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Systems of communication are clearly related to what man can make of his world both internally in terms of thought and externally in terms of his social and cultural organization. So changes in the means of communication are linked in direct as well as indirect ways to changes in the patterns of human interaction. Language is the specific human attribute, the critical means of interaction between individuals, the foundation of the development of what we call ‘culture’ and of the way in which learned behaviour is transmitted from one generation to the next. But if language is inextricably associated with ‘culture’, it is writing that is linked with ‘civilization’, with the culture of cities, with complex social formations, though perhaps not quite in so direct a manner. Nor is this only a matter of the implications for social organization, radical as these were in the long run. It is not just a question of providing the means by which trade and administration can be extended, but of changes in the cognitive processes that man is heir to, that is, the ways in which he understands his universe.

Writing and design

The physical basis of writing is clearly the same as drawing, engraving and painting – the so-called graphic arts. It depends ultimately on man’s ability to manipulate tools by means of his unique hand with its opposable thumb, coordinated of course by eye, ear and brain. There is little evidence of such activities in the early phases of man’s history, during the Early and Middle Old Stone Age. But with the coming of the later Old Stone Age (the Upper Palaeolithic, c. 30,000 – 10,000 BC) we find an outburst of
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graphic forms in the caves of south-western France, then later on in the rock shelters of Southern Africa and much later still, on the birch bark scrolls of the Ojibway of North America.

Writing, then, has its roots in the graphic arts, in significant design. To use distinctions that sometimes overlap and are not always very helpful, both the intention and the consequences of these designs can be described as either communicative or expressive. Expression can be seen as an incomplete communication, and on one level as self-communion, a kind of graphic monologue, the aim of which is the externalization of thoughts and feelings or simply the creation of design itself (as in a doodle or some more regular pattern) without any immediate communication taking place; in this case the encoder and decoder are one and the same person, since no others are involved, although expression in a long-lasting medium may mean that after a lapse of time another person can receive and interpret the message, whatever the intention of the originator of the design. In terms of reception as distinct from emission, even a non-significant design, for example, a pattern, may, like a natural object, be endowed with meaning, or with a more precise meaning, by the perceiver, even though communication, in the strict sense, has not taken place (that is to say, where intention is absent). Nevertheless, the prior existence of a system of interactive communication appears to be a prerequisite for these reflexive forms of meaningful act.

The designs in their turn range from the iconographic (which we can also refer to as the pictorial, the figurative or the eidetic, as for example when a picture of a ‘horse’ stands for a horse) to the arbitrary (the non-pictorial or abstract). In speaking of writing systems, iconographic designs are often referred to as pictographs (or pictograms, if they are isolated signs rather than extensive systems), abstract ones as ideograms; however these terms are somewhat misleading and in any case tend to be used inconsistently. In between these two poles we have quasi-pictorial designs, which may be

1 metonymic, as when a part stands for the whole, a picture of a saddle for a horse; or
2 associational, as when hay stands for horses. In some aristocratic
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societies a horse may stand for a knight, as three-dimensionally in chess; this latter variety of sign is sometimes called ‘ideographic’, for example by Diringer (1962:102); or

3 formalized, as when four dots :: stand for a horse (the feet looked at from below), or the sign [:] from the Vai (West African) syllabary for a case of gin (the bottles looked at from above). Non-pictorial designs are (i) phonological, for example, H for horse, (ii) purely conventional, for example, the sign ? to indicate that a ‘question’ has been asked.

Once again the categories are neither exclusive nor unchanging: the peacock or elephant in a North Indian embroidery may develop over time into a highly formal design whose reference is partly extrinsic to its form, that is to say, the reference has to be supplied by convention rather than by observation. Indeed the process may go yet further so that the specific relation between signifier and signified is totally lost (that is, cannot be reconstructed) and disappears into ‘pattern’. But loss of meaning is not the only way we arrive at this point; in many cases such a relationship may have been absent from the outset, for there is no evidence, in the graphic arts at least, of a general progression from representation to abstraction (Boas 1927:352), indeed, if anything the reverse is true (Leroi-Gourhan 1964:262).

Such designs or patterns are purely abstract, geometrical, falling into the category of non-significant design.1 Equally a non-pictorial design, such as the swastika, may acquire significance (that is to say, become meaningful in the ‘symbolic’ sense of standing for something else) in the specific context in which it is found, whether this be Hindu India or Nazi Germany.

In other words, whether the graphic design lies towards the pictorial pole (the pole of ‘natural indices’), or the formal or arbitrary pole, its form affects the relationship between the signifier (the graphic design) and the signified. At one level, a pictorial or natural design ‘means what it says’. At another level it may not; the early alphabet took an iconographic form, a hang-over from an earlier script since the individual signs themselves were semantically meaningless. Equally an arbitrary design is often ‘non-significant’ (as in many patterns) but it may mean what people agree it should say; the relationship is arbitrary both in terms of whether it
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has a meaning (for the individual or the collectivity) and in terms of what that meaning should be.

This distinction within significant design between pictorial and arbitrary roughly corresponds to the wider (semiotic) distinction some authors make between ‘natural indices’ and ‘signa’. The former are self-explanatory, but in the case of signa, “A stands for B as the result of arbitrary human choice” (Leach 1976:12; Mulder and Hervey 1972). Early graphic systems (e.g. North American pictographs) are clearly not totally arbitrary since the association is often (partly at least) ‘by nature’; one kind of object (a drawing) indicates another kind of object (as well as indicating a morpheme for or a more extended verbal description of that object) by graphic representation. That representation may sometimes be pictorial, sometimes of a metonymic kind (‘part for whole’), but it is more usually of a stylized, simplifying variety (for example, stick figures in action, corresponding to verbs). In these cases the representations lean towards the realm of ‘natural indices’. But any graphic repertoire (especially for a full writing system) must certainly introduce arbitrary indices, i.e. signa, if only because language itself has no one-to-one link with objects or actions in the outside world, so the system cannot be purely pictorial. Since language, as de Saussure insisted, is arbitrary, so too is writing, though a direct ‘pictographic’ link is possible in the case of some logographic signs (i.e. signs for words, for morphemes), just as a similar link is possible with sounds by means of onomatopoeia in the case of the spoken language. However, the point must be made that even the simplest forerunner of writing includes some non-pictorial signs.

The further subdivision of signa into symbols and signs also applies to graphic systems. Symbols are defined by Mulder and Hervey as “signa dependent on a separate (occasional) definition for their correct interpretation – e.g. \( x, y, z \) in an algebraic equation” and signs are “signa with wholly fixed conventional denotation, e.g. \( \pm, =, \equiv \), in an algebraic equation” (Leach 1976:13). The difference is related by Leach to the fact that signs (e.g. \(+/-\)) do not occur in isolation, but only convey information when combined with other signs. “Signs are always contiguous to other signs which are members of the same set” (1976:13). Whether this formulation makes for an adequate contrast with ‘symbols’
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significant design

'natural' indices

pictorial quasi-pictorial

pictograms and pictures (isolated)
pictography and strip cartoons (sequential)

logosyllabic writing (systematic linguistic representation)

'alphabetic/syllabic writing (systematic phonemic representation)

'non-significant' design (patterns)
arbitrary indices

Table 1. Variations in graphic representation.

seems open to doubt but the structural context of all signa, indeed all indices, is undoubtedly important, and certainly critical in discussing particular graphic systems. In terms of ‘natural indices’, pictograms (isolated natural indices) and pictographs (systems of such indices) are to be distinguished in just this way; in terms of *signa*, ownership marks need to be distinguished from the letters of the alphabet. However it seems preferable to treat this distinction as a variable displaying a number of discontinuities (and a variable that constitutes one of the differences among systems of writing and proto-writing), not simply as a binary contrast. For all *signa* occur in a structural context; none stand completely alone. But some sets are more tightly structured than others. Clearly the alphabet, as an approximate system of signs for phonemes, is very highly structured; a syllabic system slightly less so and a logographic system, which provides signs for words, is structured yet more loosely – and in a similar way to language itself. Other graphic systems (including the highly developed variety used by the Maya, whose status is subject to much disagreement) lie further down the continuum, at the end of which we find the non-pictorial forms (largely isolated signs) painted about cavern walls as well as the pictures of the strip cartoon or those of the individual variety that decorate the studio wall. Even at this end of the continuum the idea of a ‘set’ is still present, though in a very limited sense and hardly to the degree
supposed by Leroi-Gourhan for the Aurignacian cave-art of Southwestern France, which he tries to interpret as a highly structured semiotic system.

**Proto-writing**

The use of pictorial representations in sequential form, found mainly in North America, has been called picture-writing. The early authority on ‘pictography’, Garrick Mallory, described it as conveying and recording an idea or occurrence by graphic means without the use of words or letters (1886:13), constituting one form of “thought-writing directly addressed to the sight”, the other form of such communication being gesture language.

Two comments need to be made about this view. First, we need to maintain a distinction between the single and the sequential use of graphic design. An example of a ‘pictogram’ would be a zig-zag sign to indicate ‘electricity’ or ‘lightning’; it stands by itself both physically and morphologically, that is to say, it does not necessarily form part of a wider semiotic system; it does not need to stand in opposition to or in conjunction with other such signs. It is similar, in some respects, to a single picture on a wall. A sequential system of ‘pictographs’ such as we find in embryonic writing, in attempts to reproduce the flow of speech or of linguistically dominated ‘thought’, is closer to the ‘strip cartoon’; the kind of sequence we find in the pictorial representations of the national myth of the establishment of the Ethiopian crown, which incorporates the famous visit of the Queen of Sheba to Solomon, a visit that resulted in the birth of Menelik, first ruler in the line of Judah, which was held to continue until the deposition of Haile Selassie in 1972 (Fig. 1). By sequential design I refer to a succession of distinct elements, which may of course be pictorial, for example in a rose-pattern. Picture-writing involves a systematic, sequential relationship between designs, although the degree of systemization may be low.

Secondly, while Mallory, like many others, speaks of pictographs as ‘thought-writing’ (or even as ‘ideographic’ systems) that represents objects or events, concepts or thoughts, without the intervention of language, it is difficult to accept the absence of a linguistic element, even for gesture. For animals, gesture can be
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Fig. 1. The national myth of Ethiopia, celebrating the visit of the Queen of Sheba to Jerusalem and her meeting with Solomon, was recorded throughout the country in a series of ‘strip’ paintings.

described as non-verbal communication. But for human beings, the coding and decoding of gesture must include a linguistic component, as in all processes of thinking or of conceptualization. Indeed, one important definition of symbolic gestures, ‘emblems’, sees them as acts which have a “direct verbal translation usually consisting of a word or two” (Ekman 1976:14), though of course other forms of gesture exist (facial expressions of emotion, regulators, adaptors and illustrators) where there is neither the same precise meaning nor the same mutually perceived intention to communicate. How much more deeply is language embedded in the specifically human activity involved in graphic design, where language appears as an intrinsic intermediary? As Leroi-Gourhan maintains, figurative art is “inseparable from language” (1964:269); the whole development of graphic forms is linked to speech. Leaving aside the notion of a possible line of historical development, it is clear that one is never engaged simply in making
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an icon of an object as such; a horse standing in a field is a horse viewed in terms of a language that places the animal in a system of categories, as well as in the more widely embracing context of discourse that attributes to the animal certain general characteristics of speed, diet, and links it with various mythological, political and economic notions. Neither in the mind’s eye nor on the spread of canvas can a representation of the outside world be independent of linguistic usage, that is, independent not simply of categories but of the accumulated experience embodied in discourse. Equally, as Rosch has insisted (1977), category systems themselves are clearly not independent of the nature of objects in the outside world. There is, as the phrase goes, ‘feedback’.

After these preliminary comments on the spread of types of graphic design, let us return to the historical question. It is presumably not by accident that we find the conjunction of the emergence of Homo sapiens with a greatly increased brain capacity on the one hand, and with, on the other, the first appearance of graphic art together with what have been called the “striking innovations . . . in the psychic sphere” as evidenced by the careful burial of the dead, clothed and wearing personal ornaments (J. G. D. Clark 1977:104–5). These graphic forms begin with the engraved and painted materials of the Aurignacian deposits (c. 30,000 BC), but the major flowering of art occurred between 25,000 and 10,000 BC and consisted mainly of cave paintings. Graphic art seems to have come into being in the late Old Stone Age, that is to say, at the time the present species of mankind became the dominant, indeed the only, hominid species. The larger brain size may be directly connected with the dominance man achieved, but speech may already have been present. So too may have been the enlarged vocal cords (Lieberman et al. 1972). Although, as we have seen, graphics and language are often viewed as alternative modes of communication (and so in some ways they are), any elaborate use of visual ‘representation’ requires the advanced conceptual system intrinsic to language use. It is true that the simplest painting on pebbles (such as are found in the earlier Azilian cultures), or the imprinting of hands and feet on cavern walls, may not involve a high degree of conceptual elaboration. Even though elementary graphic signs are thought by some authors
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Fig. 2. The Narmer Palette. One of the first examples of writing in Egypt, bringing out the link between graphic forms, pictures and writing.

to be part of a more elaborate system, a true semiotic, such a degree of structuring seems unlikely; the ‘communicative’ or ‘expressive’ aspects of such art appear to be general rather than specific, loosely rather than tightly structured. Nor did they lead to any formal semiotic that could be described as embryonic writing. It is generally agreed that this gap is filled morphologically in quite another part of the world, by the so-called ‘picture-writing’ of the North American Indians.

Both being forms of graphic representation, the connection between art and writing is close not only in the early stages but in later calligraphy, illumination and illustration. Early writing in the Near East often has a figurative (sometimes a sculptural) counterpart; word and picture are complementary (Fig. 2). In Egypt the Narmer palette represents the beginning of both writing and monumental art, and the same conjunction seems to occur in Mesopotamia. Even when found singly or in small groups, early