2. THE EARLIEST MESOPOTAMIAN WRITING

CHRISTOPHER WOODS

At some point during the second half of the fourth millennium BC Mesopotamians began to inscribe signs on wet clay in what may very well represent the world's first writing system. The script is known as cuneiform (from Latin *cuneus* "wedge") — a descriptive designation that refers to the distinctive wedge-like appearance of the signs, or graphs, which were fashioned with a reed stylus. Indeed, the native Sumerian designations, which include the words *gag*, *gu-šum*$_2$, and *sangtak*, all similarly meaning "wedge" or "nail," also reflect this visual quality. The cuneiform script was likely invented to express the Sumerian language, but was subsequently adapted to write a wide variety of unrelated languages throughout the ancient Middle East. These include Akkadian (see *3. Adaptation of Cuneiform to Write Akkadian,* this volume), Eblaite, Elamite, Hittite (see *4. The Rise and Fall of Cuneiform Script in Hittite Anatolia*, this volume), Hurrian, and Urartian. Cuneiform texts were written as late as the first century AD, more than three thousand years after the script's invention. A consequence of using durable clay as the principal medium of writing, rather than perishable material such as papyrus, is that Mesopotamia is one of the best-documented civilizations prior to the Industrial Revolution.

URUK AND THE ARCHAIC TEXT CORPUS

The earliest-known cuneiform documents were found at the sacred temple precinct Eana in the city-state of Uruk, located in southern Babylonia in present-day Iraq (figs. 2.1–2) — and there is good reason to believe that this was the birthplace of writing in Mesopotamia. The invention of writing was

FIGURE 2.1. Evening at the Uruk excavation house, 1986

tightly intertwined with the rapid development of Mesopotamian civilization, as evidenced by extraordinary changes that took place there toward the end of the fourth millennium. During the Late Uruk period (ca. 3350–3100 BC), which takes its name from the city, Uruk was characterized by rapid urbanization and population growth, swelling to a population of 20,000 to 50,000 individuals and a size of 2.5 sq. km — nearly twice the size of the next largest settlement — to become, arguably, the world's first true city. Coupled with this, Uruk experienced a dramatic increase in social, political, and economic complexity. The results were a need to maintain records of production, goods, and labor and the corresponding rise of a complex administration. Writing was invented in this context. Indeed, that the vast majority of the earliest texts are administrative in nature suggests that the invention of writing was a response to practical social pressures — simply put, writing facilitated complex bureaucracy (Michalowski 1994, p. 56). It is important to stress in this connection that literature plays no role in the origins of writing in Mesopotamia. Religious texts, historical documents, and letters are not included among the archaic text corpus either. Rather, these text genres arise relatively late, beginning in the middle of the third millennium, some seven hundred or more years after the first written evidence.

The date traditionally given for the invention of writing in Mesopotamia is 3200 BC, but this is more or less conventional. A precise date for the earliest cuneiform texts has proved elusive, as virtually all the tablets were discovered in secondary archaeological contexts, specifically, in rubbish heaps that defy accurate stratigraphic analysis. The sun-hardened clay tablets, having obviously outlived their usefulness, were used along with other waste, such as potsherds, clay sealings, and broken mudbricks, as fill in leveling the foundations of new construction — consequently, it is impossible to establish when the tablets were written and used. The charcoal remains of pine beams found in the context of some of the Uruk texts suggest a date of around 3500–3390 BC. However, this date must be used with caution given that it represents a lone sample and various problems are known to complicate radiocarbon dates acquired from the latter half of fourth millennium (Margarete van Ess, personal communication). Currently, the German Archaeological Institute is attempting to acquire new radiocarbon dates of this material, which will hopefully clarify the situation.

Despite the difficulties surrounding the dating, we can identity two distinct phases in the evolution of the archaic script — frequently referred to as *protocuneiform* — based primarily on graphic styles, technique of execution, and complexity of the documents,

MESOPOTAMIAN ACCOUNTS OF THE INVENTION OF WRITING

> "(Enmerkar's) speech was very grand; its meaning very profound. But the messenger's mouth was too heavy, and he could not repeat the message. Because the messenger's mouth was too heavy, and he could not repeat it, the Lord of Kulab (that is, Enmerkar) patted some clay and put the words on it as on a tablet. Before that day, words put on clay had never existed. But now, when the sun rose on that very day — so it was! The Lord of Kulab had put words as on a tablet — so it was!"
>
> *Enmerkar and the Lord of Aratta,* lines 500–06
> (after Vanstiphout 2003, p. 85)

The oldest and most explicit Mesopotamian account of the origins of writing comes from the Sumerian story *Enmerkar and the Lord of Aratta*, one of a cycle of narrative poems that involve the rivalry between the southern Mesopotamian city-state of Uruk and the faraway, fabled city of Aratta, considered to lie across seven mountain ranges on the Iranian plateau. The story is known primarily from early Old Babylonian sources (ca. 2000–1750 BC), but it was likely first compiled in the preceding Third Dynasty of Ur (conventionally referred to as the Ur III period, ca. 2100–2000 BC), based on older oral traditions.

Enmerkar and the Lord of Aratta, like the other poems of the cycle, takes place at a time that is nearly contemporaneous with our earliest historical sources, during the semi-mythological First Dynasty of Uruk (ca. 2800–2700 BC), which included, in addition to Enmerkar, such legendary rulers as Gilgamesh and Lugalbanda. The story involves several challenges and counter challenges of ingenuity to determine which ruler — and city — has superiority over the other. This contest required an envoy to travel back and forth between the two cities in order to relate the long and cryptic messages, which, naturally, had to be memorized. As the excerpt given above describes, Enmerkar invented writing so that his message to the Lord of Aratta could be conveyed accurately, and would not be subject to the errors of memory. The messenger's mouth is described, literally, as "heavy" (the Sumerian word is *dugud*), which may refer to his inability to memorize the lengthy message, but may also — or additionally — speak to his failure to convey the eloquence of Enmerkar's words. Upon inspecting the inscrutable marks by the light of a fire, the Lord of Aratta furrowed his brow, for "the spoken words were mere wedges!." Remarkably — and in contrast to many other indigenous accounts, for instance, the Egyptian one ("*The Conception and Development of the Egyptian Writing System*") — the invention of writing is here portrayed as a human invention, occurring without the intervention of the gods. This account, mythological though it is, also shares the notion, which we believe to be historical fact, that writing was invented in the city-state of Uruk, and invented as a response to a practical, utilitarian need — though, that need, in reality, was to facilitate bureaucracy, and letters do not appear until nearly a millennium after the first texts.

In another Sumerian story, *Inana and Enki*, which also dates to the Old Babylonian period, writing is considered to be one of the hundred or so basic elements, or "essences" — the Sumerian term is *me* — of civilization. These *me*'s reside with Enki, the god of wisdom and intelligence and Inana's father, in the ancient cult center of Eridug. Inana, coveting them, endeavors to acquire the *me*'s for her city, Uruk, by getting her father intoxicated — a common ploy in Sumerian literature — and duping him into giving them to her. Succeeding in her plot, Inana loads the *me*'s, including that of the scribe's craft (Sumerian *nam-dub-sar*), into the Boat of Heaven bound for Uruk. The story may be interpreted as an etiology, though one necessarily based on a much older oral tradition, for Uruk's ascendancy. Writing, accounting, and the scribal matters generally were in the third millennium BC the purview of the grain goddess Nisaba. In the second, and particularly in the first, millennium, the scribal arts were attributed to the god Nabû, divine scribe and patron of writing, whose symbol was a single wedge likely representing a writing stylus. Finally, we note the late account of Berossus, an early third-century BC priest of the god Marduk. The story of the creation of the world encountered in the first book of his Babyloniaca (Burstein 1978) includes the myth of Oannes. This part-fish, part-human creature emerged from the Erythrean Sea (likely here referring to the Persian Gulf), in the "first year," and revealed to humanity all that was necessary for civilization, including the knowledge of writing, the sciences, and the arts. Giving his revelation during the day, Oannes would return once again to the sea at night. His teachings were comprehensive and perfect, for from that time "nothing further has been discovered." CW

all of which are suggestive of a chronological development. These two script stages correspond, but only indirectly, to the stratigraphy of the findspots. Consequently, the script and tablets of the earlier phase are labeled Uruk IV (ca. 3200 BC), while the script and tablets from roughly one hundred years later are labeled Uruk III (also known as the Jemdet Nasr period, ca. 3100 BC) (fig. 2.3). Approximately five thousand proto-cuneiform tablets were unearthed at Uruk by the German Archaeological Institute between 1928 and 1976 (Englund 1998, pp. 18–41). But these are not the only witnesses to the archaic script. Proto-cuneiform texts corresponding to the Uruk III tablets have been found at the northern Babylonian sites of Jemdet Nasr, Khafajah, and Tell Uqair, testifying to the fact that the new technology spread quickly throughout Babylonia soon after its invention (in ancient Iran proto-cuneiform possibly inspired

FIGURE 2.2. Plan of the German excavations of the sacred precinct Eana in Uruk. The plan includes the numbers and findspots of the archaic texts

the proto-Elamite script ca. 3100 BC). Illicit excavations since the 1990s account for several hundred additional texts, which possibly originate from the ancient Babylonian cities of Umma, Adab, and Kish. These texts have the advantage of being generally in better condition than those from Uruk, which, as noted, represent discarded rubbish and thus are frequently fragmentary. To date, the proto-cuneiform corpus numbers approximately six thousand tablets and fragments.

The Uruk IV tablets, representing the earliest phase of writing, typically bear only a few graphs and are simple in format. Further, many of the graphs represent naturalistic renderings of their referents, that is, they are pictographs. While this earliest phase of cuneiform contains a few arbitrary symbols (see fig. 2.5 below; note that the graph for "sheep (and goats)" is symbolic and not pictographic), for those that do represent pictographs — the vast majority of the signs — the Uruk IV phase of writing exhibits a high degree of iconicity between graph and referent (e.g., Catalog No. 41). The curvilinear lines of these graphs were drawn — or, perhaps more accurately, approximated with multiple small strokes (Joachim Marzahn, personal communication) — with a pointed stylus. The Uruk III phase of the script, on the other hand, represents a significant development in the paleographic evolution of the script in several

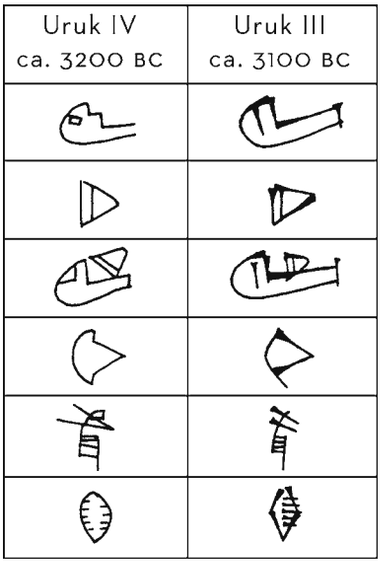
respects. The curved lines of the Uruk IV phase were straightened, while the strokes that comprise the graphs were restricted to certain orientations and were created by a stylus with a triangular cross section (fig. 2.4).

Additionally, the graphs were simplified and depicted more abstractly — for example, in the rendering of graphs consisting of animal heads, facial features, which were rendered naturalistically in the Uruk IV phase, were now omitted or depicted schematically (Green 1986, p. 465). These developments, which may have been made in the interests of efficiency as well as aesthetics, would continue well into the third millennium. As a consequence, those signs that shared a pictographic relationship with their referents gradually lost this iconic quality in the course of the evolution of the script, becoming conventionalized symbols — certainly contemporary users of the script would have regarded them as such, having no knowledge of the pictographic origins of certain graphs (fig. 2.5).

With the loss of curvilinear lines, the script assumed its distinctive cuneiform appearance as graphs were pressed into clay in short wedge-like strokes. There are two further notable developments that distinguish proto-cuneiform from the mature phases of the script. The first concerns the number of graphs employed in the system. Whereas the archaic script contained roughly nine hundred graphs, about six hundred graphs sufficed for later cuneiform. The second concerns the direction of the script. At some point, likely in the third millennium, the graphs were rotated 90 degrees counter-clockwise so that now they rested on their backs and the script was read from left to right rather than vertically (e.g.,  became  , SAG "head, person"). The reason for the change is obscure and much debated. However, it should be noted that developments of this kind are typologically quite common (Sampson 1985, p. 51).

As noted above, the majority of the archaic text corpus — about 90 percent — is administrative in nature. That is, these are economic texts that figured into a complex bookkeeping system consisting primarily of receipts and expenditures of animals and a wide range of commodities and raw materials. The tablets identify the goods, their quantities, and the individuals and institutions involved in the transactions. These were the detailed records of the business activities involving the Eana, the sacred precinct and central economic unit of Uruk.

FIGURE 2.3. Comparison of selected Uruk IV and Uruk III signs



The archaic tablets displayed in the exhibit clearly demonstrate not only the types of administrative information contained in the archaic text corpus, but also the salient differences between Uruk IV (Catalog Nos. 41–46) and Uruk III (Catalog Nos. 47–55) phases of the script. The Uruk III tablets provide a glimpse into the economic life of Uruk at the close of the fourth millennium and include accounts involving livestock, slaves, grain, and other commodities (figs. 2.6–8; Catalog Nos. 53–55).

Those graphs that were originally pictographs demonstrate a degree of abstraction, with straight lines, or wedges, having in many instances replaced the curvilinear lines of the Uruk IV script. Further, several of the longer texts represent the more complex accounts that distinguish this phase of the script from the proceeding one. Catalog No. 45 and particularly Catalog No. 44 typify the simple accounts that are diagnostic of the Uruk IV phase. But more revealing of the drawn, naturalistic quality of the Uruk IV graphs are the group of tags on display, particularly Catalog No. 41. These small pieces of clay were perforated to accommodate string so that they could be attached to baskets or vessels. The short inscriptions consist of the names of offices or officials; in some cases they possibly refer to beverages and dried fruits, commodities that would have been contained in the vessels to which the tags were attached (Englund 1998, p. 57).Interestingly, the earliest

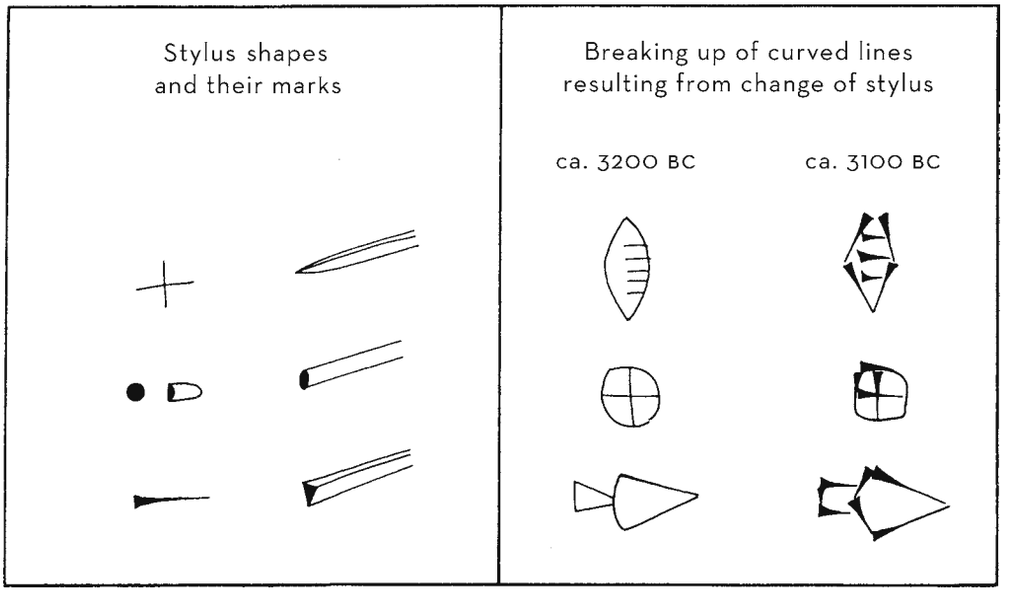


FIGURE 2.4. In the Uruk III phase incising is replaced by impressing the triangular cross-sectioned stylus into the surface of the clay tablet

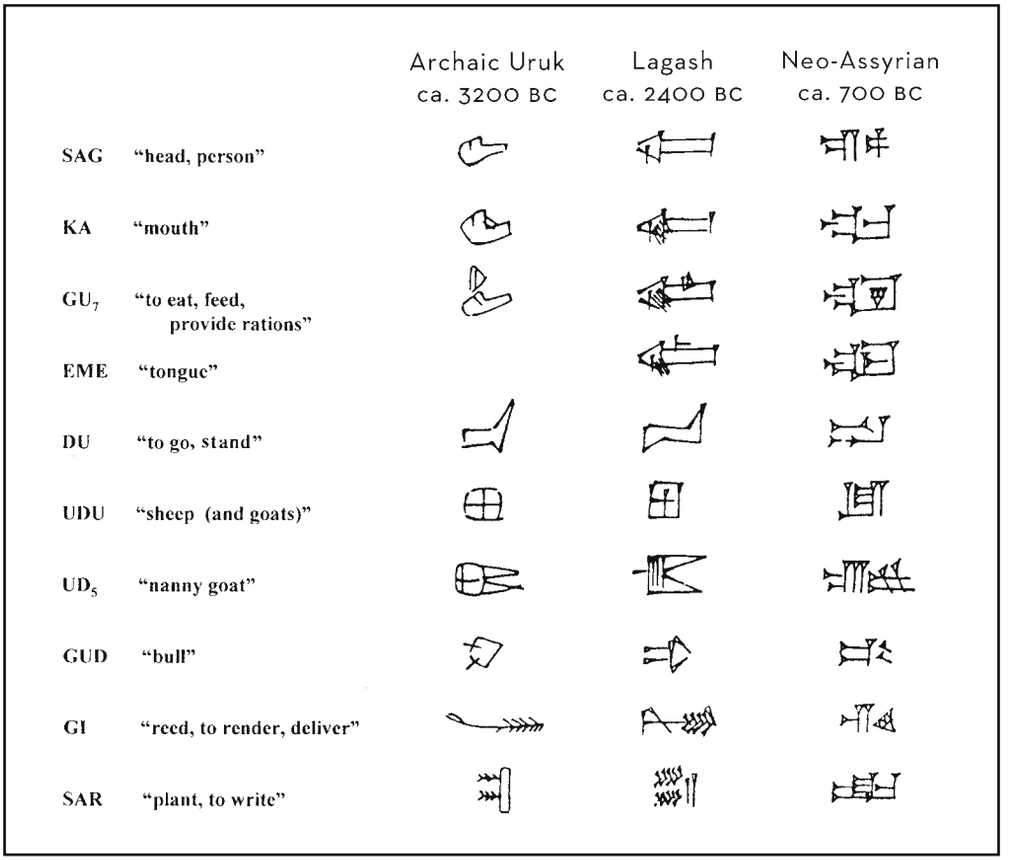


FIGURE 2.5. The evolution of cuneiform signs

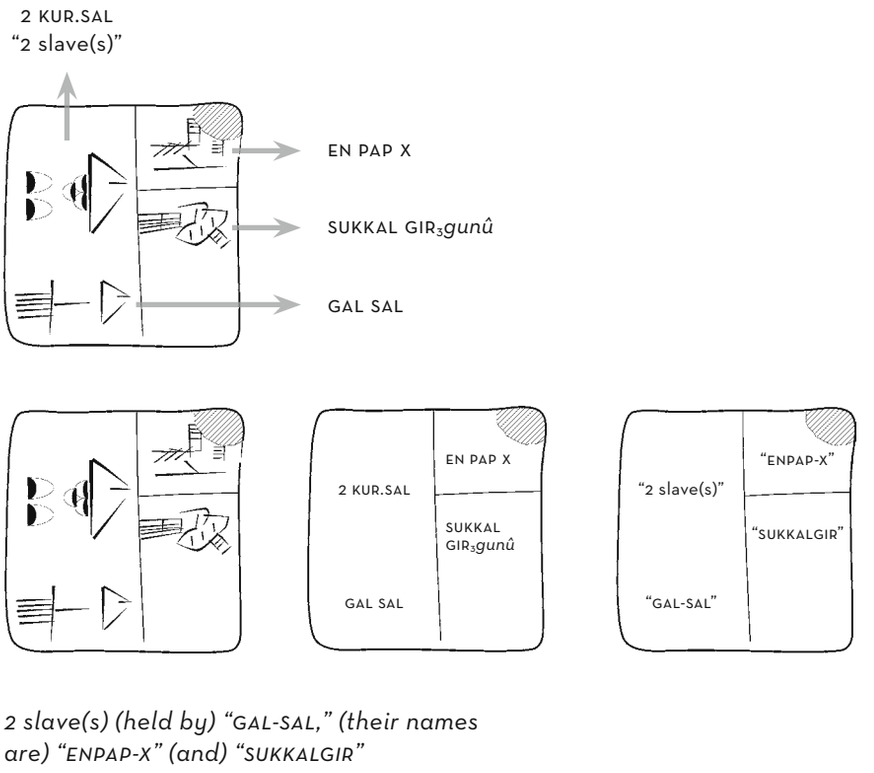


FIGURE 2.6. This text (OIM A2513; ca. 3100 BC) appears to identify two named slaves in the possession of a third individual. The sign for "slaves" in fact derives from two distinct signs, one for male (𒀀) and one for female (𒀭) slave. Typical of proto-cuneiform texts, the inscription does not include a preposition or verb, which would clarify the roles of the participants. This ambiguity is, in part, resolved by tablet format and the organization of information into cases

2 slave(s) (held by) "GAL-SAL," (their names are) "ENPAP-X" (and) "SUKKALGIR"

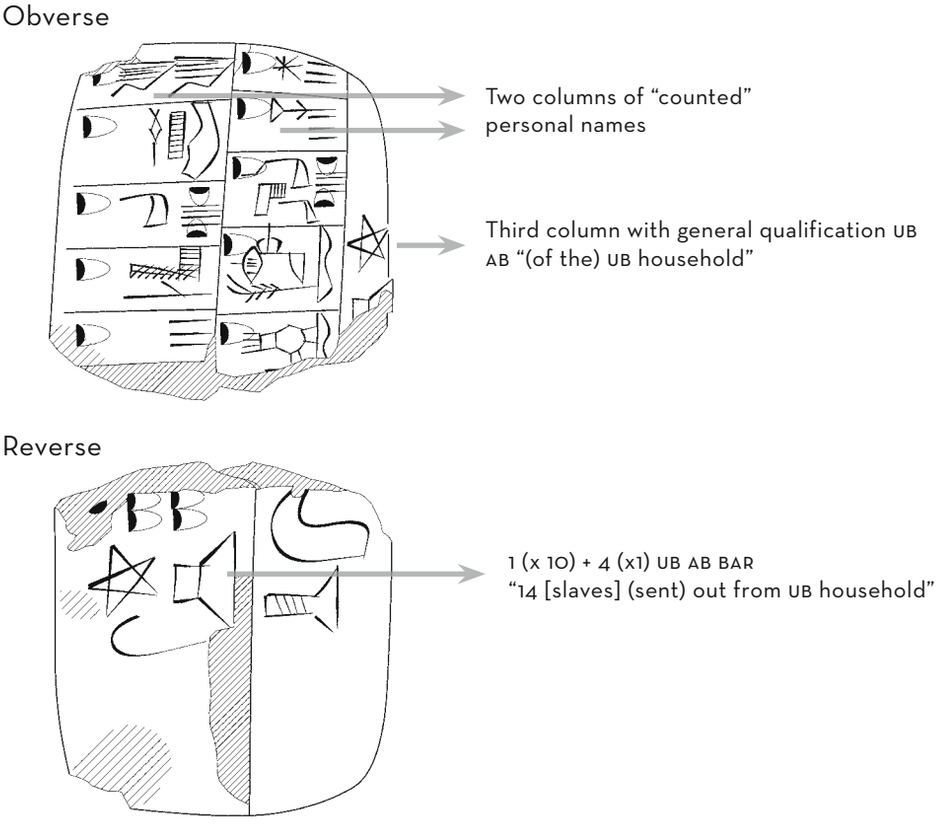


FIGURE 2.7. This fragmentary text (OIM A2514; ca. 3100 BC) concerns the transfer of fourteen individuals, possibly slaves, associated with the UB household. Although there appear to be many attestations of personal names in the archaic text corpus, they do not in general display obvious correspondences with the better-understood Sumerian names of later periods. This fact exemplifies some of the difficulties these texts pose, including ascertaining the language represented by the script. CW (modified after original provided by Robert K. Englund)

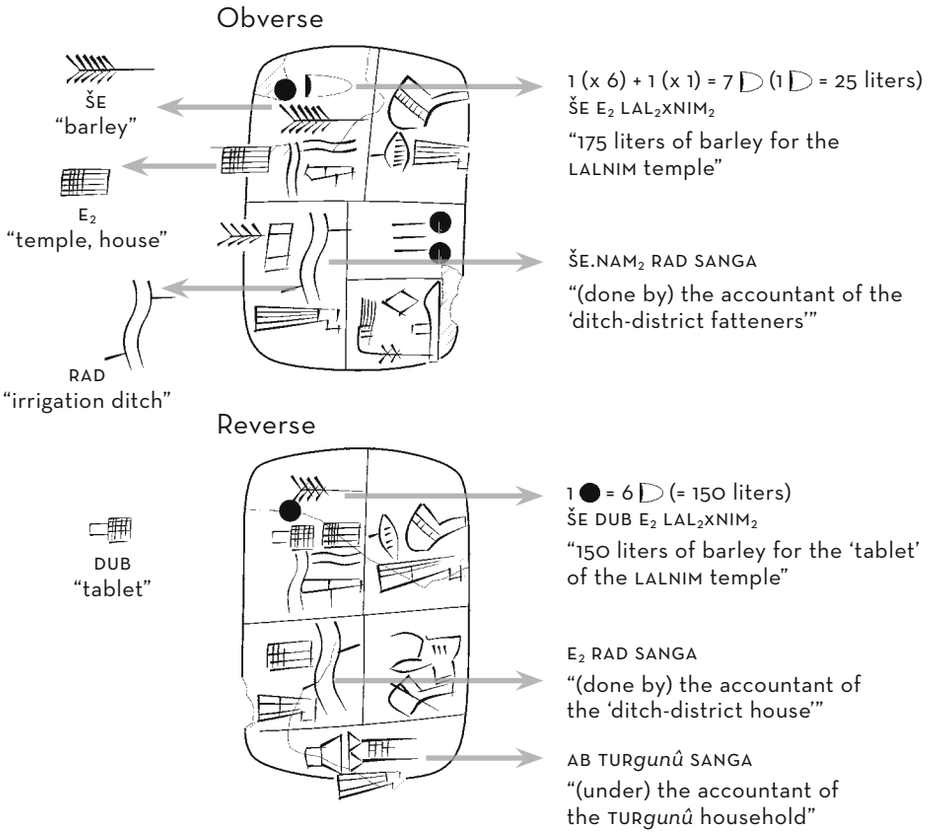


FIGURE 2.8. This text (OIM A12259; ca. 3100 BC), excavated at Tell Asmar by Oriental Institute archaeologist Henri Frankfort in 1933–34, though very difficult still contains interesting information. Grain measures of about 150–75 liters on both obverse and reverse were recorded by persons qualified as SANGA "accountant." Specialists identify this sign, , with a tallying box with compartments corresponding to bundling steps in the numerical system used by the scribes. The enclosure to the lower right would represent the box with "tokens" used in the calculations. Further, the households associated with these scribes suggest that $ŠE.NAM_2$ and E_2 RAD were part of the larger unit designated AB TURgunû. CW (modified after original provided by Robert K. Englund)

writing from Egypt consists of similar perforated tags (see *5. The Conception and Development of the Egyptian Writing System,* this volume). Like the Mesopotamian tags, the two hundred small bone and ivory tags discovered at Abydos bear short inscriptions, consisting apparently of personal names, place names, and the names of institutions.

Numerical and metrological notations play a prominent role in the archaic text corpus. The numbers can be large and the numerical notation complex. Roughly sixty graphs are devoted to expressing numerals. These graphs were not incised with a pointed stylus, as was the case with the word graphs, but were impressed with a round stylus held either perpendicular or at an oblique angle to the writing surface (Nissen et al. 1993, p. 25). At least five different counting systems are attested for the archaic texts, including the sexagesimal (i.e., with units 1, 10, 60, 600, 3,600) and bisexagesimal (i.e., with units 1, 10, 60, 120, 1,200, 7,200) systems. Remarkably, the numerical system used depended on what was being counted. For instance, all animals and humans, animal products, dried fish, fruits, tools, stones, and pots were quantified using the sexagesimal system, while all grain products, cheeses, and, seemingly, fresh fish, were quantified using the bisexagesimal system (Englund, 1998, p. 120). The sexagesimal system survived the archaic period and the Sumerians and was used by the Babylonians down to the end of cuneiform civilization at the turn of the current era. Indeed, our division of the circle into 360 degrees, the hour into 60 minutes, and the minute into 60 seconds goes back, ultimately, to the Sumerians and their sexagesimal numerical system, having come to us through the Babylonians and the Greeks (fig. 2.9).

The roughly 10 percent of the archaic text corpus that is not concerned with administrative matters are critically important for understanding early Mesopotamian intellectual life and the means by which the new technology of writing was passed from one generation to the next. These texts, referred to as lexical lists, represent one of the most distinctive and

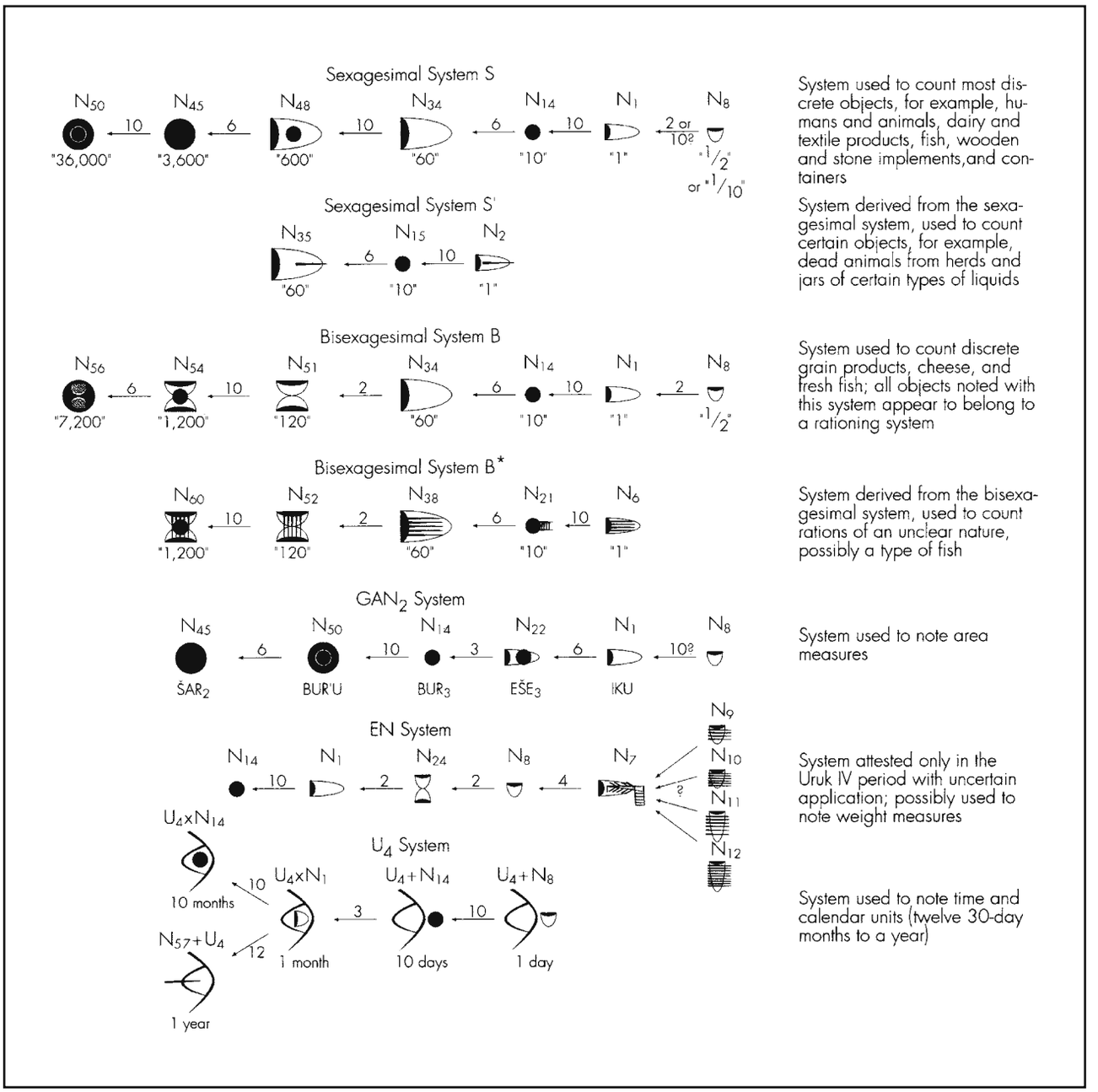


FIGURE 2.9. Numerical systems used in proto-cuneiform

prevailing signatures of Mesopotamian civilization. Essentially long lists of thematically organized words — ancient dictionaries, of a sort — lexical lists constituted the native lexicographical tradition. These texts were the primary paradigm for the scholarly organization and presentation of information, and served, moreover, as a means for teaching professional vocabulary and the intricacies of cuneiform writing. Copying a complex text of this kind would certainly have been assigned to a more advanced scribal student. A more elementary exercise is represented by VAT 16741 (fig. 2.10), in which a student has practiced inscribing various signs. This crudely formed lump of clay anticipates the elementary school exercises known from later periods, which were typically inscribed on round, bun-shaped tablets (Catalog No. 47).

Lexical lists were copied and recopied by scribal students down to the end of cuneiform culture. Catalog No. 46 represents the oldest, most important, and most copied lexical list known — the Standard Professions List, a hierarchically organized inventory

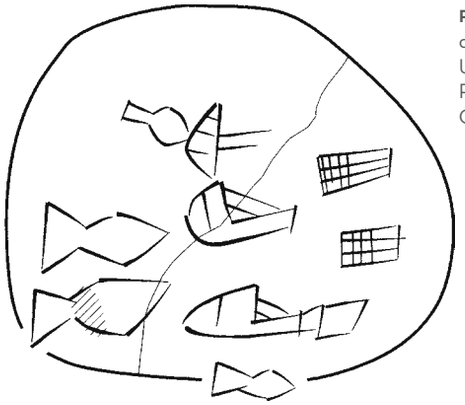


FIGURE 2.10. Line drawing of VAT 16741, an Uruk III scribal exercise. For photograph, see Catalog No. 47

of Uruk officials and occupations (Englund 1998, pp. 103–06); other lexical texts from the archaic period include lists of plants, animals, wooden implements, jars, and cities. The Standard Professions List contains some 140 entries and begins with the title *namešda*, which a later, second-millennium text equates with Akkadian *šarru* "king." In the archaic period, *namešda* may have simply represented the highest-ranking official in the Uruk administration (Englund 1998, p. 103). The titles of several high officials included in the Standard Professions List also appear as recipients of disbursements in Catalog No. 52, an Uruk III administrative text, demonstrating that titles included in the lexical list had a real-world basis. The Standard Professions List is thus crucially important for reconstructing Uruk society at the end of the fourth millennium. Remarkably this list was copied with little change throughout the third millennium, a span of nearly a thousand years — an astonishing fact indeed. From the succeeding Uruk III phase alone we have some 185 tablets and fragments (Englund 1998, p. 103), while the first complete exemplars — the archaic lexical lists typically represent extracts of longer texts — stem from the mid-third millennium (ca. 2600 BC), from the site of Fara (fig. 2.11).

Naturally, the existence of word-for-word duplicates from later periods, in which the script and the language are more comprehensible, facilitates enormously the decipherment of the archaic script. It is important to point out that faithful adherence to tradition with regard to the repeated copying of what was already an ancient text by the third millennium meant that scribes were reproducing sign forms and vocabulary, like the aforementioned *namešda*, that had become obsolete long before. Conversely, the titles of professions from the contemporaneous language necessarily could not be incorporated. This suggests that the lexical lists had a value beyond their use as simply lexicographic and instructional tools (Civil 1969, p. 4). Likely, their prestige stems in part from their cultural value as symbols of the scribal profession, the tradition of their scrupulous transmission from one generation to the next being intimately bound up with scribal identity.

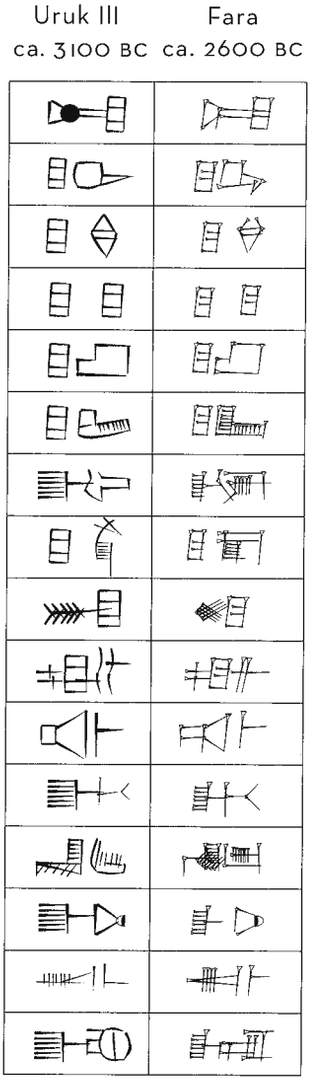
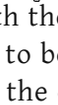


FIGURE 2.11. Comparison of the first lines of the Late Uruk- and Fara-period versions of the Standard Professions List

THE WRITING SYSTEM AND ITS RELATIONSHIP TO SPEECH

At the root of the cuneiform writing system, as originally conceived, is the logogram, or word sign, which represents a single word or group of semantically related words (see fig. 2.5). Assigning semantically related words to a common graph was done in the interest of economy, as it limited the number of signs the writing system required and facilitated the learning of the script. For instance, the sign DU, originally a pictograph of a foot,  , expressed the verbs *gen* "to go," *gub* "to stand," and *de*$_6$ "to carry," all of which share a transparent semantic relationship. Taken in isolation, one would be tempted to describe DU, and similar signs, as ideograms — signs that represent ideas or concepts — but in actuality all cuneiform signs represented specific words in a given context, and so functioned as logograms.

As Sumerian words tend to consist of (but are not exclusively) single syllables, logograms had both a semantic meaning, as representing words, as well as a phonetic value, expressing the syllabic pronunciations of those words. For example, the logogram represented by the graph KU$_6$ (the subscripted number is a modern convention for distinguishing homophonous signs),  , has the meaning "fish" as well as the syllabic value *ku*, which is the pronunciation of the word for "fish" in Sumerian. As described above, many of these logograms had a clear pictographic relationship to their referents; other examples include the picture of a reed,  (GI$_4$), for the Sumerian word for "reed," that is, *gi*, or the graph for "mountain,"  (KUR), for the word for "mountain," *kur*. A much smaller group of logograms, however, had an arbitrary relationship to their referents, such as the sign for "sheep and goats" which consisted of a cross inscribed within a circle,  (e.g., Catalog No. 28). Through the use of the rebus principle, whereby a sign for one word could be used to express a homonym, a second class of signs arose — phonograms — which possessed sound but not meaning. That is, the phonetic value associated with one word, most often something with a ready iconic representation, could be used to write another word that was identical or nearly so in pronunciation. The rebus principle is integral to writing, as it allows for the representation of those elements of language that are not easily represented graphically, for instance, grammatical affixes, prepositions, and — of considerable importance to the historical development of cuneiform — the phonetic rendering of personal names and foreign words. The high frequency of monosyllabic words and homonyms in Sumerian clearly facilitated this development. For instance, in later cuneiform the sign for *sar* "garden" (originally a pictograph of a garden bed, ) could be used to write the homophonous but more abstract verb *sar* "to write"; similarly, the sign originally representing "water,"  , *a* in Sumerian, was used for the syllable *a*, which among other things was the phonetic shape of the locative case in Sumerian. Finally, there is a third, smaller set of signs that are referred to as determinatives. These signs were not read, but merely served as aides in reading by indicating the semantic class to which certain words belonged; trees and wooden objects, for instance, were often preceded by the logogram, *giš*, for "wood," cities by *uru* "city," gods by *dingir* "god," and so on.

In its original conception, however, Sumerian writing relied almost exclusively on the logogram. Phonetic writings generated via the rebus principle played a remarkably minor role in proto-cuneiform. More certain examples of phonetic writings include: the writing of the name of the moon god, Nanna, which is written URI$_3$+NA,  , where NA,  , is phonetic complement with the value *na* indicating that the graph URI$_3$,  , is to be pronounced *nanna*; PIRIG+NUNUZ,  , where the complement NUNUZ,  , has the value *za*, indicating that the composite graph has the phonetic value *az*(*a*); the aforementioned sign designating a reed,  (GI$_4$), pronounced *gi*, is used to express the homophonous verb *gi* "to return"; and the syllabic, that is phonetic, spellings of the city names *Ša*$_3$*-bu* and *Gir*$_2$*-su* (Englund 2009, pp. 9–10; Krebernik 2007, p. 43). Relatively rare attestations of this kind notwithstanding, phonetic writings do not constitute an important organizing feature of the proto-cuneiform writing system. Only in the first quarter of the third millennium did phonograms, generated via the rebus principle, begin to play a significant and increasing role.

The scarcity of phonetic writings creates a number of problems connected with identifying the language of the script and determining whether proto-cuneiform can be defined as "true" writing.

As described in *Visible Language: The Earliest Writing Systems* (Introduction, this volume), writing is typically defined as the unambiguous visible representation of speech — forms of communication that convey ideas directly and are unhinged from spoken utterances do not qualify as writing according to this definition. A purely logographic system, without any phonetic signs (no such writing system actually exists) would pose certain problems in terms of determining the underlying language. For instance, we may intuitively know that the pictograph  means "head," but taken in isolation the graph gives us no indication of its pronunciation and hence what language it represents. We would have to consider how grammatical elements are rendered and how syntax, that is, word order, is handled to make this determination. If this information is not indicated in the script, it would be theoretically impossible to determine the underlying language, for the division between writing and other forms of visual representation would be blurred in the absence of an explicit link between script and speech.

This difficult situation is essentially what we face with the proto-cuneiform script. More than any other writing system known, Sumerian writing, in its original conception particularly, held economy as its topmost priority. There was a considerable gap between the natural, spoken language and what is represented by the early Uruk script. Most of the morphological information of speech, such as pronouns, adverbial markers, and other elements that convey grammatical meaning, is simply not recorded. The script, in this sense, is quite incomplete (fig. 2.12).

In Sumer, writing, as we have seen, was invented for a very restricted application, namely, for bookkeeping purposes. Much of the omitted grammatical information was either unimportant to the purpose at hand or was predictable from context, rendering its inclusion redundant. The proto-cuneiform texts were in a sense mnemonic devices — the decoder or reader of these texts had to rely heavily on the broader context in order to recover their full messages. As this context is forever lost, these documents pose enormous problems of decipherment and interpretation for the modern scholar. This was a writing system that was modeled on speech but did not mimic speech. Consequently, it is more appropriate to speak of "interpreting" texts rather than of "reading" them. Indeed, the breach between writing and speech extends to syntax. The order of graphs is fluid in early texts and words were not written in the order in which they were spoken. Tablet format, to a limited degree, compensated for this, as the organization of text into boxes, or cases (e.g., see figs. 2.6–8), played an important role in organizing information. Not until the second half of the third millennium did the sequence of graphs within individual cases reflect the sequential order of speech.

In sum, the evidence that the language represented by the proto-cuneiform script is, in fact, Sumerian is quite slim, being based on perhaps fifteen instances of phonetic writings, of varying degrees of certitude that have been discovered to date. However, the circumstantial evidence provided by the cultural continuity between the late fourth and the mid-third millennium, at which time there is no doubt the language represented is Sumerian, bolsters this

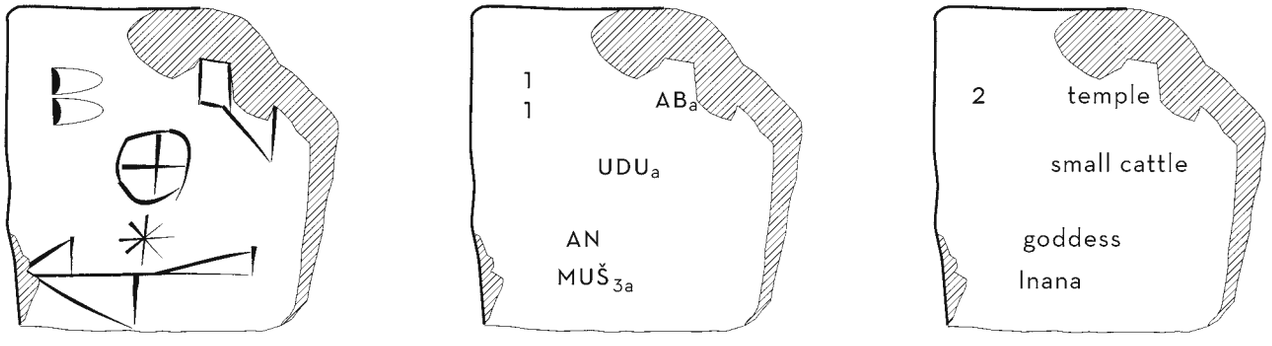


FIGURE 2.12. Line drawing, transliteration, and "translation" of an Uruk III text, illustrating the incomplete nature of the script and resulting ambiguities

argument. Most scholars today assume that Sumerian underlies the earliest texts from Mesopotamia. As for proto-cuneiform script representing writing in the sense defined above, we must accept that there is no sharp division between what we know to be true phonological writing and more symbolic modes of communication — pristine writing systems, in general, appear to occupy the ambiguous gray area between the two. Phonetic writings were present at the beginning, or so it appears, but they were of little importance to the organization and structure of the proto-cuneiform system. Indeed, the proliferation of phonetic writings, in terms of the development of a syllabary, was not precipitated by a desire to better express Sumerian, but rather by the necessity to write foreign words and the adaptation of the script to write the Akkadian language. That Sumerian writing became more closely bound to speech was a secondary consequence of these developments.

Sumerian writing became more explicit in its expression of morphology, so that by the end of the third millennium the grammatical elements of speech were, for the most part, reflected in writing. Yet economy of expression always remained a basic feature of Sumerian writing and it was always possible to omit information that was deemed to be retrievable from the broader context. A striking example of this is the existence of what may be referred to as "morphograms," an extension of the logography that was the basis of the writing system (Woods 2010). Morphograms are signs that represent a conceptually basic or default form of a morpheme, the smallest unit of meaning in a language. An example of a morphogram in English would be the writing of the plural marker in the words *cats* and *dogs*. The plural in both cases is written *-s*, even though in the case of *dogs* the plural is pronounced *z*. In other words, English orthography ignores the fact that the plural has the pronunciation *z* following a voiced consonant. English speakers unconsciously apply the same rules they use in generating speech and "read" the *-s* in *dogs* as a *z* (for a discussion of this phenomenon more generally and the English past-tense suffix *-ed*, see *Visible Language: The Earliest Writing Systems*, Introduction, this volume). In Sumerian writing this phenomenon is much more pervasive. A scribe could exploit the logographic, or more accurately morphographic, basis of Sumerian writing and write a basic or primary form of a morpheme regardless of the allomorphic shape — that is, the pronunciation — dictated by the context. The burden of supplying the appropriate "surface" or phonetic form of the morpheme was left to readers, who did so by relying on their native competence with the language. One had to know the language in order to render what was written into intelligible speech. For example, the verbal form pronounced *hanašumu* "he should give (it) to him" could be written *he-na-šum$_2$-e* (in addition to the more phonetic *ha-na-šum$_2$-mu*), a writing that preserves the basic or underlying form of the individual morphemes contained in the verb but obscures the phonetic changes owing to the assimilations that take place in speech. In the interests of economy, phonetic variation could be omitted in the writing where it was predictable from the context. While writings that more faithfully represent pronunciation increasingly dominate over time, it was always possible for a scribe to employ the morphograms that were the basic building blocks of the early script. One potential advantage in doing so was that fewer signs needed to be memorized and used, so that messages could be written more succinctly. But the overriding interest appears to be in the continuity of tradition and the prestige associated with the old orthography.

PRECURSORS TO WRITING

Mesopotamia boasts not only what may be the earliest writing system invented, but also some of the clearest evidence for the non-linguistic communicative systems that were precursors to writing. The first writing, which we may define as the unambiguous representation of speech, borrowed symbols from pre-existing administrative devices and artistic traditions, added many new elements, and codified and integrated the whole into a system that was fundamentally different from the communicative systems that preceded it (Michalowski 1994, p. 54; idem 1996, pp. 35–36).

The invention of writing represented a more comprehensive solution to a number of administrative and bookkeeping problems posed by an increasingly complex bureaucracy, problems that were addressed individually, and only in part, by earlier devices (Nissen 1986, pp. 323–26). These earlier,

prehistoric administrative devices, which were likewise products of the Late Uruk period, include cylinder seals, numerical tablets, and clay counters and their accompanying "envelopes" (see *1. Iconography of Protoliterate Seals,* this volume). As writing would more effectively do, each served as a means to control and monitor the flow of materials, commodities, and labor.

The hollow, baseball-sized clay balls referred to as envelopes and their associated counters, or "tokens" (Catalog Nos. 20–28 and 32–36), have received the most attention, having been made famous by Denise Schmandt-Besserat and her theory of the origins of writing (1992). These artifacts have been excavated in Iran, Syria, and Mesopotamia and make their first appearance in the archaeological record shortly before the Uruk IV tablets. The clay envelopes bear the impressions of one to three seals, but most importantly they contain clay tokens (Catalog Nos. 32–33 and 35–36); some envelopes, in fact, bear marks that indicate that the tokens were impressed upon their outer surface before being sealed within. The idea that these envelopes represented precursors to writing was first suggested by the French archaeologist Pierre Amiet in the 1960s. Studying a group of envelopes found at Susa in southwest Iran, Amiet (1966) observed that in some cases — the emphasis being on some — the markings on the envelopes matched those on the enclosed tokens. It was Amiet's idea that the tokens were numerical counters, and that each envelope was the record of a transaction — a type of primitive accounting system in which it was necessary to impress the tokens onto the outer surface of the envelope so that it would not have to be broken to inspect its contents. The very act of impressing tokens onto envelopes to represent numbers could have led to the creation of writing.

Amiet's understanding of the function of the envelopes was seemingly corroborated by a much later, second-millennium artifact found at Nuzi. This object, the so-called egg-shaped tablet (fig. 2.13), was first discussed in 1959 by A. Leo Oppenheim of the Oriental Institute.

This object is a type of envelope, but, again, much later in date than those discussed by Amiet. At the time of discovery, it contained forty-nine small pebbles. What is remarkable about this object, and what distinguishes it from the archaic envelopes, is that

FIGURE 2.13. The "egg-shaped tablet" from Nuzi (SMN 1854 = HSS 16:499)

it bears an inscription written in Akkadian. The inscription on the envelope makes reference to forty-nine sheep, and so matches the number of pebbles enclosed, identifying the pebbles as "the stones of the sheep" (Abusch 1981, pp. 3, 6). A receipt tablet, which clearly concerns the same transaction, was found together with the envelope, and also makes mention of the forty-nine sheep. The tablet provides the additional information that the sheep in question were placed in the care of a shepherd, Ziqarru, by a sheep owner, Puhišenni. So there can be no question that this particular envelope represents a simple accounting device for a specific transaction. And, although it postdates the protoliterate envelopes by some two thousand years, it seems reasonable to suggest that those earlier artifacts served a similar function (Lieberman 1980, pp. 340, 352). As to why such a primitive device would remain in use at Nuzi, where writing was well known, and why this transaction would be recorded in two different media, it might be suggested that the exchange of sheep involved an illiterate shepherd (Abusch 1981, pp. 7–8; compare Oppenheim 1959, pp. 123–24). Because the shepherd could not verify the accuracy of the written document, it was necessary to draft a second parallel receipt that would be comprehensible to him, this one consisting of the pebbles within the sealed envelope (Steinkeller 1984, p. 6).

Returning to our fourth-millennium envelopes, Amiet stopped short of equating specific token-shapes with specific cuneiform signs. This is the critical point at which Schmandt-Besserat's theory of the origins of writing departs from that of Amiet.

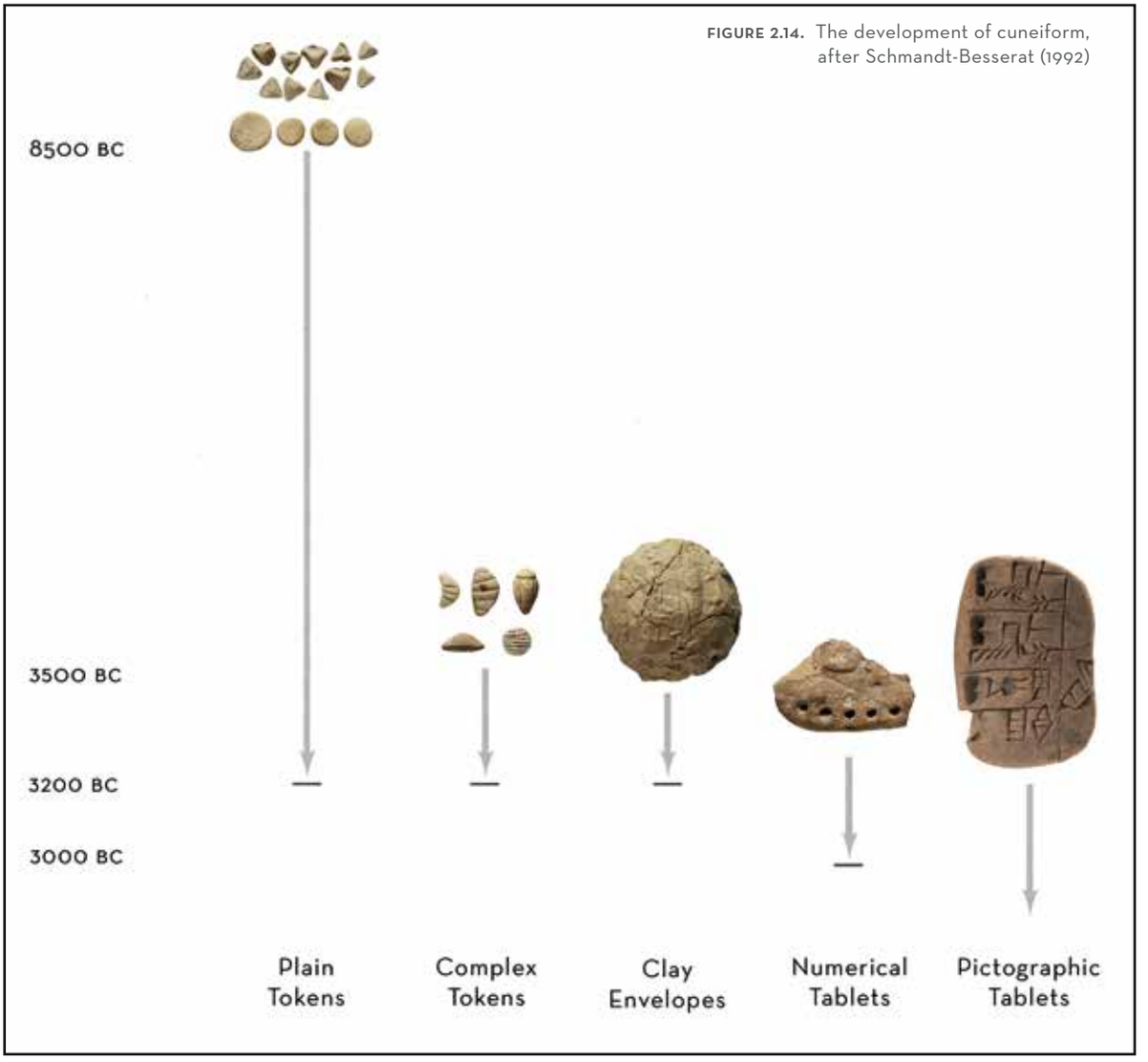


FIGURE 2.14. The development of cuneiform, after Schmandt-Besserat (1992)

In Schmandt-Besserat's view, both the numerical and logographic signs of cuneiform evolved directly out of the earlier token system. This theory is based on the visual similarities between the elements of the token and writing systems (fig. 2.15). According to Schmandt-Besserat, the simple, undecorated tokens, which first make their appearance with the beginnings of agriculture in the ninth millennium, developed into the numerical graphs (Catalog Nos. 20–21). The so-called complex tokens, those that have various markings and incisions and are regarded as a hallmark of the burgeoning urban societies of the fourth millennium, became the logograms of cuneiform (Catalog Nos. 22–28). They represented, she argues, the new commodities and bureaucratic needs of the complex societies that were emerging at the end of the fourth millennium. In Uruk and Susa, early bureaucrats organized them by threading them on strings and, of course, sealing them within clay envelopes after impressing them on the surface. From this point it is supposedly a simple and logical step to the development of writing. Early accountants soon realized that the process of enclosing tokens within envelopes was entirely unnecessary, since their two-dimensional impressions on the surface conveyed the same information with far less effort. So the envelopes were replaced by tablets. The cones and spheres of the complex token system were now translated to two-dimensional pictographs and were drawn with a stylus on clay tablets. By comparing the geometric shapes and designs of the tokens with those of the early cuneiform signs, Schmandt-Besserat assigned meanings to fifty complex tokens.

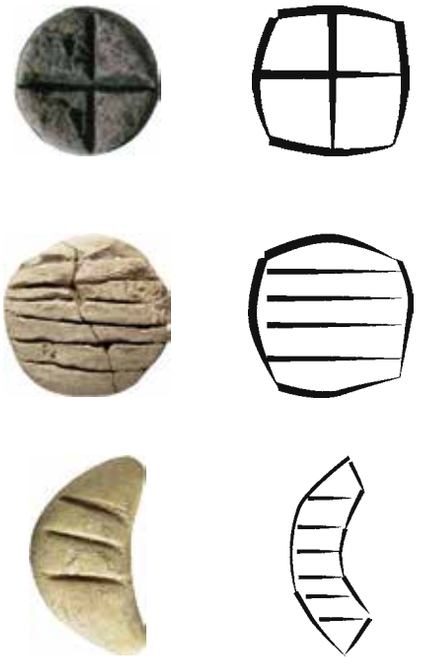


FIGURE 2.15. Comparison of complex tokens with the respective cuneiform graphs (from top to bottom) for sheep and goats, wool, and silver

Although there is an elegant simplicity to much of this argument, and Schmandt-Besserat is certainly to be praised for reigniting the debate over the origins of writing, the theory is problematic. It is difficult to accept, for instance, that tokens found over such a vast time period and over such a vast geographical range — from the Mediterranean to Iran, from the ninth to the end of the fourth millennium BC — comprised a uniform accounting system, as Schmandt-Besserat argues. For many of the objects, the archeological context is vague if not completely unknown. Notably, most of the tokens that are claimed to be the evolutionary precursors to cuneiform signs are not even found in connection with envelopes. However, it should be pointed out that perhaps only five envelopes have been opened, as doing so would necessarily destroy these artifacts; eighty of the some 130 excavated clay envelopes remain intact (Englund 1998, p. 49; Schmandt-Besserat 1992, p. 117). But recent technological advances in CT scanning and three-dimensional imaging now allow us to inspect the contents of sealed envelopes with a level of detail impossible just a few years ago. Currently, the Oriental Institute is working jointly with the University of Chicago Hospitals to scan the fifteen envelopes in the Oriental Institute's collections that were excavated from Chogha Mish in southwest Iran. The results promise to significantly enhance our understanding of the nature of the transactions or agreements represented by the tokens and clay envelopes (fig. 2.16).

The lynchpin of Schmandt-Besserat's theory — that tokens look like cuneiform signs — is, of course, subjective, and many of her identifications linking complex tokens to cuneiform signs are simply not plausible. Moreover, the assumption that a symbol present in two distinct systems — in this case the tokens of a prehistoric accounting system and proto-cuneiform — must necessarily have the same value is a well-known methodological pitfall in decipherment efforts, for it is entirely possible that the shared symbol has different values, or meanings, in the respective systems. Also damning in this regard is that the distribution of tokens, if we accept Schmandt-Besserat's identifications, is at odds with our understanding of early Mesopotamian economy and society. As the archaeologist Paul Zimansky has

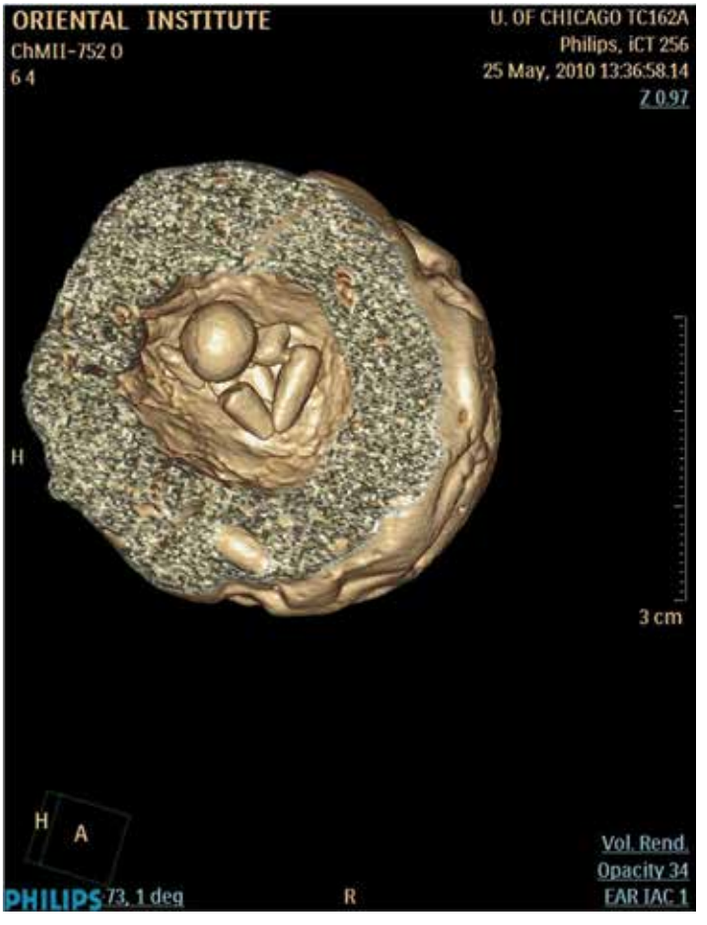


FIGURE 2.16. Three-dimensional CT scan of the contents of a clay envelope from the site Chogha Mish in southwest Iran

pointed out, the alleged sheep token, perhaps her most compelling piece of evidence on visual grounds, occurs only fifteen times over seven thousand years (Zimansky 1993, p. 516). This is indeed troubling, given all we know about the importance of livestock in the ancient Middle East. Conversely, the most common tokens are those that supposedly signify "nails" and "work days," prompting Zimansky to ask, "is it really credible that early villagers would leave more evidence of keeping accounts of nails than of livestock?" (Zimansky 1993, p. 516).

At this point, all we can say with any degree of certainty — as Amiet pointed out over forty years ago — is that there is a relationship between the impressions on the envelopes and the numerical graphs of the cuneiform system and that these two systems, and only these two, appear to be related. Indeed, the existence of numerical tablets (see Catalog Nos. 29–31) — stemming from the period immediately preceding the invention of writing with numerals but without graphs representing words — bridges the gap between the accounting systems represented by the tokens and the numeral graphs of proto-cuneiform, as numeral signs appear to have been made, in some instances, by impressing the tokens into the wet clay. In a final development before the inception of proto-cuneiform proper, these simple numerical accounts were supplemented with graphs (one or two at most) representing the commodities concerned (Englund 1998, pp. 52–56).

As for the origins of the word signs, or logograms, of proto-cuneiform, most of these were no doubt invented with the writing system itself. Others, however, were borrowed from various pre-existing communicative devices that were decidedly not writing (Michalowski 1990, p. 59; idem 1994, p. 54; idem 1996, pp. 35–36). The symbol that would become the graph for "sheep and goats,"  , for instance, obviously belonged originally to the accounting system represented by the complex tokens. When the script was invented, this symbol was borrowed from the older accounting system and assigned the meaning "sheep (and goats)." The graphic symbol was borrowed — people used and re-used the shapes known to them — but in all likelihood, based on its distribution in the token system, the meaning, or perhaps better, meanings, it had in that earlier system was not (Zimansky 1993, pp. 516–17). An example of this

FIGURE 2.17. Beveled-rim bowl. Nippur. 7.4 x 19.6 cm. OIM A31656

type of adoption from the material culture is the ubiquitous beveled-rim bowl, a diagnostic feature of the Late Uruk period (fig. 2.17). These crude, mold-made bowls were mass produced, and were likely used to disperse standardized rations to workers. The distinctive shape of the bowl was incorporated into the writing system to represent "a ration of food"; when combined with the graph SAG "head," the composite graph GU_7 denoted "disbursement" as well as the verb "to eat" (fig. 2.18)

In other cases, the inventors of the script borrowed long-established pictographic and iconographic elements from the visual arts of the proto-literate period. In particular, a number of standards and emblems connected with deities and their cult centers, which possessed powerful symbolic value, were drafted into the script (Szarzyńska 1989, 1996)

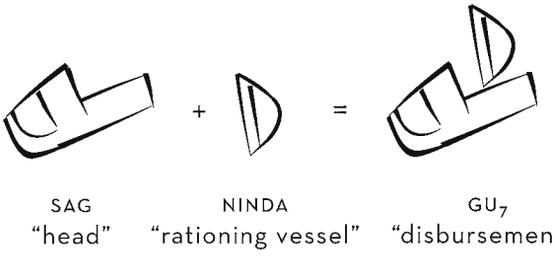


FIGURE 2.18. Composite sign GU_7 "disbursement" consisting of the graph for "head," SAG, and the graph for "rationing vessel," NINDA, likely the depiction of a beveled-rim bowl of the Uruk period

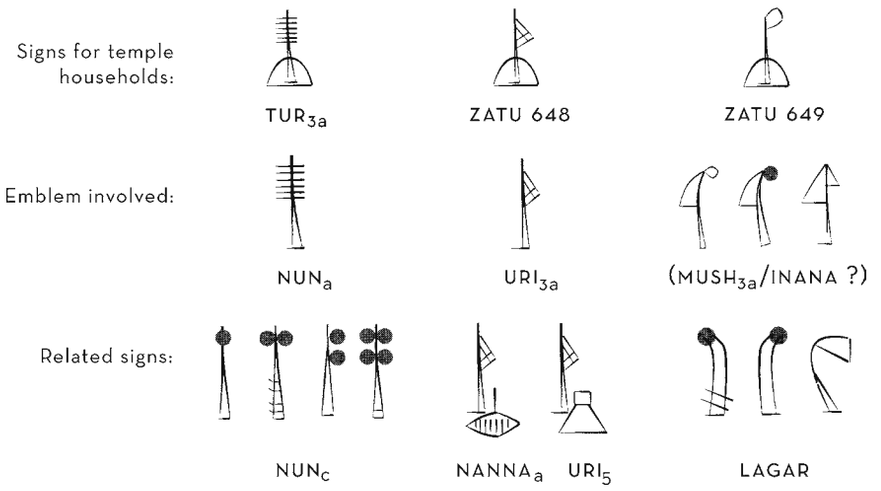


FIGURE 2.19. Pictographic signs representing temple households

(fig. 2.19). The exhibit includes an illustrative example in a fired clay symbol of Inana, the patron goddess of Uruk (Catalog No. 39). The object was found at Uruk in 1929 by the German Archaeological Institute and served as part of a wall frieze in the Eana complex. Often described as a reed bundle, this volute-like symbol may have represented a stylized scarf or headband (Steinkeller 1998, p. 95). Interestingly, the impressed circular designs on the staff mimic the clay-cone mosaics that decorated building facades, a characteristic feature of the architecture of the Eana precinct. This cultic symbol was borrowed and integrated into the writing system as the graph representing the name of the goddess,  . As a cultic symbol it may not have survived the fourth millennium, but as a cuneiform graph it persevered down to the end of cuneiform civilization (Steinkeller 1998, pp. 87–88).

In the protoliterate period the boundary that would later separate writing from artistic, symbolic representations was quite porous, and the two systems mixed more freely than they would in later periods. A unique Uruk-period seal demonstrates the point (Glassner 2003, pp. 175–76; Nissen, Damerow, and Englund 1993, pp. 17–18) (fig. 2.20). The image includes the symbol of the goddess Inana discussed above, and, to the left, a star representing the divine determinative, the pictograph UD — the sun rising between two mountains — and the mirror image of the latter, SIG, designating the setting sun. Also included, to the right of the Inana symbol, is the sign EZEN "festival" (the pictograph depicts a drum). The group together can be "read" as "the festival of the rising and setting star," that is, the planet Venus, a manifestation of the goddess Inana.

It should be emphasized that while some graphs can be demonstrated to have roots in other, earlier symbolic systems, the vast majority of the pictographs likely came into being with writing itself. And here we must be careful to distinguish between the history of the individual graphs and the writing system as a whole (Michalowski 1994, p. 55). When writing was invented it represented a completely new mode of communication, quite different from anything that preceded it and quite different from any of the systems in which individual graphs may have originated. The present evidence leads us to believe that although it would evolve and undergo enormous changes in the course of its history, writing, as a system, came into existence suddenly as an integrated whole (Michalowski 1996, pp. 35–36). For the restricted applications for which it was invented, as a bookkeeping device, it no doubt served its users well. While the potential to do so was there from the outset, accurately tracking speech was beyond this initial purpose, and the bond between the incipient script and the spoken word was tenuous. In this sense, at least, the earliest writing from Mesopotamia had more in common with the administrative devices it replaced than with the flexible visual representation of speech that it would become.

FIGURE 2.20. Impression of an Uruk-period cylinder seal from the former Erlenmeyer collection, Berlin