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Guest Editors: David Olson and Derrick de Kerckove

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Introduction

Harold Innis and Marshall McLuhan are regarded, both here in Canada and to a large extent in the rest of the world, as being among the first to consider the media of communication as distinctive cultural forms rather than as transmission devices. This perspective allowed Innis to focus on questions of the role of communication in the formation of political and economic empires and McLuhan to focus on the psychological dimensions of oral and visual media of communication.

To trace their influence and to further the development of these ideas Derrick de Kerckhove and I of the McLuhan Program in Culture and Technology and Ian Parker and Roger Riendeau of the Innis Foundation hosted an International Conference on Innis and McLuhan and the Frontiers of Communication at the University of Toronto, to

fron·tier \ˌfrən-'ti(ə)r, 'frən-ˌ, fränˌ-', 'fränˌ-\ *n* [ME *frontier*, fr. MF *frontiere*, fr. *front*] (15c) **1 a** : a border between two countries **b** *obs* : a stronghold on a frontier **2 a** :

which such leading scholars as Jack Goody, Denise Schmandt-Besserat, Brian Stock, James Carey, Arthur Kroker, Vincent di Norcia, Carolyn Marvin, Graeme Nicholson were invited to participate. The result was an exciting two-day conference. We are delighted to share some of these papers, those dealing particularly with issues of writing and literacy, with the readers of *Visible Language*.

David R. Olson
Derrick de Kerckhove
McLuhan Program in Culture and Technology

Ian Parker
Innis Foundation
University of Toronto

a region that forms the margin of settled or developed territory **b** : a new field for exploitative or developmental activity in a particular subject — **frontier** *adj*

TOKENS: FACTS AND INTERPRETATION

Denise Schmandt-Besserat
The University of Texas at Austin

The first part of the article summarizes some of the major pieces of evidence concerning the archaeological clay tokens and in particular the technique for their manufacture, their geographic distribution, chronology, and the context in which they are found. The second part is devoted to the interpretation of tokens as the first example of visible language and, in particular, as an antecedent of Sumerian writing.

This paper deals with tokens recovered in archaeological sites of the ancient Middle East.[1] The first part summarizes the factual evidence available on the artifacts. The second part discusses what can be extrapolated from these facts for reconstructing what the tokens stood for and their significance. The interpretation focuses, in particular, on the way the objects were manufactured, their function as a counting device, the mode of reckoning they illustrate, and finally, the socio-political role they play in pre- and protoliterate communities. In the conclusion it will be proposed that tokens led ultimately to writing as a consequence of interrelated economic, social, and conceptual changes.

I. THE FACTS

The factual evidence on tokens includes their physical aspect, geographic distribution, number and findspots at given sites. Gathering this data involved visiting all possible collections of tokens in major museums of North America, Europe and the Middle East where they have been stored since excavation, counting the number of specimens, making a sketch of their shape and eventual markings, measuring their size and making note of all particular features. In the best instances, tokens identified by a field or museum number could be traced to the corresponding entry in field notes, excavation catalogue or site report in order to identify the level and location where they were found in excavation.

tokens led to writing as a consequence of inter-

Visible Language, XX 3 (Summer 1986), p250-273.

1 The Physical Evidence

Tokens are small artifacts modelled into standard forms either geometric or naturalistic. The shapes are as follows: spheres, disks, cones, tetrahedrons, biconoids, ovoids, cylinders, triangles, paraboloids, rectangles, cubes, rhomboids and hyperboloids (Figure 1). Others are miniature representations of tools, containers, pieces of furniture, fruit, animals and parts thereof. Tokens can be classified according to types and subtypes. The types refer to the shapes as described above whereas the subtypes refer to the intentional variations of size within the types or the addition of markings. Spheres, cones and tetrahedrons, for example, occur consistently in two sizes. Spheres also occur as fractions such as hemispheres and ¾ spheres. The markings consist of incised lines, notches, punches, pinched appendices or appliqué pellets. These are applied clearly on the face of tokens but with no particular concern for composition or esthetics. The lines and punctuations are displayed on a single face of the disks, triangles, paraboloids and other flat tokens, but cover the entire surface of spheres, ovoids, cones and other globular forms (Figure 2). The practice of applying markings on tokens is attested in the earliest assemblages of the VIIIth millennium B.C.[2] Tokens bearing markings remain rare, however, during the entire duration of the system, except between 3400-3100 B.C., when they become widely used at selected sites such as Uruk and Tello in Mesopotamia: Susa and Chogha Mish in Iran; and Habuba Kabira and Tell Kannas in Syria.[3] These assemblages of tokens characterized by a proliferation of markings are referred to as "complex tokens". Some complex tokens are also perforated. In the case of Uruk, for instance, 35.4% of the collection of 647 tokens bear markings and 15.6% are perforated.[4] The various assemblages of complex tokens are strikingly similar. They share, in particular, a same fine clay of buff-pink color and the markings they bear are identical in pattern and manufacture.

related economic, social and conceptual changes

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The size of tokens ranges, usually, between 1-3 cm across, with some examples measuring between 3-5 cm and rare specimens being less than 1 cm. There are sites, like Tepe Asiab, where tokens are consistently smaller than usual, with series of spheres, measuring less than 1 cm. On the other hand, sites like Tepe Yahya produced tokens larger than the norm.

The choice of material used to manufacture tokens is limited to four. As a rule, tokens are made of fine untempered clay. There are also examples made of stone, bitumen or plaster. The stone specimens are found, mostly, in north Mesopotamia and those of bitumen, which are exceedingly rare, seem restricted to the Susiana plain of Western Iran. There are occasional tokens made of plaster, for example, at Suberde in Turkey.

There can be great differences in the care given to the manufacture of tokens even among specimens from a same assemblage. Most clay tokens are modelled into a well defined shape with precise and crisp edges but others are sloppily done. The stone tokens which required far greater skill to manufacture and a time consuming polishing process usually show excellent craftmanship.

The color of clay tokens varies from buff to black with grey, red and pink specimens. Tokens of the neolithic period often show a black core whereas complex tokens of the IVth millennium B.C. are buff-pink throughout their thickness. Stone tokens are often made of colorful stones such as pink, green or black marble or white alabaster.

Differential Thermal Analysis (DTA) and electron microscopy have determined that tokens of various periods and various sites such as Tepe Asiab about 7800 B.C., Tepe Sarab, ca. 6500 B.C. and Susa, ca. 3300 B.C. were consistently fired at a low temperature never exceeding 700° C.[5]

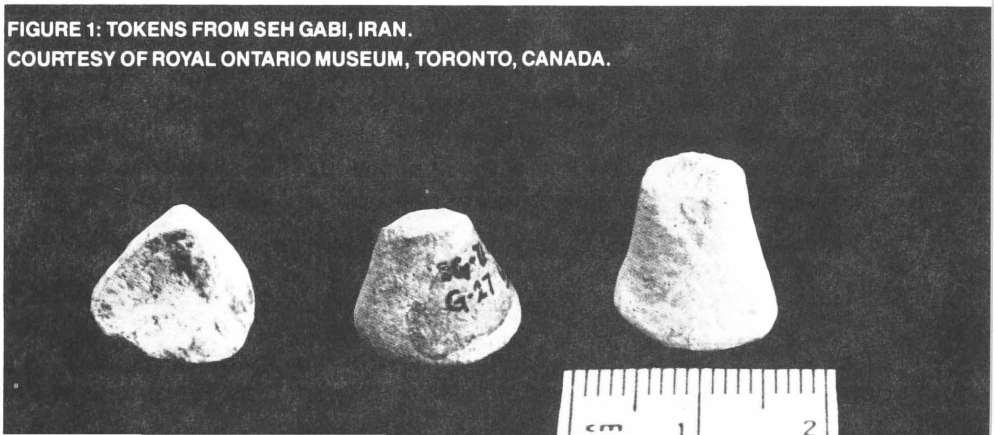


FIGURE 1: TOKENS FROM SEH GABI, IRAN.
COURTESY OF ROYAL ONTARIO MUSEUM, TORONTO, CANADA.

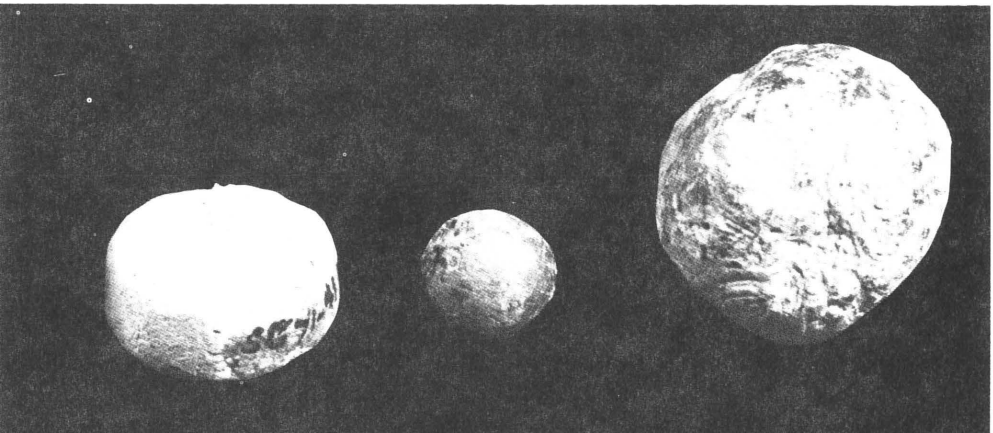
2. *Geographic Distribution and Number*

Tokens have been excavated in a large geographic area of the Middle East. The largest concentration of sites yielding tokens is in Iraq and Iran with respectively 45 and 42 sites. Among the Iraqi sites feature Uruk, Ur and Tello in the south and Tepe Gawra, Arpachiyah, Tell-es-Sawwan, Yarim Tepe, Jarmo, M'lefaat and Maghzaliyah in the north. The major Iranian sites with tokens are Susa, Chogha Mish, Chaga Sefid, Jeitun, Zagheh, Hajji Firuz, Tepe Sarab, Tepe Asiab and Ganj Dareh Tepe. Furthermore, tokens have been recovered in 15 sites in Syria, 9 in Israel, 5 in Turkey and 1 in Saudi Arabia. Among them, Habuba Kabira, Tell Kannas, Tell Ramad, Tell Aswad, Ghoraife and Mureybet have produced the most representative token assemblages of Syria: Jericho, Munhata, Beidha and Ain Ghazal in Palestine; Gritille, Can Hasan, Suberde, Cayönü Tepesi and Beldibi in Turkey. Dharan is the only site yielding tokens identified in Saudi Arabia.

The number of tokens varies greatly at each site. For example, there are about 2000 tokens from Jarmo in Iraq, ca. 6500 B.C.,[6] whereas, a single token (namely a paraboloid) is known at the site of Ubaid.[8] Uruk and Susa in the IVth millennium B.C. have each produced about 700 tokens.

3. *Chronology*

Stratigraphic excavation and Carbon[14] provide a chronological framework for the study of the token system.[8] The earliest counters appear in sites which cluster around 8000-7500 B.C. such as Ganj Dareh, level E, (GAK 807 : 8450±150 B.C.); Tepe Asiab (unique level, UCLA B and C : 7900-7700 B.C.); Tell Mureybet, level III (P. 1220 : 8000±100 B.C.) and; Tell Aswad, level I, (Gif-2633: 7790±120 B.C.). Tokens continue to be used in sites of the VIIIth- IIIrd millennium B.C. such as Ali Kosh (Shell 1246 : 6450±200); Jarmo



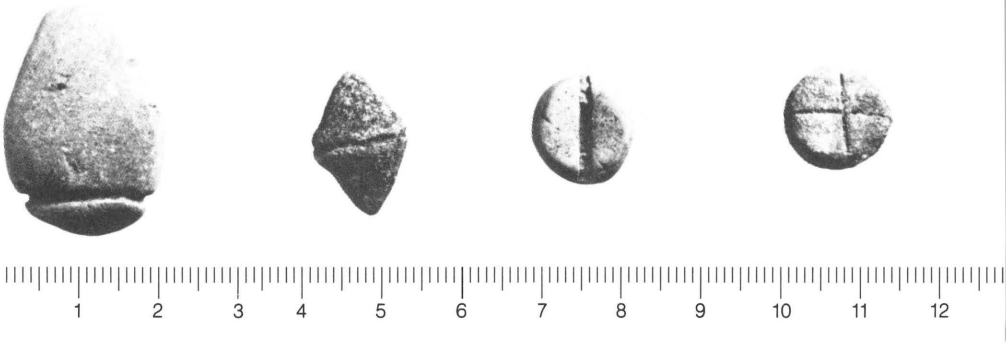
(UCLA-1714 E: 6030±140); Tell Ramad II and III (GRN 4822 : 5950±50, GRN 4823 : 5930±55); Tell es-Sawwan I (P-855 : 5506±73); Arpachiyah (P-548 : 5077±83); Hajji Firuz (P-502 : 4945±83); Chogha Mami (BM-483 : 4896±182); Tall-i-Bakun (P-438 : 4220±83); Zagheh (TUNC 11 : 4133±84); Farukhabad (M-2152 : 3210-3310 B.C.); [9] Susa (SPr1 : 3143±104).[10]

Complex tokens occur in level VI of the sanctuary of Eanna at Uruk and disappear in level III. At Susa they are present in levels 18-17 but no longer in level 16. Unfortunately, none of these levels at the two sites are dated by Carbon[14]. Instead the stages of their occupation are estimated, conventionally, according to the relative chronology established for the sanctuary of Eanna at Uruk. The period of Uruk VI to the end of Uruk IV is estimated to about 3350-3100 B.C.[11]

4. The Context

Controlled excavations in several sites provide information on the context in which tokens were found. At Tell Mureybet the first tokens appear in level III, in a layer characterized by a quantum jump in the quantity of cereal pollen.[12] No tokens are reported, on the other hand, in the earlier levels. Mureybet I and II, which yield remains of wild grains. The majority of tokens at Hajji Firuz originated in a small structure showing no evidence for any domestic activity.[13] On the other hand, tokens were rare in the houses where cooking and flint chipping were taking place. At Uruk 95% of the tokens belonged to the sanctuary of Eanna, 2.2% to the area of the Anu Ziggurat and 2.8% to the city private quarters. In the Eanna precinct the tokens were recovered among trash deposited in vacant lots in antiquity. They were sometimes found in groups of 50 to several hundred mixed with other discarded materials such as

FIGURE 2: TOKENS FROM SUSA, IRAN.
COURTESY OF MUSEE DU LOUVRE, DEPARTEMENT DES ANTIQUITES ORIENTALES.



broken jar sealings and tablets; pottery vessels, such as bevelled rim bowls; and clay cones used for decoration of monumental architecture.[14] Only once was a group of tokens recovered on the floor of a structure. These 75 tokens were mixed with the ashes of a hearth in a typical Eanna building with a facade decorated by recesses and indentations.[15] In Susa, Habuba Kabira and Chogha Mish, complex tokens belonged to assemblages featuring seals, sealings, tablets, bevelled rim bowls, and clay cone mosaics identical to those of Uruk.[16]

Three northern Mesopotamian sites provide the evidence of tokens deposited in burials. Tell-es-Sawwan I and II, in the VIth millennium B.C. produced burials, among which were those of infants, that included stone spheres.[17] In the Vth millennium B.C. one clay sphere is reported in a grave at Arpachiyah.[18] Tepe Gawra in IVth millennium B.C. is the third assemblage yielding tokens among funerary deposits. It was by no means a common practice at the site, and only one out of 306 simple graves and four out of 80 richly furnished tombs were found to include tokens. The grave which contained 34 cones was that of an adult male whose legs had been amputated.[19] A child was buried in the earliest of these tombs, dated to a level XIA[20] whereas the three others, tomb 102, 107 and 110 which belonged to level X, about 3200 B.C., were those of adult males. The first, tomb 102, included rich furnishings among which were one macehead, two obsidian vessels, beads, 23 stone spheres and 3 cones.[21] Tomb 110 was a double burial furnished with 6 gold rosettes, some decorated with turquoise; 2 gold studs, gold and stone beads, 1 seal of lapis lazuli, 2 mace heads, 2 serpentine beakers, 1 ivory comb and 6 stone spheres.[22] Lastly, No. 107 was that of a man prestigious enough to have a shrine built upon his tomb. In fact, he was the only individual so honored. His only funerary gift consisted of 6 stone spheres.[23] It is well understood that the burial had not been robbed and was intact at the time of excavation.

5. Tokens Enclosed in Envelopes

The ten following sites have produced tokens stored in envelopes: Shah Dad,[24] Tepe Yahya,[25] Chogha Mish,[26] Susa,[27] Farukhabad,[28] in Iran; Uruk[29] and Nuzi[30] in Iraq; Habuba Kabira[31] in Syria; Dharan in Saudi Arabia and Dumah in Israel.[32] The envelopes are made of clay and consist of hollow spherical or ovoid balls measuring about 5-9 cm in diameter (Figure 3). A total of 14 envelopes have been opened either intentionally or accidentally producing a total of 120 tokens. The number of tokens contained in each envelope varies from 2 to 52. The following types of tokens were found stored in envelopes: spheres, disks, cones, tetrahedrons, ovoids, triangles, paraboloids, rectangles, containers and miscellaneous. Some cones, tetrahedrons, ovoids and containers bear incised and punched markings showing that plain tokens as well as complex tokens were held in envelopes. For example, in Habuba Kabira one of the envelopes yielded as many as 8 incised ovoids.

Most envelopes bear the imprints of one or several seals covering their entire surface. Sixteen envelopes also bear markings which, except on two occasions, repeat the number and shapes of tokens held inside (Figure 4). Some of these markings were made, obviously, by impressing the tokens upon the surface. This is the case of Habuba Kabira where the ovoids fit exactly in the negative imprints shown on the surface of the envelope. A Susa envelope is unique in showing a discrepency between markings and the tokens contained. It shows 3 circular markings but, apparently, held only 2 spheres.[33] Another envelope from Susa shows the right number of tokens but the markings impressed have little to do with the shape of the counters. In this case 1 large sphere, 6 spheres and a disk are shown with a circle, 6 vertical lines and a miniscule triangular impression.[34]

Like the tokens found loose, the envelopes are rarely found *in situ*. At Uruk 25 specimens were stuck in a cavity of the wall surrounding the Stone Cone Temple. At Susa a number of envelopes were scattered on a large area of a room. One specimen was held in a small jar together with a spindle whorl, a flint blade, a shell and pierced roun-

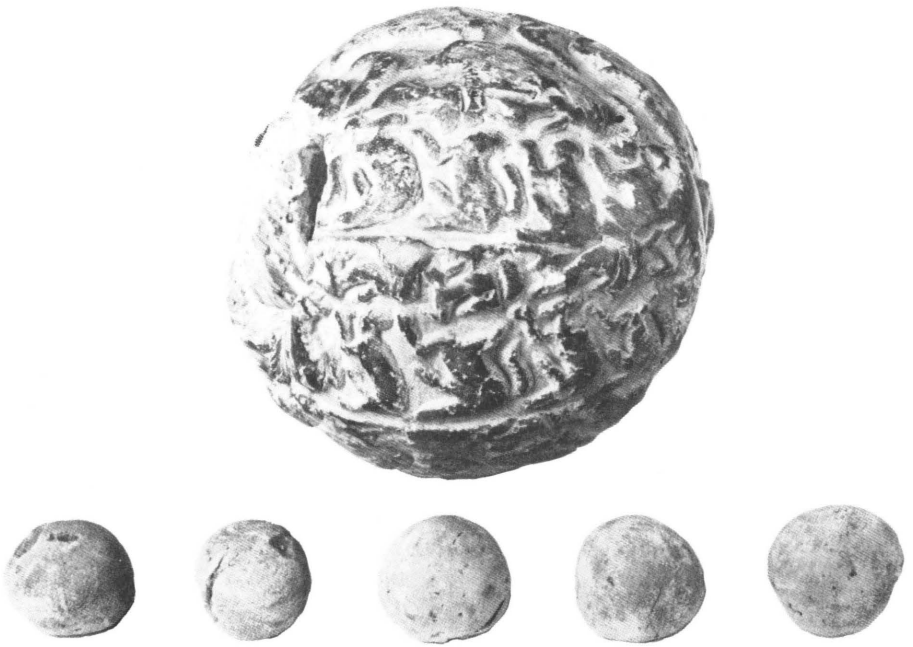
The envelopes are made of clay and consist of hollow spherical or ovoid balls... about 5-9 cm in diameter.

dels. These envelopes from Susa belonged to level 18-17 of Chantier Acropole I which are dated to about 3300-3200 B.C.

A similar artifact, referred to as an "egg-shaped tablet", is reported at Nuzi, Iraq (Figure 5). The specimen dates to about 1500 B.C. and is, therefore, far later than the protoliterate envelopes. The Nuzi envelope was made of clay, bore seal impressions, and was inscribed with the following text in cuneiform script:[35]
"counters (referring to sheep and goats):
21 ewes that have given birth
6 female lambs
8 full grown rams
4 male lambs
6 she-goats that have given birth
1 he-goat
2 female kids
seal of Ziqarru (the shepherd)."

The Nuzi envelope was found complete and produced 48 counters when it was broken open. Unfortunately, the shape of the counters is not known since they were lost without being properly reported.

FIGURE 3: ENVELOPE FROM SUSA, IRAN, WITH ITS CONTENT OF FIVE SPHERES. COURTESY OF MUSEE DE LOUVRE, DEPARTEMENT DES ANTIQUITES ORIENTALES.



II. INTERPRETATION

A number of logical inferences can be drawn from the facts summarized above concerning the manufacture, function and significance of the tokens. These interpretations, in turn, give new insights into the technology, economy, cognitive skills and social organization of the cultures that used the artifacts.

1. The Manufacture

The fact that tokens exhibit variations in size and form indicates that they were not produced in molds but handmade. Consequently, it can be assumed that each token was separately modelled by pinching a small lump of clay between the fingers and that markings were added, individually, with a pointed instrument or stylus. Furthermore, the striking resemblance between the various assemblages of complex tokens from distant sites such as Uruk, Susa and Habuba Kabira suggests that in the IVth millennium B.C. tokens may have been mass produced in central workshops.

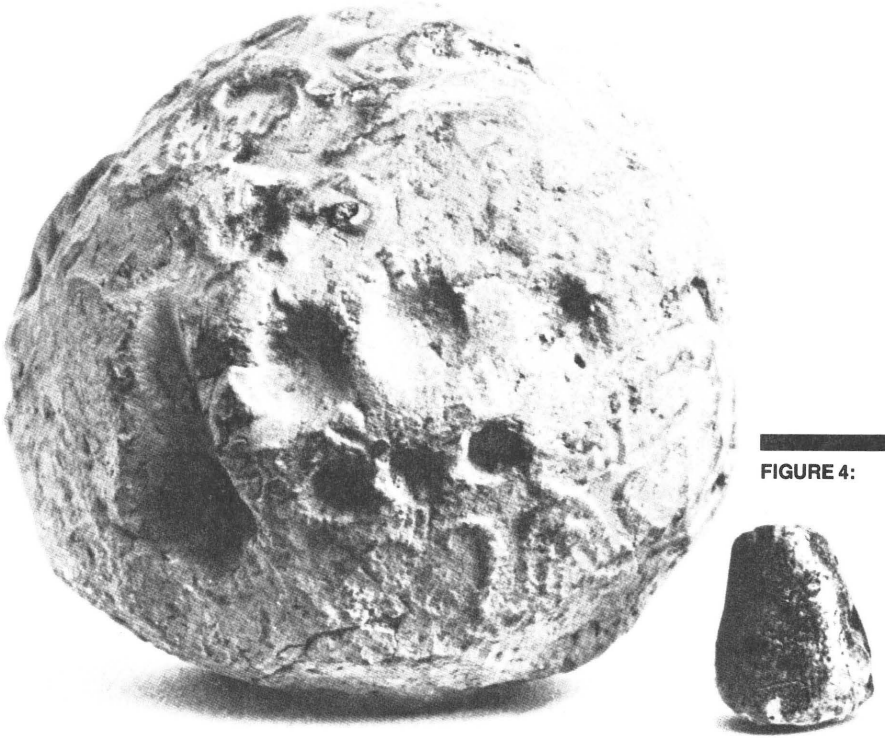


FIGURE 4:

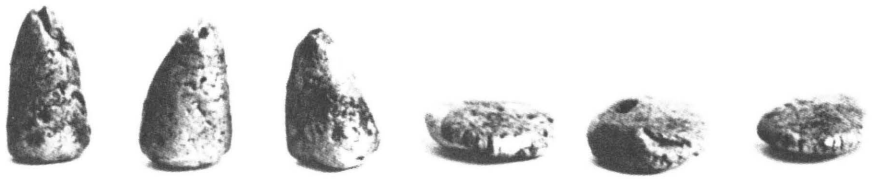
The various tests, such as DTA and electron microscopy establish that tokens were among the earliest clay artifacts to be subjected to firing — if not the earliest. It is probable that, during the Neolithic period, tokens were baked in an open fire. This is suggested by the low temperature of combustion and the black core showing an incomplete firing. Moreover, the range of colors represented among the tokens probably derived from the position the artifacts occupied in the hearth during the firing process. The black and grey specimens can be explained by the reducing atmosphere prevalent in the center of an open fire, whereas the red and buff specimens could result from the oxidizing atmosphere of the periphery. The tokens of the IVth millennium B.C., on the other hand, which were buff-pink throughout their thickness, were baked, possibly, in an oven where temperature and ventilation were fully controlled.

2. A system

The fact that groups of different types of tokens are found together, recurrently, either in hoards, such as those of Uruk, or enclosed in envelopes, indicate that all the tokens, including plain and complex specimens, belonged to a single system. Furthermore, because tokens of the same type, manufactured in the same way in similar sizes and bearing identical markings, are recovered, without any discontinuity, in most archaeological sites of the Middle East, there can be no doubt that the token system was widely used in the region during five millennia.

Concerning the size of token assemblages, it is interesting to note that Uruk and Susa, the main centers of Mesopotamia and Elam in the IVth millennium B.C., produced an almost identical number of tokens amounting to some 700 specimens. Otherwise, the number of tokens at each site is not always meaningful because it depends on such variables as the volume of dirt examined, the methods of excavation and luck. On the one hand, the fact that Jarmo produced 2000 tokens demonstrates that the artifacts could be plentiful in a typical

ENVELOPE FROM SUSA, IRAN, SHOWING MARKINGS CORRESPONDING TO THE TOKENS ENCLOSED. MUSEE DU LOUVRE, DEPARTEMENT DES ANTIQUITES ORIENTALES.



Neolithic village. On the other hand, the single paraboloid described at the site of Ubaid should not be interpreted as indicating that Ubaid used only one type of token. It merely acknowledges that only one token has been found, identified or reported upon at Ubaid. In fact, this particular specimen was included and illustrated in the report not because it was identified as a counter but only because it was misinterpreted as the part of a monumental sculpture, namely, the tongue of a lion.

3. The Evolution

According to Carbon[14], or relative chronology in the case of the protoliterate period, the token system remained in use from about 8000 B.C. to 3100 B.C., after which it becomes rare. The some 5000 years of existence of the token system can be divided into three major phases as follows:

1. 8000-3400 B.C. The assemblages of tokens consist primarily of spheres, disks, cones, tetrahedrons and cylinders (Figure 1) with rare triangles, rectangles, hyperboloids, vessels and animal heads. Most tokens are plain faced with only few examples bearing incised or punched markings.

2. 3400-3100 B.C. Complex tokens occur in level VI of Eanna at Uruk (Figure 2). The number of token types increases by the addition of biconoids, bent coils, rhomboids, tools and fruit; triangles, rectangles, containers and animal heads become frequent. The number of subtypes also multiplies by the addition of numerous patterns of incised lines, different numbers of notches, punch marks, pinched or appliqué features. A sizeable number of complex tokens are perforated. There is a dichotomy between sites which yield complex tokens and those that do not partake in this phenomenon such as Tepe Gawra in north Mesopotamia.

3. After 3100 B.C. complex tokens disappear. All assemblages revert to plain tokens bearing no markings. They are often limited to a few shapes, mostly spheres and disks.

4. An Accounting Device

The Nuzi envelope is the Rosetta Stone which revealed the function of tokens (Figure 5). The 48 artifacts it contained corresponded, visibly, to the 48 animals listed in cuneiform script on its face. It could be inferred, therefore, as A. Leo Oppenheim suggested, that the Nuzi envelope was an accounting device using two different methods to refer to the same 48 animals: cuneiform writing and counters.[36]

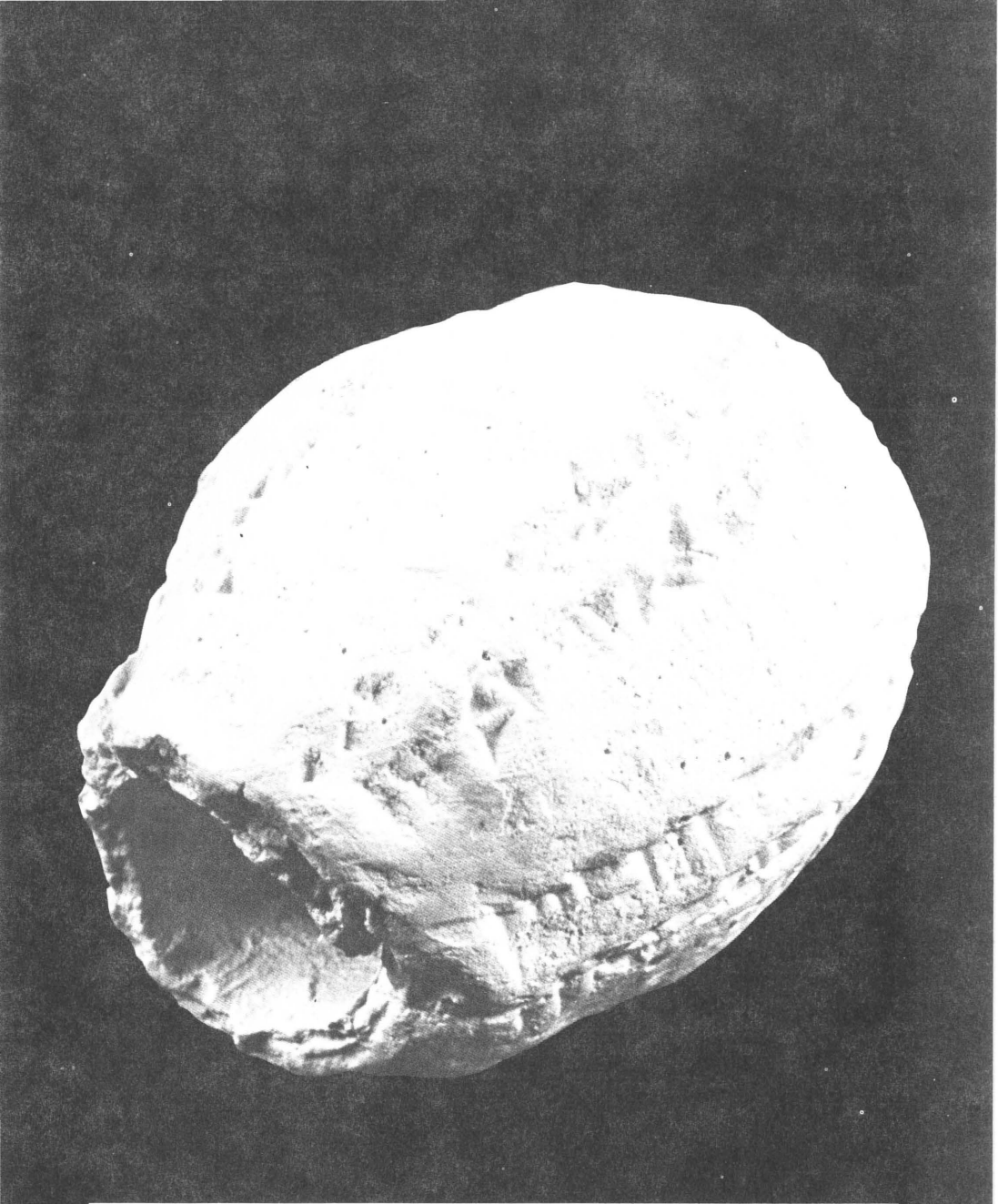


FIGURE 5: ENVELOPE FROM NUZI, IRAQ. COURTESY E. LACHEMAN

The Nuzi envelope is the Rosetta Stone which revealed the function of tokens.

Pierre Amiet saw a parallel between the protoliterate envelopes of Susa and that of Nuzi and, in particular, between the objects they contained.[37] The comparison was daring because, not only are the Susa envelopes 2000 years earlier, but there is no known example of any comparable device holding tokens during the 2000 years separating the artifacts. Despite the puzzling gap in the evidence, it is reasonable to argue that the two kinds of envelopes are similar in many ways. Both are made of clay, contain small artifacts, are impressed with seals and, most importantly, sometimes bear inscriptions. The markings on the protoliterate envelopes are not cuneiform signs for the good reason that the cuneiform script was not developed at that early date. The protoliterate markings, on the one hand, replicated the shape and number of the tokens enclosed: and, on the other hand, were identical to signs impressed on the first Sumerian tablets (Figure 6) — the earliest ancestors of cuneiform writing. Evidently, the protoliterate envelopes, like the Nuzi example, expressed the same information in two different ways: tokens and impressed signs. Consequently, the protoliterate envelopes, like that of Nuzi, can be considered to be accounting devices holding counters.

FIGURE 6: IMPRESSED TABLET FROM SUSA, IRAN.
COURTESY MUSEE DU LOUVRE, DEPARTEMENTS DES ANTIQUITES ORIENTALES.

5. *The Precursor of Writing*

Two pieces of evidence support the argument that tokens are the precursor of writing: chronology and the similarities between tokens and the first signs of writing. Assyriologists have established that the evolution of the cuneiform script, written on clay tablets, can be divided into three main phases:
1. IIIrd millennium B.C.: archaic script
2. 2900-3100 B.C.: pictography (Figure 7).
3. ca. 3100-3150 B.C.: impressed signs (Figure 6).
A still earlier stage can now be added:
4. ca. 3200 B.C. impressed signs on envelopes holding tokens (Figure 4).

Carbon^{14} dates available for Mureybet III, Tepe Asiab, Hajji Firuz, Arpachiyah, Seh Gabi, etc. . . . and the relative chronology of Uruk, indicate that the token system evolved as follows:
1. 8000-3100 B.C. Token assemblages include many shapes (Figures 1 and 2).
2. ca. 3400-3200 B.C. Groups of tokens are enclosed in envelopes (Figure 3).
3. 3100-3000 B.C. The token system dwindles.

In this perspective, the envelopes emerge as a link between tokens and writing, establishing a continuity between the two systems. Accordingly, the evolution of record keeping in the ancient Middle East can be summarized as follows:
1. 8000-3200 B.C. Accounting is performed with tokens.
2. 3200-3000 B.C. The token system and writing overlap.
3. 3100-3000 B.C. The advent of pictography which marks the true take off of writing coincides with the decline of the token system.

It should be emphasized here that the steps that led from tokens to writing cannot be precisely dated. There is no Carbon^{14} date available, in particular, for the chronology of envelopes, marked envelopes and the first tablets bearing impressed signs. The artifacts are presently dated only according to the relative chronology of Uruk. This is due to the fact that the events leading from tokens to scripts occurred in rapid succession between 3400-3150 B.C. making it difficult to pinpoint exactly each stage of the sequence.

The problem is aggravated by the fact that envelopes are not found in a stratigraphic context but among trash accumulated at unknown times in antiquity. Even the envelopes of Susa recovered on the floor of buildings cannot be considered *in situ*. The artifacts were discarded, probably, by the occupants of the buildings seemingly because they were not worth saving when the rooms had to be cleared

for repairs or rebuilding. The fact that we are dealing with trash is shown by the pattern of distribution of the artifacts on the floors. They were not clustered together along a wall as is the case of archives found *in situ*. Instead they were scattered randomly on large surfaces of the rooms. This also explains the heterogeneous nature of some groups of artifacts such as, for example, the jar holding one envelope together with a spindle whorl, a flint blade, a shell and pierced stone roundels.

The envelopes are also the crucial link between the shape of tokens and that of the first signs of writing. The method of storing tokens in clay envelopes where they were no longer visible, made it necessary to indicate the token contents on the surface. Consequently, the marks shown on the face of the envelopes duplicate, unambiguously, the shape of the tokens enclosed. In fact, at Habuba Kabira, the marks consisted visibly of the negative impression of the incised ovoids the envelope contained. The complete metamorphosis of tokens into graphic signs was realized on the so-called "impressed tablets" (Figure 6) when the token images were separated, definitively, from the actual tokens. Finally, when pictography was introduced the most refined incised signs featured also token prototypes, either plain or with markings. Writing thus perpetuated the repertory of symbols used for millennia for accounting with tokens.

6. *Symbols for Economic Units*

Sumerian pictographs are held to be the key to cracking the code of the token system. This hypothesis is founded on the fact that signs may change form without altering their meaning. Most letters of our latin script, for example, have preserved the value they had in the former Greek and Phoenician alphabets of 2500 and 3500 years ago. Egyptian and Chinese writing systems are other notorious examples of the preservation of symbols through the ages. Egyptian signs, for instance, can be identified at various stages of their 4000 years evolution in demotic, hieratic and hieroglypic scripts and, in some cases, with pre-dynastic prototypes as three dimensional amulets.[38]

FIGURE 7:
PICTOGRAPHIC TABLETS FROM URUK, IRAQ. COURTESY VORDERASIATISCHES MUSEUM, STAATLICHES MUSEEN ZU BERLIN.

Some cuneiform signs evolved from three dimensional artifacts. The sign for "sheep" for example, can be followed backwards in time through its 3000 year evolution, starting with the Assyrian cuneiform of 500 B.C. to the Sumerian pictograph of 3000 B.C. (Figure 7). In turn, because the Sumerian pictograph is the exact rendition of a token — namely a disc with an incised cross (Figure 2, top right) — it seems logical to assume that the disc with an incised cross also stood for "sheep".

The symbols for *ban* and *bariga* (two measures of grain) probably equivalent to our "peck" and "bushel" may have a record longevity of about 8000 years. These signs can be traced without discontinuity in the following stages of their evolution:
1. I-IIIrd millennium B.C.: cuneiform sign
2. III- late IVth millennium B.C.: impressed sign (Figure 6)
3. ca. 3200 B.C.: impressed sign on envelope (Figure 5), cones and spheres in envelopes (Figure 4)
4. 3200-8000 B.C.: cones and spheres (Figure 1)
Unfortunately, most pictographs are presently undeciphered; so, consequently, the meaning of most tokens remains enigmatic.

It is noteworthy that all the tokens identified so far stand for units of merchandise,[39] leading to the conclusion that during its entire existence the token system was an accounting system restricted to keeping track of goods. Furthermore, the plain tokens typical of the neolithic and chalcolithic assemblages, such as spheres, cones, cylinders and lenticular disks, can be matched to the symbols of staples, such as measures of grain and number of animals. On the other hand, the complex tokens familiar in the large centers of the IVth millennium B.C. are parallel to series of signs standing for manufactured goods. Among them feature, for instance, products such as bread, oil, perfume, wool, various types of cloth and garments, rope mats, pieces of furniture, tools and a variety of stone and pottery vessels. It thus appears that mostly staples were accounted for during the Neolithic and Chalcolithic periods. On the other hand, the quantum jump in the token types and subtypes which occurred in large cities

The advent of pictography [3100-3000 B.C.] which marks the true take off of writing coincides with the decline of the token system.

such as Uruk and Susa about 3400 B.C. reflected a profound change in the economy indicating the addition of manufactured goods among the commodities accounted for in the emerging state bureaucracy.

7. A Tool of the Mind

The tokens were counters and thus belong to the category of items considered by Jack Goody as "tools of the mind".[40] It is reasonable to assume, therefore, that the artifacts may shed light on the cognitive skills of the people who used them.

Tokens expressed plurality in a way fundamentally different from the way our 20th-century writing system expresses it. For example, when we write "3 sheep", we separate the concept of number from the concept of the item counted, showing each of these concepts by different symbols, numerals or letters. Tokens, on the other hand, expressed plurality in one-to-one correspondence.[41] The counters, in other words, were repeated as many times as the number of the items counted. "1 sheep" was shown by one token standing for "sheep"; "2 sheep" by two tokens; "3 sheep" by three tokens; and so on. Such a group of three tokens indicated, literally "sheep, sheep, sheep" instead of the modern western usage, "3 sheep" (or "three sheep").

Tokens also expressed plurality in a way fundamentally different from a 20th-century counting device such as the abacus. Because the abacus is based on abstract numbers which can be applied to any and everything to be counted, the beads are uniform and are used to compute any possible item under the sun. The beads of the abacus can be used, for example, to count either sheep, measures of grain or jars of oil. On the other hand, the token system is characterized by counters of different shapes to count different items. Sheep were counted with disks, small and large measures of grain with cones and spheres and ovoids served to compute jars of oil. Reciprocally, jars of oil could only be counted with ovoids, small and large measures of grain with cones and spheres and sheep with disks. There were not tokens standing for 1, 2, 3, etc. applicable to any possible item. Each token, in other words, fused together the concept of the number "1" and the concept of the item counted. The lack of counters to express abstract numbers is well illustrated by the groups of tokens enclosed in envelopes. At Habuba Kabira, for example, an envelope yielded eight identical ovoids in order to indicate "8 jars of oil".

The token system seems to correspond to the stage of "concrete counting" which preceded the acquisition of abstract numbers. Concrete counting is characterized by different numerations, or sets of numbers to count different categories of items. This mode of reckon-

ing is illustrated by the Gilyaks on the River Amur, who use as many as 24 different classes of numbers. They express "two" by different numerical expressions in each of the following connotations: 2 spears "mex", 2 arrows "mik", 2 houses "meqr", 2 hands "merax", 2 boards "met", 2 boots "min", 2 sledges "mir" etc. . . .[42] The many shapes of the tokens seem particularly well suited to concrete counting. Put differently, if we had to imagine what kind of counters would best suit concrete counting, we would have to come up with a system, similar to that of the tokens, with different counters to count different things.

The archaeological evidence is also supported by linguistics. Igor Diakonoff proposes that the many different numerical signs to express quantities, capacity, area measures etc. . . ., and the presence of at least six different numeration systems in Sumerian suggest the use of concrete counting in prehistoric Mesopotamia.[43] Starting from different sets of evidence, archaeology and linguistics arrive at the same hypothesis, namely, the existence of an archaic method of reckoning, prior to abstract counting.

8. The Earliest Precursor of Numerals

Sumerian numerals — i.e., ideograms expressing number concepts — can be traced back to token prototypes. This is shown by the way numerosity is featured on the pictographic tablets of the IVth millennium B.C. With the advent of pictography, about 3100 B.C., the concepts of numerosity and of the items counted are no longer fused in a single sign. As a result, pictographs are never repeated in a one-to-one correspondence to indicate the number of units, as was the case with the signs impressed on envelopes and tablets. Instead, pictographs, such as those standing for "jar of oil" or "sheep", for example, are preceded by numerals. Furthermore, the same numerals are used to express the numerosity of all possible units of goods, showing that they stood for abstract numbers, universally applicable.

With the advent of pictography...the concepts of numerosity and of the items counted are no longer fused in a single sign.

The signs indicating numerals derive from the signs for grain measures. The sign for "1" was a short wedge, identical to the sign for *ban*, a small measure of grain; the sign for "6" was a circular sign, identical to *bariga*, a large measure of grain. It appears, therefore, that the signs, while retaining their primary meaning as grain measures, acquired a secondary abstract meaning as numerals. This phenomenon of bifurcation is shown, explicitly, on particular tablets where, in the same text, the signs are used alternately to express grain measures or numerals. Tablets recording the rations allotted to workers, for example, feature the same signs to indicate the number of workers paid and the units of grain they received.[44] The same is true in the Proto Elamite system of writing.[45]

The choice of the signs for grain units to express abstract numbers can be explained by the two following reasons. First, grain being the staple of the Middle East, it was the commodity most widely exchanged. Consequently, the signs for grain measures were most familiar to accountants. Second, the multiple grain measures could be easily converted into a sequence of numerical units.

In sum, cones and spheres indicating measures of grain in the prehistoric token system led to graphic signs expressing: 1. measures of grain, and 2. numerals.

9. An Instrument of Control

According to Claude Levi-Strauss, writing was invented for the exploitation of man by man.[46] The context in which tokens are found suggests that tokens were, also, a means of power in the hands of a few. The fact that the earliest tokens occur in the Fertile Crescent about 8000 B.C. (i.e., in the region and at the time when agriculture came about) leaves little doubt that the need for record keeping was related to particular aspects of human adaptation to food production. This is particularly evident at the site of Mureybet where tokens appear in level III, coinciding with the first cultivation of cereals indicated by a quantum jump in the yield of cereal pollen. Tokens, on the other hand, were not present in the earlier levels, Mureybet I and II, when the occupants of the sites relied on an economy based on hunting and gathering.

It is unlikely, however, that the mere fact of harvesting crops and tending herds brought about the need for record keeping. According to ethnographic parallels, staples accumulated in communal storage, as was probably the case in early farming communities, are redistributed among members of the community without involving any reckoning.[47] Also, herding societies do not count their flocks. They know each animal by its particular characteristics.[48] Trade,

which was based on barter, probably also did not rely on accounting. It consisted in face to face transactions which, as noted by Goody, would not necessitate any record keeping.[49] It should be considered, therefore, that the primary role of the tokens may have been more than a memory aid.

The information available on record keeping in the ancient Middle East, and in particular, on the accounting devices closest to the token system in form or time, such as the Nuzi envelope or the Uruk tablets, suggest that they were used as a means of control. According to the inscription it bears, the Nuzi envelope was a legal document listing animals entrusted to a shepherd.[50] As far as we know, the pictographic tablets of Uruk kept precise records of entries and expenditures of goods in temple granaries. The seals of the various stewards demonstrate that the function of the pictographic tablets was to control the movement of goods in the temple.[51]

It is likely that the complex tokens of 3200 B.C. served the same function as the tablets that replaced them about 3100 B.C. Both of them kept records of lists of goods using related symbols; at Uruk, both tablets and tokens were recovered in the same area of the temple precinct; the seals covering envelopes and tablets were identical. It is, therefore, probable that, like pictographic tablets, complex tokens served the temple administration to control the amounts of goods delivered to the temple and their redistribution.

The notion that the tokens had a connotation of power is supported by the fact that they were deposited in the burials of prestigious individuals at Tepe Gawra. This suggests that, together with seals and maceheads, the tokens served as status symbols for the administrators who used them in daily life.

Further back in prehistory, tokens included in the infant burials of Tepe Gawra and Tell-es-Sawwan may suggest that, in these communities, the authority associated with handling tokens was an hereditary function. Lastly, the fact that, at Hajji Firuz, tokens were recovered in a non-residential building, indicates that, even at this early date, they were not mere household items but were handled in a particular place, probably by a particular individual.

On the basis of these inferences it is presumable that the development of the token system reflects the development of authority. The emergence of tokens probably marks the transition from simple household-based political systems to village-level organization. They served as a bureaucratic tool to control the production of goods and their pooling for the benefit of the community. It was the first step towards the administrative complexity of chiefdom and the state.

CONCLUSION

Tokens and writing are considered in this paper to be two increments in the development of record keeping in the ancient Middle East. The increasing complexity of the device was due to interrelated economic, social and conceptual changes. Plain tokens merely kept track of staples; complex tokens served for the inventorying of manufactured goods; and writing fulfilled the needs of a temple economy. The three steps of evolution of the system can also be correlated to the stages of village organization, cities and the state. Finally, the tokens were suitable for an archaic method of reckoning, called concrete counting, whereas writing was based on abstract counting.

Abbreviations

UVB Vol. II & III.
Vorläufiger Bericht über die von der Deutschen Forschungsgemeinschaft in Uruk-Warka unternommenen Ausgrabungen, Abhandlungen der Preüssichen Akademie der Wissenschaften, Phil.-hist. Klasse, Berlin.

UVB Vol. XXI & XXV.
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ALPHABETIC LITERACY AND BRAIN PROCESSES

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Several relationships are explored in this paper to support the hypothesis that writing systems affect cognitive strategies at a deeper level of human information-processing thatn is generally accepted in present-day psychology. It appears reasonable to claim that the structure of orthographies is strongly correlated with the specific linguistic features of the languages they represent. The Greek alphabet developed in the high density area of different Mediterranean cultures and its lineage combines features of the Sumerian and the Egyptian scripts. However, it was worked out as an adaptation to the specific needs of the Greek language. The word "alphabet" presents enough ambiguity to warrant a category distinction between consonantal and vocalic types of alphabetic systems. Both types require different processing strategies. Among the indicators of such differences, it has been observed that both orthographies adopted different orientations. In almost all varieties of alphabets and syllabaries, consonantal systems have been written leftwards while vocalic ones have been written to the right. Why? The answer to this question may be found in different neurophysiological constraints imposed to the brain by different types of orthographies.

The object of this paper is to raise a basic question concerning the underpinnings of the Western culture. Did the fully phonetic alphabet invented by the Greeks circa 740 B.C. (for a discussion of a possibly earlier date, see Naveh, 1982) and still used today in Greece (and in the rest of the West in its latinized version) have a conditioning impact on the biases of specialized brain processes in our culture? Could the alphabet have acted on our brain as a powerful computer language, determining or emphasizing the selection of some of our perceptual and cognitive processes? This question has already been raised in terms of hemispheric specialization by Joseph Bogen (1975, p. 29):

Did the fully phonetic alphabet invented by the Greeks c.750BC... have a conditioning

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It is likely that some anatomical asymmetry underlies the potential for hemisphere specialization, but it is also clear that the extent to which capacities are developed is dependent upon environmental exposure. Although humans of any culture, so far as we know, have the potential for reading and writing, many remain nonliterate and thus fall short of acquiring the most special of left-hemisphere functions. Conversely, we can readily comprehend the concept of a society in which "right-hemisphere illiteracy" is the rule. Indeed, our own society (admittedly complex) seems to be, in some respects, a good example: a scholastized, post-Gutenberg-industrialized, computer-happy exaggeration of the Graeco-Roman penchant for propositionizing.

During the seventies, split-brain research gave rise to a number of scientific and popular theories, among which a book by Julien Jaynes (1976) called *The Origin of Consciousness in the Breakdown of the Bi-Cameral Mind.* In it Jaynes claimed that different aspects, including the invention and development of writing, of ancient Greek culture were responsible for the rise of self-consciousness in the Western world. Though this notion had already been entertained by different avenues of classical, psychological and anthropological scholarship, especially by Innis (1950), Onians (1951), Snell (1953), Havelock (1963, 1982), McLuhan (1963), Barbu (1972), Olson (1977) and Goody (1977), Jaynes' thesis was original because he was the first to have tried to bring neurological consideration where others had only made guarded references to psychological and cognitive changes. The reason why Jaynes' own attempt was largely inconsequential is that his speculations on the impact of culture were far too

impact on the biases of specialized brain processes in our culture.

general and could have been applied to any cultural ground, without making a specific case for the development of the Greek world. Jaynes' work is very controversial and, some (Earl Hunt, personal communication) claim that it is not sufficiently scientific to warrant consideration. However, it has been the object of a symposium on consciousness at McMaster University in 1983 and received critical attention from several scholars (Witelson and Kristofferson, 1986).

More to the point, neurologists have begun to compare the effects of brain lesions in different cultures and are discovering, for instance, that some Chinese and Japanese patients who have suffered specific brain injuries do not evidence the same reading and writing impairment as some corresponding Western patients (Sasanuma, 1975). The reason for that may be that their scriptforms are processed in a different way and that, in turn, this fact modifies the organization of their cognitive processes. A real contribution can be made by the neurosciences if it can be shown that specific features identified in orthographies such as, for instance, the orientation of the signs and the direction of writing, relate to neurophysiological constancies in processing, such as visual-field preference or sequential versus holistic processing. Then the uninterrupted observation of simple rules of orthographic lay-out over several thousand years could conceivably be explained by correlations between neurological and graphological features.

1. The Lateralization of the Greek Alphabet

The theme explored in this paper was suggested by archeological observations concerning the direction of writing in the Ancient world from Sumer to Classical Greece. There was indeed a possibility that the direction of syllabaries and alphabetic systems could provide clues to the organization of some neurological processes involved in reading and writing. The main argument here is that when the Greeks borrowed their writing system from the neighbouring Phoenicians, they changed the direction of writing from their model's right-to-left orientation to a rightward direction. To write their own language with the 19 consonants and 3 semi-vowels of the Canaanites, the early Greek writers had to accommodate some of those letters to represent vowel sounds needed for their own vowel based morphemes. In so doing they created the first writing system based on a fully sequential phonemic representation. By comparison, ancient syllabaries and even the most sophisticated semitic scripts were approximations that required the reader to supply the oral context to decipher the text. What is implied here is that the reader of Arabic, for instance, or Hebrew, must supply the values of the vocalic intervals between the consonants. The problem of the reader of syllabaries is different in that, though the vocalic values are included —

either within the syllabic sign as in Japanese Kana or as stand alone vowels which constitute a full syllabic sign as in the Akkadian syllabary — the syllabic combination is not always systematic; some syllables, as will be shown below, must be contracted to enable the reader to achieve a consonantal grouping such as CCV. In the case of syllabaries the problem is not to supply missing vocalic values, but to eliminate them where they are superfluous.

One of the earliest scholars to hint at the cultural relevance of the relateralization of Greek writing was the Canadian cultural historian Harold Innis (1950) whose succinct description can serve as the ground for the evidence: "Following the Semites the Greek began by writing from right to left, but they continued in a boustrophedon style and finally, by the end of the fifth century, wrote from left to right and generally reversed individual Semitic letters".

According to A. G. Woodhead (1981), it is not possible, for lack of precisely datable evidence, to claim that all the earliest Greek epigraphs were written from right to left. Even in the eighth century B.C., now acknowledged by most scholars as the earliest period of extant Greek epigraphs, there may already have been some isolated instances of writing from left to right, just as there are later samples of writing in random directions following unspecified designs up, down and sideways. It is assumed that scriptforms were subjected from the beginning to a certain amount of experimentation which followed various trends in various places (Jeffery, 1961). However, the second period of Greek alphabetization is well documented. It is possible to date the appearance of what is known as the boustrophedon style to the beginning of the sixth century.

The boustrophedon was a stunning departure from previous models of scriptforms, as it was written continuously in both directions, to the right and to the left alternately in uninterrupted horizontal lines starting from the top to the bottom of the writing surface. There was no separation provided for individual words and no segmentation of any kind and the orientation of individual letters followed faithfully the alternate directions of the line.

THEBOUSTROPHEDONWASASTRIKINGDEPARTUREFROMPREVIOUSMODELSOFSCRIPTFO

ITFELEHTOTDNATHGIRHTOTSNOITCERIDHTOBGNIYLSUOUNITNOCNEVITTERWSAWSIASMR

NUNINTERRUPTEDHORIZONTALLINESSTARTINGFROMTHETOPOFTHEWRITINGSURFACETH

KYNAFONOITATNEMGESONDNASDROWLAUDIVIDNIROFEDIVORPNOITARAPESNOSREFER

INDANDTHEORIENTATIONOFINDIVIDUALLETTERSFOLLOWEDFAITHFULLYTHEALTERNATED

A B O U T F I F T Y Y E A R S

A F T E R T H E B E G I N N I

N G O F T H E B O U S T R O P

H E D O N A N O T H E R S T Y

L E B E G A N T O A P P E A R

I N A T T I C A T H E R E G I

O N O F A T H E N S A N D L A

T E R I N O T H E R G R E E K

C O M M U N I T I E S T H I S

I S T H E S T O I C H E D O N

A W O R D D E R I V E D F R O

M T H E M I L I T A R Y T E R

M K A T A S T O I C H O U S W

H I C H M E A N S B Y O R D E

R L Y R A N K S W O O D H E A

D S A Y S T H A T T H I S N E

W G E N R E W H I C H I S E V

I D E N C E D O N A T H E N I

A N W A L L S A N N D S T E L

A S F R O M T H E M I D D L E

O F T H E S I X T H C E N T U

R Y R E Q U I R E D T H A T A

L L T H E L E T T E R S B E W

About fifty years after the beginning of the boustrophedon, another style began to appear in Attica, the region of Athens, and later in other Greek communities. This is the stoichedon, a word derived from the military term *kata stoichous*, which means "by orderly ranks". Woodhead says that this new genre, which is evidenced on Athenian walls and stelas from the middle of the sixth century, required that all the letters be written in the same direction to achieve an effect of orderly regularity according to the equidistant positioning of each individual letter.

R. P. Austin (1938) suggests that the guiding principle of the creation of the new style was the need to align the vertical traces of each individual letter to insure a vertical continuity from the top to the bottom of the writing surface. The search for a geometrically precise equidistance is evidenced in some epigraphs by faint traces of a grid pattern on the stones that bear the inscriptions. The stoichedon style was incompatible with the bidirectional practice of the boustrophedon because one of the criteria of its regularity and lapidary beauty was the alignment of the vertical segments of all the same letters which reappeared in the text. Since the vertical segments in several letters, notably B, Γ, E, K, and P, are not centered, but to the left of the character, such letters when presented in the retrograde direction of the boustrophedon would appear to the right and disturb the alignment. This theory is plausible, but there is no direct evidence to support it.

The choice of this initial orientation was not stablized one way or the other at the inception of the style. There are several vestigia of stoichedon from the middle of the sixth century to the end of the fifth which are written leftwards although the majority read rightwards. The third and last phase of the incipient alphabetization of Greece took the shape of a bureaucratic decision which was taken in Athens in 403/2 by Archinos, then the archont of Athens, to homogenize the writing of official documents. This decree, according to Austin and Woodhead, merely reinforced and institutionalized the existing predominant trend of writing from the left to the right from the earliest beginnings of the stoichedon style.

Reviewing the developments of Greek writing, one can tentatively conclude that the first period of alphabetization demonstrates a condition of lateral indeterminacy biased by a pronounced tendency to follow the pattern imitated from the Semitic models (Jeffery, 1961; Woodhead, 1981). The second period is marked by an ambilateral practice which seems to have also applied to the orientation of individual letters. At this point, in spite of the well established practice of word breaks in the Phoenician models, there is no attempt at chunking words, sentences or even paragraphs: letters follow each

other in a single continuous snaking sequence from the top to the bottom of the writing surface. The third period introduced the final stage of rightward laterality which we still observe today after 2,500 years.

The explanations provided for this mysterious though orderly development of Greek epigraphy range from considerations of esthetics (Austin) to possible changes in the posture and the writing material of the scribes. To be sure, there are material and cultural reasons for these shifts of direction, and they have been propounded convincingly by several authors (Sirat, 1976; Jackson, 1981). Other scholars such as Etiemble (1973) throw up their arms and claim that the orientation results from a combination of chance and the inertia of custom.

By and large chance occurrences, custom and material causes would be satisfactory explanations for the changes if there were sufficient reasons to believe that serendipitous processes with serendipitous results were always at work. However, one thing which should have alerted us long ago to take the matter seriously is the fact that among all Semitic (that is, consonantal scripts and their derivates numbering about 50) there is not a single one which at any time has been written consistently in any other direction than to the left (de Kerckhove, in press). Conversely, there is hardly a single vocalic script, among several hundreds, which has not been either written rightwards outright, or soon been reverted to the rightward direction within a hundred years after its initial appearance. Beside the Greek, there are other cases of initially leftward orthographies such as the Etruscan and the Latin alphabets and the Ethiopic syllabary, which were reoriented rightwards, but only after they began to include fixed signs for vowels. I might add that almost all syllabaries, which by definition must include signs for vowels, are written rightwards. The main exceptions are Japanese Kana and Korean Hangul which were written leftward until recently when both forms adopted the rightward direction in the wake of westernization. These exceptions are interesting for different reasons. If my theory is correct, both should have been written rightwards in the first place; however, Japanese Kana was invented long after the Japanese had adopted the Chinese characters (which now constitute the body of Kanji signs) and consequently would follow the direction of their established writing system which was leftward. The case of Hangul is even more interesting in that these characters can be considered either as syllabic structures or, more to the point, as modified ideographic structures. In this case there would be little resistance to follow the pattern of the Chinese script which is known to have strongly influenced the Korean system. This is particularly plausible as the script was written vertically until the recent westernization.

Thus there are so few exceptions to the general rule correlating consonantal alphabets with a leftward direction and vocalized scripts with a rightward one, that I have been led to investigate whether the brain, not the culture, was primarily responsible for the determination of the direction (de Kerckhove, 1981, 1982, 1984b). This hypothesis, which is testable on a purely logical level, may have profound socio-cultural implications if it is also tested at the neurobiological level.

2. Contextual Versus Sequential Orthographies

To understand what role the brain may have to play in coding and decoding orthographies, we must first be clear about the relationships between oral languages and their scriptforms. The morphemic structure of Semitic languages is based on a division of labour between vocalic and consonantal sounds. By and large the consonantal sounds mark the lexical value of individual words while the vocalic intervals modulate their relationships, that is, their grammatical roles (Lafont, 1984; Sampson, 1985). This is the reason why vowel signs are not indispensable in Semitic scripts. It is almost always possible to recognize the meaning and the structure of the line of writing by the order of the consonants, provided that the reader can supply the vocalic sounds by contextualizing the consonantal signs. This economy of signs is not available to Indo-European languages such as Greek or Latin because the morphemic structure of their vocabulary includes vocalic sounds to distinguish one word from another. For example, whereas the radical for the word "writing" in Hebrew is fully expressed by the three consonants K-T-B, the radical of the same word in Greek, ΓΡΑΦ requires the vowel α (Jurdant, 1984).

There are three structural features which help to distinguish the systems of the Greek and the Phoenician alphabets: the presence of characters for the sound of vowels, the orientation of the written line to the right, and a relative indifference to word and sentence segmentation. This last difference, subject however to great variations over time and space, comes from the fact that Semitic scripts must depend upon word separations, whereas in vocalic alphabets and syllabaries such segmentations are largely optional. These distinctive features are not aribitrary. They are extremely relevant to what follows. But in order to reach a satisfactory explanation for such peculiarities, we have to go somewhat deeper than the surface correlations between sight and sound. Here is a set of propositions which should serve to ground speculations concerning some cognitive processes involved in coding orthographies (Figure 1).

FIGURE 1. EIGHT PROPOSITIONS ON CODING PHONOLOGICAL SCRIPTS

1. Speaking is acting symbolically on auditory representations
2. Reading/writing is acting symbolically on visual representations
3. Because phonological writing is based on a visual representation of auditory sequences, it is bound structurally to present characters in sequences
4. The linguistic structure of Semitic languages requires that the emphasis of phonological representation be placed on the visual representation of consonantal sounds alone
5. The linguistic structure of Indo-European languages requires that both vocalic and consonantal sounds be visually represented
6. To decipher consonantal alphabets it is necessary to combine the symbols by contextual sequence, that is to supply the auditory component
7. To decipher vocalic alphabets it is sufficient to combine the symbols by contiguous sequence
8. Likewise, to decipher syllabaries it is necessary to combine the symbols by contiguous sequence, but it is also necessary to monitor the meaning by context.

1. We can claim that one of the properties of any oral language is to enable man to act symbolically over and above his ability to behave pragmatically. One can structure one's activity either by gesture or by speech, or both. Acting symbolically, however, implies an articulation of differentiated elements which have to be combined in an orderly fashion.

2. We can also assume that writing — any kind of writing — by emphasizing the representation of human experience in articulated forms further refines and strengthens this capacity to act symbolically. In fact, writing enables man to act on representations. Except for Braille and other specialized systems, writing is usually a visual representation of speech or thought. However, it is quite a different thing to act on speechforms than to act on the iconic representation of their semantic contents.

3. Phonological writing, as opposed to ideographic or other pictographic writing forms, emphasizes the process of representation by redoubling it: indeed, phonological writing represents language which in turn represents experience. Phonological writing is a visual representation of an auditory representation. Because the auditory representation of language consists of an ordered succession of sounds, its visual presentation must perforce also evidence the orderly succession of characters which address the individual sounds. This is the principle of the sequence or the principle of linearity.

4. However, the structure of Semitic languages, because it reserves the use of consonants alone to distinguish the lexical values of individual words from each other, has led the inventors of Semitic orthographies to place an emphasis on those characters (i.e., the consonantal ones) to represent speech visually. This implies that the vocalic sounds — which are not used for lexical oppositions but are necessary, nevertheless, for the full expression of oral speech — are left in abeyance in Semitic scripts. They are the intervals between the consonants and they have to be supplied by the reader.

5. The structure of Indo-European languages requires that the vocalic components of linguistic sounds be included in the visual representation of the language because they are just as critical as the consonantal components to discriminate between different words at the lexical level. The inclusion of vocalic sounds represented by characters for vowels in the phonological orthographies of Indo-European languages (that is, in alphabets and in syllabaries) implies that no only the lexical values but the grammatical values also are both represented in the scripts. Consequently, there is no need for the reader to supply its oral context to decipher the written line. The auditory dimension of the text is adequately represented by the sequence of visual characters in alphabets and syllabaries alike.

6. Because they are structurally bound to an equal degree to represent the sequence of the phonological articulations of oral speech, Semitic as well as Indo-European scripts must present their characters in succession, namely in a linear sequence. However the sequence in Semitic scripts is not linear to the same extent as it is in Indo-European alphabets and syllabaries. In order to decipher Semitic scripts, because the reader has to supply the missing elements (the vocalic intervals), he or she cannot directly combine the sequence of letters as they appear on the line of the script. The consonants are "written" and the vowels are "oral". By reading the decipherer of Hebrew or Arabic "gives life" to the text. He or she relates the shape of the letters to sounds which are given, not by the text (that is, the succession of the letters themselves) but by the global context which these letters summon. Therefore, the exact decipherment of the line of script depends not only upon the sequential order of the characters, but also upon the contextual order of the words which alone permits the reader to choose safely among different potential interpretations of any single group of letters. This is the principle of contextuality.

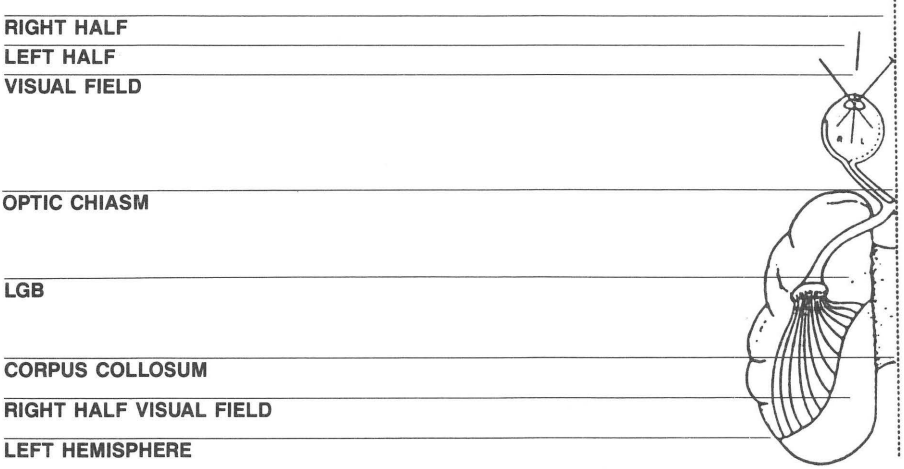
7. To decipher vocalic alphabets and syllabaries (that is, merely to access the auditory representation of meaning, independently of the semantic values of the text) it is sufficient to combine the shapes of each individual letter into syllabic units and then to further combine

these units along the linear sequence of the letters. This implies that, for the purpose of decipherment at least, the reader does not need to rely on the meaning of the whole sentence or of its context, but merely on an abstract process of letter recombination. This property enables the alphabet to preserve both the content and the linguistic structure of "dead" languages such as Latin or Classical Greek, or, in the case of the exacting Indic syllabaries, to preserve even the complex phonological values of dialectal variations over millennia (Lafont, 1984). The reading process of Indo-European alphabets and syllabaries is ruled by the principle of sequential contiguity which does not and cannot apply to decoding consonantal alphabets.

8. Likewise, to read syllabaries the principle of contiguity is predominant. However, because syllabaries are meant to represent as exactly as is possible the phonological sequence rather than the combined lexical and grammatical structures of speech (Lafont, 1984), they cannot be as clearly detached from the oral context as is the case for alphabets. In the case of syllabaries both principles of contiguity and contextuality are brought into play, but the first one to be applied in all cases is that of contiguity to enable the reader to combine the syllabic symbols into a sequence of sounds. The reason why — in spite of the sophistication of the phonemic analysis implicit in some syllabaries such as the Indic or the Korean Hangul, or even the Ojibway/Cree systems — these orthographies have remained faithful to the principle of syllabic as opposed to phonenic division, is precisely because they are meant to emulate phonology not merely to represent it as is the case for Indo-European alphabets.

Assuming that reading phonological sequences which do not include letters for vowels is really a different thing from reading fully phonetic sequences, it is conceivable that the different direction evidenced

FIGURE 2. THE OPTIC CHIASM



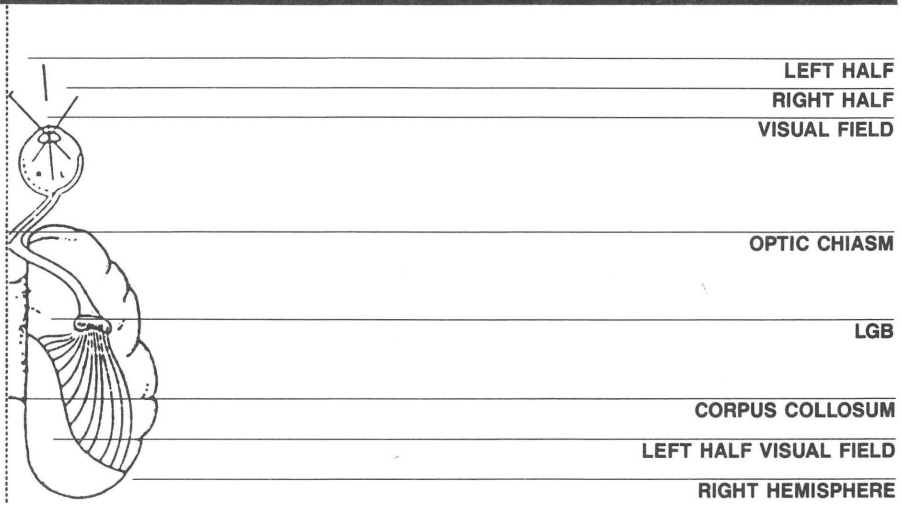
by the lay-out of the scripts not only reflects important differences in physiological processing but also provides a reliable indication concerning at least the lateralization, if not the precise location of whatever process is involved.

3. Direction of Writing and Brain Specialization

Neurological investigations over the last twenty years, especially in aphasiology and amnesiology (Geshwind, 1968, 1972; Krashen, 1972; Galin, 1974; Marcel et al., 1974; Kinsbourne, 1982), have shown that the lateralization of cognitive processes is a critical issue to distinguish the differences between specific tasks performed in different areas of the brain. It is well known that each hemisphere largely controls the opposite side of the body. For instance, it is known that the right hemisphere of the brain is better equipped to deal with objects presented in the left-visual field, while the left hemisphere processes faster the objects which are presented in the right visual field (Kimura, 1966, 1969, 1973; Tzeng, 1982).

The reason for this is, first of all, anatomical: it is the phenomenon known as the optic chiasm (Figure 2) which requires that the visual field of each eye be split vertically, with the right visual fields of both eyes being controlled by the left hemisphere of the brain, while the left visual fields of both eyes are controlled by the right side of the brain. More specifically, it appears that within the visual system of a normally lateralized subject, the right hemisphere is better at deciphering icons and images, while the left side of the brain is better at analyzing sequences (Krashen, 1975; Moscovitch, 1983).

These preliminary, rather crude observations first led me to speculate that, all considerations of posture and writing material put aside



(for discussion on writing postures and neurological correlates, see Levy and Reid, 1976, and Shanon et al. 1978), iconic and pictographic writings might favor a kind of neurological processing which would be quite different from that which is elicited by phonological systems. This notion is already receiving ample support from a growing literature on Japanese aphasiology and alexia. The Japanese are indeed ideally suited to provide evidence on matters related to writing because, they, and they alone today, share with the ancient Akkadians the privilege of using together two systems of orthography: the iconic Kanji and the syllabic Kanas. Localized aphasias among the Japanese give evidence that if a given lesion destroys the ability to decipher one system, it occassionally has little or no bearing upon the ability to decipher the other (Jones and Aoki, in press; Sasanuma, 1975; Hatta, 1981; Tzeng, 1983).

But there is more. Some thirty years ago, also intrigued by the conflicting reports on the effects of different types of aphasias, the linguist Roman Jakobson (Jakobson and Halle, 1956) compiled enough evidence to regroup the major effects in two categories that matched his own linguistic categories. He classified the effects of brain lesions into disturbances of relationships of *similiarity* and of *contiguity*. In the first instance, the patients seemed to be unable to bring together different words, notions or images into a coherent whole. However, though without showing evidence of understanding it, they could easily decipher whatever reading material they were presented with. The other group could relate different objects or words by observing their correspondances and similarities, but they could neither read, nor even put together a single sequence of simple letters. Since that time, data has poured in from neuro-biologists and, recently at the University of Toronto's Memory Disorders Unit, from amnesiologists (Schacter et al., 1984; Schacter, 1985), to show that indeed people need at least these two processes to read, think or speak, and that they are located in different parts of the brain.

To be sure, the controversy is not that such processes are not differentiated, but rather that they are in localizable areas of the brain (for a review of the controversies over brain localization see Corballis, 1980, 1983). That indeed is another matter altogether. I do not pretend to resolve it here, but only to make a workable suggestion. Let us recall the clinical evidence that feature detection is best performed by the right hemisphere if objects are presented to the left-visual field, while the left hemisphere's analytical processing abilities are enhanced if the objects are presented in the right-visual field (Kimura, 1966, 1969; Tzeng 1981, 1983; Tzeng and Singer, 1981; Moscovitch, 1983). The suggestion is that with a consonantal alphabet the reader requires from his or her brain rapid feature detection to facilitate contextual relationships. This is something akin to establishing

what Jakobson called the relationship of similarity, which for the present purpose I would like to rename relationship of *contextuality*. It stands to reason that such scripts that depend primarily on feature detection will require less reaction-time from the brain if they are written to the left rather than to the right of the visual-field. The reason being that, appearing first and moving into the left-visual field, they will be addressing by priority the most appropriate part of the brain.

Conversely, if we accept the existing clinical evidence that the right-visual fields of both eyes are better suited to effect sequential combination than the left-visual fields, then the need to facilitate the left brain's access to the order and arrangement of complete letter groupings may have been sufficient to determine the pattern of rightward orientation of coding and decoding vocalic scripts. When one is reading a vocalized alphabet, one should summon primarily the brain's ability to process contiguous sequences. This process, in turn, is akin to establishing what Jakobson calls relationships of contiguity. Ultimately, the rightward direction of the scripts must follow because the most urgent task of the brain, in this case, is to combine the signs together, a task best performed by the left hemisphere, and presented in optimal conditions if the line of writing is proposed to the right visual field.

A parenthesis should be opened here to dispel a possible misunderstanding concerning foveal vision which, of course, is the operative visual mode for reading. To be sure, the scanning process of reading, irrespective of saccadic movements of the eyes, depends on focusing, even for short periods of time, on the narrowest area covered by the line of writing. At that point and, presumably, at every point where both eyes begin their saccadic movements, the foveal vision is strongly involved. And of course, there is no evidence to indicate that foveal vision is susceptible to laterality preferences. On the contrary, standard neuro-anatomy suggests that the information presented to the fovea of both eyes is distributed to both hemispheres at once. This, however, does not invalidate the argument, because reading horizontally is a dynamic process requiring eye movements to scan the surface of the line in one or the other direction. It is the scanning process which is affected by preferential decoding strategies rather than the visual system per se. Though this suggestion is more applicable to horizontal forms of writing, it is interesting to note that even in the case of vertical scripts like Chinese or Egyptian hieroglyphic, in the composite characters which contain both pictographic and phonological clues, the former are placed on the left and the latter on the right of the sign. This feature should be investigated to find out whether the habitual scanning process may affect foveal vision itself.

To return to the principal argument, modern Arabic or Hebrew which have to give precedence to the iconic features of groups of characters over their sequential order would spontaneously favor the left-visual field (for further investigations in the correlations between scriptforms and visual field preferences, see Bryden, 1978; Silverberg et al. 1979). Conversely, Greek, Latin, Cyrillic and all other phonetic scripts, which can fully rely on the contiguous combination of the letters without the need to depend primarily upon the proper separation and the order of groups of letters, would favour the right-visual field and be written rightwards (for other avenues of investigations along the same general lines, see Debes, 1979; Taylor, 1983).

Conclusions

Summing up the above observations, here are the major hypotheses:
1. Different types of orthographies affect different processes of the human brain in differing proportions.
2. All orthographies elicit at least two fundamental responses from the brain, the recognition of the shape of the letters and the analysis of their sequences.
3. The aspects concerning the shape tend to be processed preferentially in the left visual field, while the aspects relating to the sequence tend to evoke a more accurate and faster response from the right visual field.
4. Thus contextual relationships requiring speed of feature detection may involve more readily the specific properties of the right hemisphere.
5. Contiguous relationships requiring speed of feature connection would conversely involve more readily the special abilities associated with the left hemisphere.
6. The Indo-European alphabets and syllabaries differ from Semitic consonantal alphabets by the fact that they attempt to present a visual analogue of the complete sequence of oral speech. It gives precedence to contiguous over contextual relationships in the coding and decoding processes. It is the priority given to the sequencing over the contextualizing of the characters which determines neurophysiologically the direction of these orthographies to the right.
7. Conversely, it is the priority given to feature-detection and contextualizing which determines neuro-physiologically the direction of Semitic consonantal alphabets to the left.
8. Finally, the Indo-European alphabets differ from syllabaries, but only marginally, in that the latter require almost to the same degree contiguously and contextually bound decoding processes to be deciphered. This explains why a small percentage of the world syllabaries have been, for a period of time, written to the left.

The implication behind these observations is that even though we can assume that both hemispheres always collaborate in the production of mental representations of the world "out there", they contribute different and complementary processes in differing proportions according to the kind of training and development they have been subjected to (de Kerckhove, 1984b). Thus when the brain has been trained by a fully phonetic code, it is conceivable that it will develop according to biases which are characteristic of the special abilities of the left hemisphere and which would not be so pronounced in non-literate conditions. If the developing mind has been exposed to the alphabet or to an environment strongly conditioned by a literate culture such as ours, the complex interactions normally engaging both hemispheres during instances of information processing are likely to be ruled predominantly by the left hemisphere.

Why is this selection of laterality so important? Precisely because we are dealing with the processing of language. The mental organization and representation of language implies the structuring of thought itself. It is not indifferent to cognition whether language evokes images and attitudes directly or whether it is analyzed in the mind. It has been said (Galin, 1974; Krashen, 1975) that, just as visuo-spatial relationships would require a greater involvement on the part of the right hemisphere, temporal sequences are processed mainly by the left hemisphere. This is a useful way of distinguishing the properties attributed to each hemisphere. Assuming that there is some validity to such a distinction, the overarching consequence of the hypothesis presented above would be that vocalized alphabets may have brought reading and writing in line with speaking as effects of the timing properties of the left hemisphere. It has become a commonplace that oral languages are processed mainly by the left hemisphere. Some neurobiologists (Krashen, 1975; Nebes, 1975; Kinsbourne and Lempert, 1979; Changeux, 1983) suggest that speech finds its place in the left hemisphere, not ontogenetically, but because the left brain's timing processes reflect and accommodate the serial nature of the production and the reception of linguistic sounds. If that is indeed the case, it can also be suggested that the adoption of vocalized alphabets may have more than any other system promoted and reinforced reliance of left hemispheric strategies for other aspects of psychological and social information processing.

Thus for those people who are learning to use the Greek or other fully phonetic alphabets, the serial and timing properties associated with the left hemisphere in normally right-handed people may be given a special emphasis on the ground rule of processing. Such properties which favour bit-by-bit analyses of items or chunks of information could eventually be deemed to rule the coding and decoding opera-

tions involved not only in reading and writing, but also in "thinking". It is a matter of whether, in the mind, language is processed as "oral", that is as evoking immediate and direct responses, or as "written", that is as an object of mental scrutiny and interpretation.

Thanks to the complete alphabetic sequence, the reading brain can rely on the succession of letters without having to check its interpretation with reference either to the oral rendition of the text, or to the immediate context of the statement, or to the situation of the reader. It is this level of abstraction which enables language to be processed in the mind as "written" rather than as "oral". Because of this release from the obligation to contextualize, the reader can understand the text by a purely conceptual use of language. The written word will refer not to a reality, not to an image of reality, not to an idea of reality, but first of all to a mental image of a sound which itself can eventually yield an idea or an image of reality.

Furthermore, the principle of combining letters to form syllables and of combining syllables to form words, enables the reader/writer to perceive and use each level as a separate unit. As Lafont (1984) has suggested, the invention of the Greek alphabet opened the era of grammar. There is, in Plato's *Phedrus*, a revealing comparison drawn between the letters of the alphabet and the organization of concepts: just as letters constitute a finite set of modular structures which can be combined to form a higher level of modules, each alphabetically written word automatically acquires the status of a separate concept and such concepts, if need be, can be ordered together in abstract sequences before they are put to the task of describing a given reality.

In Western philosophy, which is predicated on a written rather than an oral tradition, what most people call "thinking" is a predominantly conceptual and sequential activity. It is the ability to organize concepts in chains and sequences. "Speed" reading (that is, registering written information at high speed) appears to be more relevant to our culture than "deep" reading, which is restricted to hermeneutics and literary criticism. The order and succession of concepts generated by reading are more important, more "significant" than their full elaboration in the imaging processes. As Plato's philosophical investigations into the nature of discourse and, later, Descartes' *Méthode* for scientific enquiry amply demonstrate, the literate bias has been to break down information into parts and to order such parts in a proper sequence.

Metaphorically, one could say that this was the beginning of artifical intelligence. There is not much which is "natural" about Western intelligence. Indeed, I am considering the possibility that the adop-

tion of the alphabet by Western cultures has had a reordering effect on the brain and the whole nervous system of literate people, including their sensory modes (de Kerckhove, 1981, 1982), an effect comparable to changing the program of a computer. With full phonetization, writing seems to have acquired a precision, a flexibility and a paradoxical meaninglessness comparable to computer programming codes. I do not mean by this that alphabetic writing turned people into computerized automatons, but that it made language available for a kind of information processing which is, technically, and especially in scientific investigations, very close to a mathematical model.

In evolutionary terms, with the Greek alphabet, the development of writing was moving further and further away from the context of immediate experience and taking its place as the abstract code of reality. It became possible to read meaningfully strings of visual speechforms which contained radically new ideas, concepts or notions, some of which could even be completely foreign to the reader, because he or she did not have to depend upon previous knowledge to decipher them. Hence the origin of the first truly comprehensive scientific investigations which were dependent upon a system of archival recording which was not bound to the traditional usages of oral speech, but only to the specialization of reliable written documents based on progressively more reliable empirical observations. This conclusion has intuitively and tentatively been reached by many scientists and cultural observers and its consequences for the reinterpretation of cultural differences and historical developments may require a paradigmatic shift in scientific and scholarly investigations.

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Texts, Readers, and Enacted Narratives

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My paper is about writers, readers, and the enactment of roles in society. My point of departure is my notion of the 'textual community', which is essentially a group of people who have a common understanding of a text, spoken or read, and who organize aspects of their lives as the playing out of a script. I discuss the meaning of 'text' in this context, the problem of reading, and some of the behavioural principles which lie behind the personal or group narratives.

One of the most persistent problems in the contemporary field of communications is the relationship between writers, readers, and the enactment of roles in society. Everyone who has thought seriously about the problem agrees that the three are connected in some way. But there is little agreement on just how.

What follows can best be described as an interim report on my own reflections. It is a summary of a spoken rather than a written paper: by the very nature of the genre, it clarifies a few questions but leaves many others unanswered. I am aware that the intellectual landscape is changing: research in progress in psychology and cognitive science may profoundly modify the manner in which we think about texts, minds, and brains; and there is an active debate in philosophy on how these empirical and experimental findings affect our notion of representation. The complexity of the field compels one to shrink from generalization. Yet the attempt to provide a working summary of one's thoughts is not entirely without value, even if the value relates chiefly to one's own previous work (Stock, 1983).

the "textual community" **is the union of literates and non-literates around the message of a text, written or spoken, with subsequent implications for behaviour.**

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Let me begin then with a notion I myself have employed, the 'textual community'. My use of the term as a historian was intended mainly to be empirical and descriptive. What I was talking about was a situation which historians of different times and places had encountered but which to my mind they had never isolated and designated as a 'type'. This was the union of literates and non-literates around the message of a text, written or spoken, with subsequent implications for behaviour. My favorite example of this phenomenon is a group of medieval heretics whose beliefs were transformed into action by textual means. But there are instances closer to our own experience: religious orders, which govern lives by means of 'rules'; revolutionary movements, which organize their members around a 'manifesto'; or even the technocratic ideologies of some less developed countries (in which utopian charter and practical achievement are often tragically far apart). The norms of a bureaucracy, even the agenda of a meeting, can be a 'textual community', depending on the relationship between texts and action. Such 'communities' are not unusual; they are rather common. And being common, they all the more deserve our attention.

The notion of a textual community presupposes that we understand what is meant by a 'text'. Or does it? It was owing to structuralism that the notion of the text replaced that of the work, which was thought to contain a conceptual bias. But neither structuralism nor post-structuralism have produced a satisfactory definition of a text. And definitions may not be the best place to begin. Trying to move from the text to the textual community is like moving from the philosophy of language to the everyday uses of language. It imposes a scheme that is too restricted for the varied nature of living reality. It is not important that we hold to one or another idea of a text. It is important that we recognize a linguistic fact about all texts: once we learn to read and write, we automatically acquire an abstract notion of a text which is independent of our knowledge of particular texts. This notion is also independent of any functional relationship between speakers, readers, or hearers.

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The relationship between speakers and hearers brings me to a second issue. We are all too used to employing the speaker/hearer as our sole criterion for understanding broader semantic matters. If we take oral language as our model, we are tempted to assume that problems of meaning can be addressed through the analysis of speaker/hearer relations. This too needs to be questioned.

In the first place, there is never any such thing as 'only the words spoken'. All major linguistic theories — Saussure, Wittgenstein, and Chomsky — recognize a distinction between the phonic surface of language and subsurface thoughts or principles. Even in oral societies there is a difference between outer and inner significance. In literate societies the central issue is articulated versus unarticulated texts. What is expressed or unexpressed, and why? What is public, what private? When does naming imply necessity? What conventions govern perception: when, for instance, is king Dagobert seen wearing his imaginary clothes?

There is a second reason why the speaker/hearer analogy may be questioned. What I call a textual community is in superficial respects like a set of speakers and hearers, inasmuch as most of the communication takes place by word of mouth. But, on closer examination, it appears to be more like a group of readers, even if, in the context of early modern history, most of the reading is done aloud by a few literates addressing a great many non-literates.

The speaker/hearer and reader/listener relationships are not the mirror image of each other, as is often assumed. They operate in somewhat different ways and possibly overlap. It is normally assumed that the speaker/hearer connection is limited to the aural circumference of the words spoken. It would appear that the sphere of activity is restricted to the time and place in which it occurs. (It can be recreated by being reperformed, but this presupposes a script.) Yet, to describe the speaker/hearer phenomenon in this way is to commit the same sort of error as takes place when one puts the philosophy of language before language use. Has communication of such a contextless kind ever taken place? Normally, one is tempted to say always, the speaker and hearer are in a relationship of mutual understanding *before* any words are spoken. That is why they readily understand each other.

How are we to describe this pre-existent understanding? It is here that the reading analogy is useful. For, in contrast to a spoken text, a read text has an objective reality outside the mental world of the speaker. Words within his mind also exist objectively; in that sense they are no less a 'text'. But, in reading, one's perception invariably associates objectivity with externality. We know that the text of the

printed page exists whether we are fixing our eyes on it or not, and this perceptual certainty makes commonsense reality out of what might otherwise only have been nominal. Elementary logic or linguistics can prove just the opposite, namely that the objectivity of knowledge does not depend on whether it is oral or written. But it does not alter the normal association of physical reality and metalinguistic certainty.

We have failed to perceive these relationships because of our limited appreciation of what happens when we read. We do not really know what happens inside the head when we read, but experimental psychology has advanced at least far enough to disprove some of our more naive assumptions. Reading is normally thought to be a one-way street, in which the reader processes a visual message in letters and somehow transforms it into a meaningful message. Like all *tabula rasa* approaches to thinking, this notion of how we read is inadequate. Reading is a two-way street: graphic information is perceived visually, but syntactic and semantic information are supplied by the reader as he interprets what he sees. In other words, to read competently, the reader not only decodes visually transmitted letter arrangements; he must also have within himself the decoding instruments with which to carry out the transformation of alphabetized information into a language which the mind can understand. Paradoxically, to comprehend, he must already comprehend.

Reading, then, is like the textual community in being both private and public: the semantic information is within the mind, but it reflects a wider hermeneutic network which links individuals and groups. Otherwise, written and spoken texts, before they were enacted as behavioural patterns, would require lengthy processes of translation, which, in fact, is precisely the case when there are large-scale shifts in paradigms. Studies of children's reading habits suggest that they are learning to read from exposure to print in the environment long before they actually receive classroom instruction or are perceived to be literates by the adult community. Similarly, in the textual community, the verbal spread of textual material pre-

Reading...is like the textual community in being both private and public: the semantic information is within the mind, but it reflects a wider hermeneutic network...

cedes the actual communication of a text as a written statement. The hearers are programmed to handle the means of communication before the message is actually transmitted.

We may think of this relationship in a somewhat schematic form as follows. Whether we consider the matter in terms of speakers/hearers or, as I have suggested, readers/listeners, at either end of the spectrum of communication stands an unwritten or unarticulated text. We can crudely represent the situation as follows:

speaker/hearer reader/listener

$T_1 \ldots$ T $\ldots T_2$

With the following consequences:
1. T_1 and T_2 are implicit texts, categories of mind, or decoding instruments. These are the 'real' texts, although it is evident that, in calling them texts at all, we are making unproven assumptions about natural language and processes of thought.
2. T is the explicit text, the *scriptum.* It is a sort of middleman between T_1 and T_2, a medium between two invisible nexuses of meaning. The meaning of T depends upon a compromise between speaker's meaning and hearer's meaning. We may therefore think of T as being composed of two parts, i.e., T (the written text) and T_a (its meaning). Here we make another assumption, namely that there is an objective meaning for a text.
3. T, then, in Platonic fashion, is not the text; it is only the physical or graphic image of the real text, which is itself invisible and unable to be articulated into a single fixed text, that is, unable to be edited by graphics into one code from the many subtle shades of meaning which surround it. The articulated text, the edited version, so to speak, is something we can perceive: it has a reassuring objectivity. But we must not mistake sensual appearance for reality. We may think of T as the tip of a triangular iceberg, whose other two corners lie hidden beneath a sea of context.

With these thoughts in mind, let me return to the notion of the textual community and to the place of the text within it. As noted, the community needs only three things, a text, a communicator, and an audience. What happens is the influencing, patterning, or even determining of behaviour according to a script. Life becomes a narrative which is dramatically enacted. It is given a shape which is aesthetically coherent, and this coherence somehow gets mixed up in the actors' minds with ethical rightness. The rightness in turn appears to be a rationale for action: it is the means by which individuals explain

the why of activity to themselves. In that sense it is a type of rationality. Material factors are not excluded from the process, but they have no particular priority. In the perception of reality, mind and matter may not be clearly distinguished. What is essential is the subjective consideration of action: the members of a textual community will, intend, project, and shape their futures. They think they are determining their courses of action, and this thinking actually determines what they do.

The large question is: what sort of causal mechanisms are at work? This is a difficult problem, and one is tempted to dismiss it in a skeptical manner by saying that there is no real causality at work at all. But this would be misleading, since, in social and cultural activity, men and women are most often directed by subjectively perceived causal relations, as Max Weber demonstrated. True, there is no necessary relationship between thoughts, words, and events. Reconstruction is the making of historical stories. The text which motivates action is only a mediator of contingencies. And the causality is largely retrospective. For the actors within the unfolding events interpret them as they take place and thereby build up a gloss on the patterns; and the ethnologist historian puts together another interpretive gloss using the events, what he knows of the subject's thoughts, and a mass of other evidence, whose selection depends on intellectual fashion.

These glosses are not the text. They are metatexts, even though they may attain a theoretical coherence of their own, and, as independent structures, influence subsequent behaviour in a manner different from the original events. Napoleon was not only defeated at Borodino; he was also defeated in the Russian and French interpretive structures after the event. Of course the cycle of thought and action is perpetual. We separate them by abstraction; and we frame them as a story with a beginning, a middle, and an end through an adaptation of allegory. But new behavioural norms begin with the subjective selection and definition of a set of rules. They constitute an anti-Napoleon party based on the lessons of Borodino, now set up as a code. In this sense we may speak of a new text, whatever its obscure anterior chemistry. It is important not to be overwhelmed by *Quellenforschung*, and to assimilate forms of life into antecedent literary genres. What brings people together and makes them act is the articulation of a text within the group and the binding of the group's behaviour to the rules set forth in the text. Only a part of one's comportment in the world is affected; the textual community normally influences only one sector of behaviour, which it singles out as a key to overall ethical and moral norms. But it does transform a

language-game into a *Lebensform*. And what gains the members' commitment is not only the content of the rules but the manner in which they are communicated. Behaviour is in part a rhetoric of behaviour.

Individuals often describe and explain their actions to themselves as stories, but the historian or the anthropologist is not concerned with the privatization of experience as such. Nor does it matter for the historical analysis of textual communities whether one views all narratives as archetypes: personal stories may or may not incorporate external texts; or, if incorporating them, they may subordinate them to archetypal patterns whose origins are themselves psychological. The central issue is testability and verification, and the criteria which individuals adduce for both. We consider individuals to be 'normal' (i.e., functioning according to norms) if they possess the capacity to judge their narratives in the light of experience and to differentiate between 'truth' and 'fiction'. But normalcy, as Foucault has reminded us, is historically conditioned. In evaluating a narrative's coherence we must ask what sort of objective standards have been set up against it. What is subject, what object, and why?

In western society standards of objectivity and conditions for truth were transformed by the advent of literacy. Once again I stress that I am talking about perceptions, not realities, but about perceptions which were instrumental in determining patterns of behaviour over *la longue durée*. The crux of the matter was this: the permanence of the text, first on vellum or parchment and later on the printed page, offered a tangible analogy for the belief in an externally existing world of laws, principles, and relations. As is often the case with a new technology, its conceptual scheme was applied by analogy to diverse areas of thought and action. Texts thereby emerged as catalysts, not causes, of a momentous shift in mentality. To take a few examples: the basis of legitimate authority changed from the word of the individual to the transcript of a statement. Rules were separated from rulers; charisma waned and bureaucracy was born. Also, a science of the outer world led to a science of natural laws, and built upon the now assimilable heritage of the Greeks and Arabs. Above all, plans for living which were framed as stories ceased to be internal and individual and were assumed to have an historically verifiable existence. It is no accident that the same period which saw the rebirth of literacy also witnessed the revival of literalism in biblical studies. The literal and allegorical senses of the text appeared as if by magic: one was pegged to alleged events in the real world, the other to the equally real workings of the mind or soul. Long before Galileo displaced the earth as the centre of the universe, the text displaced man from the centre of his decision-making about his own behavioural norms.

The problems I have been discussing are complicated, and, in a brief review which has concentrated on my own modest contribution, I have doubtless sidestepped many issues. Among them is what happens when texts begin to play such a large role in our construction of reality that the direct evidence of our senses and even mental life is reinterpreted through them, the texts, so to speak, acting as a conceptual filter for experience. However, even within a brief sketch of the terrain, one subject emerges naturally as a basis for further reflection. The study of literacy should not be just an academic investigation of texts, their literary properties and relations. It should lead us to better understand relations between thought and action, and, in particular, between the ethical norms we associate with right reason and the narratives by which we accommodate our lives to a variety of aesthetically appropriate designs. We have all been taught to think of man as obeying blind economic directives, unconscious drives, and inner codes of kinship and family. We have paid less attention to outer shaping devices. The perception of interiority is itself a byproduct of the literate mentality, and it has led us to isolate many problems connecting the past and the present. But, ironically, the same mentality has imposed upon us a 'bias of communication' which must be overcome if new problems are to be solved.

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Interpreting Texts and Interpreting Nature The Effects of Literacy on Hermeneutics and Epistemology

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In this paper it is argued that literacy has its cognitive effects indirectly, through the conceptual distinctions and social practices that it fosters, rather than directly, through the actual activities of reading and writing. The conceptual distinction examined in particular is that between what is given, *whether in texts or in nature, and what is* inferred *or* interpreted *by the reader or observer. Children's acquisition of this distinction is decisive, it is argued, to the development of a literate mode of thought.*

Harold Innis writing in 1949 (Innis, 1951) and Marshall McLuhan writing only four years later (McLuhan, 1953) brought about a decisive change in our orientation to the study of literacy. Prior to their writing on the "bias" of communication media, literacy was generally considered to be a simple, unadulterated good, a mark of progress and of civilization. True, there were some counter arguments such as those presented by Plato in the *Phaedrus* (cited in Goody and Watt, 1963) to the effect that writing would destroy memory and Rousseau's argument in *The Origin of Language* that writing would dehumanize language by separating the author from his text, but by and large the prevailing assumption was that language is what makes us human and literacy is what makes us civilized.

a hermeneutics, the interpretation of texts, provided the conceptual categories for scientific epistemology, b the interpretation of nature. c d

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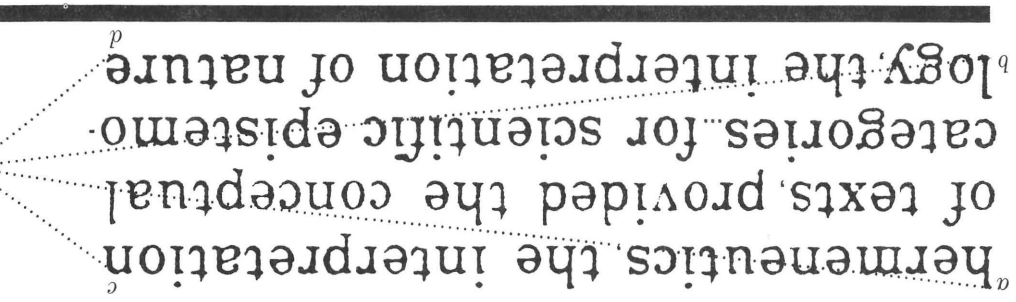
But with the writing of Innis and McLuhan, literacy came to be seen not as the solution to every other problem, but rather as a problem in its own right, indeed the central problem in coming to understand ourselves and the modern world. Complemented by such contemporary and seminal works as Eric Havelock's *Preface to Plato* (1963) and Jack Goody and Ian Watt's *Consequences of Literacy* (1963), literacy came to be seen as a decisive factor in the evolution of modernity — in the development of Protestantism, modern science, law and government, and even consciousness. Decisive in this transformation was the invention of the alphabet and in the invention of printing. And finally, the effects of literacy were more or less invisible to us; what we took to be natural was, in many cases, the consequence of the particular biasing effects of alphabetic literacy.

These writers, while agreeing about the consequences of literacy, differed in their hypotheses as to how these effects were brought about. Havelock thought that the alphabet permitted explicitness of representation such that decoding could be distinguished from understanding (a position very close to the one I shall develop presently), Goody and Watt suggested that writing made language into



an object of reflection, and McLuhan and Innis argued that writing altered the sense ratios. No one hypothesis has received general, let alone empirical, support.

The hypothesis I shall advance is closely related to that recently advanced by Brian Stock in his remarkable study of literacy in the Middle Ages, *The Implications of Literacy* (1983). In that work Stock documents the increasing use of writing and of written documents for such purposes as law, theology, philosophy and science. In those domains uses of literacy regularly and systematically altered those institutions and the individuals participating in them. To cite a single example. In the early Middle Ages a variety of forms of evidence could be presented at a trial to determine the innocence or guilt of a person charged with a crime. Some of these forms of "evidence" now strike us as decidedly odd. Eye witness testimony was used but so were, he points out, dreams, prophesies, and visions. If someone had a dream that the accused had committed a crime, that was an important form of evidence for his guilt. That changed with literacy. Stock points out that some new conceptual distinctions came to be drawn (or old distinctions came to be honored more systematically) as judges and courts became more literate. Simultaneously, the distinctions made in the administration of law came to be made in other domains such as writing up the lives of the Saints and their miracles. What were these distinctions? Here is the crucial point: a distinction was made between texts and their interpretation and between facts and their interpretations. The former were coming to be seen as objective while the interpretations were coming to be seen as subjective, personal and invented or fabricated.

Here, I believe, we have our link between literacy and modernity — the systematic distinction between something which is taken as given, fixed, autonomous, and objective and something which may be construed as interpretive, inferential, and subjective. My hypothesis is that the contrast between texts and their interpretations provided the model, more than that, the precise cognitivie categories or concepts needed for the description and the interpretation of nature; that is, for the building of modern science. To state this somewhat grandly, hermeneutics, the interpretation of texts, provided the conceptual categories needed for scientific epistemology, what I referred to above as the interpretation of nature. Let me spell out the relation and provide some evidence for the hypothesis.

The Conceptual Change Hypothesis

The Reformation, the rise of modern science and mentalistic psychology are, of course, social movements, but they all rested. I argue, on a new conceptual distinction. What is that distinction and how was it

derived from writing and literacy? A written text preserves only part of language. What is preserved is the form, and the meaning has to be regenerated from that form by the reader. The preserved part we'll talk loosely of as being "given", "fixed", "permanent"; the reconstructed part we can call, roughly, the meaning, the intention, the interpretation.

That distinction is implicit in speech, but the relation between a text and an interpretation becomes problematic only in literacy. In oral language the form and meaning form an indissoluble pairing. When we don't understand a sentence/utterance we say, "What do *you* mean?" not "what does *it* mean?", focussing upon the person doing the communicating, not on the utterance. Furthermore, we use much beside the linguistic form to gather a person's intentions with the result that it is virtually impossible to distinguish what was said, the form, and what was meant by it, the meaning. In speech, then, form and meaning are indissolubly linked or at least perceived as such by speakers. Children and non-literates both show little distinction between them as I'll show presently.

Writing preserves what is said, the very words, while the meaning or intention is lost and must be reconstructed from the text, context, and the like. With writing, meaning and interpretation becomes a problem. Writing, I said, invited the distinction between what a text said and what it meant; the first part is taken as "given", the second is taken as the "interpretation". The relation between texts and their interpretation is the problem of hermeneutics. And the development of a sharp distinction between texts and their interpretation gave rise to Luther and the Reformation.

Hermeneutics

Literacy created hermeneutics. The development of a distinction between statements and texts on one hand and their interpretation on the other was a consequence of literacy. Two examples of how the literate distinctions altered orientation to language will help to make this point.

Pre-literate societies — both the pre-literate Greeks and the pre-literate Azande studied by Evans-Pritchard in the thirties — used oracles for giving advice and making predictions. The oracles would utter a prediction and with remarkable frequency these oracles told the truth, or were at least taken as telling the truth. Recall Shakespeare's *Macbeth* in which the oracular witches promised that Macbeth was secure until Birnam Wood came to Dunsinane only to be fulfilled by the attacking soldiers carrying boughs of Birnam wood as camouflage in their attack on Dunsinane. The interesting point about oracles is that they largely disappeared with literacy. Why?

The conceptual hypothesis offered above can take this in stride. In a pre-literate society there is little or no distinction between a text and its interpretation. The preliterate attitude is that the interpretations arrived at by the listener were actually intended by the speaker. There is no recognition of the ambiguity of the pronouncements. Later events, taken as fulfillment of the oracle, were seen as having been intrinsic in the pronouncement. Again, there was no distinction between what the oracle said and its interpretation by the listener. Any interpretation arrived at by the listener was ascribed to the speaker. Oracles fell to literacy because literacy involved an awareness of that distinction. If the interpretation could not be ascribed to the oracles, the oracles lost their power. The horoscope is, of course, a modern-day version of the oracles which, I believe, we still read with a tingle of the possibility of prescience. But serious reading lets one see their enormous "openness" to interpretation; the texts are written to be ambiguous. Writing, by preserving the words but not their meanings, invites the distinction between a text and its interpretation.

A second example comes from the remarkable work on witchcraft and oracles among the Azande, a non-literate or traditional society, in which Evans-Pritchard (1937) commented on a peculiarity of interpretation: He noted anything a suspected witch may say is "interpreted in a different sense from the one the speaker intended to give his words" (p. 133). Evans-Pritchard was surprised that these "interpretations" were attributed directly to the speaker and used to prove his guilt. The same is true of the language of ritual. Leach (1966) points out that "a great variety of alternative meanings [are] implicit in the same set [of categories]" (p. 408). Clearly, these were not interpretations in a literate sense — they were not thought of as having been made up by the hearer as we would think of them. Rather, any interpretation made by the listener was ascribed to the speaker. The Azande interpret language, of course, but they do not distinguish their interpretations from what the speaker actually said. This is just the problem that children in our society have with the ambiguity of language. They assume that the intention or interpretation is exactly what the speaker said. When they arrive at an interpretation, they are convinced that the sentence could not be interpreted any other way (Beal and Flavell, 1985).

Again, the point to note is that the Azande make little distinction between what is said and its interpretation. My point is simply that the distinction was created by literacy. Literacy involved the preservation of a part of language — what was actually said, the "given", which could be contrasted with the interpretations assigned and the intentions that lie behind it. In an oral society there were, of course,

"texts", fixed bodies of ritual and poetry, along with intentions and interpretations. All language necessarily involves all of those. But literacy provides the means for splitting those things apart, fixing part of its meaning as the text and permitting interpretations to be seen for the first time as interpretations. Goody (1985) has shown how religious reform movements rely upon just this distinction, calling for the abandonment of interpretations and a "return to the book".

The twist in the understanding of interpretation which has been studied most carefully is the change in interpretation associated with the Reformation and the Counter-Reformation. As Stock has shown, the problem of heresy in the Middle Ages was almost exclusively associated with literacy. "Heretics had a highly-developed, if somewhat personal, style of 'rationality' which depended on individual interpretation of theological texts" (pp. 110-120). Heretics considered the teachings of the church to be mere interpretation, if not fabrication. Yet while heretics recognized the interpretations of the Church as interpretations — they were recognized as man-made — they did not recognize their own interpretations as merely interpretations. They, like the medieval church, took their interpretations to be the ones intended by God and, hence, they died, apparently happily, at the stake for them.

The church's view of interpretation prior to the Reformation, as expressed for example in Aquinas' *Summa Theologia* (written 1267-73) was that Scripture had several levels of meaning including literal meaning, spiritual meaning and moral meaning. All levels of meaning were "given" in the text. Reformation theology, as exemplified in Luther, denied that all these meanings were in the text: the literal, historical meaning was in the text, all the rest was "tradition" and "dogma". Reformation theology, in a word, involved a sharp distinction between what was "given" by the text and the interpretations that one could make of a text. The latter were suddenly seen as subjective, fanciful and a product of the imagination. Thus, part of the meaning was moved from being seen as given by the text to being seen as invented by the reader. The interpretive principle of the Reformation, as expressed for example in Luther's attitude to Scripture, was that Scripture is "autonomous", it doesn't need interpretation, it needs reading; it means what it says. All the rest is made up — a product of fancy or tradition. It was this distinction between the "given" and the "interpreted" which launched the Reformation and which, a century later, opened "the book of nature" to modern scientists, to make it readable to anyone "with a faithful eye" as Robert Hooke, one of the first of the seventeenth-century British empiricists, said.

Epistemology

The hypothesis connecting hermeneutics with scientific epistemology is that hermeneutics provided the conceptual distinction between something taken as fixed or "given" and something else taken as "interpretation". The scriptual text and its interpretation was seen as exactly parallel to the natural world and its interpretation. It was a commonplace in the Middle Ages to speak of nature as God's book. The metaphor came to have a new meaning in the seventeenth century. Francis Bacon spoke of "the book of God's word and the book of God's work." Thomas Browne, a seventeenth-century British cleric, talked of God's two great books, Scripture and nature (Figure 1). Galileo complicated the story by claiming that: "The book of nature is written in the language of mathematics." At first we may be tempted to believe that this is a mere metaphor. However, it may be argued that modern science was the product of applying the distinctions needed for understanding the book of Scripture, namely that between the given and the interpreted, to the book of nature. For modern science the "given" was the world of observed facts; all the rest, hypotheses, final causes, interpretation and inferences were invented, made up by man. These distinctions are fundamental to scientific epistemology. Modern science rests on the distinction between observation and inference, observations being objective and reliable while the inferences are theoretical interpretations of those observations. Recently, the distinction has come in for considerable revision, and I shall return to that problem later.

The modern scientists — Galileo, William Harvey, Robert Hooke, Robert Boyle, Isaac Newton and Francis Bacon — consistently and systematically distinguished facts from "hypotheses". Science, Bacon said, consisted of the "statement of observed facts." It involved no

FIGURE 1:
THE GIVEN-INTERPRETATION DISTINCTION IN HERMENEUTICS AND EPISTEMOLOGY

BOOK OF SCRIPTURE [HERMENEUTICS]		**BOOK OF NATURE [EPISTEMOLOGY]**	
READ	**INTERPRET**	**SEE**	**KNOW**
SAY	**MEAN**	**OBSERVATION**	**INFERENCE**
	INTENTION	**FACT**	**THEORY**
		EVIDENCE	**CLAIM**
GIVEN	**INTERPRETATION**	**GIVEN**	**INTERPRETATION**

FRANCIS BACON (1605)
THE BOOK OF GOD'S *WORD* AND **THE BOOK OF GOD'S *WORK***

THOMAS BROWNE (1643)
THERE ARE TWO BOOKS FROM WHENCE I COLLECT MY DIVINITY:
THAT WRITTEN OF GOD, [AND THAT] **WRITTEN OF NATURE**

interpretations. William Harvey added: "For in every Science . . . a diligent observation is required." Bacon said it most strongly: "God forbid that we give out a dream of our imagination for a pattern in the world." The split was complete. Observation provided direct access to the "given"; theory and interpretation was the work of the imagination. Bacon again: "All depends on keeping the eye steadily fixed upon the facts of nature and so receiving their images simply as they are." They not only said it, they acted on it. Galileo and Newton are replete with denials of the relevance of purposes, goals, and causes in the explanation of motion and machines — they sought factual description, not theoretical interpretation.

So, "reading" the book of nature — that is, science — was simply applied hermeneutics. The distinctions worked up for reading and interpreting Scripture could be applied, without revision, to reading and interpreting the book of nature. Recall Bacon's plea: "God forbid that we give out a dream of our imagination for a pattern in the world." In science the distinction takes the form of an observation versus inference, fact versus theory, claim versus evidence, and a whole set of related concepts such as hypotheses, conclusion, conjecture, the set of concepts, educators will notice, that are so alien to school children's cognition. Children have little idea of the difference between an observation and an inference, or between a fact and a theory, or between a claim and evidence. If my argument is correct, these are sophisticated, literate concepts that, while important to "educated" activities, are not often honored in ordinary discourse. (The Watson-Glaser Test of Critical Thinking tests for just these concepts!) We are just beginning to examine children's knowledge of these concepts (see Olson & Astington, 1986.

Subjectivity

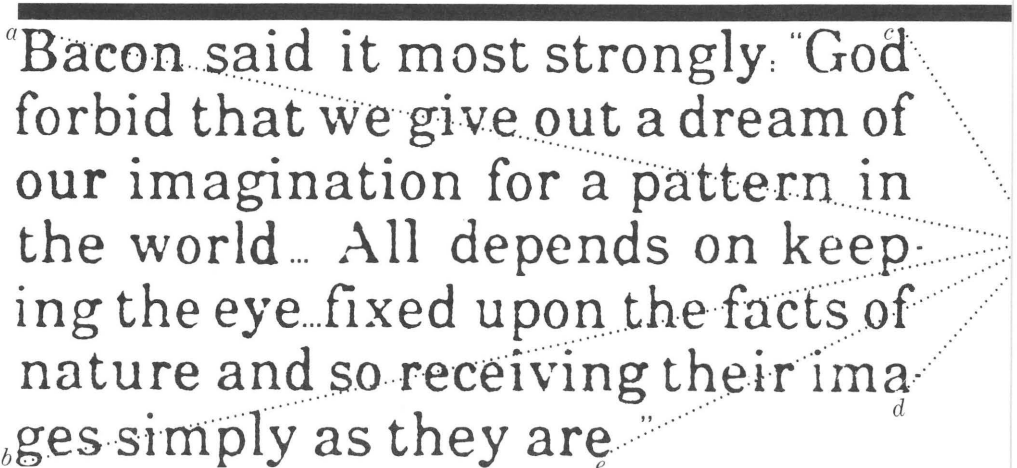
There is a third prong to the argument which I shall discuss here only in passing. It is that if "interpretations" are not in the text, where do they come from? Interpretations came to be seen increasingly as subjective, that is, made up by the reader of texts or the observer of nature. It was this new subjectivity, I suggest, that provided the bases for Descartes' mind-body dualism and the priority of the mental: "Cogito, ergo sum" ("I think, therefore I am"). Bishop Berkeley's new theory of vision identified the reality with the workings of the mind — to be is to be perceived — the priority of the mental. Descartes, Locke, and Berkeley, I suspect, were as much a product of Lutheran hermeneutics as Bacon and Galileo were. A recent paper by Saenger (1982) connects the rise of notions of private consciousness and reflection with the development in the tenth-thirteenth centuries of silent reading, a suggestion that fits in well with this account.

Children's Distinctions Between What Is Given and What Is Interpretation

I would like to conclude by showing that these distinctions are, in fact, achieved by children in the early school years and that they are closely related, indeed that children succeed in recognizing the role of interpretation in what they hear at precisely the same time that they succeed in recognizing the role of appropriate interpretation in what they see. The claim is that children come to see "interpretations" as interpretations at the same time that they come to see inferences from perception as inferences. Let me report two experiments which my colleagues, N. Torrance and J. Astington, and I have performed to examine these relations.

Children's acquisition of the distinction between what is said and what is meant by it can be examined by looking at their reactions to ambiguous utterances. Nancy Torrance reads stories to young children ranging in age from 5 to 10 years which include referentially ambiguous utterances. A sample story will make this clear. In this case, the child is first shown a picture of Charlie Brown, Lucy and Linus, and also one showing three pair of shoes in a closet. The shoes are described as Lucy's new red party shoes, her old red running shoes and her ordinary blue shoes. The following story is then told:

One Saturday night, Lucy and Charlie Brown were going to a party. Lucy was all dressed in her brand new red party dress, but she didn't have her shoes on. She wanted to wear her new *red shoes to go with her party dress. Linus was upstairs so she called up to him, "Linus, bring me my red shoes." Linus went to Lucy's closet where she kept her shoes. Now Linus picked up the* old *red shoes and rushed down the stairs with them. He said, "Here are your red shoes" and he gave the shoes to Lucy. "Good grief," said Lucy, "how can you be so stupid?" and she gave him a whack on the head.*



Following the story the children are asked a series of questions. Younger children's responses are illustrated by the following exchanges.

Q. Did Linus bring the shoes that Lucy wanted?
A. No

Q. Did he do what Lucy said to do?
A. No

Q. What did Lucy tell him to bring?
A. The red party shoes.

Q. What were the exact words that Lucy said? She said "Linus, bring me —"
A. My new red shoes.

Note that the child assumes an identity between what's said and what is meant by it. Elizabeth Robinson (1977) has characterized this kind of response as "listener blaming" because when asked "Whose fault was it?" younger children fail to note that the speaker is actually responsible for the failure because he/she provided an ambiguous message. Older children tend to blame the speaker and his message. In our study, older children's answers tend to run as follows:

Q. Did Linus bring the shoes that Lucy wanted?
A. No.

Q. Did Linus do what Lucy said to do?
A. No.

Q. What did Lucy tell him to bring?
A. The new red shoes.

Q. What were the exact words that Lucy said? She said "Linus, bring me —"
A. My red shoes.

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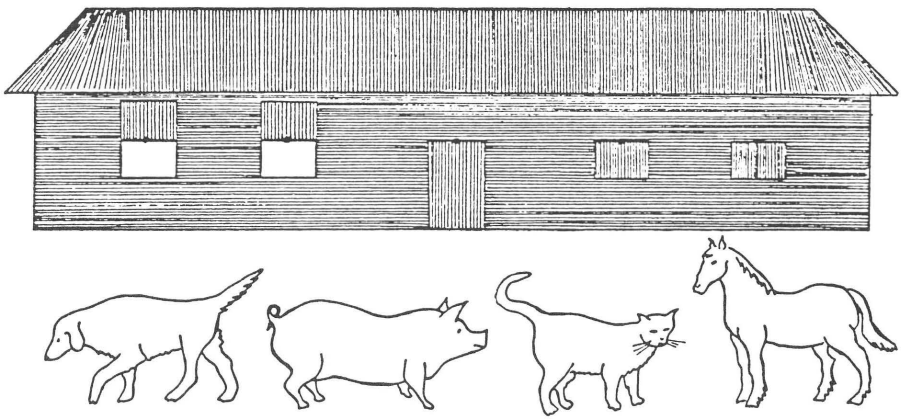
[a]Bacon said it most strongly: "God forbid that we give out a dream of our imagination for a pattern in the world. All depends on keeping the eye fixed upon the facts of nature and so receiving their ima[d]ges simply as they are."[e] [b]

Notice that even here the second grade child answered the second and third questions in ways that are technically incorrect. In fact, Linus did do what Lucy said to do; he just didn't do what she wanted him to do. It is only in the last question that this child acknowledges what was actually said. By grade 4, however, the majority of children (75%) that have been tested respond accurately to all four questions. The data for this experiment are summarized in Table II. We interpret such results as indicators that with age and experience children come to distinguish what a person or a text "says" from what is "meant" by it. It is not a distinction directly tied to age but rather, here we just suspect, to the language and literacy practice of parents.

The critical part of my hypothesis is the following. It is the child's conceptual distinction between the given, namely, the text or wording, and its possible interpretation that provides the basis for the child's epistemological distinction between what he sees and what he knows. We examined that distinction in the following way. Janet Astington has prepared a series of cut-out animals, some of which were unambiguous in their coloring and some of which were ambiguous in a way analogous to the ambiguous sentences in the preceding experiment. Children were shown the collection of animals shown at the bottom of Figure 2. They were asked to identify these and to name their colors. When it was clear they knew them well, they were told that the animals would be hidden in the barn and they would be asked to find them. Copies of the animals remained in front of the child to ensure that the animals and their colors wouldn't be forgotten.

The barn and the visible parts of two of the animals is shown at the top of Figure 2. Only a sample of the color of the animal is visible in the window. In the case of the unambiguously colored animals, the

FIGURE 2: ILLUSTRATION OF TASK MATERIALS



child has grounds for identifying the animals; when the ambiguous pair is revealed in the other two windows, the child, of course, does not have grounds for identifying them. The question is, will young children recognize the ambiguity of the second pair and acknowledge that they don't know which animals they see?

The contrast is even more clearly drawn in the second half of the experiment. All of the materials except for a new barn are removed and a doll named Katie is produced. The child is told that Katie has not seen the animals and is asked to now answer the same questions about what Katie would see. The question sequence for both self and other is shown in Figure 3. Consider first children's responses when asked which they, themselves, see. A typical pattern of responding by a younger child is the following:

E: (Pointing to the window revealing a red animal) What do you see?
C: Cat.

E: Do you know it's a cat?
C: Yes.

E: How do you know it's a cat?
C: Red.

Older children do much the same thing on the unambiguous stimuli. More interesting is the younger child's response to the ambiguously colored animals. Here is a sample:

E: (Pointing to one of the two windows revealing blue animals) What do you see?
S: Dog.

E: Do you know it's a dog?
S: Yes.

E: How do you know it's a dog?
S: 'Cause it's blue.

It is not that the child is blind to the ambiguity; rather it is that the child has no conceptual means for dealing with it. Thus, the child may continue as follows:

E: (Pointing to the other window revealing the other blue animal) What do you see here?
S: Pig.

E: Do you know it's a pig?
S: Yes.

E: How do you know it's a pig?
S: 'Cause it's blue, too.

The child marks the similarity with "too" but the child fails to acknowledge the ambiguity and its role in the fact that one may see

something but not know what it is. The child fails, we say, to distinguish what one sees from what one knows. A similar pattern, but delayed by a year or two, occurs when the child is asked what the doll, Katie, sees. Here is a sample transcript:

E: (Pointing to the window revealing the red animal) What will Katie see?
S: Cat.

E: Will she know it's a cat?
S: Yes.

E: How will she know?
S: 'Cause it's red.

As Table III indicates, this pattern shifts with age, although age is not, I suggest, the major factor, older children acknowledging that Katie would see the red but that she would not know what it was. Similarly, older children acknowledge that they themselves do not know what animal they see when the colors are ambiguous. We have conducted this study twice with somewhat different questions. In the first study (Olson and Astington, in preparation) the children who could handle the ambiguous stimuli for themselves, were the very children who could recognize that the doll would not know. In the present study, conducted by Nancy Torrance and me, the children were considerably better at acknowledging that they did not know, in the ambiguous case than they were at acknowledging that the doll, Katie, would not know what animal she was seeing. We are currently attempting to resolve these small differences. In general, older children appear to recognize the role of belief and knowledge in their

FIGURE 3: SEE / KNOW QUESTION SEQUENCE FOR SELF AND OTHER

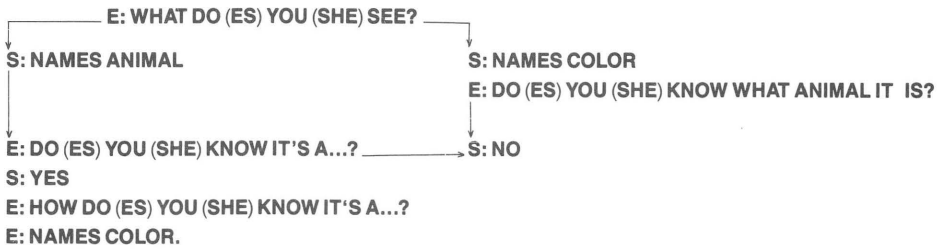


TABLE I: SAY / MEAN
NUMBER OF SUBJECTS RESPONDING CORRECTLY

GRADE	16-18 CORRECT	0-15 CORRECT
SK	3	13
2	8	8
4	12	4

$x^2 (2) = 10.8, p < .01$

own and others' interpretation of their observations and perceptions while younger children appear to have no devices for differentiating what they see from the prior beliefs and knowledge that they use to interpret what they see.

The clinching part of the argument connecting notions of interpretation of texts to interpretation of perceptions would be provided by showing that precisely those children capable of solving the say-mean task also solve the see-know task. Our evidence to date presented in Table III is that the two are quite highly correlated (r = .53) but not identical. However, it must be noted that the tasks are quite different in format, and perhaps difficulty, so a perfect correlation would be unlikely. In fact, Elizabeth Robinson (1980) has provided just the data we need. She gave her subjects two listener-blamer tasks which were identical in every way except that in one case the message was a set of words which was ambiguous while in the other it was the picture that was ambiguous. In her study the responses were exactly as expected: children who solved the verbal task were the ones who solved the pictorial task. This suggests that the same sets of categories were used in interpreting language as were used in interpreting perceptions. Conversely, when children worked up the appropriate conceptual distinctions for handling text, they could readily be applied to handling nature. We must note that the relation of these "literal" distinctions to the actual process of learning to read and write is indirect. One could learn to make them from oral discourse with literate parents. My preferred hypothesis is that they become sharpened in learning to write.

TABLE 2: SEE / KNOW
NUMBER OF SUBJECTS RESPONDING CORRECTLY

	SELF		OTHER	
GRADE	4 CORRECT	0-3 CORRECT	4 CORRECT	0-3 CORRECT
SK	9	7	3	13
2	11	5	2	14
4	14	2	8	8
	$x^2(2) = 3.83$, $p < .10$		$x^2(2) = 6.54$, $p < .05$	

TABLE 3: SAY / MEAN SEE / KNOW CORRELATIONS

GRADE	SELF	OTHER
SK	.38	-.11
2	.53	.34
4	-.03	.28

Conclusions

We began with the well-documented inference relating literacy to the social and psychological changes that occurred with the invention of alphabetic literacy in Greece and, more particularly, with the growth of literacy in the late Middle Ages and the early Renaissance. I argued that while the relation is well known, there was no theory connecting the Reformation with the rise of modern science or with Cartesian mentalism. I advanced the notion that the three were by-products of literacy and offered, as a mechanism for the change, the new conceptual distinction between what was given in a text and the interpretations a reader brought to or assigned to a text. I called it the given-interpretation distinction. I could as well have called it the reading-interpretation distinction (cf. Havelock, 1976). It was the hypothesis that something was given, invariant and autonomous about a text and that givenness could be contrasted with the interpretations of that text which were subjective, fallible, and the product of the imagination. That distinction I say was invited by literacy because writing, in fact, split the comprehension process into two parts, that part preserved by text, the given, and that part, the interpretation, provided by the reader. Printing sharpened just this distinction. With the exact duplication of the original text, free from copyist errors, that part "given" in the text was more readily distinguished from the "interpretation" brought to the text by the reader. In a single move the layers of meaning of Scripture which Aquinas had claimed to be in the text were suddenly taken by Luther to be mere additions and accretion or interpolations. Galileo followed the lead, taking Aristotles' notions of "final causes" as mere interpretation of motion, quite independent of the laws of motion themselves. The distinction between the given and the interpreted, then, invented for reading and interpreting texts, was simply borrowed for "reading" the book of nature. The product of the distinction was modern science, science built on the notion of a discontinuity between observation and inference, facts and theory, claims and evidence. Modern scientific epistemology was, therefore, a by-product of hermeneutics.

And finally, to show how language and the world would appear to someone who did not make these distinctions, I showed you how young children conflate what is said with what is meant and what they see with what they know. And I showed that at about the time that they "solve" the interpretation problem them solve the "observation" problem; their epistemology reflects their heremeneutics. And I suggested that the sorting out of the related distinctions such as say, mean, intend, interpret, as well as observe, infer, claim, evidence, fact, theory are both fundamental to education and to western thought generally, and are, if the above argument is correct, the cognitive consequences of literacy.

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Writing, religion and revolt in Bahia

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The impact of writing on culture is discussed, especially the psychosocial consequences of literacy as a "technology of the intellect." The role played by writing is described (a) in a slave revolt in nineteenth-century Brazil and, (b) in a preliterate African culture (the LoDigaa) and its religious myths. Writing was a crucial factor in the planning of the revolt and writing tends to turn a religion of inheritance into a religion of conversion. But in view of the diversity of functions it served in these cultures, literacy, as an all-encompassing descriptive term, is unsatisfactory. We need to devote attention to the uses of texts within a culture.

The greatest forced migration of peoples in the history of the world followed upon Columbus' discovery of the New World. Already on his second voyage in 1495, he brought two African slaves from the Iberian peninsula (Rout 1976: 22). Following the drying up of the supply of white slaves from the Near East as the result of the Turkish conquest of Constantinople, there had been an increased flow into Europe from the western coast of Africa.

Slaves for the New World were first imported from Spain into Hispaniola in 1502 to help produce the newly-introduced sugar crop (Mintz 1985). But the main shippers of slaves directly from Africa were the Portuguese who took them to Cartagena on the Caribbean shore of Columbia where they were then sold to the Spanish col-

"As a prelude to baptism..., the priest walked among the rows of captives assigning, a Christian name to each and handing him a paper with his name written on it lest he forget it."

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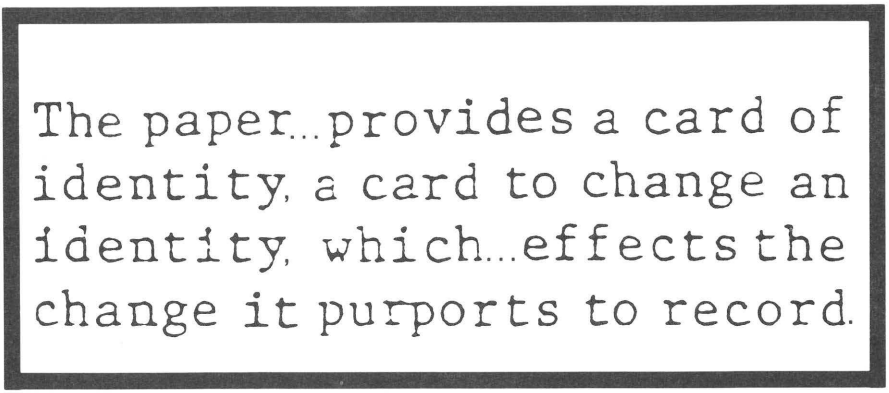
onists. They came largely from the Guinea coast of West Africa, the preferred supply for Spain, while those from Angola went mostly to the Portugese colony of Brazil. The day before embarkation Angolan slaves wre usually assembled in a nearby church, sometimes in the main square of the port, in order to be baptized. As far as the ecclesiastical authorities were concerned, it was essential that this sacrament be performed, since the missionizing aspect of the slave trade was often seen, at least by the Church, as the most compelling reason for its existence. "As a prelude to the perfunctory ceremony to follow, the priest walked among the rows of captives, assigning a Christian name to each and handing him a paper with his name written on it lest he forget it" (Bowser 1974:47). Indeed, according to Koster (1816:198) the Angolan slaves in Brazil bore the mark of the royal crown on their breasts which "denotes that they have undergone the ceremony of baptism".

The renaming of slaves, who were by definition kinless persons, non-persons, was nothing new. I have known individuals of slave origin in the Gonja town of Salaga in northern Ghana who had been given names like "I am here", supposedly an answer to the question 'Where are you?'. Such new names served to cut the individuals off from their kinsfolk, their society, from humanity itself and at the



same time emphasized their servile status. In the case of the Portuguese slaves from Angola, the Catholic Church not merely legitimized but sacralized enslavement by the bestowal of a new name, a *Christian* name as we still say in English, that effected an enforced conversion. Free Africans were now Christians and slaves.

However the renaming was not in itself sufficient, the new name had to be written down and handed to the individual. To the magic of the spoken word was added the hocus-pocus of the written one, which supposedly transformed the religious status of someone whose social life had already been totally overturned by purchase or by the sword. To think about this act is to realise its terrifying authoritarianism. The paper is intended to convey information to the slave's purchaser in the New World. But at the same time it provides a card of identity, a card to change an identity, which at one level effects the change it purports to record.

There are countless other examples of the use of writing for what can be called magical purposes, the burning of paper money before Chinese altars, the Buddhist wheels turning the pages of prayer books, the stuffing of messages into the Temple walls in Jerusalem, the drinking of the ink in which Qu'ranic verses have been written on wooden tablets, the Egyptian letters to gods and to forefathers and, to bring it nearer home, notes to Father Christmas; such uses were central to magico-religious performances. All these cases obviously occur when religions are written and except for the Egyptian example, written in an alphabetic script; they were religions with sacred texts and at the same time religions of conversion. These facts were not accidentally associated.

In this paper I want to argue for a positive relationship between the presence of writing and particular features of the religious system. Like McLuhan I have been interested in the social and cognitive consequences of changes in the means and mode of communication. I have written of writing as the technology of the intellect and this has been taken by some critics (e.g., Street 1985) to mean that, firstly, I am only dealing with writing in the limited sense of the graphic technique, and secondly, that I see this as 'determining' some aspects of cultural life, that is, as the only relevant factor. To many of those interested in culture, technology stands at the opposite pole. To think of it as influencing, let alone determining, culture is a kind of blasphemy.

My own background taught me differently. Like McLuhan I read English at Cambridge when it was dominated by the figure of F.R. Leavis. Like many of those interested in literary culture at that time, I never regarded it as being uninfluenced by technological factors.

Was it T.S. Eliot who spoke of the rhythms of Victorian poetry having been influenced by the coming of the steam-engine? Q.D. Leavis (1932) examined the way the reading public for the eighteenth century novel had been effected by the advent of the printing press. Watt took up a similar theme in his book on the rise of the novel (1957), while he and I (1963) attempted to look very broadly at the various ways alphabetic writing had influenced human cultures. In doing so we were interested not simply in graphic techniques but in what was stored in the written tradition. Nor did we consider literacy even in this large sense as the sole factor in any situation. We did not subscribe to single factor determinism of a technological or any other kind. Above all we did not subscribe to the belief in 'instant literacy' embodied in some psychological experiments. On the other hand the analysis of the interaction between 'culture' and 'technology' was central to our endeavour.

I want to illustrate this interaction by looking at writing and religion. But since speculation in this field can easily take leave of the empirical, I begin by returning to the concrete situation of African slaves in the New World and later look at this against the background of African oral religions in the Old.

In the nineteenth century, as today, blacks comprised more than one half of the population of those tropical countries of South America with access to the Atlantic seaboard. Originating in Africa, they were brought over as slaves, mainly to work on the sugar estates.[1] The trade itself started soon after the beginning of the colonial period and it continued until the middle of the nineteenth century, although owing to the frequency of manumission and of 'miscegenation' in comparison with North America, at least after 1830, a significant proportion of that population consisted of freed men and women.[2] But if manumission lessened the pressure to escape (Sharp 1976:146-7), it also stimulated the import of new slaves for the labour force. So did the prospect of abolition. After the beginning of the British-inspired campaign to end the slave trade, the numbers im-

Protests...by slaves...often took the form of escape, with the runaways establishing...maroon communities in defended villages in inaccessible places...

ported into Brazil increased steadily from 130,000 a decade in the eighteenth century to 387,000 between 1840-1850. Indeed Brazil was estimated to have a population of 3,817,000 in 1817-18 of which 2,515,000 were *preto* (black) and *pardo* (mulatto); of these 585,000 (only 15% black) were free (Kent 1970: 335).

Protests against slavery by slaves themselves often took the form of escape, with the runaways establishing usually shortlived maroon communities *(palenques* or *quilambos)* in defended villages in inaccessible places — and occasionally longer lasting ones as in the well-known case of the Black Republic of Palmares containing over five thousand escaped slaves and enduring for nearly 70 years (1630-1697) (Genovese 1981; Price 1973; Friedmann and Cross 1979; Schwartz 1970:315; Kent 1970:337-8). Flight, writes Bowser of Peru, was the most common form of protest (1974:330). But revolts of freedmen as well as of slaves occurred and were facilitated by the fact that even slaves were often allowed to carry arms and were sometimes used to control other slaves.[3] According to Freyre (1946:358) these slave forces were developed in the course of family feuds among the ruling class, but they defended not only the Great House but the whole country against the Dutch and the entire class against runaway slaves. It is the series of uprisings that took place in the rich sugar-growing province of Bahia, both in the city of San Salvador itself and in the surrounding countryside between 1807 and 1835, which are the focus of the present study.

Of these the revolt of 1835 was the most serious, giving rise to fears of another massacre of Saint Domingue (later Haiti), with the blacks murdering the whites and taking possession of the country. This they might well have done in Bahia as they formed seven-eighths of the town's population of 125,000, for it was a centre for the importation of slaves until the middle of the nineteenth century. Although such revolts drew the attention of white Brazilians to the danger of adding to the black population, the need for labour (especially for coffee plantations after 1835), the reluctance of the dominant class to participate in manual work and the constant emancipation of slaves (often with the help of black Catholic fraternities and systems of rotating credit) meant a continual demand for new recruits.[4] Many of these later imports were of Yoruba origin (Nagôs as they were known in most of South America). Their language (from Anago) became the *lingua franca* of Bahian Africans from the turn of the century until the 1860s, and it was freed men and mulattos from this group who, drafted into trade and crafts rather than the plantations, played a leading role in the events of 1835.[5] Yoruba slaves continued to be shipped from Whydah, the main port of Dahomey, long after the suppression of the trade by England and France (Verger 1964), and it was partly to watch this traffic that a British Consul was

posted to Bahia, although the town also accommodated many English merchants at the time.

What immediately impressed observers was the careful planning behind the rising. The first report of the British Consul, J. Parkinson, was sent to the Duke of Wellington on the following day (26 January 1835). He spoke of the role of the Nagô blacks, "who comprise the chief part of the slave population of the city". He went on to say that it "was widely extended and combined with far greater ability than is usual in such affairs".

Incendiary fires were lit in several parts of the city. Simultaneous attacks were made on the guard at the palace, the cavalry quarters and at the barracks of the artillery, cacadores, and national and municipal troops.

Three days later Parkinson wrote again with more information. The revolt had been planned for daybreak "when household slaves are despatched for water and their masters and mistresses are engaged in Church devotions" (the 25th was a Sunday). Most of the *brancos* were in the suburb of Bomfim on an annual pilgrimage to the church of Nossa Senhora da Guia where they were particularly vulnerable to attack (Kent 1970:350-351). According to one commentator, the great opportunity of the rebels was lost owing to impetuosity, the rising started three hours too early, losing the advantage of coordinated timing. In fact the authorities had been warned by two Yoruba women, ex-slaves, who announced before 10 pm on the 24th that an insurrection was about to take place. As a result of this information the soldiers forced an entry into a building owned by two of the participants, the ex-slaves Belchior and Caspar. This house was one of two meeting places, each with its own Muslim religious instructor, here the Nupe Luiz Sanim; the other group from the Victoria quarter consisted mainly of slaves working for Englishmen; they met in a 'straw' house where there was a religious school under the supervision of one Thomas, a slave. When the soldiers attacked the first centre, they surprised some 60 armed blacks who overpowered them and directed their attack against the main centres of Brazilian power. At that time this was the army barracks, but today in West Africa the radio station, that centre of communication, is usually one of the first targets in any coup.

Writing in 1900 Nina Rodrigues described the role of Islam in Bahia at that period, having been brought there by captured Hausa and later by other Muslims (Tapa, that is, Nupe as well as Yoruba).[6] He connected these uprisings with the famous 'Jihad, 'holy war', against the infidel in Northern Nigeria proclaimed by Uthman dan Fodio in 1804 which led to the conquest of the Hausa, the Nupe and of north-

ern Yoruba and to the present dominance of the Fulani ruling elite. For these slaves, he notes, were not uncivilized natives but members of warrior cultures who knew how to read and write the Arabic script. Indeed, according to Freyre the standard of literacy of the Muslim population was greater than that of most of the white colonists — "some of them illiterate, most of them semi-literate", almost none being capable of signing their names. They did not easily take on the role of simple cultivators nor accept forced baptism into the Christian faith. One should add that in the first half of the nineteenth century, unlike many other slave societies, there was continual communication with Africa back and forth across the Atlantic, in which Brazil played a dominant role. Not only did each slave shipment brings news of the homeland, but blacks were involved in the trade itself, established 'Brazilian' settlements along the Guinea cost and free Africans even made the voyage to America. Contact with the world of Islam was maintained in a minor way just as Yoruba cults, especially after the end of the slave trade, were reinforced by visits and by consultations between the two continents.[7]

In Bahia many slaves were employed as palanquin bearers, often by strangers, and especially by the English whose servants were suspected of complicity during the major revolt of 1835. These Protestant masters were presumably less concerned with the commitment of their charges to the Catholic faith and may have encouraged incipient signs of literate activity. Certainly two participants took refuge in the house of the British Vice-Consul, who happened to be the Consul's son-in-law, and were 'instantly surrendered'. But in other instances the merchants claimed 'British privilege' for the runaways, who "were pertinaceously harboured . . . in defiance of law civil and military". The local whites resented this assumption of privilege and openly charged the British, whose activities were regarded with great hostility (Rodrigues 1965), "with inciting their own slaves to insurrection and preparing them to emulate the horrors of San Domingo".[8]

Rodrigues' analysis of the 1835 revolt was based mainly on the report of the Chief of Police, later Governor, Francisco Gonçalves Martins who explained how the rebellion "had been planned over a longer period, in utmost secrecy and in a way that was not to be expected from brutish and ignorant beings. In general, all knew how to write

in the first half of the nine·····
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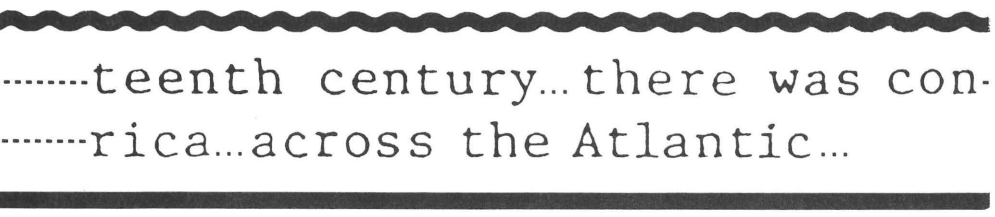
and read in unknown characters resembling the Arabic used by the Hausa which now appears to have spread to the Yorubas [who had largely replaced the Hausa whom they had joined in previous revolts]. They had some educated people who gave lessons and tried to organise the insurrection in which freed Africans [that is, blacks born in Africa] and even some rich ones, were involved". He found many books which they claimed were religious precepts drawn from the Qu'ran. Certainly religion had a part in this revolt, even at the level of the leaders telling "these poor people that these papers could protect them from death".[9]

Of the writings referred to by Rodrigues some have apparently been lost. What we have seem to be mainly religious (Monteil 1967; Reichert 1967; Reichert and Abdelghani 1966). However, we do have a resumé of other materials made by a Hausa named Albino and written in Arabic characters (Rodrigues 1976:105-6; Verger 1968: 341). According to this source, some of these papers contained instructions to the insurgents coming from the Victoria quarter to seize the country, kill all the whites and then to go to a meeting place where they would be joined by people from the interior.[10] Other papers were designed to protect the rebels from the bullets of police and soldiers. One, signed by a Mala Abubakar, that is, by a mallam or learned man, was a kind of proclamation, exhorting the people to unite and asserting that nothing would harm them on the way. We may contrast this mode of gathering a group together with the 'drumbeats' and 'nocturnal ritual gatherings' used in the revolt in Saint-Dominque in August 1781 (Parry and Sherlock 1963:163). The author, Mallam Abubakar, may have been the Imam, that is, the religious leader, at the time of the revolt, although this was apparently unknown to the police and only told to Rodrigues much later by the contemporary Imam; nevertheless the mallam was later expelled to Africa (Verger 1968:349) along with many others. Another letter was sent from one Allei to Adao, slave of an Englishmen, saying he would arrive at 4 am and Adao should not leave without him, a message presumably referring to the planned attack at daybreak. Finally the searches revealed an ABC and writing boards used for teaching the written language.

Documents had also been discovered after the projected revolt of 1807, which started as a result of an attempt to suppress the nearby



quilombes by breaking off their relationship with the town. This earlier rising was definitely attributed to the Hausa (Kent 1969: 343), though some Mandinka were also arrested (p. 349). The same group appears to have been involved in the revolts of 1808, 1809 and 1814. However those of 1826 and 1830 were mainly Yoruba (though Dahomeans are also mentioned) and the 1809 rising was blamed on the Yoruba secret society called *Ogboni*, which Kent saw as one possible reason why it was undetected (p. 349); that made it a unique case for in the other instances someone always succumbed to the rewards that were being offered by the authorities.

In the discussions of the later revolt we find references to the role of Muslim schools, to marabouts or alufas (Rodrigues 1976:54) and to Limano (Imam); more recently, from 1900, we encounter descriptions of the observance of the annual Muslim fast (p. 68), of mosques, of grisgris, of washing the writing from tablets and drinking it. No one can doubt the importance of Islam in nineteenth-century Brazil, despite the fact that after the revolt of 1835 an effort was made to deport all freed blacks who could read and write back to Africa, a truly draconian measure aimed at depriving the blacks of their literate members, a move which hit the Muslim community hard.[11] A ban was placed on 'unorthodox cults'; subversives and undesirables were expelled to West Africa, 400 in all, while slaves received 100 lashes. Some of those who could, went voluntarily, some 800 passports being issued between October and December 1837. This return of the learned (and the watchfulness of the police) seems to have taken the heart out of further revolt. In any case Islam was partly driven underground, although groups such as Candomble that attempted to combine Catholicism and Islam or Yoruba cults were allowed to flourish.

There certainly appears to have been a falling off in commitment to Islam after 1835, partly because of suppression, partly because of syncretic adjustment. Nevertheless, a tradition of Islam continued as we see clearly from Étienne's study of the revolt. For his general knowledge of the 'sect', — and he used the term to define what he considered to be a special Brazilian version of Islam — was derived from Muslims he talked to at the beginning of the twentieth century, including Imam Hassoumanou, Imam of all Brazil, resident in Bahia. He observed a continuing 'fanaticism', a hatred towards whites and Christians. While they could not read Arabic and used a Portuguese translation of the Qu'ran and Yoruba as a *lingua franca*, the structure of the community was fully Islamic, with an *imam*, *muezzin* and *alkali*. They regretted they had no mosque,[12] but observed prayers, the five pillars of Islam, used a lunar calendar for the festivals, avoided pork, fermented drink and animal blood, and consumed the ink with which *surahs* had been written on boards (known as *wala uassa)*.

The strength of Islam in Bahia at the time of the revolt had been considerable. "The atmosphere that preceded the movement of '35 in Bahia was one of intense religious ardour among the slaves. In Mata-Porcos Lane on the Preça slopes at St. Francis' Cross, in the very shadow of the Catholic churches and monasteries . . ." writes Freyre, "slaves who were schooled in the Koran preached the religion of the Prophet, setting it over against the religion of Christ that was followed by their masters, up above in the Big Houses. They propagandized [*sic*] against the Catholic Mass, saying that it was the same as worshipping a stick of wood; and to the Christian rosary with its cross of Our Lord they opposed their own. . . ."[13]

While Islam had later to go underground for a while, Freyre notes its continuing influence on Brazilian Christianity, with its "prayer-papers, to deliver the body from death" (1946:316). The position taken by some blacks and coloureds towards Protestantism may be related to these earlier anit-Catholic prejudices. Moreover various rituals seem to smack of Islam, such as a feast of the dead in Penedo, with its long prayers and fasting, its abstinence from alcohol, the lunar calendar, the long white tunics and the sacrifice of a sheep.

In his observations of African practices in Pernambuco (sects he calls them) Freyre notes how people remove their shoes at ceremonies, avoid treading on an old mat, cross their legs, pass round coloured cloths while dancing and drink the ink washed off writing boards (1946:31). In this way the Catholicism of the Big Houses was "Enriched with Musulman influences" (p. 318).

Some 800 blacks took part in the uprising, in which 14 lost their lives. 326 persons were arrested, including 26 women; 286 participated in the nine-year trial, 120 of them free blacks. Of the leaders (all African born), 7 were free, 4 slaves; 10 were Yoruba, 1 Hausa and 1 Nupe. Of the 160 slaves accused, 50 were employed by strangers, 45 of them by the English,[14] 52 were domestic servants, 37 palanquin bearers and 33 street traders and store clerks. A number of them appear to have formed a club to learn the Qu'ran including Jose, a Yoruba who was found with papers, and Jaôa, another Yoruba employed by an Englishman who had not only papers but guns. Many of the slaves in Bahia appear to have been *negros de ganho* who worked independently but turned over an agreed percentage of their weekly earning to their masters (Kent 1970:340). Aruna (Haruna, a Yoruba with a Muslim name) sold water; another Sule (Suleman, though Victoria was his Christian name) sold cloth.[15] Licutan, a Yoruba slave known as Pacifico, was one of the leaders and could read and write; the Hausa Dandara sold tobacco. The Yoruba Luiz and Gaspar were tailors, as was Jose from the Congo; Ahora, a freed Yoruba, carried lime; Dada was a smith; Namomin, a Yoruba, worked with a butcher.

All had entered various trades, none were plantation hands. Sanim (the Nupe leader also known as Luiz) organised a kind of *esusu*, a friendly society, providing rotating credit collecting the contributions of its members (for the Yoruba, see Eades 1980:77) in order to buy their freedom and purchase clothes; the purchase of freedom was common enough throughout Latin America, the provision of loans being one of the functions of the black fraternities *(irmandade* or *confraria)*, the most important of which was Our Lady of the Rosary, founded by the Domenicans and established in Portugal in the fifteenth century for the defence, conversion and control of slaves.[16] The fraternity, whose officers had to be freed blacks, and its scribe, a white of noble birth, was also concerned with participation in processions, with providing proper burials and with representing its members in lawsuits against their masters.

The variety of documents obtained in the search shows that we are not simply dealing with writing for magical charms, nor even for religious uses alone. In the first place, the fact that writing was employed in the uprising to make secret arrangements by means of letters, suggests that the superior planning was partly related to literacy. Secondly, the magical power of the word (and the book) as manifest in the use of *surahs* (verses) of the Qu'ran sewn into leather pouches on coats, was directed to secular aims, being thought to protect the wearer from the enemy's weapons. Indeed in Northern Nigeria at this period, the leather pouches, like the quilted kapok coats of the horsemen (as shown in the illustration to Denham 1966:471) helped to deflect the arrows of enemy archers. Such protective medicines against firearms were not the exclusive possession of Islam (Genovese 1981:47). They were sold, for example, by Akan obeah men in Jamaica in 1760 (Schuler 1976:383) and by the LoDagaa in northern Ghana in 1900 (Goody 1956). I do not mean to suggest these were all derivative from Islam. But belief in the efficacy of these *madingas*, known in West Africa as *safi*, against the bullets of the white man, also found in the 1807 revolt (Rodrigues 1946), was not simply a matter of magical power or material protection but of religious faith. A somewhat similar use of writing was found in the

verses of the Qu'ran sewn into leather pouches on coats were thought to protect the wearer from the enemy's weapons.

practice whereby an individual is made to drink the ink washed off the wooden tablets on which *surahs* of the Qu'ran had been written. Rodrigues quotes Binger's reference to the practice in Timbuctu, but it also occurred widely in North Africa, and throughout the Muslim world, as well as among the Ancient Hebrews as a kind of ordeal.

Thirdly, the written religion of Islam appears to have provided some kind of ideological backing to the revolt. Although an obvious feature of the protests of African slaves, the notion of 'Death to the Whites' is very characteristic of many recent uprisings in West Africa (e.g., Goody 1982) where the word *nasala* for 'white' is derived from the Arabic form of Nazarene, Christian. Ethnic and even racial definitions were again dominated by religious ones.

Fourthly, writing may in fact have helped people to gain their freedom because of the contribution it enabled them to make to the work of their masters (often semi-independent work), and then to remain free once they had done so. Somewhat later, about 1848, the French Consul at Bahia, Francis de Castelnau, tried to question a Muslim called Mohammad-Abdullad Filani who had been living there for some thirty years and had liberated himself by his work as a carpenter. He could read and write not only in his own language but in Portuguese. According to de Castelnau he remained "very intolerant and fanatic", even trying to convert the Consul to Islam. When the Frenchman offered him money to come and work, he turned round to another black and declared that he did not want to serve a Christian dog. This man of seventy, a marabout, claimed to have even made the voyage to Mecca. He was born in Kano and was taken prisoner at Katsina by the Hausa during the Fulani wars. In his discussions he returned constantly to the faith of Mohammad, which was the basis of all, and the only thing in this world worthy of occupying a man's time (Verger 1968:327-8).

It is amazing to consider that Mohammad-Abdullad had been to Mecca and back, then to the New World, while the Imam, Abubakhr, travelled, again as a result of his faith, from Nigeria to Brazil and back again. However, Africans in Brazil, whether Muslims or not, did not loose contact with their former homeland; the Yoruba continuing to import religious rituals for personal use, kola nuts, cowries, soap, striped indigo cloth and palm oil. Moreover, down to the end of the nineteenth century Hausa and Yoruba freedmen from Bahia were repatriated to Africa, founding Porto Seguiro in Ardra. When a delegation of Quakers visited Rio in 1852, it was received by a commission of freedmen from the provine of Minas, seventy of whom had been repatriated to Benin. They presented the English visitors with documents written in Arabic (Chandler and Burgess 1853; Freyre 1946: 318).

The words of Mohammad-Abullad run counter to widely held notions about the syncretism of African religions, about adaptation to the forms of Christianity or of slave society. In West Africa and elsewhere Islam was constantly making compromises with local beliefs; this was one of the ostensible causes of the Fulani-Hausa wars, for the family of Uthman dan Fodio was highly literate and aimed at introducing a purer version of Islam, going back to the Book (Last 1967). But here we find a statement of a man convinced of his particular faith, a firm follower of the movements of reform generated by the Fulani, and unwilling to compromise that faith in any way. As Rodrigues notes, the revolt was defined in religious rather than tribal terms; Muslims participated regardless of ethnic grouping, although the latter affiliations were still of considerable importance. The strength of these insurrections has been attributed to the religious organisation, to the propaganda and to the teaching of Islam. In planning, execution and defeat, religion sustained the morale of the rebels. "The moral greatness that certain insurgents showed in the face of danger and death, was the real key to these insurrections which had nothing to do with the despair of slavery", for the richer ones took part and non-Muslims were excluded (Verger 1968:349-350).

The British representative at Rio also praised "the personal boldness which they displayed"; indeed this and the "extensive system of combination" that preceded the rising were seen to give "just cause of alarm", and he notes that "the intelligence of this revolt has spread more uneasiness in Rio de Janeiro, that any other public disturbance which has occurred for many years".[17] At the same time Fox considered the black insurgents not to have had "any definite object in view, beyond burning and plundering, and murdering at random; or not to have any distinct notion of freeing themselves from slavery". On this subject his opinion ran directly counter to that of the local Chief of Police, later to be Governor.[18]

According to Genovese, throughout the Americas "Muslim slaves earned a reputation for being especially rebellious" (1979:29). While African cults provided an ideological rallying point for some revolts (Obeahmen, Myalmen, Vodûn priests, Ñáñigos), Muslims led the great uprisings in Saint-Dominigue and in Surinam, despite their numerical insignificance. Macendal, leader of the most importantly early resistance movement in Saint-Domingue, has been described as a Muslim, while Boukman, leader of the rising that sparked off the great revolt itself, was a Vodûn priest (Genovese 1979:86). And presumably Islam was involved in the early rising of the Wolofs on Hispaniola in 1522; the Spanish forbad the importation of Wolofs to America in 1532 because of their reputation for insubordination and rebelliousness. Mulatto slaves became the next targets, their entry

being forbidden in 1543 because many were suspected of Moorish ancestry and therefore of exposure to Islam. Berber and Moorish slaves had already been excluded in 1506 because of possible Islamic faith, although as in the other cases such laws were mostly ineffective (Bowser 1974:148, 360).

In his general account of slave revolts in the Americas Genovese (1979) proposes a progression from rebellion to revolution, a pattern of protest similar to that discussed for other parts of the world (e.g., Gluckman 1955). This shift he sees as roughly corresponding to the transition from seigneuralism to capitalism. In the early period, he argues, revolts were basically forms of withdrawal from society, restorationist in character, attempting to relocate African village life in the colonial setting. The change came with the bourgeois-democratic influence of the French Revolution and its cries of Liberty, Equality and Brotherhood, reaching its high point with the overthrow of the whites in Haiti in 1791, after which nothing was the same.

This periodisation of slave revolts seems over-determined, if only because it does not allow for the role of another literate creed, Islam. Moreover, slavery was to disappear for a variety of reasons (one of which, as in Brazil, was certainly rebellion), while liberty was no less an aim of the early movements of protest. It is true that the cries of liberty and equality were raised by a nationalist political movement in Bahia in 1798 under the possible influence of the French Revolution (Kent 1969:336-7). But well before this, in 1692, "Death to the whites and long live liberty" had been the battle cry of a mocambo in the Bahia captaincy. Like most such communities, this settlement was situated near to the towns and farms on which it depended. In active communication with the town, often through taverns, the runaways lived not by agriculture but parasitically by highway theft, cattle rustling, raiding and extortion (Schwartz 1970:322). While some African villages may have had a similar mode of livelihood, it was certainly not the norm and the reaction here seems to have been less a matter of the restoration of rural life than of escape and survival. Above all, the African-derived religion of Islam also provided an ideology that focussed the resistance to domination by Christian whites.

The creed of the French Revolution displayed a characteristic feature of written creeds; it was (like the Declaration of Rights) universalistic, generalized, indeed over-generalized. For the Girondins, for Napoleon, and to some extent for Toussaint himself, all men were to be equal, free, brothers — ideals that inevitably had to compromise with the reality of circumstances, certainly after victory had been achieved. But the written creed was important in providing an explicit ideology for getting rid of a social order that did not measure up

to the wishes of the oppressed. Islam played a similar role, even if its creed was directed as much to the other world as to this. Individual leaders of revolts were often literate despite the fact that even in the nineteenth century the bulk of participants were not.

Of the major uprisings in the United States, that of Gabriel Prosser in 1800, Denmark Vesey in 1822 and Nat Turner in 1831, all the leaders "had learned to read and write and had special talents and privileges" (Genovese 1979:44). Significantly, after all these revolts there were "restrictions on literacy, preaching, manumission, and much else" (p. 113). The main leader of the Haitian struggle, Toussaint Louverture, had read and been much influenced by the work of the abolitionist Abbé Raynal, *Philosophical and Political History of the Establishments and Commerce of the Europeans in the Two Indies* (1st Fr. ed. 1775), (James 1938:16). But if literacy made its mark in revolts inspired by European declarations, it also played its part in quite a different tradition, that of Islam which rejected the rule of those who did not follow a different book, the Qu'ran, whether in West Africa or Brazil. And the results of its commitment of literacy was particularly marked in the Bahia revolt of 1835.

I want to try and generalize from these observations and ask how far the effects of Islam were due not to Islam in itself, but to the fact that it was a religion of the Book. For written religions, taken as a whole, have some general characteristics that make them differ from the generality of oral religions, and these in turn have a bearing upon the role of Islam in Bahia.

First, however, I want to refer to another aspect of this situation. There is always a problem in talking about societies with and without writing in terms of the oral and literate traditions because any society with writing obviously uses both channels and there are differences between individuals and between subgroups in their competence and performance in one or the other; indeed some individuals may never use the written channel at all and these we speak of as illiterates. But their position, their activities, their knowledge, will differ in significant respects from those of members of truly non-literate societies, since they will be defined (and will define themselves) in opposition to the dominant literate mode. Nor is this simply a question of self-definition in the general sense beloved by social scientists. The oral tradition of popular culture is influenced not simply by juxtaposition, but in content, conceptually, by the written tradition. Of course this is a matter of degree. The practices of some Indians, in Brazil and in Mexico, were altered very early on by the insistence of the regular clergy, especially the Jesuits, on obedience to European-derived marriage and other restrictions which transformed their lives. Others were influenced very little. But the point I

want to make is internal to the slave community in Bahia where in the early part of the last century the *orixas* (orią, the Yoruba for 'gods') seem to come out as of secondary importance, at least in a political context, with their practitioners standing in certain opposition, even subordination, to the leaders of the Hausa, Nupe, and Yoruba Muslims. The consequences, both for Catholic syncretism and for the later dominance of the *orixas*, of sending away most of the literate Muslims, is an interesting question of cultural history. Did one rise as the other fell? Rise in a more adaptationist, less literate, mould? As Prince (1972) has argued, with Islam and 'unorthodox cults' being forced underground, the time for eclecticism was at hand. Indeed, syncretism appears to have had the encouragement of the authorities.

In looking at the specific features of written religions that may have influenced the situation in Bahia, let us recall that when we speak of an oral tradition, we do so with reference to a population boundary, whether it be tribe or nation. Asante religion, Ojibway religion, is what that particular group practices at a particular place and time.

Written religions, on the other hand, are defined in relation to a text: while not all are religions of the book in the sense of the alphabetic religions of the Middle East, they all have texts to which reference is made. Consequently we define the religion in non-ethnic terms, that is, as Christian or Hindu, the religion is by definition capable of crossing tribal or national boundaries and hence of recruiting adherents, as in the Bahia revolt, on a non-tribal basis — of overcoming, in this respect, the tribal divisions which the Brazilian owners and the slaves themselves had attempted to preserve.

But because written religions, especially alphabetic ones, cross tribal boundaries while oral ones do not, that does not mean to imply that the latter are fixed and static while the former are infinitely maleable. Rather the opposite. The fact that we speak of Asante, or of say LoDagaa religion, does not mean that this set of practices and beliefs is the same today as it was yesterday, much less the day before that.

I have argued that quite the opposite is true, that because African

when we speak of an oral tradition, we do so with reference to a population boundary...

religions are closely linked to matters of health and well-being, they are inevitably open-ended if only because they are constantly faced with the problem of the God that failed, the unsuccessful cure, the promise made but unfulfilled. The closer the entailment of religious activity with the affairs of daily life, that is, the greater the contextualisation, the more often the problem will arise. Consequently, truth is, I argue, not fixed as if residing in a fixed text, but involves a constant search, a seeking, after new solutions to old problems.

Only by some such a hypothesis can I explain the changing face of, say, LoDagaa religion. While it has its fixed points in the shape of the heavens (High God, the mystical aspect of sky), the earth (the mystical aspect of the land and soil) and the ancestors (the mystical aspect of the land and soil) and the ancestors (the mystical aspect of humanity), there is an intermediary area in which lesser gods or shrines have a rather high degree of turn-over. Some rise in popularity, others fall, like other recipients of votive offerings. Nor are such new gods always of internal creation. In the area of Northern Ghana in which I lived several so-called medicine shrines had spread far and wide throughout West Africa. While the extent and rapidity of the spread was partly due to new modes of transport and the more active networks of personal communication, the phenomenon itself was not new. Movement had always occurred.

The turn-over of, say, adherence to Nana Brukung (that is, outside the 'home' area of Shiare in the Togo hills of West Africa) was high (Pollock 1979). Clients and client groups come and go, and some establish the shrine in their own locality; indeed the very cult is incorporated into Afro-Brazilian religion today. It is in a sense like the upsurge and downturn of people attending the church of a specific saint, as with the contemporary importance of the Church of São Judeus Thaddeus in São Paolo (another cult that crossed the Atlantic), but by migration the cult activities get incorporated in the cosmological, classificatory, and sacrificial systems of other groups, changing in subtle ways the nature of these cultures. Nor can we argue that this change is superficial even if limited. The notion that what changes is surface structure, what continues is profound, deep, is an idea to which anthropologists and others subscribe, especially in the America of themes and Ruth Benedict; it has many more recent

written religions cross.....

rebirths, but embodies a tautology which distracts from intellectual enquiry by assuming what needs to be proven. I do not assert that it is always false; I do maintain it may be profoundly mistaken (or if you prefer, the truth-value is of truth by definition).

Religion — especially in that area dealing with health and well being; the invocation of the Bagre myth of the LoDagaa lists farming, hoe, chicken raising, hunting, childbirth — involves an active search, not only among existing agencies, by means of the diviner (who is supposed to seek the truth, *vilmiong*, but may be lying) but also for other agencies, new shrines, revealed by the Beings of the Wild, the "fairies". Life is a quest, a *journey*. The Myth of the Bagre traces the journey of one of the first two men in the course of which humanity acquires culture, not fire in fact, but the way to make iron hoes and arrows, then farming and fighting, copulation and cooking and, importantly, at length, the making of beer.

It is interesting that in the recitation of the Bagre the High God and the Beings of the Wild play the dominant roles, to the virtual exclusion of the Ancestors (whom, of course, the first men had to do without) and of medicine shrines, indeed, even the Earth itself. So that if one were to write down this recitation and look upon it as an inclusive statement of LoDagaa religion or cosmology, as might happen in the early stages of literacy, one would be greatly deceived. Deceived in the sense that a large number of other ritual activities, very central, are excluded, especially those to do with the Earth shrine and the Ancestors who are not really incorporated in the overall 'mythology', and who are perhaps more action (deed) oriented than verbally oriented. That is not altogether the right way of putting it. They receive endless prayers and supplications, but they are not placed in a narrative context nor in a structured, pantheonic relationship with other agencies. Indeed regular pantheons are rare in West African religions, outside Dahomey and Yoruba, and the fixing of such a frame is another general tendency of writing.

There is another deception involved in transcribing the myth. By writing down a version of the Bagre, one crystallizes a particular recitation, creating text from utterance. The use of a particular version for analysis is no worry if one is comforted by the thought,

encouraged by the absence of any other transcriptions or anthropologists, that all possible versions are identical (the fallacy of the single case). Or that all possible versions are simply transformations of basic themes, principles, structures (which is a fallacy of post-facto analysis). The reproduction of long utterances along these lines may occur under certain circumstances but my own evidence shows that we have to allow for syntagmatic change in important elements in the structure. That is, unless structure is defined in a tautologous way by what is common to a set, the Lowest Common Denominator of elementary arithmetic, it must be allowed that writing transforms one of many possible performances into a fixed text.

When a version is written down a fixed text is created which has to be taken into account in future performances or exegesis. The notion of a fixed text presents some difficulty to certain of my colleagues (Parry 1984; Juller 1984). It is not that the text is incapable of different interpretations — that is only too obvious. But as we saw with the Fulani jihad, under a very wide range of circumstances it remains a continuing source of interpretation that may conflict with current 'compromises' or assertions. Reference to the fixed text lay behind the ideological inspiration of the Fulani movement, whose leaders were learned men, writers as well as readers, just as it had lain behind that other great Back to the Book movement, Protestantism. Protestantism crystallized around another significant change in the means of production — printing — which made the text directly available, if not to all, at least to a very much greater number of people than was possible in any manuscript culture. Manuscript cultures had encouraged the continuing importance of the spoken word, especially the spoken version of the written word, of reading aloud and recitation. And it encouraged the internalisation of the written word that we find so well illustrated in the mnemonic techniques of the Arabic school and the swallowing of the word by washing the written text off the tablet and drinking it.

The fixing of a text necessarily involves the selection, the accidental selection, of one version at one time and one place. Looked at in a long-range perspective, the definitive shift of literate forms puts an end to the creative aspects of long oral recitations, though creativity may be more limited with other genres. But even in mixed situations, problems arise. The Bagre that I recorded and published has for at least some of the schooled population become the authorized version; the text, as against the utterance, is orthodox. I may have made an error in the transcription, but if I did, all other versions are 'wrong' because mine is earlier; my text takes the preserve previously held by the men of old. In this context at least the notion of a wrong version takes on different meanings.

The main point to which I wanted to draw attention, however, has to do with content. If my view of LoDagaa religion rested upon a written version of the Bagre, it would turn out to be much more *theocentric* than is the total picture. I would be pushing more towards, if not a *monotheistic* picture of the universe, at least one which emphasized God's role.

In suggesting why this should be so, I am on difficult ground. But it is precisely because the myth is one dealing with the *Creation* of the world, or rather culture, it tends to emphasize the unique source of the unique act. If the myth had been more concerned with healing, then perhaps the emphasis would have been rather on the plurality of the Saints rather than the uniqueness of God. And Saints, like ancestors, are by definition non-scriptural, or rather post-scriptural. If we go back to the book, we eliminate them (though by so doing we create a gap in our understanding of the world, but that line of argument would lead us elsewhere). My argument does suggest, however, one kind of particular explanation of the tendency of written religions to emphasize the uniqueness of the godhead.

In practice Islam, like Christianity, treads a tightrope between the concept of the One God and the recognition of other agencies, such as the *jinn*, the equivalent of the Beings of the Wild. But since the *jinn* are not scriptural, they get swept aside from time to time by reform movements of the Fulani kind that necessarily adopt the so-called intolerance encountered by de Castelnau in his interview with Mohammed — Abdullad at Bahia in 1848, or Étienne fifty years later.

Intolerance is connected with universalism. Not all literate religions are necessarily so universalistic, but they have tendencies in that direction if only because their commandments tend to get phrased in decontextualised, that is universalistic, ways. The establishment of the Universal Church necessarily excludes other views, for religion is no longer defined politically but theologically, in fact scripturally, by writing. It can usually be spread independently of political institutions, although political support, however temporary, often helps. And it emerges in opposition ('Thou shalt have no other gods but me'), hence giving birth to a boundary between Jew and Gentile (even if both are Jews in another sense), but more strongly between Christian and pagan (also 'gentiles' in the early letters of Jesuit fathers from Brazil), or between Muslim and infidel *(kaffir)*. The latter terms are often ones of abuse, with animal implications such as Christian dog, or kaffir son-of-a-bitch, pagan swine, making it perhaps easier to kill them (despise them, spit upon them, stone them) if they refuse to be converted.

The corollary of what I have been saying is that in oral cultures religious beliefs and practices often seem to have a generative capacity that stands out in contrast to the relative fixity of scriptural religions. Whatever local adjustments are required, they are made in terms of spirit cults; even Hinduism displays solid identities, with a unitary pantheon and an iconography that can be recognized when it turns up in Indonesia and in Indo-China.

To return finally to Brazil, there are two other points that are related to the means of communication and the Bahia revolt. The first has to do with the problem of conversion. You cannot convert to an oral religion — you become a member of the political system and subscribe. Conversion implies a different definition of religion, commitment to a fixed text (beliefs or rituals) and it involves giving up one set of practices and beliefs in favour of another. Hence Islam was able to cross-cut ethnic affiliations.

Secondly, the existence of conversion, of supra-tribal recruitment, means that the religion must break out of its local bonds; it must (to use terms that will link-up with other psychosocial aspects of the implications of literacy) become partly decontextualised and partly universalised. Now, while these are pre-conditions for the spread of a multi-tribal religion, they are also part of the implications of literacy itself. That is to say, moral injunctions and jural norms tend in writing to get phrased in a more generalised way than when these injunctions or norms form part of action situations. We find statement such as "thou shalt not kill" rather than "thou shall not kill anyone (a) except those who are themselves killers (Law of Talio) (b) except other Jews (c) except in times of war, etc." Such generalised norms in one sense create the notion of the brotherhood of man by making it explicit. But the presence of these (literate) ideals also raise problems, since in practice, in context, compromise is forced upon the community. The result is an increased measure of cognitive dissonance, of conflict between ideal and 'reality', which gives rise to dissent groups consisting of those who take the generalised norm (e.g., against killing) more *literally* (to the letter) than others.

I have tried to point out some of the general tendencies of written religions that seemed relevant to a set of revolts in nineteenth-

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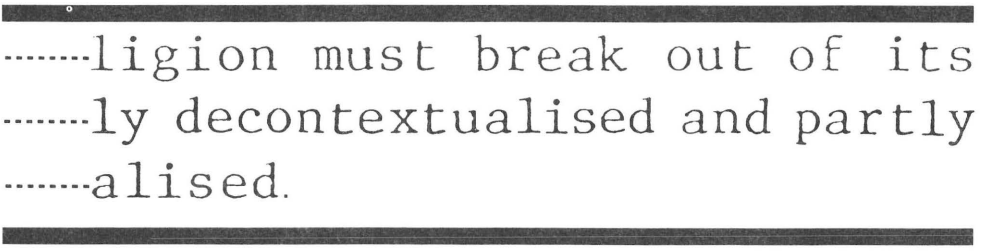
century Brazil. Those revolts themselves provide a contrast with West Africa where the percentage of slaves in some states was probably as great as in Brazil (that is, some 50%) but where, although fear was expressed about slave risings, these were few and far between, for reasons I have elsewhere tried to elaborate. But to these we must add that they did not, unlike earlier Christians, have a book to guide, sustain and stimulate them. Like the non-Muslim slaves in Brazil, residual tribal affiliation led to greater disunity, which was then exploited by the masters who encouraged personal dependence and religious collegiality (we are all Muslims or Christians now). This cultural pattern was altered by the influence of writing, both in terms of the short-term influence of the technology and the long-term influence of what is stored and developed.

I have taken a specific example of the role of writing in a language, scarcely understood, during a revolt of blacks in nineteenth-century Brazil, the comparative success of which has been attributed to writing and to a written religion. Its very success resulted in the despatch of many of those able to read and write back to the Africa from which they came, since as elsewhere the authorities feared underdogs who were literate.

Using as an implicit contrast the religion of an oral society, the LoDagaa, I pointed out some general features of written religions that would have helped the recruitment of insurgents from a number of tribes, for written religions tend to be differently defined by reference to fixed texts, not politically but theologically. For such texts may fix not only ritual and myth but also beliefs and moral injunctions. That is to say, the morality is not one that cannot be embodied in a particular place and time but has inevitably to be partially decontextualised and universalised, and then recontextualised in a particular situation, like the text when it is read or recited. These characteristics, often remarked upon in literacy studies, are attributes not only of written religions but of written communication itself, for writing employs only a single channel (instead of the many involved in speech) and is usually aimed at a wider, distant and impersonal audience.



1. The first slaves came to Brazil in 1549, a batch of 120 from Guinea and São thomé, to work on the sugar plantations. Of course blacks arrived in the New World at an earlier date, even in the conquest itself.
2. In mid-nineteenth-century Brazil 40-60% of the coloured population were free, rising to 74% in the 1872 census. The comparative figure for Cuga in 1861 was 35% and of the U.S. 11% in 1860 (Klein 1969:36-7).
3. Runaway slaves fought against the Dutch in the Northeast under the command of the free black, Henrique Dias (Klein 1969:31).
4. Among the Yoruba in Brazil these 'guilds' were known as *cantos;* members pooled resources to buy freedom, with the first to secure it contributing to the pool until the last number was free (Kent 1970:340; Pierson 1939:530).
5. Fox (Rio de Janeiro) to the Duke of Wellington, 11 December 1835 (FO 13/117, PRO, London), for the population estimates. In 1807 the census of Salvador showed 28% white, 20% mulatto and 52% black (Russell-Wood 1982:48).
6. Muslims were known to the Yoruba as 'Male', presumably from Mali, Malle, Mande, from whence Islamic practices spread (cf. Hausa, *Wangara,* Gonja, *N'sau).* Kent however claims it is from Mallam, which structures his whole interpretation (1970:356); the Malès rebelled because their marginal religious position left them no room for adjustment. Russell-Wood (1982:180) states that the leader of one Malinke group, known as Males in Brazil, was called *lemane* (i.e., *imam)* and presided over marriage ceremonies. According to Johnston (1910:94) a "considerable aggregation of slaves grew up in Bahia in the first quarter of the nineteenth century who styled themselves *Musulmi*".
7. On the contact between Africa and Brazil see especially the works of Verger and of Carneiro da Cunha. Pierson (1939:528) remarks that early in the eighteenth century and natives of the Guinea cost referred to the outside world as 'Bahia'. He also suggests that it was proximity to West Africa that led to the greater preservation of African cultural forms and to the development of nagô as a common language.
8. Parkinson to Wellington, FO 13/ 21, Bahia, 29 January 1835.
9. See also the translation by Pattee (Ramos 1956:48-49). A similar conclusion to that of Martins and Rodrigues was reached by Étienne; Kent's rejection of the thesis (1970: 346 ff.) seems rather unconvincing.
10. See also Kent's comments on these papers (1970:353). He suspects all talk not only of a Jihad but of the general influence of Islam; it was Rodrigues and Etienne, he claims, who invented the idea that one of the participants, Pedro Luna, was the Almamy *(imam).*
11. According to Kent (1970:354) nine of the participants were repatriated. "The repatriation of Africans from Brazil was not uncommon . . ., nor was it rare for Africans of the upper caste to come to Brazil to be educated, especially in Bahia" writes Rodrigues (1965:126), although the case to which he refers is the second wife of the famous Afro-Brazilian trader, "Xaxá" Souza, the daughter of the king of Dohomey. It has to be remembered that Brazil was closely linked to Africa until some time between 1850 and 1858, when "the tradition of three centuries of ethnic-cultural contacts was broken" (Rodrigues 1965:193). Exile was the fate of other slaves involved in escape or revolt. Some Yoruba slaves from Brazil were sent to Sierra Leone and interestingly it was the Muslims among them who kept their own language (Banton 1959).
12. In fact Rodrigues writes of a mosque at roughly the same time but presumably it was not in Bahia.
13. The references are to Rodrigues (1976), Querino, M. (1933) and Étienne (1909).
14. The figure is from Verger. According to Kent, a total of 234 reached the final stage. Of these the Nagôs, Hausa, Nupe, Ewe and Kanuri accounted for 213; the total included 14 women. The figures I have given are from Prince (1972).

15. On the wide range of work available to freedmen in the nineteenth century, see Klein 1969.
16. The fraternity was founded in 1460. Black slaves came to Lisbon from the north coast of Mauritania in 1441; by the 1450s the annual figure was 7-800 and by 1551 approximately 10% of the population of Lisbon consisted of blacks. Corporations of artisans were founded in the twelfth century, and these led to confraternities (Saint-Léon 1941; Monti 1927).
17. Fox to Wellington, Rio, 11 February 1835 (FO 13/117).
18. The Chief of Police was often a lawyer and hence might set his sights in further directions of a political kind.
19. I am heavily indebted to Professor Manuela Carneiro da Cunha of the University of São Paolo for discussion, references and the use of the library, as well as to John Iliffe in Cambridge. My interest in the role of literacy among African slaves was stimulated by the work of E. Genovese and I. Wilks and in Brazil, which I visited by courtesy of the British Council and the Department of Psychology of the University of Pernambuco, by various colleagues and friends in Recife, Campinas, São Paolo and Rio de Janeiro. The last part of the paper is a brief summary of my discussion of religion in *The Logic of Writing and the Organisation of Society* (Cambridge, 1986).

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Of Stone, Books and Freedom

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Harold Innis' original social theory has often been charged with 'technological determinism'. If this means that Innis ascribed social structure and historical developments to 'technology', the charge is false. By studying two widely separated examples we can see that Innis had a sophisticated ecological understanding of the many forces at work in social dynamics, of which technologies were but one set. The impact of stone and its competition with papyrus in ancient Egypt was, Innis showed, not totally deterministic. There were significant attempts to play one medium off against another and the related institution of politics off against religion. Millennia later, in modern Europe, Gutenberg's invention of the mechanical printing press led to the book's ultimately successful competition with the traditional medium, parchment manuscript, and to the decline of the Church. Here too freedom flourished in the social interstices, as the essay shows.

"We have described... the tendency of each medium of communication to create monopolies of knowledge to the point that the human spirit breaks through at new levels of society and on the outer fringes." Harold Innis

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Harold Innis' words undercut the view that a rigid technological determinism pervades his work. In contrast, I will argue, his concept of monopolies of knowledge involved freedom both in elite control of a dominant technology and popular resistance to their dominance. I will illustrate Innis' view of media and freedom in ancient Egypt (I) and modern Europe (II). Then I will discuss freedom in relation to the monopoly of knowledge and media bias (III). I will end with Innis' diagnosis of the "bias of civilization" (IV).

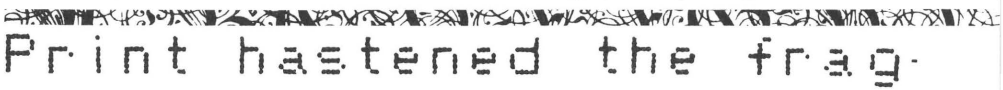
From the first I wish to stress that Innis' complex social ecology did not rest on a fatalistic metaphysics of technology in history. The Canadian conservative George Grant, deeply influenced by Plato's mind/body dualism, holds such a view (1965; see di Norcia, 1984a). Innis in contrast approached Plato in terms of the rise of prose over the oral tradition (1964, 8f; 1972, 56f). He treated dualism in terms of religion, magic, the "detachment of the self" and the split between living man and a mathematical nature; which he attributed to a "static, simultaneous, and spatial" philosophy (1972, 65; cf 18f, 49f, 71f). Nor did Innis share the optimistic faith in technology, held for instance, by James Mavor, his department head at the University of Toronto in the 1920s (Shortt, 1976, 130, 134f). His own view was more empirical and ambivalent. It was enriched by his awareness of the complex role of technology in Canadian economic history (cf Neill, 1972, ch. 1; Creighton, 1978, 40-71). The result was a rich social ecology, concerned to grasp the conditions of competition for the control of technologies and knowledge. It was illustrated in his study of ancient Egypt and modern Europe.

1. *Of Stone and Empire*

In ancient Egypt political and religious elites competed for power (1972, ch.2). In the pyramids, temples, and statues stone, a durable medium, gave continuity to the pharoah's reign. Stone "left its stamp on the character of writing" even after the priests switched to papyrus. It restricted the development of a more flowing script and the phonetic alphabet. The Pharoah's "dependence on stone" however "invited competition from papyrus", under the priesthood's control. "Words were imbued with magic power" by the priests, who controlled the "difficult and specialized art" of hieroglyphic writing. This favoured their monopoly of knowledge, for they alone could grasp the mysteries of the calendar and predict the Nile's flooding. Consequently, McCorduck and Feigenbaum note, the Pharoah "had no way of knowing whether his scribe was representing his thoughts authentically. . . . He gave the orders and hoped they were transmitted accurately. The opportunities for mischief were great, because the real power lay in the hands of the scribes, the select few with the knowledge of writing" (1984, 46).

In Egypt kingly and priestly power rested on different media; but religion and politics and their media monopolies could reinforce each other as well as compete. The durability of stone helped the Pharoah to control time and resist the priests. Indeed their switch to papyrus made the Pharoah's administration and military more efficient. The distinctiveness of hieroglyphic writing, albeit under religious control, helped the Pharoah to resist invasion. And despite the fatalism of Egyptian culture and the priestly monopoly of knowledge Akhnaton could still attempt to break the power of the priesthood. In seeking to promote monotheism in the service of the state he not only grasped the political significance of religion, but more significantly, he also sought to "bring the written and the spoken language into accord".

It is significant that Innis' study of Egypt did not reduce technology to a metaphysical abstraction. Rather he described the media materials, stone and papyrus, their physical properties, the complex writing system, and its instruments. His theory of technology sought to integrate these components and disclose their complex interaction. The Egyptian economy was tied to the Nile's flooding, whose prediction rested on the priesthood's monopoly of knowledge, which in turn reinforced a fatalistic traditionalism. Religion was supreme, as in medieval Europe; but the priesthood's very dominance required it to deal with competing elites. In Innis' ecology of media and power in Egypt many factors were at work, too: technology, agriculture, astronomic, geometric and economic knowledge, competing elites, re-



ligion, politics, and a traditional culture. He showed that some freedom in the control of a dominant communications medium was possible under the most contrary circumstances, notably in the case of Akhnaton.

As befits an ecological approach, balance was for Innis the secret: "A successful empire required adequate appreciation of problems of space that were in part military and political, and of problems of time that were in part dynastic . . . and religious." In fine his study neither said nor implied that technology predetermined Egypt's history. That change was slow did not make it inevitable. Rather, Innis discerned social interstices between competing social powers and media where freedom might arise.

2. *Of Paper and the State*

In *Empire and Communications* Innis described the epochal battle between parchment manuscript and paper book, which began in the late 14th century (1972, 135ff). The Church's monastic monopoly of knowledge rested on the parchment manuscript and the use of Latin. Humanists used the vernacular. Paper combined with the vernacular proved a force for the greater diffusion of knowledge, notably in new centres of secular learning.

Both Protestants and humanists, Innis maintained (1972, ch.7), grasped the potential of Gutenberg's mechanical printing press as a force against the old manuscript culture. It "mechanized communication" by simplifying and standardising information. It was a much more accurate and efficient medium; but it did not always improve understanding (1964, 191; 1972, 143f).

The rise of print from 16th to 18th century Europe proved an anarchically revolutionary force which could not be left uncontrolled. It intensified the old conflict between church and state and abetted the Reformation. The rising Calvinist bourgeoisie sensed the revolutionary potential of print and deployed it in order to create a theocratic state. The religious use of print was complemented by its literary use in the new humanism, and, notably, Machiavelli's secular political works.

Print hastened the fragmentation of Christendom. Within 50 years of Gutenberg's invention Christendom was dividing into powerful states. Since the churches were not able to control print, the state stepped into the vacuum. In 1578 their supremacy over religion was legitimised by Jean Bodin's paean to sovereignty. Almost simultane-

ously, Montaigne's *Essays* set continental thought into a lasting individualistic mould. Bodin's ideas were implemented by the absolute monarchies of the 17th century, whose supremacy was reinforced by the new apolitical individualism (Keohane, 1980, ch. 1,2; di Norcia, 1984b).

The 17th century state fully joined the battle to control the powerful new medium, soon to be followed by commerce. To Innis the outcome was not foreordained. All elites — religious, political and commercial — sensed the importance of controlling the new medium. The state consolidated its position by proclaiming religious tolerance on the one hand, and regulating print media through restrictions and censorship, on the other.

Newspapers, Innis noted, began by printing political news: wars and parliamentary debates. This aided parliament against the King and encouraged rebellious elements. So the press was threatened by state censorship, taxes, and libel suits. State restrictions on political commentary encouraged the rise of apolitical writing from scientific treatises to literary essays. But competition arose on the outer fringe; books went uncensored in liberal Holland, where Descartes wrote. In 18th century France Rousseau sought to integrate private sentiment and democracy and was censored; and the Encyclopedists had to disguise their political critique as erudition.

Commerce, Innis noted, was soon involved in the book trade. Publishers had a monopoly over books through their perpetual copyright. Its undoing by an English court was a sign of the state's sensitivity to the new commercial elite's monopoly over the new communications medium. The absolute state controlled commerce by monopolies, economic regulations, stamps, and taxes. Advertising revenues, however, helped the commercial press to compete with the state to control this new form of print medium. The commercialization of the press reinforced a sensationalist and trivializing treatment of social issues. More marketable, private entertainments displaced a politically concerned readership.

In the 18th century North American hinterland a free press could flourish; for "freedom flourishes in colonies. Ancient usages can't be preserved. . . . Where every man lives on the labour of his hands, equality arises" (1972, 66). But here freedom had two senses, political and economic: uncensored expression and the mobility of private capital. Both were symbolized in Ben Franklin, a printer who worked both sides of the Atlantic, an explicit capitalist and a supporter of the political freedoms of speech and independence. Economics, not religion or politics, came to dominate media. Money had come to "permeate social relations and encourage political and economic freedom"

(1972, 70). Commerce had come to prevail over the state, whose prior victory over the church was coming undone.

In sum, Gutenberg's mechanized medium evoked a century of social and technological revolution. But Innis' description of the complex media battle and the victory of print over parchment did not imply that the technology itself predetermined the final outcome. Rather, he suggested, established elites and empires competed with rising elites and colonial hinterlands to control the new medium. In a way his was a Canadian insight, for his detached critical observation of the social effects of technology avoided both European fatalism and American optimism.

3. *Of Media Bias and Freedom*

Innis' theory of technology and power was interesting inasmuch as he sought to discern the impacts of technologies in varied social milieux and their dynamic interaction with other social factors: knowledge, language, religion, politics and economics. Freedom, like social power, is mediated in many ways. For these reasons I term his theory a social ecology. In it freedom arises in three ways: through increased control in the social interstices or fringes, expanded choices, and understanding the bias of communications.

Firstly, an economics of communications lies at the centre of Innis' social theory (cf. 1964, xvii, 3f). Monopolies of knowledge, as market theory implies, "invite competition" from other groups and technologies (1972, 124; cf. 1973, 252-72). There were other monopolies, too: of force, transportation, goods, wealth, energy. Innis' view of this social dynamic is not determinist. Rather it is the context of his understanding of freedom. "In the clash between types of monopoly an unpredictable freedom can be achieved" (1964, 131). This conflict model contrasts starkly with metaphysical talk of the inevitable rise of one technology or group.

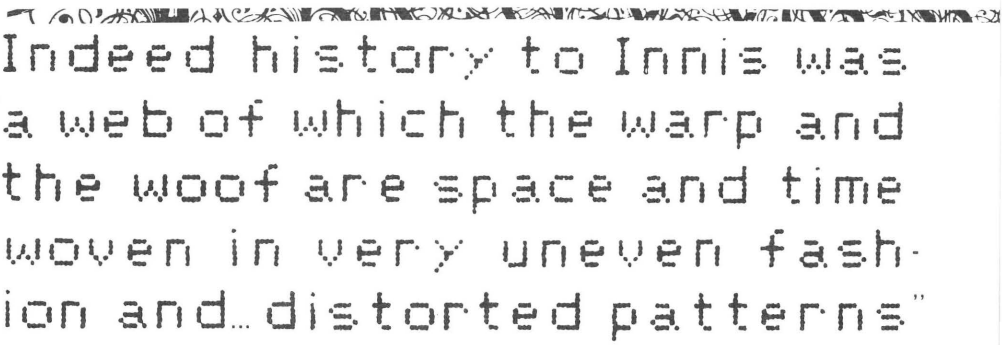
Indeed history to Innis was "a web of which the warp and the woof are space and time woven in very uneven fashion and . . . distorted patterns" (1964, 132). This is quite unlike a linear model of development, predetermined by technology. Rather, monopolies of knowledge go through cycles, developing and declining "in relation to the medium of communication on which they were built. They tended to alternate as they emphasized religion, decentralization, and time, and force, centralization and space" (1972, 166). We see the rise and fall of empires and media, e.g., in the decline of the manuscript and the rise of print (cf 1982, 5/121, 126, 137; 11/11,132). Our era is similar to 16th century Europe; for the rapid rise of electronic media and computers threatens the ascendancy of print. Electronic communica-

tions have made today's global corporation possible (Tugendhat, 1971, 31). It competes with empires and nations to ride the reins of cybernetics, continuing the battle between commerce and politics.

Secondly, Innis's theory of media includes both its limitations and its potential. He viewed technologies with an empirical and detached eye, assuming neither fatalism nor optimism. Inasmuch as a new technology expands options, it can reinforce freedom and develop user powers in relation to others. Writing extended speech into different media: stone, papyrus, and paper, and from pictographic to phonetic script and print. However, Innis did not focus rosily only on a medium's potential; he also noted its limitations. Media properties can inhibit as well as expand choices. However user freedom is not simply a matter of choosing the options which media automatically offer. Rather, one must understand the bias of a medium.

Third, as McLuhan suggested, to disclose the potential options and limits of a new medium requires that one understand its social dynamic (1964, viif; 1972, vf). But it is not easy to grasp the social effects of an unfamiliar technology; nor is it impossible. But such understanding is essential to control and freedom. Since media monopolies invite competition, understanding media is more complex still. Grasping the full potential and limitations of a medium then can doubly enhance one's freedom: both in using it onself and resisting its use by others. Now, Innis' theory of the bias of communications helps one to understand the social effects of media. ('Bias' note refers to an objective property of media, not subjective prejudices.) There are three such biases: a knowledge, power and a dimensional bias. I will take them in turn.

First, the knowledge bias. For Innis knowledge did not refer to thoughts locked inside a ghostly mind. Rather it signified information capable of being communicated and stored in some medium . This implies an interesting concept of knowledge as embedded in some interpretive code appropriate to the medium. Innis mentions various codes: linguistic (vernacular or foreign), numeric (Arabic or algebraic), or technical (physics and cybernetics), or even political (legal



codes). Even the retrieval of sense information from memory may rest partly on the natural coding of sensory experience both in the neural traces of sense impressions and psychological rules, viz, of association. Communications media simulate and extend 'natural' linguistic, psychological and neural storage codes. Systematizing knowledge in interpretive codes made sense, for without systematic storage retrieving valuable knowledge would be unnecessarily difficult.

Knowledge then was for Innis systematically stored in various interpretive codes, linguistic, numeric and technical; it is also what elites monopolize through communications media. Now, a complex interpretive code facilitates the monopoly of knowledge, while simpler codes make it easier to diffuse knowledge. One's language, for example, affects one's social position, a not unfamiliar point to Canadians. Quebec opposed foreign rule by deploying the vernacular against English, the dominant imperial tongue. The user-friendly simplicity of some codes, like the spoken vernacular, is inherently knowledge-diffusive. The user-intimidating complexity of computer language, in contrast, facilitates the monopolization of valuable knowledge in the interest of elite power. Thus a medium has a knowledge-diffusion or knowledge-monopoly bias. The competition for power between social groups and empires rests then on the bias of the medium for monopolizing or diffusing the knowledge it stores.

However, since all storage must be systematic I suggest that it makes interpretation or decoding possible, if not always easy. Like knowledge then media are in principle communicative. The general bias of technology would therefore appear to be democratic. Innis' concept of a monopoly of knowledge also implied that knowledge is of value to someone, namely those who seek to control access to it. It is not, as James Mavor held, value neutral. Innis' theory avoided the fact / value dichotomy (Shortt: 128f). Now, what knowledge is valuable to whom varies widely. A concern with the value of the knowledge stored in a medium reinforces Innis' comments on the efficiency of media and the cost and supply of materials (1972, 98, 137f, 124ff, 141f).

Secondly, media have a power bias. Each medium "invites realignments" in power, e.g., towards elite monopoly or popular diffusion of knowledge (1964, 4). Different media, then, are prone to favour some groups rather than others and different forms of social power. This depends on the cost, efficiency, and complexity or simplicity of a medium, combined with its encoded knowledge (1972, 24f). Oral media and the vernacular naturally diffuse knowledge and reinforce freedom; but complex writing systems, foreign languages and technical codes (e.g., in computers) inhibit interpretation or access to information. So they facilitate elite monopolies of knowledge (1982, 3/5, 5/84, 10/5).

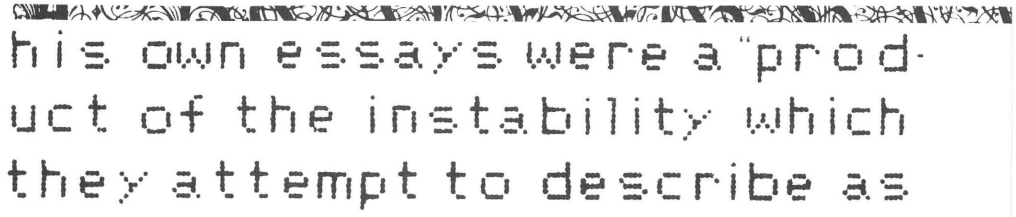
The third bias is dimensional. It reflects a medium's capacity to store and transmit information through space and time (1964, 3f, 38f, 55f). The dimensional bias determines a medium's social value, too; for it can help a user group to control territory more than history, or vice versa. It rests on the physical properties of the medium; stone endures, radio signals don't. Stone is heavy and static; paper, light and portable. Descriptions of the physical properties of different media are frequent in Innis' works (1964, xvii-131; 1972, 16f, 27f, 59, 122f, 141f). The power bias, while related to values, is objective in a social sense. The knowledge bias of a medium is similarly rooted in the objective properties of interpretive codes. In each case then the bias of communications is objective.

A descriptive realism and ecological complexity lies at the heart of Innis' theory of freedom and the bias of communications. His conception of freedom rests on the concrete determinism of the causal principle, in contrast to a metaphysical dualism which sees freedom as transcending causality and often hypostasises Technology as Progress or Fate. The causal principle is assumed in the practical view that controlling media is a function of understanding how they function and what their effects are. With such control comes freedom; but it is limited and material, not infinite or spiritual. Freedom is situated in a specific, dynamic social space and time. It is inseparable from the dynamic ecology of knowledge, media, their biasses, and social power.

4. *Appraising the Bias of Civilization*

Innis diagnosed a deep crisis in western civilization, resting on its spatial bias: "the conditions of freedom of thought are in danger of being destroyed by science, technology, and the mechanization of knowledge, and with them western civilization" (1964, 190). Indeed, Innis was concerned that his own essays were "a product of the instability which they attempt to describe as characteristic of a period in which time has been torn into fragments" (1964, xvii). The civilizational bias of western society, he held, is spatial; but wisdom takes time.

This crisis of civilization is epitomized in the rise of cybernetic media, which diffuse information rapidly, but involve esoteric expertise, complex codes and costly technologies. In speeding up information

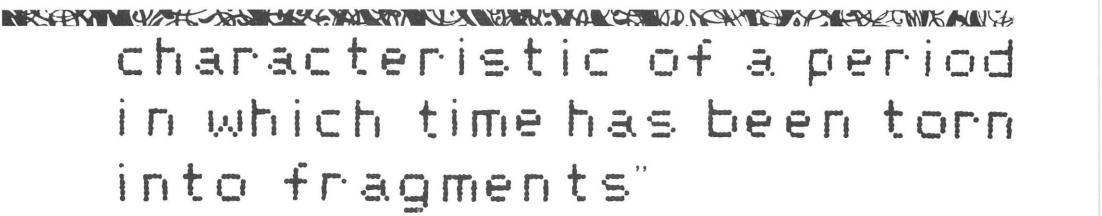


cybernetics has increasingly mechanized knowledge, but it may not have improved understanding or wisdom. Computers and artificial intelligence, Feigenbaum and McCorduck hold, involve knowledge of vital importance to civilization today. Indeed an epochal rivalry over high-tech has arisen between the U.S.A. and Japan (1984, chs. 4, 6, 7). This global competition to monopolize the new communications media fits Innis' model of empire and communications. It gives weight to Innis' concern about Canada's current position at the margin of cybernetic innovation and economic empire.

It also reinforces his concern about the difficulty of grasping the bias of one's own civilization; for this involves the "perhaps insuperable difficulty of assessing the quality of a culture of which we are a part" (1964, 132). Nonetheless, Innis' essays had already recognized the civilizational bias of his era. They even suggested how he transcended that bias; because he could observe today's dominant civilization, the U.S.A., from its Canadian periphery (1972, 4ff). Our freedom, I would infer, rests on diagnosing our situation and its historical roots, and disclosing its cultural, economic and technological potential and limitations.

Innis sought to diagnose the crisis of his civilization. The key to his approach was his concrete social ecology and a related insight into the links between understanding and freedom. His work contained a method for disclosing and projecting the space for freedom, however limited, within the global clash of empires and communications media: namely, by describing the material properties of competing media and then projecting their dimensional, knowledge, and power biasses. One might then try to examine the dynamic of competing media to disclose the civilizational bias of the times.

Innis' appraisal of the "bias in the cultural development of civilization" rested on his insight into social balance, his emphasis on both space and time, politics and religion (1972, 170). On this reading the dominant spatial bias of our era suggests a need for temporally biassed media "to check the bias of the first and to create conditions suited to the growth" of our society. "The ability to develop a system of government in which the bias of civilization can be checked and an appraisal of the significance of space time can be reached", Innis concluded, "remains a problem of empire and the western world" (1972, 170).



1. 1972, 117. All references to items below are given in the text. In sections I and II unremarked quotations are respectively from the chapters 2 and 7 of *Empire and Communications.*

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Innis, McLuhan and Marx

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To help sort out the useful theoretical similarities and distinctions between Innis, McLuhan, and Marx, this brief comment considers some unresolved problems in how Innis conceptualizes the logic of historical process and the impact of media on social organization. The comment argues that certain fundamental notions in Innis's work, including his categories of spatial and temporal bias, inaccurately analyze key features of the historical interaction of media with social organization, and in particular shortchange the flexibility and persistence of oral-gestural modes of communication.

Harold Innis is nothing if not sweeping, and the title of this paper reflects something of the theoretical breadth his work has always had. That work is a field on which all history is allowed to play. It follows that the only conceivably more satisfying development would be to enlarge the field and the possibilities of the game. To set up a comparison between Marx and Innis is to do just that.[1]

Between them there are at least superficial similarities. Both attempt to set in motion a historical logic of material causes which expose our imagined progress as an illusion. In both accounts our consciousness turns on us, and turns out to be full of destruction, death, and injustice. Innis's model of media competition and monopoly borrows an economic vocabulary, and he entertains a vision of unalienated communication which in some respects resembles Marx's vision of unalienated labor.

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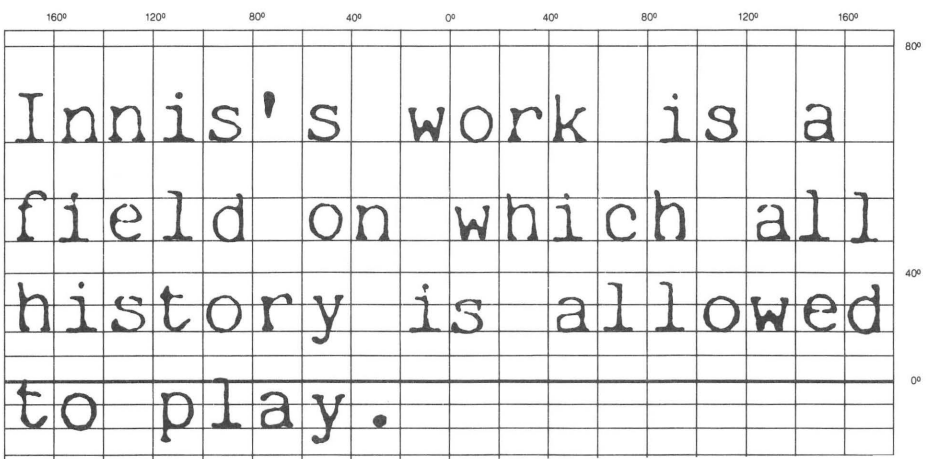

Self-contained grand theorists do not require one another for completion since they already aspire to be complete. It can be interesting to discover what unsuspected incompletenesses emerge in their comparision, however. If they seem after all to be compatible or complementary, we can believe either that some universal theories share similar characteristics, or that reality truly exhibits the same face to each lens even from different foci. Such comparisons are not my purpose. Nor is it my intention to join the ranks of Marxian critics, or even to make a choice among the three theorists under discussion. The question I wish to address is how adequate a framework Innis's theory provides for Western history. My comments are offered in that spirit.[2]

Innis's intuitive appeal is very great to anyone for whom communication is a central intellectual preoccupation. He offers an apparently powerful media theory to criticize the world we live in. His notion that media forms shape political institutions and cultural habits of mind is not quite a notion of original sin, but something nearly as intractable. The influence of those forms is so pervasive, it is Innis's object to show, that the intermediate solutions in terms of which most political discourse is conducted will always fail because they do not touch the means by which we structure our world and our associations with others in it. This rejection of the terms of contemporary culture is a radical posture. Lacking remedies, however, and with a view that the most moral communication is a state from which we have historically fallen and to which there is no returning, Innis's outlook is pessimistic and deeply conservative.

As the means of production are critical for Marx, so the means of communication are critical for Innis. What governs the potency of voice, stone, clay, parchment, papyrus, and paper are their relative attributes of durability and portability. These attributes select victors among competing historical powers by conferring relative advantages of range and longevity in the exercise of authority. But Innis offers no notion of Communicating Man equivalent to Economic Man to explain exactly how communication structures mind and society, since durability and portability account (if they do) only for media and not at all for communication. Nor does Innis ever give us a definition of medium which makes it possible to construct a notion of what is *not* a consequence of its action in any of its variety of incarnations. With so little of the essential theoretical scaffolding made explicit, communicative consequences are assumed but never investigated.

Does it matter? It does indeed. While Innis is praised for a political economy of communication that reaches beyond newspapers and broadcasting to pre-industrial media, and especially to speech, it

remains unclear why some social artifacts are media in his scheme and others are not. Why aren't clothing, art, architecture, etiquette, cuisine, transportation, and all forms of economic activity modes of communication? Or, if stone and clay are media, where is the analysis of the civic building or the temple as significant communicative expression, or of the Greek amphitheater, or even the modern skyscraper? Social forms designated as media exert their influence on historical experience over other candidate media by no identifiable principle. Nor does Innis demonstrate why the same media, available to different groups, fail to confer the same power or veneration on them all, or what it really means, in the multi-media history of the world, to label a medium as "dominant."

According to Innis, one of the important things that distinguishes one medium from another is how difficult it is to move each one across space. Since media artifacts do not move themselves, systems of communication are functionally indivisible from systems of transportation. But Innis neglects this dimension of the story entirely. It would be difficult to argue that mere portability automatically gives rise to suitable modes of transport, or that media modes can be historically more potent than the efficiency of the systems of transportation on which they depend.

A close reading of some of Innis's work, moreover, suggests a technological plasticity at odds with his theory. Media which are space-binding on some historical occasions turn out to be time-binding on others. If the theory supposes that political institutions and cultural dispositions are transformed through modal characteristics of media, the list of features explaining changes in politics and culture cannot legitimately include differences in political and cultural organization from society to society. Without acknowledging that he does so, Innis invokes such differences himself. But because his theory requires him to ignore them as much as possible, he is unable to notice a number of lines of inquiry they suggest.

In this much too brief critique of Innis's theory, I will allow myself a single hasty example to illustrate the kind of significant cultural discrimination at which I think Innis is aiming, but which escapes the net of modal analysis. For Innis, a man of the twentieth century, print and paper present a single spatially biased face. But a spate of detailed and excellent recent scholarship on the history of literacy in the West has demonstrated that literate modes (which exemplify other organized uses of other communications media as well) offer opportunities for complex expressions of social, political, and economic stratification. In eighteenth- and early nineteenth-century France, and not alone there, writing and reading were often culturally dissociated. Reading was the mode of receptivity to the word of

God, and to salvation. Its claims were universal, for if even the poor could at least read, God would take care of the rest. Skill in reading accompanied by an absence of skill in writing was a form of non-scholastic, religiously grounded, usually familial acculturation especially prevalent among women. Skill in writing, accompanied often by poor reading skill, belonged to the civil domain of males. It was gradually transformed from a rare and learned art to a convenience to a status symbol. Reading belonged to religion, morality, and women; writing was a male apprenticeship of utility.[3] Here is a difference in modal practice and cultural consequence to which only an analysis that admits cultural shapes is sensitive, and which it is the thrust of Innis's framework to defeat.

Equally puzzling is the fact that Innis never takes half his theory, the half he likes best, seriously enough. Closely examined, his notion of time-binding turns out to be nothing more than a unique case of limited transmission. He gives no attention to retrieval and storage systems as media attributes of some variety and importance, and of something more, real effect. Though memory depends on selection and significance and not merely on durability, Innis treats neither of these. Nor does he discuss traditional memory objects as media.

This brings us to some conceptual difficulties of the distinction between space- and time-binding, a distinction which provides Innis with the engine he needs to move history and make its consequences intelligible. Innis never explains why a medium may be classified either as space- or time-binding, but not both at once. A little reflection will tell us that powerful media have always "bound" both space and time. Elizabeth Eisenstein makes this clear in her discussion of the impact of printing. It is arguable that with its instantaneous and expansive reach and its powerful memory, computing will have historical consequences of the same magnitude.

McLuhan was perhaps more consistent than his colleague mentor in making a medium of everything, though that strategy, as McLuhan developed it, sacrificed both force and historical precision. Innis's implicit definition of media appeals to the characteristics and settings of messages, and to knowledge of their authors, a discouraging state of affairs for a theory which claims to be medium-based. Although oral tradition is not limited in Innis's discussion to particular kinds of content, he treats clay, stone, parchment, and papyrus as media only when they carry the bureaucratic inscriptions of religious or secular elites. Paper, like speech, is allowed more popular and more culturally diverse content. All this seems fairly arbitrary. And what are we to make of the fact that what Innis offers as a radical revision of history disturbs none of our previous periodizations, nor even any of the labels by which we designate (and therefore begin to explain)

epochs and peoples. It is as though the arena of history were otherwise uncontested, and historians have simply misnamed its underlying "causes." Even assuming this to be the case (I suspect few historians do), there would be none but aesthetic reasons to prefer Innis's account except that it appeals to us, since he does not show us what we can do with his theory that has not already been done by scholars working without media explanations.

If Innis offers us neither theoretical rigor nor close historical detail, what keeps the flame alive? I think it is his ability to see communications technology as something more than transparent extra-historical transmitting and recording devices, and his striking early intuition that modes of communication have powerful effects on social organization, even though he does not offer a clear historical account of this process. He speaks for something in all of us in his disillusionment with the attenuation and dilution of personal experience by communication made remote for social control. He also assumes, using Marx's vocabulary for Innis's problematic, that only oral communication is unalienated communication. But the consequences of making meaning alienated or exteriorized — what in other circles is called the problem of interpretation — which Innis does not trust in some media he does not notice in others, especially speech.

The idea that modes of communication propagate and reflect the interests of specific classes and groups is a powerful theme of contemporary scholarship. Innis was one of the first to make the case that elites use the tools of communication to pursue power, and equally that media may become vehicles to subvert entrenched elites.

Perhaps *neither* Innis, McLuhan, nor Marx, but the same problem as always: resisting the temptation to substitute grand theory for patient analysis of the complexity of human imagination and circumstances that the residue of social forms in historical records reveals.

1. For reasons of parsimony, I am collapsing McLuhan into Innis for this discussion. I agree with Jim Carey that as a "student" of Innis, McLuhan attempted (with less success) to do for psychological perception what Innis attempted to do for institutional organization.

2. Elsewhere I have developed some of these arguments in greater detail. See Marvin, "Space, Time, and Captive Communications History," in Mary Mander, ed., *Communications in Transition: Issues and Debates in Current Research* (New York: Praeger, 1983), pp. 20-38.

3. Francois Furet and Jacques Ozouf, *Reading and Writing, Literacy in France from Calvin to Jules Ferry* (Paris: Editions de la Maison des Sciences de l'Homme, 1977; New York: Cambridge University Press, 1982).

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TITLE PAGE: include title of article, author(s), and full address(es).

ABSTRACT: approximately 150 words, typed as a single paragraph on a separate page.

REFERENCES, footnotes, and acknowledgements should be double-spaced and begin on a new page.

TABLES should each be on a separate page; use Roman numerals plus title, like this:
Table III. Weighted precision of comprehension scores for treatment groups.

ILLUSTRATIONS: Visible language lends itself to visual treatment; authors are encouraged to incorporate examples, photographs, sketches, diagrams, etc. Ilustrations should each be on a separate sheet. Drawings and photographs must be of excellent quality. Identify each by its Figure number very lightly in pencil on reverse side.

CAPTIONS should *not* be attached to illustrations; type double-spaced together on a separate sheet, like this: Figure 5. Peter the Great's Civil Type.

AMERICAN SPELLING preferred, but British spelling may be used where appropriate.

FOREIGN LANGUAGE passages should be translated into English. Where more appropriate, the English translation can accompany the foreign material in the text or can be included in the footnotes.

STYLE: Because the journal includes articles from several scholarly and scientific disciplines, the reference style standard for your own discipline may be used: *e.g.* Modern Language Association, American Psychology Association.

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