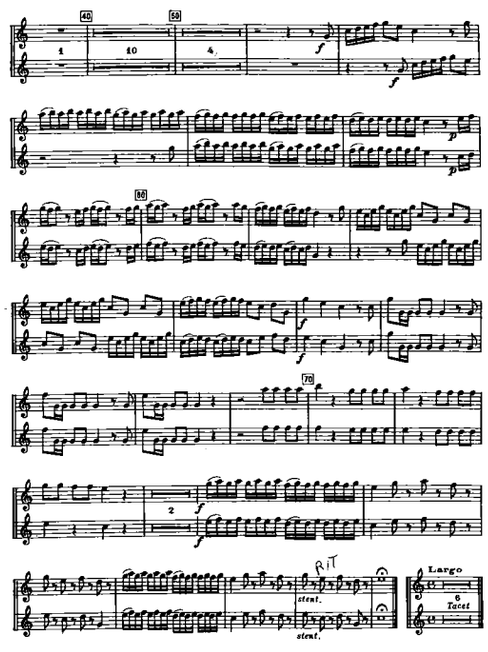


Figure 2.13 "Trumpet Concerto for Two Trumpets and Orchestra" by Antonio Vivaldi (1680–1743) in modern musical notation

$a = m,$

$b = n(mn+2),$

$c = (n + 1)(mn + m + 2),$

$d = 4(mn + 1)(mn + m + 1)(mn^2 + mn + 2n + 1);$

$ab + 1 = (mn + 1)^2,$

$ac + 1 = (mn + m + 1)^2,$

$ad + 1 = (2m^2n^2 + 2m^2n + 4mn + 2m + 1)^2,$

$bc + 1 = (mn^2 + mn + 2n + 1)^2,$

$bd + 1 = (2m^2n^3 + 2m^2n^2 + 6mn^2 + 4mn + 4n + 1)^2$

Figure 2.14 The mathematical solution to the problem of finding four numbers such that the product of any two of them is one less than a perfect square

as an aesthetically pleasing representation. The mark at the left of each stave  , called a *clef* ("key"), determines the range of pitches assigned to the five horizontal lines that intersect it, while the shapes of the notes determine their duration. Other marks add information about intonation and phrasing. Here is sound made visible, making possible the creation of patterns never before found in music. Modern musical notation is related to earlier systems of musical notation rather as was the Greek alphabet to Phoenician writing and other earlier traditions.

Mathematical notation

Another form of semasiography familiar to all makes it possible to "find four numbers such that the product of any two of them is one less than a perfect square" (Fig. 2.14). We can couch the problem itself in speech, but the solution, though one might find a verbal equivalent, functions through the symbolic use of alphabetic, numerical, and other signs unattached to speech. It is easy to see that mathematical semasiography is itself a language (but not speech), capable of achieving blinding feats of logic and abstract thought and even describing the governing forces behind appearances in the material world.

Computer icons

The international community of computer-users happily or necessarily tolerates a bewildering plethora of sematograms, the ocean of computer

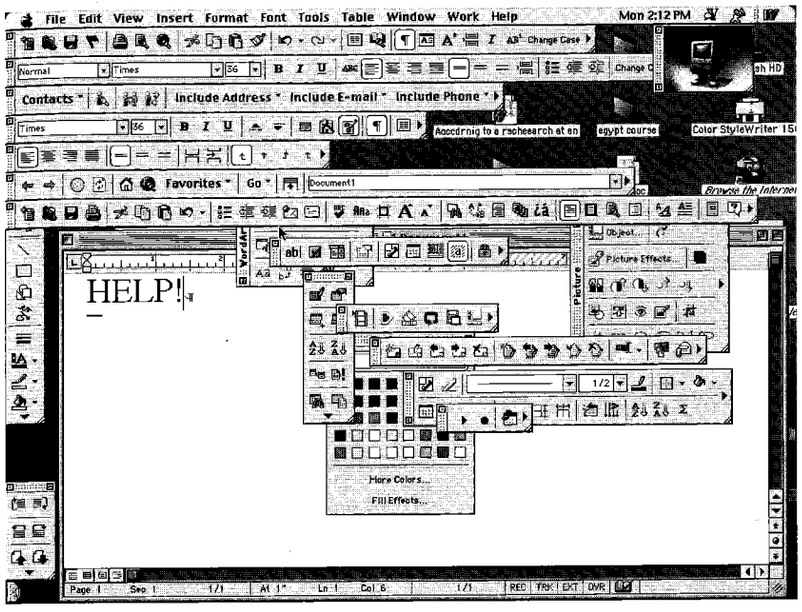


Figure 2.15 Computer semasiography

icons, which proliferate like microbes, most of unknown meaning, though in theory discoverable (Fig. 2.15). For example, in Figure 2.15 one might discover pictures of a lock, a house, and binoculars (and be tempted to call them "pictograms"), then infer that the "lock" locks something up, perhaps that the "house" goes to a general menu (but does it?), and that the "binoculars" bring something up close. The other buttons remain mostly mysterious. Such identifying-mnemonic devices, a kind of semasiography, do not stand for words, but usually for an action: If you press the "lock," the document cannot be opened. Like the identifying-mnemonic devices found in American Indian winter counts, their meaning remains best known to their creators, though their function is different because they enable the user to do something while the counts remind the interpreter of an event. Sometimes we can guess what such icons mean, but most have to be learned one by one, or are never learned.

Observations

Musical and mathematical notation and computer icons are surely writing, markings with a conventional reference that communicate information, but they are semasiographic in nature. Such writing, not tied to speech, works through symbolic means to communicate a variety of kinds of information that can bear great aesthetic, scientific, and social power. Semasiographic systems vary immensely in the sort of information they communicate, from the nature of sounds on the oboe to the relationship between quantities of light and matter, to dance steps on a stage (for which several systems exist). Nonetheless, all such systems are alike in that the information they convey does not make direct use of the resources of speech.

Semasiography preceded lexigraphic writing and is very old, but limitations for the expression of many kinds of information by semasiographic means are enormous. We cannot discuss the origins of the American Civil War or the meaning of life by means of mathematical symbols. The discovery of the phonetic principle in graphic representation in Sumer in the late fourth millennium BC did not, therefore, change writing's fundamental nature as "a system of graphic signs on a material substance with a conventional reference that communicates information," something very unlike speech, but opened to writing the enormous, almost limitless opportunities for precision that symbols originating as speech can offer. It is not surprising that so many scholars have identified the discovery around 3400 BC of the phonetic principle (a way to encode sound in graphic marks) as the moment when "true writing" or "full writing" began, which has led to the common view that writing is not "writing" unless it embodies a reconstructible utterance. "Writing" didn't begin in 3400 BC, but an epoch-making, earth-shattering change in the way writing worked *did* begin then.

The discovery of the phonetic principle in graphic representation made possible a new kind of writing, which I am calling *lexigraphy*, "writing with words," to distinguish it from its older brother *semasiography*, "writing with signs," of which we have considered examples, ancient and modern. Lexigraphic writing is, as a system, always rooted in speech, and no form of it more so than the Greek alphabet. The commentators reviewed in Chapter 1 mistake lexigraphic writing for writing itself, easy to do when one is an alphabet-user and not thinking about writing theoretically or historically. Only an alphabet-user could think that lexigraphic writing

"represents language" or "represents speech," but certainly it does refer to elements and features of speech – to nouns, qualifiers, and syntax – in order to present and develop original thought through symbolic means.

Figure 2.16 Sign in Tokyo airport

In West Semitic writing and in the Greek alphabet most graphemes were in truth phonetic, "with sound value," but in the modern systems descended from the Greek, semasiography has re-emerged as a critical component. The two kinds of writing have nearly a longing to work together and today are found everywhere. For example, a welcome sign for the weary traveler trying to find a toilet in the Tokyo airport contains four strongly iconic sematograms (Fig. 2.16). Schematic representations of a woman and a man at the far left tell you that there are facilities for either sex; the schematic man in a wheelchair reveals that there are toilet stalls with wide doors and adaptations for handicapped users; the figure changing an infant indicates that a changing table is available. We can alphabetize the Japanese lexigraphic writing to the right of the sematograms as *keshoushitsu wa kouhou e,* but should remember that *keshoushitsu* (the first three characters) and *kouhou* (the fifth and sixth characters) are in origin Chinese characters, which do not have phonetic value at all, but here stand for the appropriate Japanese words (the Japanese call the use of Chinese signs with Japanese values *kanji*, "Han [= Chinese] writing"). The remaining signs are phonetic and stand for open syllables (called *hiragana*, "ordinary [because they are not Chinese] writing"). The Japanese phrase translates literally "For the make-up room [go] back," that is "The toilets are back the opposite way." This you will never learn from the iconic sematograms, or from the Japanese lexigraphic writing unless you have mastered *kanji* and *hiragana* scripts. Fortunately the English *lingua franca* explains where to go! Whoever designed this sign believed that one needs both kinds of writing, semasiographic and lexigraphic, and some knowledge of English, to find a toilet in this busy international airport.

3

Categories and Features of Writing

Now that we have begun to face the complexities in the task of understanding the theory and history of writing, it will be useful to organize the categories of writing into a stemma of structural relationships, beginning with the fundamental distinction between semasiography and lexigraphy. In the following chapters we will focus more on several different kinds of lexigraphy.

The **stemma facing the title page of this book** is a chart of structural relationships, not a historical stemma, but let us explore its historical features as well. In the history of writing, earlier forms of symbolization – making one thing stand for another – remain embedded in later forms, precisely what took place in the examples cited in the last chapter of the admixture of semasiographic and lexigraphic writing.

The Rebus

Although we cannot identify the exact moment when the critical shift from semasiographic to lexigraphic writing took place, it appears to have taken place toward the end of the fourth millennium in southern Mesopotamia, probably in the city of Uruk, home of Gilgamesh (the modern name "Iraq" comes from this ancient city). We guess that the shift took place through the working of the *rebus* (= Latin "from the things"). Someone discovered that a graphic mark can encode a sound recognizable in speech by divesting the graphic mark of its "meaning," leaving only the sound. Sometimes this shift is called *phoneticization*. Henceforth, to the shape is attached a certain sound and not a certain meaning. Once organized into a system, different shapes with different attached sounds (or a range of

sounds) could be combined to symbolize such elements of human speech as names of people and of places and names of things, useful when a lot of wealth needs to be accounted for. Lexigraphy does not evolve from "pictograms" or "picture-writing," but depends on the discovery of the rebus applied to signs that were sometimes iconic, but just as often abstract and never the picture of anything. Only insofar as we can consider the discovery of the rebus logical can we consider lexigraphic writing to be implicit in semasiography.

Figure 3.1 Advertisement for Heineken beer as a rebus: HEINIKEN REFRESHES THE PARTS OTHER BEERS CANNOT REACH. (After Harris, 1988, p. 136.)

Figure 3.1 illustrates in principle how a rebus works, although in this example the rebus-maker three times appeals to alphabetic characters to make his message succeed. Not counting the alphabetic signs, the pictures stand for sounds and are *phonograms*, "sound-writing"; the last sign, however, does not stand for a sound but for the word "reach": It is a *logogram* or word-sign. The sounds attached to the fifth and sixth phonograms, /ref/ and /rushes/ = "refreshes," are not obvious. Fortunately, the slogan is celebrated in the annals of British advertising and once some meaning is recognized, the reader will understand the whole. All writing is rife with similar ambiguities. Of course, the sound values attached to these signs do not belong to a system of writing; they are a game.

The rebus seems to have been discovered three times: in southern Mesopotamia around 3400 BC; in China around 1200 BC in the late Shang Dynasty (c.1600 BC–c.1100 BC, though some Chinese claim much earlier dates); and in Mesoamerica some time before the birth of Christ. In Mesopotamia, the historical inspiration for the discovery of the phonetic principle through the rebus must have taken place through the need to record personal names, place names, and names of commodities in connection with economic transactions. The Mesopotamian tradition is by far the most important because from it descends all modern systems of writing, including the writing on this page. The bizarre Chinese writing and its descendants are confined to a few Asian countries, highly populated, and Mesoamerican writing, which glorified tribal leaders, died with the Spanish conquest.

Logography, the First Division of Lexigraphy

In the earliest lexigraphic systems, in Mesopotamia and Egypt, the phonetic principle was by no means applied to all signs, but only to some. It is practical to divide lexigraphic writing into the two categories shown in the chart facing the title plage, depending on the kind of value assigned to the signs: *logography* and *phonography*. By value I mean the segment of speech to which the sign refers. In logographic writing, such logograms ("word-signs") as the "stretching arm" in the Heineken rebus *do not have phonetic value*, but they *do refer to significant segments of speech*. In phonographic writing, the signs *do have phonetic value*, and they *may or may not refer to significant segments of speech*.

Logograms and words

We ordinarily think of the segments of speech to which logograms refer as words, although in very many cases the notion that such segments of speech are words derives from their association with written signs. Logograms can in exceptional cases also refer to phrases or to portions of words that are independently meaningful (that is, to morphemes, as the syllables in "man-drake"). But in deciding what is a "word," very often the written form comes first; the boundaries of the "word" in speech come second. Literate people cannot easily sort this out, but linguists cannot define a "word" other than the things listed in a dictionary. Words appear not to exist as discrete entities in speech. Rather, in nature they are patterns of sound in a continuous wave (see Fig. 13.4 below), placing us in an awkward position when we want to talk about how "words" are associated with written signs.

We want to believe that words are discrete entities, however, because personal names are surely bounded and discrete, as are the names for the things that surround us in life. Such elements of speech even undergo easy mutation according to circumstance – for example, you may call your wife, whose name is Patricia, "Pattykins." We all read and write and believe that RUN, PERKY, RUN consists of three words. Nonetheless, speakers of languages that have never been written down, or illiterate persons living within a society with a written tradition, do not recognize the category "word" even though they recognize that people have names, as do animals and other

objects. In famous studies in the 1930s the classicist Milman Parry showed how when you asked an illiterate Balkan oral singer to sing just one "word," he would sing a whole line, several lines, or even a whole song. Even so we might say, "Do you mind if I have a word with you?"

It may be true that speech is a wave, a stream in which words are not discrete entities, but if you ask a child learning to speak, "What is that?" he will say "ball" or "cat" or "granpa." If as a grownup I want to write down somebody's name, because there is wealth at stake, I have no easy way of symbolizing his name by means of marks. Who is this? Let's say that I've discovered how to make a record of his name through stumbling on the rebus: I am writing phonograms. But what is he herding? That is a "cow." I make a note of it beside the name of the man by drawing a picture of a cow's head with horns: Now I am writing with logograms, a graphic sign that stands for the word "cow," but the sign does not have the sound /cow/ (at least not yet). I have made no attempt to "record speech," but through the rebus have symbolized the man's name and through the resources of sounds in speech have recorded the important information "cow." I have also discovered the concept "word," which writing makes possible, because that is the thing attached to the sign: COW. Now we may expect a number to tell how many cows, recorded in a semasiographic system, strokes or impressions. That is how lexigraphic writing began.

The nonphonetic nature of the logogram, one of the bases for lexigraphic writing, is highly confusing and persistently difficult to grasp. There is *no necessary equivalent in the sounds of speech to a logogram*, although logograms stand for "words," that is, segments of speech with meaning. For example, the logographic Arabic numerals 1, 2, and 3 stand for whole words, in English *One*, *Two*, and *Three* (they do not stand for the "ideas" of unity, duality, and trinity). In German the same signs stand for *Eins*, *Zwei*, *Drei*. In Istanbul, they would be *Bir*, *Iki*, *Üç*. We might think of logograms as close to sematograms, because no necessary equivalent in sound is attached to either. But logograms represent *significant segments of speech* and sematograms do not – we will continue to call these segments "words" even if philologists cannot agree on what they are. The distinction between logogram and sematogram will be critical to our efforts to understand the theory and history of writing.

To add to the confusion, we can sometimes understand logograms without the intercession of segments of speech, just like sematograms, when the signs represent clearly what an unknown segment of speech might signify. For example, without knowing anything about ancient Egyptian

speech it is easy to see that  refers to "the sun god," however the Egyptian might have pronounced the name of this god. It is the picture of a sun and the picture of what might be a god. Even if we can understand such signs in this way, they are nonetheless logograms that in history stood for the appropriate segments in the user's language (in this case ancient Egyptian). Sematograms, by contrast, do not stand for significant elements of speech, for "words," but for thoughts that have many possible, and no necessary, equivalent in speech (for example, how to uncrate a refrigerator).

Additional signs

Sometimes logograms are complex, consisting of more than one sign taken together, appearing in a conventional arrangement. Additional signs can add three types of information.

1 They can explain the category of sign. For example, in my own middle initial [B.] the [.] explains that the sign [B], which stands for the word /bē/, is an abbreviation. In the Egyptian writing for "sun"  , the stroke beneath the disk indicates that the disk is a logogram (and not a phonogram).

2 Additional signs may also add phonetic information to the nonphonetic logogram; for example, in English [2nd] the [nd] makes clear that the logogram [2] is to be read not as the cardinal "two," but as the ordinal "second." Notice that the use of such elements, called *phonetic complements*, ties the logogram to a certain language, so that "12mo" instead of "twelve months," or "twelfth month," as an English-speaker might think, must be read as Italian *duodecimo*.

3 Additional signs may place the accompanying signs in a certain category. For example, English [$0.36] is "thirty-six cents" because the [$] tells us that the logogram [36] is to be understood in the category of accounting. In this example, as often, the order of the signs in a complex logogram does not follow the order of words in the corresponding expression. In the Egyptian complex logogram  , the god sign shows that the god Re is meant and not the sun disk itself or something else related to the behavior of the sun disk. Such semasiographic additional signs as [$] or

 are *semantic complements* or *determinatives*, because they determine the category within which the accompanying signs must be understood. "Semantic complement" is a more scientific term, but "determinative" is long established. In modern European orthographies, capitalization can fulfill the same function as a semantic complement.

Phonography, the Second Division of Lexigraphy

Logograms refer to significant elements of speech, to "words," but in *phonography* ("sound-writing") the signs may refer to significant or nonsignificant elements of speech. When pronounced in sequence, such sounds provide hints about significant elements of speech, that is, words and phrases. Logographic writing does not require the same linear organization of signs. We would, for example, read the complex logographic

$M6.4

as

"six million four hundred thousand dollars" or "six point four million dollars"

wherein our verbal equivalent to the logograms [$] and [M] and [.] and [6] and [4] by no means follows the same order as the written signs. Nor does it when we render the logographic

♣QJ82 ♥A6

as

"queen, jack, eight, and two of clubs, and the ace and six of hearts."

In phonographic writing, by contrast, the *signs follow the same order as the sounds in human speech*, as in "now is the time for all good men to come to the aid of their country."

In history, as we have seen, phonograms ("sound-writings") have at some point acquired phonetic values through the rebus. Phonograms can refer

to the smallest elements of speech, to vowels and consonants in alphabetic writing, or to single syllables or to several syllables in syllabic writing; but such phonetic signs are not semantically meaningful in and of themselves, as are the elements in speech to which logograms refer. When pronounced, their sound may refer to something meaningful, as /go/ means "go," but the sign itself does not signify "go," only its sound. In other words, phonograms are not in themselves meaningful: *phonograms have values but no significations*. In an example such as [B 4] = "before" the signs function as phonograms; written as [4 Bs] = "four letter Bs," the signs are logograms (except for the [s] after [B], which is a phonetic complement).

Syllabography and Alphabetic Writing, the Two Categories of Phonography

The two categories *syllabography* and *alphabetic writing* (which Gelb called *grammatography*) are distinguished by the kind of value to which the signs refer. Syllabograms refer to separately utterable but nonmeaningful elements of speech so that a single character may have the value /ba/, /be/, /bi/, /bo/, /bu/, or /ab/, /eb/, or /bab/, /beb/. A repertory of syllabograms is a *syllabary*. In alphabetic writing, by contrast – that is, in the Greek system and its many descendants – there are two categories of signs, one utterable (signs for vowels) and one nonutterable (signs for consonants). Both categories are called *letters*, which exist only in alphabetic writing. Characters in others systems should be called syllabograms or logograms. When combined in sequence, the two categories of letters, vowels and consonants, create graphic images of syllables and words. Letters can be simple, for example *g* or *r*, or by the addition of other letters or diacritic marks they can be complex, for example *th* or *é*. A repertory of alphabetic signs is an *alphabet* or, in historical studies, an *abecedarium*.

Unlike syllabograms, named by their value, letters have names that are different from their values. So [β] is called *beta* and B is called *bee*. In the example [B 4] = "before," the letters function as syllabograms, acquiring their phonetic value by the rebus through the names assigned to the signs.

A common mistake in traditional studies of writing is the belief that the Phoenician writing, which preceded the Greek, worked in the same way as the Greek alphabetic writing, that the Greek writing refined something that the Phoenician writing was already doing in a rather crude way. But

the two systems did not work in the same way at all. The Greek letter forms are based on and closely resemble their West Semitic model, yet in structure the Greek alphabet was a radically different kind of writing from the West Semitic family, enabling different mental processes and standing in a different relationship to speech. The casual use of the word "alphabet" to describe both systems of writing disguises the innovation that took place c.800 BC and that has enabled deep change in human culture. One need remember that the Phoenician writing was unpronounceable except by a native speaker, who could only guess at oral equivalents to graphic marks. The Greek writing, by contrast, was pronounceable by someone who did not know the Greek language. By mistaking a historical relationship for identity of function, the word *letter* is casually applied to the signs of Phoenician and its related Aramaic, Hebrew, and other West Semitic scripts, but it should not be.

Auxiliary Signs and Devices

There are, then, three principal categories of lexigraphic signs:

logograms (nonphonetic, words)
syllabograms (syllables)
alphabetic signs (parts of syllables)

However, sematograms are rarely abandoned in systems that use these kinds of signs. Sematograms survive conspicuously in the "determinatives" or "semantic complements" that accompany logograms and syllabograms in ancient Egyptian and Mesopotamian writings, which place the accompanying word in a certain category. For example, as stated on page 42, in the Egyptian the bearded man places the word within the category "god."

In phonography we call one kind of auxiliary sign a *diacritical mark*, or *diacritic* (Greek "distinguishing"), something added to a sign to alter its sound. For example, in French *manque* is /mank/ and *manqué* is /mankay/. Such phonetic marks belong to a broader category of *auxiliary signs and devices* that assist the reader's perception of the organization of thought: periods or full-stops indicate the completion of a thought; commas indicate a unit of thought; colons divide a statement from its

explanation or elaboration. Such kinds of signs do not constitute a category of writing in themselves but are auxiliary to the principal categories of logography, syllabography, and alphabetic writing.

Here are some examples of auxiliary signs and devices in English from our own experience of writing. In

green Green

a change in shape of the initial letter changes the meaning from a color to the name of a person. In

hit "hit"

the first word is a verb or noun and the second word is something to be talked about. In

quit now! quit *now!*

the odd slant to the letters informs us of meaning through spoken emphasis not contained in the letters themselves. Students are often unsure of the difference between

its it's

forgetting the meaning of the silent auxiliary mark ['']. Through such auxiliary signs we might even distinguish social classes:

lightnin' 'Enry

or through special spelling, nationalities:

grey gray

Formatting is a similar auxiliary device that aids comprehension. For example, white space between words (which the Greeks never used) indicates conventional word-boundaries, telling you how to look up the word in a dictionary. Indentation indicates a division of thought larger than a sentence. The color of the signs can mean various things. For example, the Egyptian scribe wrote in red and black: red for titles and section breaks, black for the text. The color is semantic, it tells you something.

Spelling Rules

In phonography, both syllabography and alphabetic writing, there are never enough signs for all the possible sounds of human speech, even in the already unwieldy IPA. By nature phonography must make harsh compromise between ideal vision and obdurate reality. For this reason evolve *spelling rules*, which, like auxiliary devices, enable the phonographic system to extend its reach and refine it. Hence in Italian *c* before *i* and *e* is /ch/ as in *ciao*, *civile*, but it is /k/ before *o* and *a*, as in *coca*. For the sound /k/ before *i* or *e* you must write [ch], as in *vecchio*, *che*. In English orthography, the final silent *e* can lengthen a preceding internal vowel:

hid hide
mat mate

In phonographic writing, spelling rules are the set of conventions that define the range of sounds that a sign may encode, depending on conditions, as well as the values of certain combinations of signs. In the Cypriote syllabary, used from c.1100 to 200 BC to record Greek solely on the island of Cyprus, there are no signs for sounds represented in the Greek alphabet as consonant clusters. Hence you write the name *Stasikypros* with signs we would transliterate as *sa-ta-si-ku-po-ro-se*, but in other contexts the same signs *sa-ta* could represent alphabetic *santa* and *po-ro-se* could represent alphabetic *poros*. The spelling rules permit this range.

Orthography

If the purpose of writing is to make a visible record of speech, then phonography is better than logography and alphabetic writing is the best of all. A disturbing feature of modern phonographic writing, especially of English and French, is the failure of its signs to reveal the sound of the word written in spite of spelling rules. So English orthography permits

THE BUCK DOES FUNNY THINGS WHEN THE DOES ARE PRESENT

or

THE SOLDIER DECIDED TO DESERT HIS DESSERT IN THE DESERT.

The following list of 13 items contains 15 verbs and 16 nouns:

bow cow dow how jow (to ring a bell) low mow now row sow tow vow wow!

In these cases, the same spelling yields many different pronunciations, hence different meanings, according to context. This is *polyphony*, common in systems of writing.

Just the opposite, words with the same pronunciation but different meaning can be spelled differently:

beau bow
reed read
read red

This is *homophony*, also common in writing systems. In such cases the spelling is semantic, it communicates information: We know what it means not by how it sounds, but by how it is spelled. On this principle, inflated a trillionfold, is based Chinese writing.

Through orthographic convention other words become virtual logograms whose pronunciation, based on the recognition of shape and not on spelling rules, is learned on a case by case basis:

A ROUGH HICCOUGH PLOUGHED THROUGH A DOUGHY COUGH

Even such nonphonetically composed common words as "which," always pronounced as /hwich/, function as virtual logograms. Once I was unable to persuade a copyeditor, after much effort, that not only "which," but "whale" begins with the sound /h/. Such intimate, and in our own world unconscious, relationships between written forms and speech are powerful and explain the conservatism of spoken English since the invention of printing in the mid-fifteenth century and the spread of popular learning that printing made possible.

In many cases historical orthography, always a force in the history of writing, is to blame for the situation in English. We spell *knight* and say /nīt/, but once we said /kniht/. Other causes explain the formation of many English logograms; for example, the influence of intellectuals who inserted the *b* in *doubt* by analogy with Latin *dubitum*. The word has always been pronounced /dout/.

Many of the logograms that pepper English orthography return to the formalization of English orthography in the nineteenth century, especially in America by Noah Webster (1758–1843), who published his first dictionary in 1806, a good example of the influence of a single man on a tradition of writing. During that same year the personal secretary of the president of the United States, the brilliant and driven Meriwether Lewis (1774–1809), wrote on Saturday, February 1, in the journal to his expedition of discovery, according to his own published version:

> we found twenty seven of the best rifle powder, 4 of common rifle, three of glaized and one of the musqut powder in good order, perfectly as dry as when first put in the canesters, altho' the whole of it from various accedents has been for hours under the water. these cannesters contain four lbds. of powder each and 8 of lead.

The orthography is a mixture of logograms (4, lb, 8) and arbitrary alphabetic phoneticization in which nothing is standardized. The entry "lbds" is, first, an abbreviation of the Italian *libra* = [lb], but pronounced as English "poun*ds*," as proved by the phonetic complement [ds]. Five generations of Noah Webster's "blue-backed speller" (*The American Spelling Book*, from 1783) put an end to such irregularities as we find in the *Journals* of Lewis and Clark, but froze into American orthography many examples of words whose pronunciation the linear sequence of signs does not reveal, "as everyone knows."

Disturbed by modern English orthographic practices, many have taken seriously the task of reforming the whole system. George Bernard Shaw created his own logical system of phonography, and gave an example of "All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood" (= Article 1 of the Universal Declaration of Human Rights) (Fig. 3.2). Unfortunately such reformist projects ignore the fact that traditional and conventional usage is the essence of a writing system, pre-

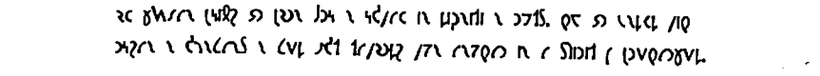


Figure 3.2 Opening portion of Article 1 of the Universal Declaration of Human Rights written in George Bernard Shaw's "Shavian alphabet"

served by a social class or a social system that values a particular system. Orthography is part of traditional usage. To change such usage is to fail to communicate thought and information by graphic means. The trouble with Shaw's alphabet is that no one can read it.

4

Some General Issues in the Study of Writing

It is time to summarize and review the categories of writing and the main features of these categories.

1 *Semasiography*: Writing in which the signs are not attached to necessary forms of speech. *Sematograms*, the elements of semasiography, may be arranged in any conventional way.
2 *Lexigraphy*: Writing in which the signs are attached to necessary forms of speech. They are (usually) arranged in a linear sequence corresponding to sounds in speech. There are two divisions.
   (i) *Logography*: the signs represent words (but not sounds), significant segments of speech. A logography would be a system in which *logograms*, the elements of logography, predominate (sometimes logograms do not follow the same order as words in speech).
   (ii) *Phonography*: the signs represent sounds. Such sounds are ordinarily nonsignificant elements of speech. There are two kinds of phonographic systems.
      - *Syllabography*: the signs represent syllables, the smallest apprehensible elements of speech. A syllabography would be a system in which *syllabograms* predominate.
      - *Alphabetic writing*: the signs represent elements of speech smaller than syllables, although such sounds do not exist in nature as separable elements of speech. In alphabetic writing *letters* predominate.

Although this is a structural description, it is also a rough outline of the history of writing, understood as a technology that underwent broad and radical changes over millennia and came to serve ever more efficient and

complex forms of communication and thought. The major changes were three.

First was the discovery of the phonetic principle, the representation of the sounds of speech by graphic means. This discovery appears to have been applied three times in a more or less systematic way: in southern Mesopotamia, in China, and in Mesoamerica. But all these systems are only partly phonetic.

The second major discovery was of a wholly phonetic writing. We cannot date the discovery, but perhaps as early as 1800 BC in the Near East and rather earlier in Crete, c.2100 BC (for the earliest "Cretan hieroglyphs"). While such writings are wholly phonetic, that is, most signs refer to sound and are not meaningful, they still cannot be pronounced except by a native speaker. Wholly phonetic writings made possible an immense constriction in the number of signs over the earlier logosyllabaries (made up of logograms and syllabograms) by focusing on a single semantic aspect of communication, namely sounds of the human voice speaking some "language." This advantageous constriction was gained at the loss of clarity provided by the many semantic nonphonetic elements of the earlier logosyllabaries.

The third major shift was the invention of the Greek alphabet around 800 BC, a system that atomized the sounds of human speech, utilized symbols for these sounds, and made possible the approximate reconstruction of the sound of human speech, even by someone who does not speak the language.

In studying the history of writing we must remember that a continuity of forms can mask an extreme shift in inner structure, while two sets of completely differing forms can function in the same way.

Strategies in the Formation of Lexigraphic Writing Systems

We may regard the tangled course of the history of lexigraphic writing as an ever-living response to the basic problem that speech and writing are different by nature, one invisible and transitory, the other material and lasting. For this reason the two systems can never match one another, but stand in an uncertain relationship. Imagine that one wished to invent a lexigraphic writing (as did the Cherokee Indian Sequoia, and many others). If you make

up a different sign for every word, it quickly becomes unmanageable (or like the nightmarish logographic Chinese writing). Much better to assign multiple meanings to a single sign and thus reduce the inventory. You can write

I ♥ NEW YORK

or

MY ♥ LONGS 4 U

or

♥Q10

in which the single logogram ♥ refers first to a word for a strong emotion, then to a word for the physical organ (though meant as the seat of emotions), then as a category in a game. Something rather like this actually happened in the early systems of writing in Egypt and Mesopotamia, as we will see.

Another way to limit the number of signs is to assign them different functions in accordance with how they are drawn. For example, [2^2] means "two-squared" or "two times two," though we would ordinarily understand its logographic representation directly without the intercession of any forms of speech. We can write [ix] as a logogram for "nine," but by adding the auxiliary sign [.] change the meaning to ordinal "ninth" [.ix]. Thus do auxiliary signs and devices make more flexible a limited repertory of signs and help ease the immense distance between speech and writing.

Another way to extend the range of a repertory of signs which we want to be broad but manageable is to invent the phonetic principle. By discarding the evident meaning of a logogram yet preserving the sound, then arranging the signs in sequential order we can create a material basis for an element in speech; for example,

B 4 

or

or

I M <red>E 2 C U

In using such devices, as do text-messagers the world over today, the writer has ceased to make use of singular logograms *meaningful in themselves*, as ♥ means "love" or "heart" or "the suit of hearts in a pack of cards," to use meaningful combinations of phonetic signs *meaningless by themselves*.

Writing and Play

Because writing is use of conventional signs in a conventional system as instruments in mental processes, writing is a form of thinking. Certain kinds of writing enable certain kinds of thinking. To illustrate the basic disjunction between lexigraphic writing, which appears to imitate speech but which can enable extremely fine forms of thought impossible in speech, and speech itself, governed by its own syntax and rules of expression, we might consider a random passage from *Finnegans Wake*, by the eccentric Irish author James Joyce:

> Of all the stranger things that ever not even in the hundrund and badst pageans of unthowsent and wonst nice or in eddas and oddes bokes of tomb, dyke and hollow to be have happened! (Joyce 1958: 4.15.597)

The alphabetic signs do not represent speech so much as they constitute things in their own right in a system partly self-contained, which means what it means (if it means anything) through hint and innuendo – of course, always in alliance with the resources of speech. When we read "in the hundrund and badst pageans of unthowsent and wonst nice," perhaps we think of "the hundreds and vast pages of the Thousand and One Nights" (of Scheherazade) but *pageans*, "pages," might be also "pageants" or "pagans." Joyce's *hundrund*" looks like German for "dog-round," but why? *badst* "vast" may also be "worst," no doubt to be taken with pagans, and *wonst nice* should be also "once nice," as opposed to *badst*. The *eddas* and *oddes bokes of tombs* are "odds and ends," but also the Norwegian Eddas of Snorri Sturulson (twelfth century AD) . . . and perhaps the medieval Domesday Book, on which a further pun could be Dome = Doom . . .

A less random example makes explicit Joyce's indebtedness to the powers of the alphabet to enable certain forms of thought:

> "(Stoop) if you are abcedminded, to this claybook, what curios of signs (pleasestoop), in this allaphbed! Can you rede (since We and Thou had it out already) its world? It is the same told of all. Many." (Joyce 1958: 1.1.18)

Perhaps he means that if you approach his story as the Greeks taught us, as an orderly narrative ("abcedminded"), with things coming in a row like the ABCs in an abecedarium, you will not fare well with *Finnegans Wake*. So give it up now (*Stoop* = "stop," but also "condescend"), for alphabetic logic won't help because you will have to get down to earth ("this claybook"), off your high horse, and alter your expectations. The Semitic names *alep*, *beth* are invoked in *allaphbed*, but somebody is in bed too, maybe "reding"? *Rede* is an old word for "advice" . . . one cannot "rede" *Finnegans Wake* from beginning to end because the book is a loop in which the end joins the beginning. You can jump in anywhere, as if you were on the Internet. All possible plots here come together ("the same told of all"), maybe. If you are too logical, you will never understand the stories of man that this book encloses.

The reader has to supply most of the jokes and worry about the allusions and philosophize about what it all might mean, which makes "reding" the book tough going. Many say that *Finnegans Wake* is written in a special or private "language," and one is not sure that *Finnegans Wake* has preserved the common reference we expect from our definition of writing. The close alliance between a late form of the Greek alphabet, our own, and speech makes such jokes and multiple meanings possible, while revealing the arbitrary and conventional nature of alphabetic representation.

Similar exaggerated literary forms appeared in Egypt in the perversely complex, enigmatic hieroglyphic writing of the Ptolemaic Period (where a picture of a "head" could mean the "number seven," because there are seven openings in the head), and in the *technopaignia* of the Greek Hellenistic period, when poets composed poems in the form of pan-pipes or an egg or a pair of wings or an altar. The vocabulary of these poems is obscure in the extreme, as are references to scarcely known facts of myth, and the learned, playful distortion of straightforward expressions. For example, Telemachus becomes "son of No Man," referring to Odysseus's adventure with the cyclops Polyphemus, where he tricks the giant by giving his name as No Man. They are scarcely intelligible as narrative of any kind,

but are puzzles, whose solution is in some way encoded in the poems' shapes. Like Joyce, they are games, conundrums, "a playing with poetic skill," as we may translate *technopaignion*.

While such antics as *Finnegans Wake* and the Greek *technopaignia* prove the inadequacy of definitions of writing that view it as a secondary representation of a primary speech, they are also signs of the end of an epoch in the history of written expression. Joyce's punning, allusive, elusive exclamations use the resources of speech and a tradition of writing, but exist in an expressive system parallel to speech. Such has always been true of all forms of writing, including alphabetic writing.

Because greater complexity better expresses the conventional nature of all writing, traditions of writing tend to become more complex over time, as we noted earlier. In the hands of scribes and the intelligentsia, we are given the Egyptian enigmatic hieroglyphs or the Greek *technopaignia* or James Joyce's obsession with puns and his solipsistic indifference to the pleasures of an audience making use of an alphabetic tradition.

"You Have a Lovely Hand": Writing and Beauty

Gelb's three categories of the "forerunners of writing" (pages 20–32) are all, in their way, forms of what we might call art, that is, they are pictures. Gelb thought, as have many, that "writing" began with pictures, although that is not quite what happened. Writing has a reader (information is communicated) while art has an observer (form is enjoyed), so they are different things, but art and writing are close nonetheless. You observe the form of writing too, and art can tell you something. In Egypt, where one of the earliest writings flourished, one can scarcely separate the illustrator from the scribe. For example, a formulaic stela from the Sixth Dynasty, c.2200 BC, shows a table of offerings before a certain nobleman by the name of Sarennewtet (Fig. 4.1; for more on this stele see Chapter 9). The writing above the table explicates the offering. The purpose of the stela is to ensure the feeding of the *ka* of the dead man, his essence, and we can translate the writing as "An offering that the king gives to Osiris [that is, the dead Sarennewtet], lord of Djedu [a place in the delta], the great god, lord of Abydos [center of the god's cult]. May he [the king] grant one thousand of bread ( ), beer ( ), beef ( ), poultry ( ), alabaster, linen,

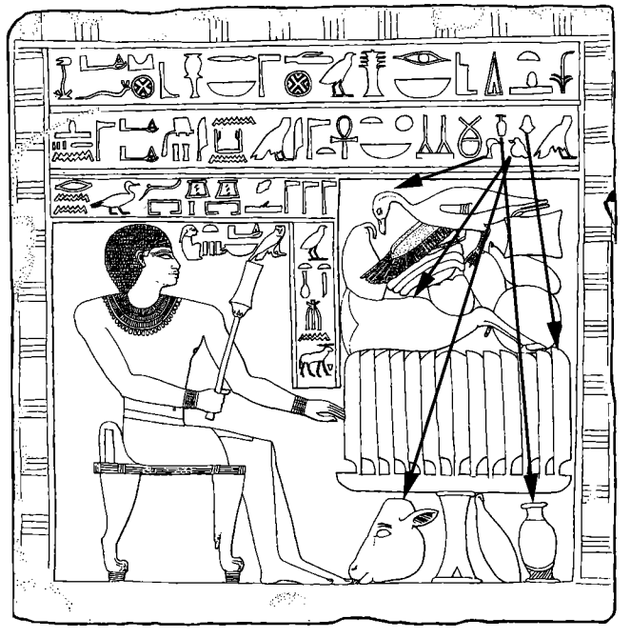


Figure 4.1 Stela of Sarennewtet, Sixth Dynasty, c.2200 BC. Carved limestone. (London, British Museum EA 585; drawing after Collier and Manley 1998, p. 48.)

every good thing from which the god [that is, Osiris/Sarennewtet] draws life, the revered one, the grantor of divine offerings of the gods, the counter of the two granaries, the master of the house, Sarennewtet, true of voice [that is, acquitted of wrongdoing in the hall of Osiris], son of Bameket."

The hieroglyphic signs for the staple foods bread , beer , beef , and poultry closely replicate the pictures of produce on and below the table: loaves of bread (but more elongated in shape), a jug of beer, beef (a leg of beef is on the table too), and fowl. A hieroglyph "seated man with flail" represents the human figure and the chair in which he sits in the same posture as Sarennewtet on the stela – his portrait is a kind of character in Egyptian hieroglyphic writing. Egyptian art and the highly iconic Egyptian hieroglyphic writing (but there were other forms:

Figure 4.2 Calligraphic medallion in Santa Sofia, Istanbul, containing a verse from the Quran

see Chapter 9) play back and forth between each other constantly and ingeniously. But the one kind of signs, the hieroglyphs, is lexigraphy, writing associated with elements of speech, and the other is art, with the magical purpose in this case of creating the objected represented.

Legion are the apologists for the artistic aspects of systems of writing, but they open themselves to criticism on the grounds that calligraphy works to keep the secrets of writing within a restricted social class, often priestly. For example, Figure 4.2, a nineteenth-century medallion in Santa Sofia, Istanbul, typically encodes a verse from the Quran and possesses magical power for those who think in such terms, but in no sense can or ought one read it, except as a kind of puzzle: Its power lies in the artistic excellence of its curves and twists and flourishes, all that remains for artistic visual expression within the puritanical and iconoclastic Islamic tradition. Even Chairman Mao, who murdered millions, prided himself on the elegant refinements of his beautiful hand .

Art and writing are inextricably entwined, but each has different origins and purpose. The more phonetic a system of writing becomes, the less inclined it is to calligraphic distortions, with the exception of the West Semitic Arabic script within the Islamic context. In the ancient world the other wholly phonetic West Semitic writings (Phoenician, Moabite, Hebrew, Aramaic), then the Greek alphabet showed little susceptibility to exaggerated calligraphic forms.

5

Protocuneiform and Counting Tokens

Good evidence that lexigraphic writing did not "come from pictures" but emerged in the context of a preexistent accounting system comes from clay semasiographic and logographic accounting tablets from late fourth millennium Uruk in what is today southern Iraq (see Map 1 in Chapter 6). The tablets are called "protocuneiform" because the *cuneiform* "wedge-shaped" writing that dominated the Near East for three thousand years grew directly from it. The renowned Gilgamesh was king of Uruk c.2600 BC (as given in surviving king-lists). According to the poem preserved in the library of Assurbanipal at Nineveh, destroyed in 612 BC, the hero

> carved on a stone stela all of his labors,
> and built the walls of Uruk,
> the walls of the sacred Eanna Temple, the holy sanctuary.
>
> *Gilgamesh*, Tablet 1, 8–10

Dates are shaky for the around 5,000 surviving protocuneiform tablets because they were found in a disturbed context, but they belong to c.3500–3100 BC. Their find spot seems to have been within the temple precinct of Eanna dedicated to the sky-god Anu and the fertility goddess Inanna in Uruk, the very temple on which Gilgamesh erected his inscribed stela.

The excavators' strata that contained the protocuneiform tablets are numbered III and IV, stratum IV being the older. The tablets from Uruk IV are unique to Uruk and appear to be close to the time of the invention of the system that was to become cuneiform writing, according to some the oldest lexigraphic writing in the world (but others doubt the ascription of phonetic value to protocuneiform signs). Tablets similar to those in Uruk III are found in several other locations in southern Mesopotamia,

and a related writing appears at this time at Susa in Elam in southwestern Iran (the modern Iranian oilfields). In its long run of cultural dominance, cuneiform writing was to encode 15 languages in an immense arc stretching from Anatolia to Iran, from the Black Sea to Arabia. Some of these languages were Indo-European (Old Persian, Hittite), some Semitic (Akkadian, Amorite), and some isolates of unknown affinity (the original Sumerian, Elamite, Hurrian). It was one of the greatest and most successful of all human technologies.

The Protocuneiform Tablets of Uruk III and IV

Figure 5.1 is an example of a protocuneiform tablet from Uruk IV. The marks on the tablet are divided into "cases," rectangular boxes that segregate the groups of signs. In the drawing, the signs on the tablet are transcribed at the sides of the drawings of the tablet. The semicircular impressions within the cases on the obverse , made by holding a

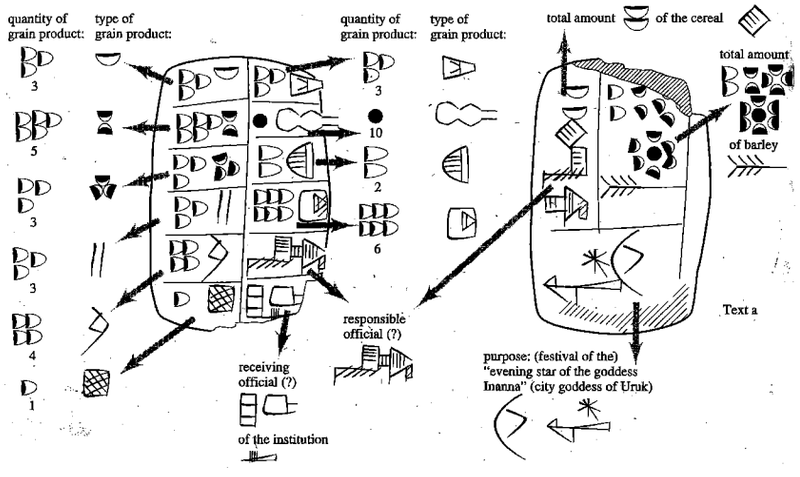


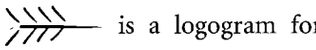
Figure 5.1 Drawing of a protocuneiform tablet from Uruk IV. (After H. J. Nissen, P. Damerow, R. Englund 1993, fig. 32.)

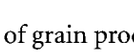
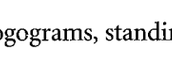
stylus at an angle and impressing its end into the clay, represent single units. The solid circle in the next to upper-right case ●, made by impressing the stylus vertically into the clay, represents 10 units. The other signs in the cases must represent commodities (but are not pictures of them), apparently different kinds of grain products.

The second to last case in the lower right-hand column contains different kinds of signs  , perhaps the name of an official. The name, if it is a name, makes clear how a phonetic script will support this economy of redistribution, informing us who is involved in the transaction. In the lowest right-hand case, perhaps the first two of the three signs  , one of them a head on its side, refers to the receiving official, and the third, lowest sign may refer to the institution he represents.

The reverse of the tablet appears to give the total of some kind of cereal and of barley needed to produce the products on the other side, though we cannot reconstruct how these sums were reached or, because of the complexity of counting systems in protocuneiform, even what the sums are; for different commodities Sumerian scribes used different systems of counting. Evidently "10" units of the cereal is meant  (but why 2 × 5 and not ● = 10?) and a quantity  of barley  .

Again, in the upper left-hand case on the reverse side, are signs for the official and, at the bottom, more or less intelligible, a star  that we understand from later cuneiform as standing for "goddess." Beneath that is the sign for Inanna  , the powerful Mesopotamian goddess of fertility, and finally the sign for "day"  , but here referring to the "evening star" according to a team of scholars in Berlin working on these tablets: Such and such a quantity of barley and some cereal are needed to produce the baked (?) products listed on the other side, in preparation for a festival of the goddess Inanna, who is the Evening Star.

Are these signs semasiographic or lexigraphic? The signs in the cases do not come in a linear order; they can be arranged in almost any order. In lexigraphy we ordinarily expect signs arranged in the same order as the elements of speech to which they correspond. Nonetheless, if the "barley" sign  is a logogram for *barley* in some language, as seems probable, it is already lexigraphic writing, because logography is a form of lexigraphy.

The same ambiguity of function attaches to the commodity and other signs. For example, the signs  = "type of grain product," = "day," and "Inanna"  = "Inanna" could be logograms, standing for words and names. We wish we knew more about how the signs for officials are working, if that is what they are – for example,  – but we cannot place them in a system of markings with conventional phonetic value; they are unique. In trying to understand the protocuneiform tablets we seem to stand between semasiographic and lexigraphic writing, with signs that stand for words, a form of lexigraphy, but no clear assignment of phonetic elements in speech to graphic signs.

Context for Protocuneiform Writing

The undoubted economic character of the protocuneiform tablets has colored general histories of writing, suggesting that all writing has appeared in response to economic behavior. In Mesoamerica, however, writing principally celebrated rulers. Early Egyptian writing also typically glorified the king, although recent finds may be economic in nature. In China the earliest lexigraphic writings, from c.1200 BC, are oracular, to reveal the will of the invisible spirits; some Sumerologists have suggested similar motives in the devising of cuneiform by the oracle-obsessed Mesopotamians. Certainly the Greek alphabet did not serve economic needs for three hundred years after its invention, and no evidence survives that the West Semitic writings, including Phoenician, enabled the keeping of economic records. Of course, the Sumerians were writing on imperishable clay,

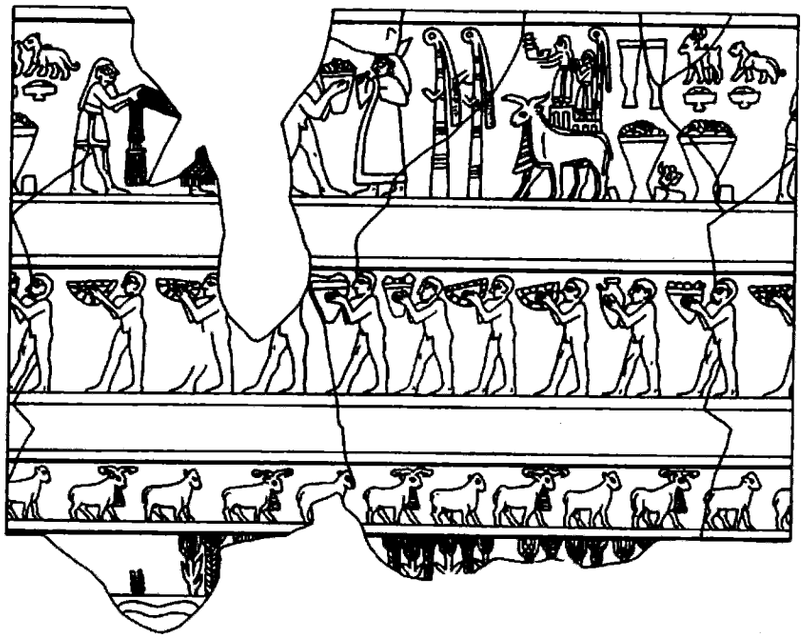
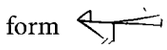


Figure 5.2 Sculpture on a stone vase from Uruk, c.3500–3000 BC. (Drawing after André Parrot, *Sumer*, Paris 1960, fig. 89.)

whereas other traditions preferred a perishable medium, including the West Semitic, so evidence for early economic application of lexigraphic writing may simply be lost.

In any event, in Sumer, where the West began, the scribes worked within an accounting system whose general functioning an extraordinary vase from Uruk nicely illustrates (see Fig. 5.2). This famous vase, one of the earliest relief sculptures in the world, is contemporaneous with the protocuneiform tablets and was found within the same temple precinct. Three feet high and weighing 600 pounds, the large vase was looted during the American/Allied invasion of Iraq in 2003, then returned in the trunk of a car, broken into pieces. From bottom to top appear, in alternating registers, first grain crops, then domestic animals, then naked men carrying baskets of produce, then in the lost portion the king (called the *En*) preceded by a naked priest in the presence of Inanna. This must be her

temple, where she is represented by the "ring-post signs,"  , door posts for a structure made of reeds with a ring at the top. The ring-post = Inanna appears on the accounting tablet in a stylized form  . Produce consisting of livestock and baskets of grains are being brought to the temple, the structure on top of which two votaries stand, and again the ring-post symbol for the goddess. Perhaps the ram, goat, cheetah, and vases behind the standards, but turned toward them, represent produce already within the temple precinct, near where the protocuneiform accounting tablets were found.

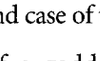
Naked votaries bring produce and livestock to the building as if in offering to the goddess, whose province is richness. The men's nakedness may refer to a ritual of sacred marriage, or place the offerings in a context of sexual reproduction. These commodities the authority of the En will redistribute according to service and need in the new redistributive economy of southern Mesopotamia, dependent on sedentary populations, irrigation agriculture, new craft technologies, and a system of written accounting. In this brave new world of wealth and power the tasks imposed on information storage have multiplied a thousandfold. On the one hand is the Uruk vase, which tells a kind of story in pictures, but includes the sign for Inanna, and on the other, contemporary clay tablets present abstract noniconic signs that represent commodities, office, festival, and personal names. They may all be logograms: signs that stand for words in speech. The "star" on the protocuneiform tablet  (lowest right-hand case of the reverse) seems to mean "goddess," but is not the picture of a goddess. It may be a sematogram, placing the "ring-post" in a category, that is, a determinative or semantic complement. The ring-post on the tablet derives from a picture of bundled reeds, but it means "Inanna"; the sign must be a logogram. We have pictures of things we recognize that stand for something else (the star, the ring-post), and pictures of things we do not recognize (the commodities, the names, if they are names). Lexigraphic writing has not begun as pictures that somehow became something else, but as a complex system of signs most abstract, some iconic, that refer to elements of speech. These signs relate to each other according to conventional rules in order to communicate information.

Figure 5.3 Plain tokens, found in Tepe Gawra, Iraq, c.4000 BC. The cone, spheres, and disk may stand for various grain measures, and the tetrahedron for a unit of labor, according to D. Schmandt-Besserat. (Courtesy Denise Schmandt-Besserat, The University of Texas at Austin.)

The Tokens of Denise Schmandt-Besserat

The Texas scholar Denise Schmandt-Besserat has offered apparent confirmation of the noniconic origin for signs in the earliest lexigraphic writing. Evidently both the form and meaning of *some* of the protocuneiform signs descend directly from a much older use of geometrically shaped clay tokens found over a large area of the Middle East, including Palestine, Syria, Mesopotamia, Anatolia, Arabia, and eastern Iran (but not Egypt) from as early as 8000 BC (see Fig. 5.3). The tokens are found in ever-increasing numbers down to the time of the protocuneiform tablets, when around 3400 BC they gradually disappear. In the fifth millennium in Uruk (but later, around 3400 BC, in Iran and Syria), in union with an increasing complexity of urban life, originally *plain* tokens became *complex*, with striations and other alterations. Some complex tokens are perforated, as if to be strung on a cord or string (see Fig. 5.4).

Schmandt-Besserat plausibly explains these objects, once ignored or discarded by archaeologists, as representing quantities or commodities in some kind of accounting system, though we can rarely or never be sure which quantities or commodities are meant (but Schmandt-Besserat attempts to explain various forms by referring to later cuneiform usage as standing for sheep, units of oil and grain, units of metal, types of garment, a measure of honey, and other commodities). Critics have disagreed with Schmandt-Besserat's combining token-shapes from different sites and

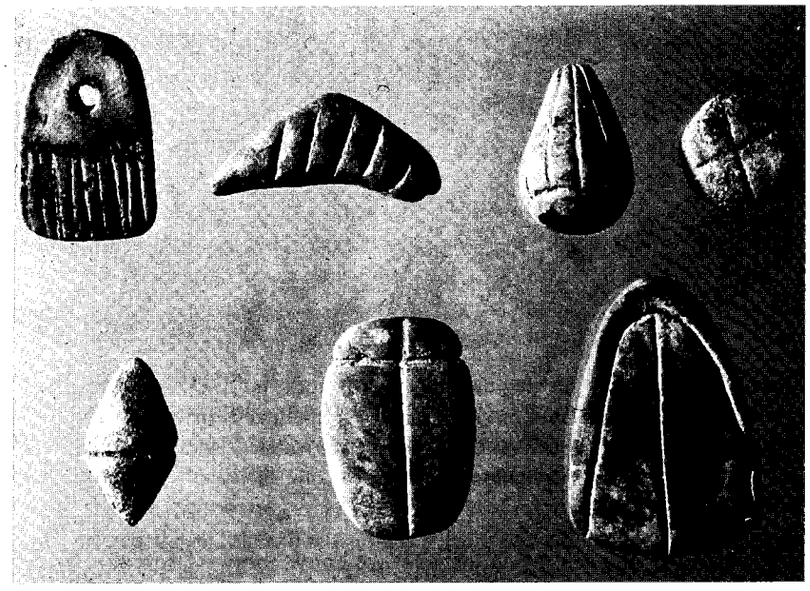


Figure 5.4 Complex tokens representing (above, from right to left) one sheep, one unit of a particular oil, one ingot of metal, one garment; (below, from right to left) one garment, (?), one honeycomb, according to Denise Schmandt-Besserat, from Susa, Iran, c.3300 BC. (Musée du Louvre, Départment des Antiquités Orientales, Paris; photograph, courtesy of Denise Schmandt-Besserat.)

periods in order to form her categories, but there must have been some way of keeping track of the grain, animals, and cloth deposited in the temple of Inanna and such places, and the tokens may well have represented commodities. What else could these ubiquitous objects be? Of the tokens found in Uruk, 85 percent were found in the temple precinct of Inanna.

Some continuity between this hypothetical system of preliterate accounting and the protocuneiform and later cuneiform tablets appears probable from the practice, beginning around 3500 BC, of enclosing a quantity of plain tokens within a clay ball, or *bulla*, a kind of envelope that prevented the objects from being tampered with. The uniquely Mesopotamian cylinder seal appears around this time, a cylinder made of a usually hard stone with an abstract or figurative design cut in reverse on the outside and a hole down the center so the scribe could carry it on a

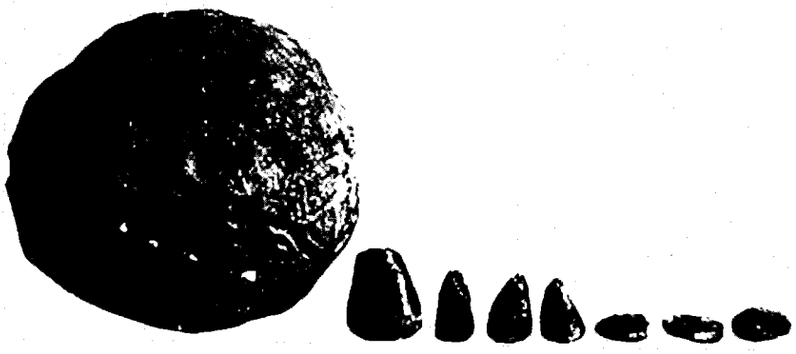


Figure 5.5 Envelope showing the imprints of cones and discs, from Susa, Iran, c.3300 BC bearing impressed markings similar to the tokens that were inside. (Musée du Louvre, Département des Antiquités Orientales, Paris; photograph, courtesy of Denise Schmandt-Besserat.)

string around his neck. Much of what we know about Mesopotamian art and religion comes from designs on these miniature works of art. Rolled across clay bullae, the cylinder seal asserted the identity of the person or office involved or a place of origin. Later, the cylinder seal will often bear the name of the official or place in phonetic characters; possession of a cylinder seal was the privilege of the scribal elite.

In order to record the contents of the bulla without having to break it, the practice appears to have evolved of impressing the actual tokens into the surface of the bulla before sealing it (Fig. 5.5). Such practice allowed for the subsequent abandonment of the envelope and its contents as unnecessary; the shapes of tokens inscribed in clay replaced the tokens themselves. The plain tokens may stand behind characters for quantities on the protocuneiform tablets, for example, the circle for 10 in Figure 5.1, ●, may derive its shape from the base of a common token in the form of a cone. The complex tokens may have become the basis for the protocuneiform signs of some commodities. In figure 5.6 token shapes are given in the left-hand column. The middle column gives analogous impressions in clay, and the third column gives meanings established from later traditions. Although we have pictures of things that stand for what they look like – stylized cows and dogs – the purely geometric signs are older. From the use of tokens enclosed in clay bullae appears to descend the use of clay as the medium of writing in Mesopotamia, a substance always abundant

on the shores of the Tigris and Euphrates rivers, but never as practical to store and transport as the Egyptian papyrus scrolls.

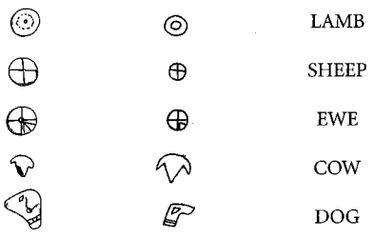


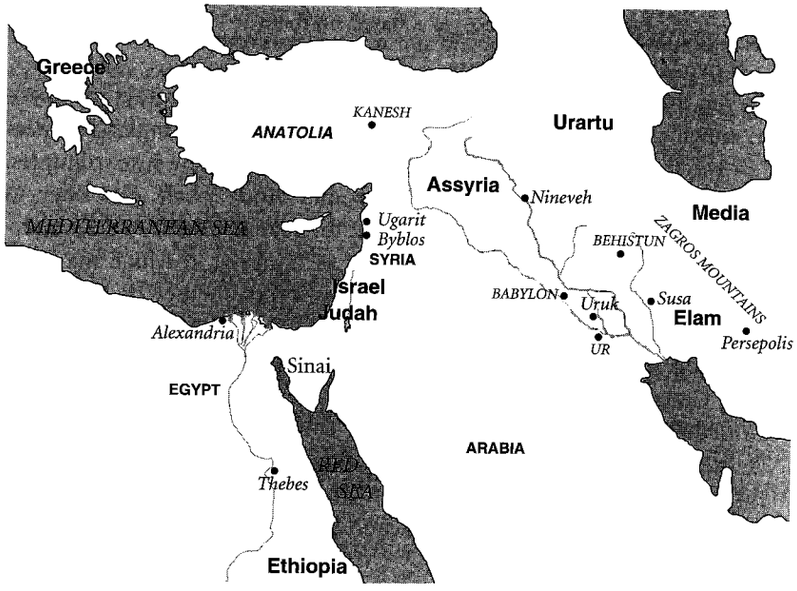
Figure 5.6 Tokens and protocuneiform signs evidently based on them

The impressed bullae that contain tokens are critical to testing Schmandt-Besserat's theory that cuneiform lexigraphic writing in some way descended from prehistoric tokens, because they are direct evidence of the translation of a three-dimensional tangible object into a two-dimensional marking. However, the unfortunate shortsightedness of museum curators who have been unwilling to break the 80 surviving unopened examples in order to test the theory means her argument rests on only a few sure examples. Only one complex token has ever been found inside a ball. Also open to criticism is Schmandt-Besserat's view that the tokens constituted an internationally recognized Neolithic system of accounting, in which the same shapes had similar values in different regions. Probably they changed over time and were different in different places, making it impossible to draw conclusions based on statistical evidence of numbers of certain kinds of tokens. Certainly it is odd that tokens are not found in Egypt.

Nonetheless, the evidence is strong for continuity between the prehistoric use of tokens and the system of accounting on clay so prominent in Mesopotamia and its cultural admirers. Of course tokens are not writing. What cataclysmic discovery took place to separate their use from the first lexigraphic writing?

6

Origin of Lexigraphic Writing in Mesopotamia



Map 1 Places important in Chapter 6

According to evidence from the protocuneiform tablets, at the moment when marks are about to acquire a conventional reference within human speech, at the moment of the discovery of lexigraphy, signs have different origins (Fig. 6.1). Some (1) are conventionalized sketches of the things they look like, fish, snakes, and oxen; alternatively (2) they symbolize something, as the sign for Inanna; or (3) they depend on a primordial accounting system within which abstract shapes represent commodities: The crossed circle, a common token design, appears to stand for "sheep." We cannot be sure

of the nature of these signs, but many appear already to be logograms, referring to the words "fish," "snake," "oxen," "Inanna," and "sheep" in some language. Several early phonetic complements seem to indicate that this underlying language was Sumerian (not all scholars agree).

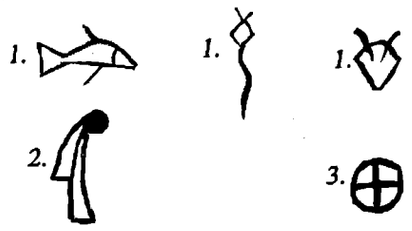


Figure 6.1 Five signs from protocuneiform

Discovery of the Phonetic Principle

Certainly "words" in Sumerian speech were at some time attached to such signs and from these attachments, through the rebus, logographic signs acquired phonetic value to become the world's first syllabograms (Fig. 6.2). For example, the protocuneiform design of a human head may have begun as a logogram for a word meaning "head," then, through the rebus, acquired the sound value /sag/, the Sumerian word for "head." The shift from logogram to syllabogram did not happen by itself but from invention, and over several hundred years, when individual scribes acted on their understanding of the advantages of marks that encode sounds and not number, people, or things. The initial discovery, made once, undoubtedly by one man, probably living in Uruk, enabled the gradual development of a logosyllabic writing in which logograms express nouns, verbs, and adjectives and phonetic signs express affixes, particles, and the spelling of foreign names. As for the form of the characters, we can trace the progressive stylization of protocuneiform characters encouraged by writing with a stylus impressed in clay (Fig. 6.3). Some of the shifts in form are substantial, as in from 2→3 and 3→4 in the evolution of SAG in Figure 6.3 (by convention the scholarly names of cuneiform signs are written in CAPS, as TI.).

We cannot determine precisely when this shift from logogram to syllabogram took place, but a good example of early phoneticization appears on tablets from the strata of URUK III, about 3100–2900 BC: The sign for arrow  , which in Sumerian is called TI with the value /ti/, is used to

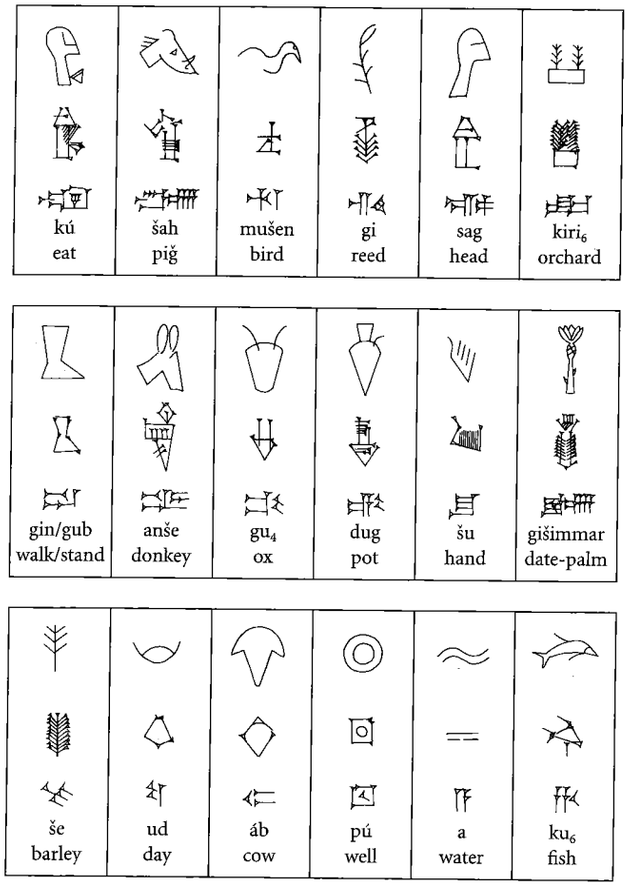


Figure 6.2 Cuneiform signs showing, from top to bottom in each case, first the form in protocuneiform, c.3300 BC; then the form in early cuneiform, c.2400 BC; then the Late Assyrian form, c.650 BC, the signs now turned 90 degrees to the left; then the syllabic value; and finally the meaning. The subscripts (as in gu_4) distinguish this sign from other signs that have the same phonetic value (called homophones). (After C.B.F. Walker, 1990, pl. 4, p. 20.)

represent the unrelated but phonetically similar Sumerian word /til/ meaning "life" and /ti/ meaning "rib" through the rebus. What are probably earlier examples of phoneticization come from the deeper Uruk IV layers, where /men/ = Sumerian for "crown" is written with the sign for

Figure 6.3 Seven stages in the evolution of the Sumerian sign SAG = "head," from c.3400 to c.500 BC. (After S. N. Kramer, 1981, p. xxiii.)

crown plus what appears to be a phonetic indicator /en/; or the moon-god Sin is written phonetically as /su/ + /en/. The sign for "reed," GI, is common in archaic texts to express the Sumerian homonym /gi/ = "to render, to deliver." We guess that the dropping of semantic value while preserving the phonetic value of logograms, as in /ti/ = "arrow" used for /til/ = "life," or /gi/ = "reed" for /gi/ = "render," depended on the need in the enlarging economy of fourth-millennium Mesopotamia to record the names of people and places, where the produce was coming from, who was receiving it at the temple and palace, and who was protecting it from theft. Accordingly, early examples of phonetic signs indicating such grammatical relationships as subject and verb by means of affixes are rare. The first full name written phonetically appears to be that of MES-KA-LAM-DUG on a gold bowl from Ur, c.2700 BC: The written name insures the lasting presence of the man. About the same time, four or five hundred years after the invention of protocuneiform, we find an attempt to render grammatical affixes phonetically, hence to fashion a structure of meaning parallel to that in speech. The first clear examples of such expression come from c.2700–2600 BC, inscribed on statues, in the shape of "PROPER NAME, son of PROPER NAME, king of X, gives this statue to SOME GOD for life." Thus will the dedicator live forever in the ambience of the divine power. By c.2400 BC we find longer texts whose signs follow the same sequence as the elements of speech. From this period come the earliest letters and "literary" compositions.

The Discovery and Decipherment of Cuneiform

European travelers even in the seventeenth century reported finds of an unknown script written on stone in impressive ruins in what is now southern Iran, but nobody could make anything of such reports. Then

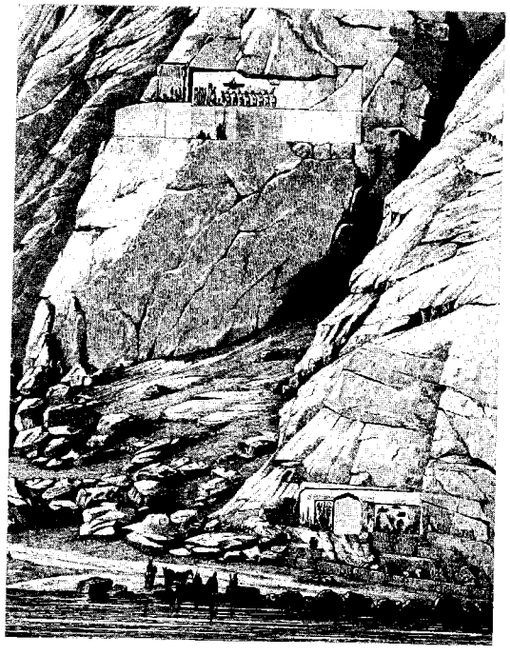


Figure 6.4 The Behistun inscriptions, western Iran, a drawing by the French traveler and architect Pascal Coste of the pass through the Zagros range and the lengthy Persian proclamation high above it, c.1840

in the nineteenth century a German scholar named Georg Friedrich Grotefend (1775–1853), believing the ruins to be those of PERSEPOLIS, a capital of the Achaemenid Persian Empire (550–330 BC), attempted to find phonetic values for several of the signs by searching for titles like "king of kings," which one might expect to find in an inscription, and for Persian royal names like Hystaspes, Darius, and Xerxes, known from classical writers. Astutely he guessed where these names might appear in the few published inscriptions and discovered the phonetic values of several signs. Because of the paucity of texts he could not carry his discoveries further.

Others refined the work of Grotefend, but it was for a British army major Henry Rawlinson (1810–95) to continue the decipherment of what we now call Old Persian cuneiform. In 1835 he found the BEHISTUN inscriptions high on a commanding rock in the foothills of the ZAGROS range that separates the lowlands of Mesopotamia from the Iranian plateau (see Fig. 6.4).

The immense panels of inscriptions were carved three hundred feet above the road that led down from the plateau to the Great King of Persia's possessions on the plains of Mesopotamia. We are not sure how the inscriptions were carved in this inaccessible position. At great risk to life and limb, Rawlinson scaled the sheer cliff and made paper impressions of a large body of material.

The cuneiform texts were evidently carved in three separate languages, one being the Indo-European Old Persian that Grotefend worked on. There were 15,000 characters in the Old Persian text alone. With the abundant new material, Rawlinson quickly decoded most of the Old Persian text, showing the script to consist of 36 syllabic signs and 7 or 8 logograms. Three of the signs are pure vowels and the others are consonants + /a/ or, for another vowel, sometimes used in combination with one of the three signs for pure vowels. Apparently the inventor is modeling his system on the West Semitic Aramaic writing in which the signs stand for a consonant and an unexpressed vowel (see Chapter 12), although with features borrowed from Mesopotamian cuneiform (the signs for vowels, the logograms). The limited number of signs, most of them phonetic, made the decipherment by sound-substitution possible. In 1846, in the *Journal of the Royal Asiatic Society*, Rawlinson translated the beginning of the text as (š = /sh/, â is a long /a/):

> I am Dârayavauš [Darius] the king, son of Vištâspa [Hystaspes], of the Hakhâmanisiya [Achaemenid] dynasty, king of kings. I am king in Pârsa [Persia]. My father is Vištâspa. Vištâspa's father is Aršâma [Arsames], Aršâma's father was Ariyâramna [Ariaramnes], Ariyâramna's father was Cišpiš [Teispes], and Cišpiš' father was Hakhâmaniš [Achaemenes].

The names corresponded surprisingly closely to those given by the Greek historian Herodotus (fifth century BC) to describe the family of King Darius of Persia (522–486 BC).

The decipherment of cuneiform was the first decipherment of an ancient script without the assistance of a bilingual, but once the meaning of the Old Persian text was known, Rawlinson was able to find the same names in the longer of the two undeciphered texts and gradually to understand its phonology. This writing was a form of "Mesopotamian cuneiform," a general term to refer to a single system with numerous local varieties. A Sumerian scribe such as those who made the protocuneiform tablets invented the system in the late fourth millennium ("Sumerian

cuneiform"), then around 2500 BC Semitic speakers applied it to a Semitic dialect spoken in the territory of Akkad somewhere on the mid-Euphrates River ("Akkadian cuneiform"); the site of Akkad is unknown. Later phases of the tradition, each with local variations, were "Assyrian cuneiform" from the courts of the Assyrian kings (second–first millennia) and "Babylonian cuneiform" from the courts of the Babylonian kings (second–first millennia). In this book, "Mesopotamian cuneiform" will include all of these varieties, but not the syllabic Old Persian cuneiform or the similarly unrelated "Ugaritic cuneiform alphabet" (see Chapter 7).

Rawlinson quickly discovered that Mesopotamian cuneiform was a completely different kind of writing from the Old Persian. The script proved to be in a Semitic language and to contain many nonphonetic semasiographic symbols. Evidently the Old Persian syllabic script was a free invention of the Persian court under Darius I (ruled c.520–486 BC), on completely different principles from Mesopotamian cuneiform, but using the ancient Mesopotamian technique of making characters from wedge-shapes like those impressed by a stylus into clay. Few examples of Old Persian survive, and the writing disappeared with Alexander's destruction of the Persian Empire in the fourth century BC. Old Persian cuneiform has no direct connection with the far older Mesopotamian cuneiform.

We do not know Rawlinson's exact sequence of decipherment because he never published it. The decipherment was furthered rapidly by the discovery of the Assyrian capital of NINEVEH on the upper Tigris in 1842. Among its many treasures were the remains of the great royal library of Assurbanipal (c.685–627 BC) containing tens of thousands of baked clay tablets covered with cuneiform inscriptions. In 1857 so much progress had been made in the decipherment that, to test it, Rawlinson and three other scholars submitted to a committee independent translations of a newly discovered inscribed column from Nineveh. The translations were similar.

The third cuneiform text on the Behistun inscription proved to be in Elamite, a language unrelated to any other known language. We can tell what it means from the two accompanying texts, but we cannot read it.

Logosyllabic Cuneiform Writing

Once discovered, the phonetic principle, applied systematically, tied writing to speech in a rough and ready way. Mesopotamian cuneiform writing was

conditioned by linguistic features of the Sumerian language. Sumerian is an agglutinative language, like modern Turkish, whereby each fundamental concept, nominal or verbal, is usually expressed by a single unchanging syllable, to which can be added prefixes and suffixes. Sometimes English works that way too, as in our word "man-li-ness," made up of the syllable "man," a thing; "li," a suffix meaning "like"; and a second suffix, "ness," meaning "the quality of."

Because of these features of the Sumerian speech, Sumerian phonographic signs came out mostly as monosyllabic syllabograms with the shape simple V (vowel), CV (consonant + vowel), VC (vowel + consonant), or CVC. Only four vocalic qualities are marked: /a/, /e/, /i/, /u/, but not /o/. Eventually not only names of people, things, and places were written out syllabically, but early syllabograms began to designate grammatical relationships.

We count about 1,200 signs in protocuneiform from around 3400–3200 BC, which may qualify it as a purely logographic system, although many (including I. J. Gelb) have denied that a wholly logographic script ever existed. In fact, rare signs of phoneticization do appear in the earliest texts. If we nonetheless call protocuneiform a logography, we might say that the intellectual world of Sumerian administrators was restricted to around 1,200 items, a significant repertory. By 2800 BC, when the system of syllabograms was well established, the signary was reduced to around 600 signs, a number that remained average for the next 2,500 years in standard cuneiform script (Fig. 6.5).

There was nothing mechanical or inevitable about the discovery of the phonetic principle or its combination with the sematograms and already lexigraphic logograms of protocuneiform in order to create the world's earliest *logosyllabic system* of writing. We must imagine an inventor, someone who first saw how, through the rebus, to tie writing to the sounds of speech; others developed the system over many generations. Logosyllabic writing is a combination of logograms (nonphonetic "word-signs"), syllabograms (the smallest pronounceable elements of speech), and determinatives (or semantic complements, a kind of sematogram). Such semantic classifiers do not have phonetic value and do not stand for words, but place the intended expression in a certain category, as the "star" on the protocuneiform tablet (Fig. 5.1) placed Inanna among the gods. The inventor must consciously have sought out a usable phonetic repertory assisted by the older semasiography and logography. New logograms and determinatives then appeared to accompany an evolving phonetic repertory, many of them iconic

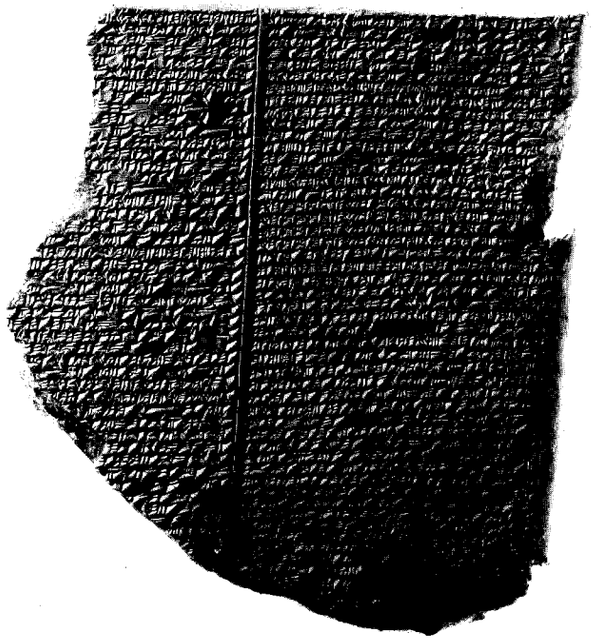


Figure 6.5 Tablet from the most complete version of the Gilgamesh epic in standard Akkadian cuneiform script, found in the library of Assurbanipal in Nineveh, who ruled c.668–630 BC. On this tablet Utnapishtim tells Gilgamesh how he escaped the great Flood. George Smith published the tablet in 1872. (London, British Museum BM K 3375.)

unlike the older abstract commodity signs of the prehistoric tokens. Some shapes from the earlier tokens came into the system. Wet clay, the substance of the prehistoric impressed bullae, remained the material basis. Logograms mixed in with syllabic signs standing for open and closed syllables and for the vowels /a/, /e/, /i/, /u/ were to remain the basic structure of cuneiform writing throughout its thee thousand year history, during which it was applied to the language of the Semitic Akkadians (third millennium), Babylonians (second–first millennium), and Assyrians (second–first millennia); and to the languages of the Bronze-Age Indo-European Hittite and Luvians (in Anatolia); and to the Bronze-Age linguistically isolated languages of the Hurrians (in SYRIA), Elamites (in southwest Iran), and Iron-Age Urartians (in Armenia). Complexity characterized logosyllabic cuneiform from the

beginning because of *homophony* in the system of syllabograms, when several different signs have the same sound; and because of its opposite *polyphony*, where a single sign has more than one sound. For example, 14 separate cuneiform signs have the value /gu/ (Fig. 6.6):

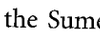
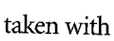
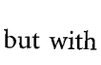
Figure 6.6 Four of the 14 cuneiform syllabograms with the same value, /gu/. (After http://www.ancientscripts.com/images/su_gu.gif.)

For an example of polyphony, the sign called KA (capitalization means "this is the name of the sign," usually a value in Sumerian) has the initial value of its name /ka/, in origin a head with the mouth shaded in and meaning "mouth." But KA is also used to mean "shout" with the value in Sumerian of /*gu*/, and can also stand for /zu/ "tooth," /du/ "speak," and /inim/ "word." Although the generous use of determinatives helped understanding, no wonder that the French Assyriologist Jean Bottéro called cuneiform "this hellish script" – but in comparison to what? to Chinese or Mayan writing?

Transliteration Nightmares

Because of the pervasive homophony (many signs with the same sound) and polyphony (one sign has several sounds) the translator's difficult task is, first, to create a theoretical transliteration in which the encoded sounds are appropriate in a given context. On the basis of such a theoretical and often contested reconstruction, the scholar will attempt a translation. Because of homophony and polyphony, transliterations into specific roman characters of cuneiform texts are very different from their highly ambiguous cuneiform originals.

For example, the cuneiform sign called DINGIR , so-named after its Sumerian value where /dingir/ = "god," could also stand for the syllable

/an/, because Anu was the great sky god in the Sumerian pantheon. In Akkadian cuneiform, the sign  can also be a *Sumerogram*, that is, a virtual logogram that has lost its attachment to Sumerian speech and been reassigned a word of comparable meaning in the Akkadian dialect, or a syllabic value based on the rebus. Sumerograms are common in Akkadian cuneiform. The Semitic for god is something like /'lh/ (hence Hebrew Eloah and Arabic Allah; in transliteration from Semitic, ['] stands for a glottal stop, where the throat closes in conjunction with the vibration of the vocal cords). Hence the sign called by the Sumerian word DINGIR  can take on the syllabic value /il/ in Akkadian texts (different from /'lh/, but close). But the sign DINGIR  taken with the sign called MU in Sumerian  , a logogram for "water" but with phonetic value in Akkadian of /a/, that is,  , can be read as /ana/; or /ila/; or "god" + /a/ (logogram for "god" in the accusative case); or "god" + "water" = "god of water"; or simply "water," taken to be a divine substance, in which case DINGIR  functions as a determinative. For we have, then, three possible transliterations and more than three possible meanings (hyphens separate the signs): *an-a*, *il-a*, DINGIR-*a*. Only context will reveal which is the correct reading and which the correct translation, if you are lucky, because the context can be elusive in the midst of abounding ambiguity.

Changes Across Time and Place

In spite of its desperately complex, illogical, and maddening features Sumerian cuneiform writing became a flexible medium for the expression of phonetic elements in human speech after it was applied to the foreign and wholly unrelated Semitic Akkadian language sometime before the reign of Sargon of Akkad (c.2334–2279 BC). Semitic words have triconsonantal roots, for example *mlk* = "something to do with king," a frame on which the speaker can build verbs and nouns through internal vowel change.

The triconsonantal roots are also combined with prefixes and suffixes. The Sumerian monosyllabic agglutinative language did not work this way at all.

The differences in language structure encouraged the use of ever more phonetic elements. Sumerian logography lost ground enormously to phonography when cuneiform was applied to the foreign Akkadian words. The shift toward phonography did not, however, mean a simplification. In a love of complexity for its own sake common in the history of writing, the learned Semitic Akkadian scribes extended still further the practice of homophony and polyphony, and as an added complication used many Sumerograms, the Sumerian signs referring to Akkadian words. Just so the Japanese writing took over Chinese signs, called Kanji ("Han characters," after the founding racial group of the Chinese Han), but pronounce them as Japanese, a language wholly unrelated to Chinese.

Akkadian was the usual language under the reign of Sargon, called "King of Sumer and Akkad." Under his leadership administration was reformed and the writing standardized, but when his dynasty declined c.2200 BC, remarkably, Sumerian again became the principal language of administrative texts, although the language may no longer have been spoken. An explosion of scribal activity at the city of UR during the twenty-first and twentieth centuries BC, called the Third Dynasty of Ur, has left more cuneiform documents than from all other periods combined. Every collection of tablets has some Ur III documents. Most are in Sumerian, though the rulers of Ur III appear to have been Semitic-speakers, to judge from their names. A kind of Sumeromania gripped the scribal class at this time, a means for scribes to assert their sophistication and to impress their peers through their competence in Sumerian. The use of Latin by European aristocracies until recent times is a good parallel.

After the fall of Ur III in c.2004 BC, Akkadian again became the principal language of Mesopotamian cuneiform. Several cities rose to dominance, but BABYLON's ascendance under Hammurabi c.1763 BC brought with it the phase of the script and language called Old Babylonian, really a form of the earlier Akkadian. Middle Babylonian, c.1600–1000, was the script and language of the famous Amarna tablets found in EGYPT at Akhenaten's capital (c.1352–1336 BC), while NeoBabylonian belongs to c.1000–500 BC. The last phase of the script, c.500–75 BC, is called Late Babylonian, found on the Behistun inscriptions.

A second variety of Akkadian, whose development ran parallel to Babylonian, comprises the Assyrian dialects. Old Assyrian, testified to by

a collection of tablets c.1900 BC found at an Assyrian merchant colony at KANESH in central ANATOLIA (near modern Kayseri), parallels the Old Babylonian texts. Middle Assyrian texts come from the time of Assyrian military expansion in the thirteenth century BC. By far the most of the Assyrian texts come from the NeoAssyrian period, c.1000–609 BC, from the archives at Nineveh and Kalhu in modern northern Iraq. After the conquests of Alexander the Great (336–323 BC), Aramaic script encoding the Semitic dialect of Damascus (= Aram) rapidly replaced cuneiform. The last known cuneiform text seems to date to AD 75.

Lexigraphic writing had appeared in response to radical changes in human economic life, then in turn caused deep-seated, dramatic changes in the economy and in the whole way of human life. We might wonder why it took human beings one million years, if they are that old, to discover the phonetic principle in graphic representation, but they did eventually discover it.

Summary

Ancient Near Eastern speculations on the origin of writing attributed its invention to a god. For the Egyptians, it was Thoth; for the Sumerians it was Nabu. European scholars before the Enlightenment liked to say that Adam invented the Hebrew writing, or that the angel Raphael revealed it to him, as Hebrew may have been the primordial language. The Greeks knew more about the human origins of their writing than earlier peoples and said either that Kadmos, "the Easterner," brought it from the Levant, or that wily Palamedes, who outsmarted Odysseus and invented numbers and dice, also created the Greek alphabet by adding further signs to a preexisting series.

Such theories imagined that systems of writing come into being all at once, full blown. In this they are closer to modern views than the evolutionary explanation once common, and still found in handbooks and popular descriptions. Once communication took place by means of pictures, according to this view, which became progressively simplified and more abstract, until the pictures began to stand for elements of speech. This evolutionary theory is sometimes called the "pictographic" theory of the origin of writing. But writing is different from pictures, and as a system of marks with a conventional reference, its evolution is never dependent on a picture as ancestor. The highly pictographic semasiography of the North American Indians showed not the slightest inclination to phoneticization.

On first inspection the protocuneiform tablets appear to support evolutionary theories about the origins of writing, because some of the protocuneiform characters resemble things in the real world, for example a fish, a snake, or a cow (Figs 6.1, 6.3). Most protocuneiform signs, however, are abstract and conventional and not iconic, for example, the circle with a cross inside for "sheep" (Fig. 5.6). Lexigraphic writing, an arbitrary and conventional system of signs, came into being when, first, sematograms standing for things, persons, or places became logograms, standing for words, which through the rebus came to stand for sounds. Such a shift in function required arbitrary decisions about how the system is going to work, and only individuals can make such decisions.

Beginning in the 1970s Schmandt-Besserat offered an original and influential recasting of the evolutionary theory by noticing that the forms and markings of tiny clay and stone "tokens" found all over the Near East from the ninth millennium to the time of the protocuneiform tablets, and somewhat beyond, are similar to characters on the protocuneiform tablets. If the tokens symbolized commodities of which the merchant or official wanted to keep track, then the markings on the tablets must have had the same meaning. Whatever the details, there must be continuity in form between this widespread and very old prehistoric accounting system by means of tokens, a sort of three-dimensional semasiography, and the protocuneiform accounting documents.

Yet continuity of form in the history of writing easily disguises radical inner change, a complete inner restructuring. We will find another clear example in the invention of the Greek alphabet on the basis of the preexisting syllabic Phoenician writing. The Greek writing, the first alphabet, rewrote the rules of written expression and changed the world, yet to consider form alone the Greek system appears nearly identical to its model (hence the misnomer "Phoenician alphabet").

Writing is a system with a conventional reference. The tokens, too, may have constituted a system in any one time and place, but we cannot fully understand their reference. Lexigraphic writing, which appears in the fourth millennium, did not *evolve* from a preexisting accounting system, but was an *invention* that took advantage of the resources of preexisting means for keeping track of commodities. Although Schmandt-Besserat's theory explains some things about the character of early Sumerian writing, including the shape of some characters and the use of clay and stylus

to keep records, it cannot explain the appearance of writing itself. Some inventor created the system as a coherent structure, using earlier traditions.

In the earliest cuneiform writing there is little variability in the shape of characters and signs, which are laid out in the same way on the same kinds of tablets. Already these signs work together predictably. The conventional system is fully formed as an instrument of abstract thought. Whereas 90 percent of the around 6,000 Uruk tablets are administrative in character, 10 percent are lists – of fish, textiles, vessels, animals, birds – reflecting the need of Sumerian scribes to organize their world into categories and to teach young scribes the contents of these categories. Already lexigraphic writing is enabling abstract thought. All the archaic tablets are administrative or educational – only by a consistent understanding of a consistent repertory could the system be useful. One such list, the Standard List of Professions, first attested c.3000 BC (it has a long life thereafter), seems to set out the social hierarchy within which the scribes lived, the first sociological analysis.

7

Plato's *Ideas* and Champollion's Decipherment of the Egyptian Hieroglyphs

The Roman historian Tacitus (AD 56–125) came close to the truth when he wrote

> It was the Egyptians who first symbolized ideas, and that by the figures of animals. These records, the most ancient of all human history, are still seen engraved on stone. The Egyptians also claim to have invented the alphabet, which the Phoenicians, they say, by means of their superior seamanship, introduced into Greece, and of which they appropriated the glory, giving out that they had discovered what they had really been taught. (*Annales* 11.14)

Egyptian writing is not the oldest writing as Tacitus thought (though recent finds at Abydos are claimed to justify him, see below), but it is from the Egyptian tradition, not the Mesopotamian, that the modern alphabet descends. Furthermore, Egyptian writing held an altogether different place in the imagination of the postclassical Europeans, who scarcely knew that cuneiform writing existed. The history of misunderstanding that characterized European approaches to the hieroglyphs reveals a good deal about how prejudice blinds users of an alphabetic system, ourselves, when attempting to understand a foreign system.

The Allegorical Interpretation of the Hieroglyphs

The last known hieroglyphic inscription was written on the Ptolemaic temple to Isis on the island of Philae near Aswan in AD 396 (the temple was moved to a nearby island after construction of the Aswan High Dam in the 1960s). The Romans had lived in intimate contact with this writing