

From Notches to Tablets

A history of writing should be predicated on an understanding of what constitutes 'writing'. The proposition is not so simple. Most readers familiar with only one consonant-and-vowel alphabetic writing system – conveying spacially separated ink-printed letters in divided words from left to right in descending horizontal lines – will perhaps be only faintly aware that the world of writing embraces so much more.

Communication of human thought, in general, can be achieved in many different ways, speech being only one of them. And writing, among other uses, is only one form of conveying human speech. Nevertheless, modern society, it appears, has exalted this distinctive form of communication. Perhaps this is partly because, as a representation of external realities, communication through graphic art seems more objective, more substantial, than linguistic communication.¹ Even abstract notions can be transcribed graphically through this 'solidifying symbolic system'. The roots of this system are to be found in human beings' fundamental need to store information in order to communicate, whether to themselves or to others, at a distance in time or space.

Since one knows writing only for what it is now, it is difficult – perhaps even pointless – to provide a definition of it that presumes to include all past, present and future meanings. Whether it is of utilitarian advantage to see in 'full' writing a 'system of graphic symbols that can be used to convey any and all thought'² is a moot point. Just as valid would be the equally unspecific definition of writing as 'the graphic counterpart of speech, the fixing of spoken language in a permanent or semi-permanent form'.³ Yet this, too, seems to miss so much of what writing is about. One might accept that it is indeed the sequencing of stan-

dardized symbols (characters, signs or sign components) in order to graphically reproduce human speech, thought and other things in part or whole. This might, in fact, be the most general definition of writing possible at present. How well each system then accomplished this in the past was determined by the relative need of each society as it grew more complex. But this definition, too, remains just this: a limiting definition of something rather special that appears to resist limitation.

It may be best to avoid the ‘pitfall’ of a formal definition altogether, as writing has been, is and will be so many different things to so many different peoples in so many different ages. Instead, for the immediate purpose of this history of writing, one should perhaps address the more relevant question of ‘complete writing’, here defined as the fulfilment of three criteria:⁴

- ♦ Complete writing must have as its purpose communication;
- ♦ Complete writing must consist of artificial graphic marks on a durable or electronic surface;
- ♦ Complete writing must use marks that relate conventionally to articulate speech (the systematic arrangement of significant vocal sounds) or electronic programming in such a way that communication is achieved.

Every graphic expression that constitutes early writing – early writing fulfils at least one, but never all, of these three criteria – can be regarded as ‘writing’ in its largest sense, though it remains ‘incomplete writing’. Some sort of communication is taking place, albeit of a limited, localized and/or ambiguous nature.

Writing did not emerge from nowhere. Divine provenance has been many peoples’ preferred cliché. In fact, this fiction survived in Europe well into the 1800s, and is still embraced by certain communities in the US and in Islamic countries. Others have asserted that complete writing – writing fulfilling the three criteria – was ‘invented’ around the middle of the fourth millennium BC by a Sumerian in Uruk consciously searching for a better method to deal with complex accounting. Others see

complete writing as the result of group effort or accidental discovery. Still others believe complete writing to have had multiple origins, for various reasons. Then there are those who assert that complete writing is the product of a long evolution of early writing over a wide region of trade.

There is certainly no 'evolution' in the history of writing, not in the sense the word generally conveys. Writing systems do not change of their own accord in a natural process; they are deliberately elaborated or changed by human agents – drawing from a wide variety of existing resources – in order to achieve any number of specific goals.⁵ Perhaps the most common goal is the best graphic reproduction of the writer's speech. Constant small changes to a writing system's script over many centuries, even millennia, will result in enormous differences in that script's later appearance and use.

Before complete writing – that is, before the fulfilment of the three criteria – many processes akin to writing obtained. However, to call these processes 'proto-writing'⁶ would perhaps be to award them a status and/or role they do not deserve and never fulfilled. On the other hand, pictography ('picture-writing') and logography ('word-writing', whereby the depicted object is to be spoken aloud) might justifiably be called 'pre-writing'. Elaborating on nineteenth-century German speculations, American linguist Leonhard Bloomfield distinguished in the 1930s between 'picture writing' and 'real writing', with the latter also fulfilling certain essential criteria (signs had to represent linguistic elements of some kind, and be limited in number).⁷ A distinction has also been drawn between primitive 'semasiography' (whereby graphic marks convey meaning without recourse to language) and 'full writing', with only the latter to be regarded as writing in the 'true' sense.⁸

Whatever one's formal position regarding early writing attempts, graphic expression appears to be a very 'recent' phenomenon among hominids: the earliest 'engravings' appear to date from about 100,000 years ago (some say much earlier). However, our ancestors' regular series of incised dots, lines or hatch marks (allegedly tallies or lunar calendars) in no way suggest a link to articulate speech – though these 'proto-scribes' certainly spoke as fluently as we do today.

Before complete writing, humankind made use of a wealth of graphic symbols and mnemonics (memory tools) of various kinds in order to store information. Rock art has always possessed a repertoire of universal symbols: anthropomorphs (human-like figures), flora, fauna, the Sun, stars, comets and many more, including untold geometric designs. For the most part, these were graphic reproductions of the commonest phenomena of the physical world. At the same time, mnemonics were used in linguistic contexts, too, with knot records, pictographs, notched bones or staffs, message sticks or boards, string games for chanting, coloured pebbles and so forth linking physical objects with speech. Over many thousands of years, graphic art and such mnemonics grew ever closer in specific social contexts.

Eventually, they merged, to become *graphic mnemonics*.

KNOT RECORDS

One of the ancient world's commonest mnemonics was the knot record, which dates back at least to the Early Neolithic (the last period of the Stone Age).⁹ Such records could be simple knots in a single strand or complicated series of colour-coded knots on strings attached to higher-order strings. Knot records reached their peak of development, it appears, with the Inca's *quipus* (illus. 1). These comprised an elaborate means of counting: different knots in various positions depicted numerical quantities, the knots' colours representing, it has been alleged, individual commodities.

The Inca of ancient Peru used mnemonics almost exclusively to achieve what writing achieved in the same or similar contexts in other societies. The Inca had several different types of knots to record their empire's daily and long-term mercantile transactions and payment of tribute. Each knot held a specific decimal value (no knot in a certain place meant 'zero'). For example, one overhand knot above two overhand knots above a group of seven knots recorded the number '127'. Thus, there were specific cord places for the concepts 'hundreds', 'tens' and 'ones'. Bunches of strings of knots could be tied off with summation

1 The *quipu* of an Inca imperial accountant. From Felipe Guaman Poma de Ayala, *Nueva crónica y buen gobierno*, c. 1613.



cords. A special class of *quipu*-reading clerks oversaw and managed this highly complicated and efficient system. Even after the Spanish conquest of the 1500s, the *quipu* was retained for daily record-keeping.

Though not as elaborate as those of the Inca, similar prehistoric *quipu* can be found from Alaska to Chile; indeed, they are the Pacific Rim's indigenous record-keeping system. The South-East Marquesan *tubuna* 'o'ono bards, for example, used bundles of woven coconut fibre from which hung small strings of knots called *ta'o mata* that could also be used to enumerate generations. On ancient Ra'ivavae in the Austral Islands, south of Tahiti, genealogical records were kept by means of knotted hibiscus-bark cords. Similar phenomena can be found throughout the world. In his Scythian campaign, the Persian king Darius left Greek allies guarding a rear bridge with instructions to untie one knot in a 60-knot thong each day: if they finished untying all 60 before his return, they were to sail home to Greece. Knot records are a much more versatile mnemonic

than simple tally sticks or notched staffs. Permitting greater categorical variety and complexity, they can easily be ‘erased’ or ‘rewritten’ by mere retying.

Some scholars claim that these knotted strings or cords were the only primitive form of ‘writing’ developed in the Andes.¹⁰ But phonetic writing did apparently exist there (see Chapter 6). And knotted strings do not comprise writing. They are memory prompts. Though the knots’ purpose is communication, they are not artificial graphic marks conveyed on a durable surface, and their use has no conventional relation to articulate speech.

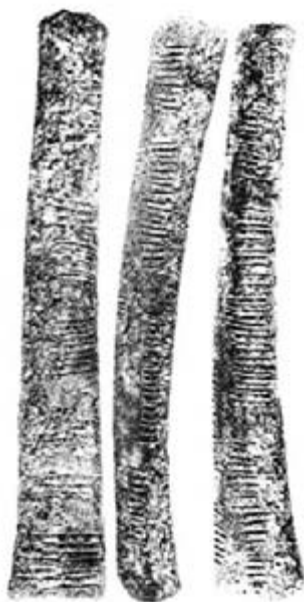
NOTCHES

Slashes in the bark of a tree – like rocks placed on a grave, branches rearranged over a path or an ochre handprint on a rock face – represent ‘idea transmission’. That is, they communicate something to others beyond immediate hearing. Here, marking and mnemonics were often combined to produce marking *as* mnemonics. The idea is extremely old, possibly older than the earliest known cave art.

Perhaps even *Homo erectus* used notches as mnemonics. Artefacts unearthed at Bilzingsleben in Germany that date to at least 412,000 years ago – several bones revealing cut lines at regular intervals – have been interpreted by their discoverer as intentional ‘engraving’ (that is, graphic symbols of some kind). It is evident that the notches are markings; what they mean, if anything, is unclear.

Subtle but consistent differences in stone and bone markings by *Homo sapiens sapiens* craftsmen beginning around 100,000 years ago indicate purposeful engraving. Discovered in South Africa’s famous Blombos Cave, two pieces of elaborately cross-hatched ochre represent early evidence of symbolic thinking to their discoverer. Other early artefacts, such as the Ishango Bone from Zaire (illus. 2; see also illus. 176), indicate similar markings made over a span of time; when counted, the marks on some of these artefacts appear to correspond with lunar cycles. However, other explanations are also possible. What is important here is that, tens of thousands of years ago, graphic marks,

2 Three views of the Ishango Bone from Zaire, radiocarbon-dated to c. 9000 BC. Perhaps a numerical or even calendrical (lunar) notation, the Ishango Bone has been called the 'earliest writing implement'.



however primitive, were probably recording some sort of human perception, for whatever reason. This was information storage.

Among more recent preliterate peoples, notches served the same purpose as knot records. For example, the *rākau whakapapa*, or 'genealogical boards', of pre-European Māori of New Zealand bore notches, each one representing the name of an ancestor. These were simple memory aids whose marks do not relate conventionally to articulate speech.

PICTOGRAPHY

Knot records and notches can recall categories, record numbers and prompt memory. However, neither can convey particulars such as qualities and characteristics. Only pictures can do this. The need to convey a larger variety of information prompted, in addition to the above, recording with one or more pictorial symbols – that is, pictography. Pictography is the fortuitous marriage of marks and mnemonics.



3 Some cave art is understood to be pictorial communication of a kind. Engraved 'P' symbols appear on top of a horse at Les Trois Frères in southern France, their significance unknown. At adjoining Tuc d'Audoubert, more than 80 such symbols, engraved using various tools, surround a second horse.



4 A Cheyenne pictographic 'letter' from Turtle-Following-His-Wife to his son Little-Man: 'I send you \$53 and ask you to come home.'

Pictorial messages were already being conveyed tens of thousands of years ago, too. In many ways, cave art can be understood to be pictorial communication (illus. 3).¹¹ The pictography of Native Americans has attracted much attention in recent years. Here, pictograms are usually simple marks either engraved or painted on walls and rocks – rock art or petroglyphs. But a few messages also involve quite elaborate pictography, listing warriors' names by painting distinctive

features: Red Crow, Charging Hawk and so forth. In nineteenth-century America, some tribes, such as the Cheyenne, even sent pictographic 'letters' to one another (illus. 4).

Pictography can convey a very complicated message without direct recourse to articulate speech. However, unlike knot records and notches, pictography does convey phonetic values by depicting specific objects and thus prompting their spoken identification. An Abnaki hunter in Maine, for example, could leave outside his wigwam a *wikhegan* – a birchbark scroll – depicting a man in a canoe and a deer, a man on foot pointing at a squiggle, and a snow-shoed man pulling a sled. Its message would be: 'I'm crossing the lake to hunt deer, turning off before the next lake, and won't be back until spring.'¹² This was communication through graphic art conveying a limited message within a limited domain.

The Ashanti people of Africa decorate their houses, utensils and other things with pictures recalling proverbs – a crocodile with a mudfish in its jaws can mean, among other things, 'If the mudfish gets anything, it will ultimately go to the crocodile.'¹³ The purpose of such a picture is also communication; it is graphic art on a durable surface, and it is related to articulate speech. However, this 'sentence writing'¹⁴ only prompts the mind of those who have already learnt the proverbs. Its 'signs' are not conventional but iconic, relating only to each proverb. Too much remains encoded in the Ashanti system, in other words, to represent an efficacious medium of general communication.

Though some Chinese characters (also used in Japanese writing) are pictographic in origin – like 'woman', 'child' and 'paddy-field' – one has to be told each meaning before recognizing the referents. For this reason, Chinese writing is not a pictography but a mixed logography (to be precise, a morpho-syllabography; see Chapter 5). That is, its characters hold sound and sense both, and must be individually learnt, not merely 'recognized'.

Pictography also happens to be the 'default script' of modern technology, as in electronic circuit diagrams. In this context, cultural ambiguities are intentionally avoided by standardizing symbols to maximize international comprehension. Within its limited domain, among specialists trained in the art, pictogra-

phy can be extremely useful, in certain circumstances surpassing the efficacy of complete writing.

However, all pictography is ‘incomplete writing’. This is because it does not use marks that relate conventionally to articulate speech. Pictography generally avoids speech.

TALLIES

Early humans, marking mnemonically, evidently realized that a similar process could be used to record counts. For example, if one could notch lunar phases one by one as they were watched – if this is what those earliest artefacts really depict – then one could also represent abstracts, such as numbers. Perhaps it was in this way that the first tallies were created.

The earliest known notched artefacts themselves might be such tallies: marks on bone to represent different people, a passage of time (rather than witnessed events), a hunting success. (Gunfighters once notched their Colt 45’s with ‘kills’; fighter pilots ‘notched’ using special emblems on the sides of their aeroplanes.) Tally sticks belong to the oldest forms of record-keeping. Native Australians even used these to send messages to one another over distances, with the number of notches on the stick signifying the amount of whatever the pre-arranged message was about.

Apparently, each ancient people possessed a regional variant of tally sticks. Standard values of notches would be known by all in the society. Throughout the European Middle Ages, customs officials’ fixtures were the tally stick and notching knife. The British Exchequer, for example, used tally sticks to record receipts from around AD 1100 to 1826. (Many sticks also bore explanatory notes in Latin, and later in English.) This system followed a general principle: the larger the sum of payment, the more wood would be notched from the tally stick. £1,000 was a straight notch, indented, four inches wide; a halfpenny was a simple punched hole.

Tallies have long existed alongside complete writing. They are easily used by illiterate people, and they are often quicker, less cumbersome and less expensive than writing. Though their

purpose is communication, and though they use artificial ‘signs’ on durable material, these are merely standardized notches and holes signifying units, not articulate speech.

FURTHER MNEMONICS AND SIGNAL MESSAGES

Many further tools have aided memory and/or conveyed human thought and speech over distance, all of which inflated the repertoire of resources that would eventually yield complete writing. Probably dating from Palæolithic times (the early Stone Age), string figures (used by one person) or ‘cat’s cradles’ (used by two persons) – designs woven on the hands with a loop of string – have been known in nearly all preliterate societies.¹⁵ Encoding genealogies, histories, songs, chants and more, this ‘writing in air’ has communication as its purpose, with conventional figures relating immediately to articulate speech, but lacks graphic marks on a durable surface. Signaling – whether by hand and face (sign language), sound, flags, smoke, fired powders, reflections on metals, electronics or other means – is similar, in that while many signal messages are now alphabet-based, they too lack conventional graphic marks on durable material.

Indexical symbols relating to something – five objects for five sheep, for example – have been used by many peoples for many thousands of years. To name one custom, the Yoruba of Africa have always used pebbles as indexical symbols; these could even assume homophonic value (an important component of some phonetic writing), whereby one word sounds identical to another with a different meaning. To arrange a tryst, for example, a Yoruba man would leave six pebbles for a woman to find – Yoruba *efa*, or ‘six’, also means ‘attracted’. If the woman was willing, she left eight pebbles as an answer: Yoruba *eyo*, or ‘eight’, also means ‘agreed’.

Some regard the coloured pebbles of southern France’s Azilian culture of *c.* 8000 BC to be the world’s ‘first pictographic writing’ (illus. 5). However, these crosses, stripes and other designs painted on pebbles do not portray easily recognizable natural phenomena.¹⁶ More significantly, like the Yoruba peb-



5 A few of the coloured designs on Azilian pebbles from Mas d’Azil, Ariège, southern France, *c.* 8000 BC.

bles the Azilian do not appear to have used marks that related conventionally to articulate speech. It is entirely possible that their pebbles figure among the world’s earliest examples of indexical symbols. However, they are not even ‘incomplete writing’.

The nineteenth-century ‘memory boards’ of the Luba people of Africa supposedly contained Luba history. ‘Read’ by experts, the boards’ patterns, colours, materials, configurations and general shape aided the ‘reader’s’ memory. Each Luba board is different in these characteristics, and even a single board can evoke different recitations by different experts – even by the same expert on different occasions. Though the Luba ‘memory boards’ comprise graphic art on a durable surface whose purpose is communication, they are not complete writing either: they, too, lack conventional marks relating immediately to articulate speech.

GRAPHIC SYMBOLS

Complete writing’s crucible was accountancy.¹⁷ Only social necessity could produce such an eminent tool as complete writing. In the ancient Middle East, around six thousand years ago, Sumer’s expanding society somehow had to administer and manage its raw materials, manufactured goods, workers, duties, planted fields, tributes, royal and temple inventories, incomes and expenditures. Time-honoured mnemonics no longer sufficed; something radically new was needed.

Marking possession, an important part of book-keeping, probably provided some of the world’s earliest graphic symbols.¹⁸ Possession markers occur with seals in apparently the same social contexts as complete writing occurs later. The Vinča culture

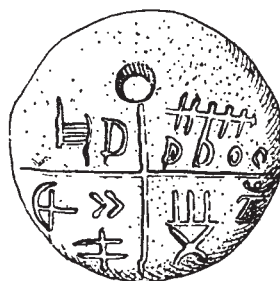
(5300–4300 BC) of the central Balkans produced pottery and other clay objects bearing incised symbols of some sort.¹⁹ There appear to be 210 symbols in all, 30 of these being main symbols, the remainder variations and compounds. The Vinča settlement at Tordos in Romania has revealed a great number of these: from simple + or - to more complicated combs and a swastika (illus. 6). At Tartaria, twenty km east of Tordos, three clay ‘tablets’ initially claimed to be of the same Vinča culture were unearthed in 1961 (illus. 7); however, they might also be a local version of the much later Minoan hieroglyphic script (see Chapter 3).²⁰ Comparable symbols have been found at some 37 other sites dating from the same period.

Most, but certainly not all, of these artefacts appear to evidence a ‘graphic symbol inventory’ of some sort that was available to artisans in the central Balkans perhaps as early as 6,500 years ago.²¹ (A ‘symbol’ is a graphic mark that stands for something else, while a ‘sign’ is a conventional component of a writ-

6 Some of the incised symbols that appear on pottery from the Vinča settlement at Tordos, 5300–4300 BC.



7 The three baked clay ‘tablets’ unearthed at Tartaria. Initially claimed to be from the Vinča culture, they might have been manufactured much later, according to some scholars.





8 Bulgarian copper-age graphic symbols from before 4000 BC: (left) 'plaque' from Gradeshnitsa, h: 1.2 cm; (right) clay 'seal' from Karanovo, diam: 6 cm.

ing system.) The discovery of two 'similar' clay artefacts in Bulgaria, radiocarbon-dated to before 4000 BC and bearing marks that could perhaps be graphic symbols, has been cited as additional evidence for this Balkan inventory (illus. 8). The current opinion is that these earliest Balkan symbols appear to comprise a decorative or emblematic inventory with no immediate relation to articulate speech.²² That is, they are neither *logographs* (whole-word signs depicting one object to be spoken aloud) nor *phonographs* (signs holding a purely phonetic or sound value).

Others have claimed that the earliest 'writing' is found in China, also dating to around 4000 BC. On pottery fragments from the Yangshao culture that were excavated at Banpo near Xian City in 1954–7 are incised marks that Chinese scholars have interpreted as numbers. However, not all specialists agree.

TOKENS

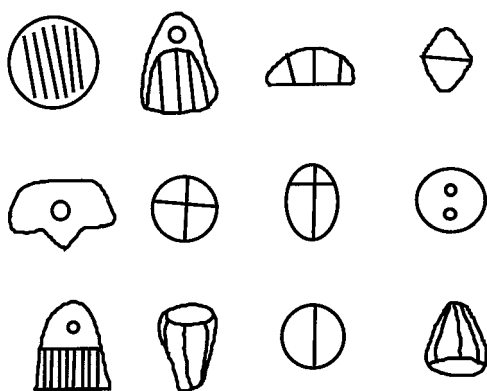
The 'Gelb Dictum' (so-called after its author, American epigrapher Ignace Gelb) – 'At the basis of all writing stands the picture'²³ – appears to be rudely contradicted by the theory of the token as the ultimate origin of complete writing. This recent theory professes that early tokens were counters in a rudimentary book-keeping system; that their form indicated

the product counted; that one token equalled one counted unit; and that these tokens led directly to complete writing. This theory has won many adherents in recent years. Generally accepted by the 1980s, it encountered critique in the 1990s; now, a compromise stance is emerging.

Complete writing was doubtless born out of the need to record the things of everyday life. Goods were perhaps tallied for many thousands of years in the Middle East using small clay tokens (illus. 9) – ‘counters’, like chits, though their exact purpose is still debated. Why clay? It is an abundant material in the Middle East, easy to work with, easy to erase and just as easy to preserve: simply let it dry in the sun or bake it. Most importantly, clay can easily be impressed with graphic marks representing stored information. Large numbers of these clay artefacts – bearing parallel, perpendicular and curved lines and dating from 8000–1500 BC – have appeared at archaeological sites from eastern Iran to southern Turkey and Israel. (Significantly, Egypt has revealed none so far.) Most come from ancient Sumer, today’s Iraq. Some were fashioned to resemble cones, spheres or other shapes.

The fourth millennium BC brought an innovation in the use of these small clay counters (if this was what the tokens were). Little clay ‘envelopes’ called *bulle* sometimes enclosed them. The *bulle* were then marked and impressed on their outside, so one did not have to break them open to learn how many tokens of which commodity were inside. Already in the 1930s, this process was recognized as perhaps the ‘beginning’ of complete writing.²⁴

9 Small clay tokens or counters of various geometrical shapes were used to make tallies from south-western Turkey to the Indus River beginning c. 8000 BC.



According to recent theory, the *bullæ* markings soon became standardized and systematized.²⁵ This development produced a new semiotic relation in record-keeping: indirectness. (Semiotics involves the relation of symbols and signs to meaning.) That is, the external marks and impressions on the *bullæ* envelopes were symbols of symbols: each token inside a *bullæ* represented one sheep, for example, and the external impression on the *bullæ* stood for the type of tokens ('sheep tokens') inside. The external two-dimensional graphic symbols suddenly began substituting for the internal three-dimensional token symbols. Simultaneously with their system of secondary symbol impressions, the Sumerians were also elaborating a numerical system using 'count stones' of different shapes denoting numerical categories. (These were true 'ideograms' – signs that stand for ideas, not things; numbers are ideas.) Count stones, like the tokens, were impressed on the outside of *bullæ* envelopes. One could now 'read' on the outside of a *bullæ* how many tokens were contained inside. *Bullæ* were thus 'inscribed' with both the type and the quantity of their contents. Once these secondary outside symbols came to be interpreted and used as primary 'signs', complete writing as we know it was born. According to the token theory, that is.

The leading proponent of this theory, archæologist Denise Schmandt-Besserat, believes that tokens' different forms represent different commodities: metal goods, species of animals, various textiles and so forth. She compares the tokens' forms with the earliest stylized cuneiform glyphs of the Sumerians, which have no apparent pictographic provenance, and finds strong similarities. As a result, she has claimed that the non-pictographic cuneiforms actually derive from *bullæ* impressions (illus. 10). Schmandt-Besserat sees two basic kinds of tokens: simple, like later cuneiform's numerical signs, and complex, like cuneiform's logographic signs.

Critics have voiced misgivings about this theory.²⁶ One of its main weaknesses, they say, is that it does not account for many of the approximately fifteen hundred Sumerian signs. (If tokens enabled the Sumerian system, they should have inspired most of the signs.) Further, cuneiform's origin seems to have been localized in Sumer, yet tokens are found over a much

clay token

pictogram incised in clay

cuneiform sign



(8000 – 3000 BC)

(Archaic Uruk, c. 3000 BC)

(Lagesb, c. 2400 BC)

10 How the Mesopotamian cuneiform for ‘sheep’ might have derived from an earlier token and/or *bulla* impression.

wider area. Schmandt-Besserat’s database appears not to support her own findings, another critic alleges: ‘sheep’ tokens, expected to be the most common, occur only fifteen times in seven thousand years, whereas ‘nail’ and ‘work, build’ are the two most common; one must also question the alleged uniformity of token meanings over such a range of time and space. The general impression is that ‘various people at various times exploited the few geometric shapes that are relatively easy to make in clay and used them as counters for whatever other purposes they, as individuals, chose.’²⁷ Perhaps most importantly, the *bulla* accounting system appears to be more complicated and sophisticated than the simple clay tablet it is alleged to have inspired.

Much still speaks for the token theory. Quantitatively, fewer tokens can be dated to the period following 3000 BC once complete writing became more common, implying that tokens were being superseded by something better. A compromise appraisal currently views the tokens of the ancient Middle East as a supplementary explanation of the origins of some early Sumerian signs. Indeed, the token system appears to have contributed to the emergence of complete writing. But tokens did not enable this on their own.

PHONETIZATION AND THE FIRST TABLETS

One might be tempted to agree with linguist Florian Coulmas: ‘The decisive step in the development of writing is *phonetization*: that is, the transition from pictorial icon to phonetic symbol.’²⁸

11 Inscribed clay tablet from Jemdet Nasr, near Kish, southern Iraq, Late Proto-literate (Uruk IV) period, c. 3300 BC. At this early stage, many signs still depicted everyday objects.



Yet the ‘reader’ of a sheep pictogram or token, for example, would have sounded out ‘sheep’ as soon as s/he recognized the animal or the token’s form. In the pictorial icon (image or likeness) phonetization – turning an image into speech sound(s) – already lay. The same is true with count stones and their impressions. Though phonetization is generally regarded to be a critical criterion in defining ‘writing proper’,²⁹ it is implicit in each graphic system. One sees a picture of something (‘sheep’) or a symbolic count I I I (‘three’) and one’s mind automatically puts a name to it, however rudimentary the graphic likeness or pre-learned unit. Phonetization is not automatically complete writing.

Dating to c. 3300 BC from Uruk on the lower Euphrates between Babylon and the Persian Gulf, the earliest of all clay tablets is only one step up from the *bulle* system, still comprising a system of numerals and (perhaps standardized, stylized) pictograms identifying commodities (illus. 11). In one system of accounting (there were several), numerals were made by pressing the round end of a reed stylus vertically into the clay (full hole = 10), at an angle left to right (hole with cavity = 5), or a number of other possibilities to signify multiples of these. The smallest accounting unit was made by impressing the edge of

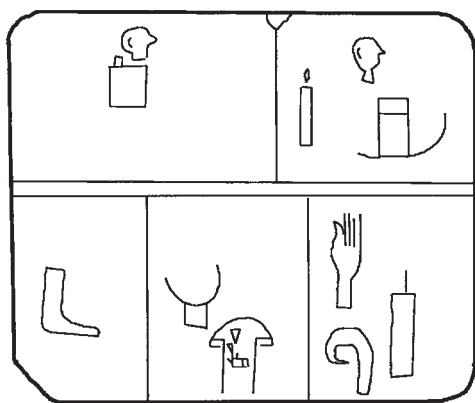


12 In Sumerian accounting, these standardized marks on soft clay were used to count humans, livestock, vessels, stone and wooden implements, fish, and dairy and textile products.

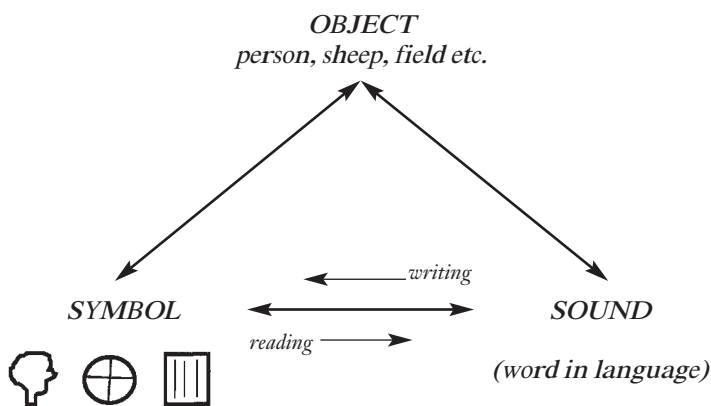
the stylus downwards, leaving a mark like the heel of a shoe (illus. 12). An obvious improvement on the *bulle* impressions, the two systems – *bulle* and tablets – co-existed for many centuries. The message of both was always: ‘so and so many of such and such a commodity’. More was not demanded of this system.

Though this is still not complete writing, as it fails to use marks that relate conventionally to articulate speech, it is nevertheless the successful conveyance of complex ideas through graphic art (illus. 13). It displays more sophisticated accounting techniques to accommodate a more elaborate economy. And in the phonetization or ‘sounding out’ of these earliest pictograms – ‘foot’, ‘hand’, ‘head’ – one is also acknowledging the special relation between an object, its graphic representation and its phonetic value or cue. Over time, pictograms became standardized and abstract, but retained their phonetic value. There came a point when the object itself was often no longer recognizable in the pictogram, though the pictogram’s relation to the object and its phonetic value were: the pictogram became a symbol. Sumer’s earliest clay tablets already exhibit many such symbols. Scribes could easily ‘read’ these within the system’s limited domain. However, the symbols were still unable to convey ‘any and all thought’ because they were bound to a system-external referent (illus. 14).

These early clay tablets show at least fifteen hundred different pictograms and symbols, each standing for one concrete object. Because abstract ideas or names were difficult to convey



13 Though perfectly comprehensible to its erstwhile scribe, this pictographic clay tablet from Kish (c. 3300 BC) reveals little that is legible today. The ‘foot’ in the lower left rectangle perhaps means ‘go’ or ‘come’; the profile heads might be ‘man’ or ‘slave’.



14 Symbols in Sumerian were bound to a system-external referent.

in this way, new methods were soon devised to express them. A pictogram could now describe different things: a ‘foot’ was both *foot* and *walking*, a ‘mouth’ was both *mouth* and *speech*. Further, two pictograms could be joined: ‘eye’ plus ‘water’ meant *weeping*. One pictogram compounded with another could also denote a special category: ‘plough’ plus ‘wood’ meant *a plough*, but ‘plough’ plus ‘man’ meant *ploughman*. For those in the society using these methods, rudimentary ‘reading’ was possible. For those not in that society, a ‘slit triangle’ (*vagina/girl*) joined with ‘three hills’ (*foreign*) would hardly have been immediately identifiable as *foreign girl* or *female slave*. This was still not complete writing. It remained mnemonics, though very elaborate and systematized mnemonics adequate to meet the immediate demands of its users.

However, a new system – or a radical extension of this mnemonic one’s adequacy – was needed if people wished to convey more or reduce ambiguity. The answer lay in *systemic phoneticism* – that is, in systematically co-ordinating sounds and symbols (including pictograms) to create ‘signs’ of a writing system. Graphic symbols became signs of a writing system only when the phonetic value of a symbol began superseding its semantic value within a system of limited, similar values. This cut the link to the system-external referent and prioritized the system’s potential to express nearly everything in articulate

speech. No longer perceiving in the graphic symbol (or pictogram) merely an external object or abstract ('sky'), one started reading a sound (Sumerian *an*) for its own independent value.

The systemic phonetic solution was possibly prompted by the nature of Sumer's language. Sumerian was mostly monosyllabic (one syllable for each word root), with a large number of homophones (like English 'to', 'too' and 'two'). Perhaps more importantly, Sumerian was agglutinative, attaching to core words prefixes and suffixes that could not stand alone, so sound words had to show these necessary attachments, too, in order to make sense of a spoken statement. When sound assumed priority in the system, incomplete writing became complete writing. This process appears to have occurred around 3700 BC. The transition expanded writing's capabilities exponentially – and inspired immediate adaptations from the Nile to the Indus Valley.

A symbol's sound had assumed systemic status to become a sign. Though perhaps prompted by the special nature of the Sumerian language, the solution had been enabled by the *rebus principle*. Perfectly suited to monosyllabic languages like Sumerian, this principle allows a picture of something to express a syllable in spoken language, taking advantage of homophonics. In this way, a picture of the monosyllabic word *eye* would also stand for the word *I*. 'Saw', the tool, would also be the past verb *saw*. 'Bill', the beak, would be the proper name *Bill*. Using pictures alone, one could 'write', then, the sentence: *I saw Bill* (illus. 15). Many scholars see the rebus principle as the 'key' to the transition from pictography to complete writing.³⁰

This was not an 'evolutionary' process. It was a sudden, localized event that occurred as a direct result of a perceived social need: better communication in recording accounts. The social requirements had been accumulating for a long time. The



eye



saw



bill

15 Using the rebus principle to 'write' *I saw Bill*.

graphic apparatus had been provided. A problem had presented itself, and a solution was needed. The solution lay in a new form of writing that now fulfilled the three criteria. That is, it:

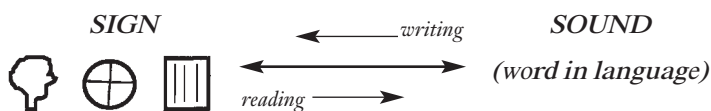
- ♦ had as its purpose communication;
- ♦ consisted of artificial graphic marks on a durable surface;
- ♦ used marks that related conventionally to articulate speech in such a way that communication was achieved.

Complete writing was the result (illus. 16).

Sumerian systemic phoneticism remained at first merely a minor tool for specifying isolated particles of information, such as transcribing foreign words or phonetically sounding out hard-to-identify signs that held several possible meanings. (For example, sometimes the phonetic marker *mesh* was suffixed to a sign in order to show that the plural was meant; before, one would have drawn multiple symbols to show plurality.) From the early fourth to the early third millennium BC, most Mesopotamian writing remained essentially pictographic, with only limited phoneticism. However, by 2600 BC the number of elements in the Sumerian writing system had been reduced, through increased use of phonetic writing, from fifteen hundred pictograms and symbols to about eight hundred pictograms, symbols and signs. Logography (whole-word writing, including homophonic) and phonography (exclusively phonetic writing) did not fully develop in Mesopotamia until about 2400 BC.

Yet Sumer's idea of systemic phoneticism, already at its inception, evidently spread far beyond the Tigris and Euphrates, both east to the Indus and west to the Nile, where the idea took root among other rising civilizations. Different languages and different social needs now demanded new solutions of their own.³¹

Most scholars still prefer to believe that writing originated independently in many regions of the world as an expression of a society's having attained an 'advanced' level of civilization.



16 Systemic phoneticism: Complete writing became possible once sign and sound were no longer bound to a system-external object (compare illus. 14) – one started reading a sign for its sound value alone within a standardized system of limited signs.

However, writing is not an automatic reward of social sophistication. Writing must be *elaborated*, and this entails a protracted process determined by evolving social needs. Though there are other possible interpretations, the cumulative weight of evidence urges the consideration that the idea of complete writing may have emerged only once in humankind's history. Drawing from a standardized repertoire of pictograms and symbols – the distillation of a long development from notches to tablets – the Sumerians of Mesopotamia elaborated what has since become humankind's most versatile tool. All other writing systems and scripts are, then, perhaps derivatives of this one original idea – systemic phoneticism – that emerged between 6,000 and 5,700 years ago in Mesopotamia.