CHAPTER 5

Literate mentalities: literacy, consciousness of language, and modes of thought

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The question I propose to address in this chapter is the role that writing played and continues to play in the evolution and development of the form or mode of thought, the mentality, if you will, that we in the West describe as scientific. I will conclude with some comments on how children acquire this more specialised model of thought.

Goody and Watt (1963) first suggested that the Greek invention of logic was a by-product of the invention of an alphabet. They argued that the existence of a permanent representation of speech allowed readers, unlike speakers, to reflect on the linguistic and logical properties of their own speech and so to detect the relations we continue to this day to describe as logical. While they were careful not to identify logic with rationality, they did infer that the invention of logic was an important step in the evolution of that formal mode of thought we dignify by the term scientific.

Although the hypothesis is entirely plausible, it suffers from a critical defect, namely, the lack of evidence. Three widely cited criticisms must be acknowledged. Lloyd (1979) showed that the evolution of analytic arguments evolved in the marketplace, in oral argument and counter-argument rather than in the private scrutiny of written documents. True, the Greeks could write, but there is little evidence that writing was the primary mode of discourse; writing was sometimes used to record speech, but the primary mode of discourse remained oral. Even the notion of proof, Lloyd argued, had more to do with silencing the opposition than with strict logical deduction. Thomas (1992), in her more extensive analysis of ancient Greek literacy, found that literacy had many forms and functions, was intimately connected with oral discourse, and reflected as much as shaped Greek culture. As a result, it is impossible to state in any simple and direct way how literacy contributed to classical Greek thought.

Second, Scribner and Cole's (1981) widely cited study of the uses and consequences of literacy among the Vai of Liberia compared three groups of subjects: those who were schooled and literate in English, those unschooled but literate in Vai, an indigenous syllabic script, and those who had neither been to school nor were literate in Vai. To their dismay, being literate in Vai had little effect on cognitive performances, while being schooled in English had marked effects. Greenfield (1983), in reviewing the book, expressed the general view by saying that the Scribner and Cole volume 'should rid us once and for all of the ethnocentric and arrogant view that a single technology suffices to create in its users a distinct, let alone superior, set of cognitive processes' (p. 219).


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Third, no satisfactory basis has been found for clearly distinguishing the oral from the written because writing has been related to speaking in so many different ways. Writing is sometimes used to record speech, other times it provides a written script for subsequent oral performance. Writing, until recently at least, has been closely tied to speaking. Finnegan (1988), among others, has noted the complete interdependence of the two, and Carruthers (1990) has shown that even in a highly literate society, the monastic society of the late medieval period, scholars did their thinking and composing almost exclusively in oral form. Even Saint Thomas Aquinas is said to have composed his magisterial Summa by dictating orally to a fleet of scribes. The boundary between the oral and the written, like the distinction between oral and literate cultures, therefore, has been blurred considerably.

My suggestion is that the focus on the modality of expression, the oral and the written, may have obscured a more important underlying fact, namely, how writing and the literate tradition contributes to the formation of a set of concepts about language that have turned out to be extremely important in the evolution of what we think of as scientific thought. The virtue of the hypothesis is that it escapes the criticisms mentioned earlier. It is not critical that Aquinas did his composing orally so long as he did it in terms of the categories and distinctions evolved for creating and interpreting written texts. And it does not matter that those competent in the Vai script showed few of the capabilities of those schooled in English, for only the latter explicitly marked the meta-linguistic distinctions that were tested for. And it does not matter that the Greeks did their disputations in the agora so long as those arguments could be scrutinised in literate terms, specifically, in terms of their ‘actual linguistic meanings’ as Epicurus insisted (Long and Sedley, 1987).

**Actual linguistic meanings**

Lloyd (1990) pointed out that some forms of argument, especially those of syllogism, axiomatic deductions, and proof, depend upon the univocal meanings of expressions. Yet the concept of ‘actual linguistic meanings’ like the concept of ‘literal meaning’ is extremely difficult to analyse. Lloyd (1990) points out that Aristotle’s conception of natural science necessarily excluded the metaphorical: ‘metaphors... are disastrous in scientific explanations and they make a nonsense of syllogistic’ (p.22). Metaphor, while acceptable in poetry and rhetoric, took on a pejorative tone when applied in science. But what is that ‘actual linguistic meaning’? It cannot be identified with intended meaning because either literal or metaphorical meaning could be intended. Furthermore, no meaning is free from metaphor.

Yet it is useful to distinguish the literal from metaphorical if for no other reason than to use these categories to criticise one’s own and other’s arguments. Lloyd (1990) puts it this way: ‘it is evident that where there are no such explicit categories as these, statements of ideas and beliefs are less liable to a certain type of challenge’ (p.25). One such challenge was that leveled at Empedocles, who claimed that the salt sea is the sweat of the Earth. Aristotle dismissed the claim, arguing that while that may make good poetry, it made poor science. An important part of writing is the invention and learning of devices for indicating how a statement is to be taken; literal and metaphorical ways of taking an utterance are importantly different. But such a distinction is neither absolute nor universal.

Seventeenth-century writers such as Galileo and Thomas Brown drew an equivalent distinction between speaking strictly and speaking roundly or ‘largely’ (Olson, 1994, p.270) in order to reconcile biblical texts with the newly discovered facts of nature. When the Bible said, or at least
implied, that the earth was at the centre of the universe with stars arrayed above it, that was taken as speaking largely. The correct relations could be expressed in careful language, preferably mathematics.

In our own time, Grice (1989) usefully distinguished 'sentence meaning' from 'speaker's or utterer's meaning,' the former a meaning expressed by lexicon and syntax, the latter a meaning intended by a speaker and conveyed sometimes by what is said and sometimes by what is not said. We recall Grice's famous, if invented, example of the music reviewer who wrote 'Miss X produced a series of sounds that corresponded closely to the score of 'Home Sweet Home.' ' The listener would ask him or herself why had the reviewer said all that instead of simply **sing**; the answer is presumably to indicate some striking difference between Miss X's performance and the activity usually described as **singing**. The listener may infer that 'Miss X's performance suffered from some hideous defect' (Grice, 1989, p.37).

Now my hypothesis is simple: Literacy has a distinctive influence on how language, in particular meaning, is conceptualised. The meaning tied to the form of an expression is the literal meaning; the form of an expression is what is brought into consciousness by writing and literacy. Criticism of an argument in terms of its form is therefore a literate form of thinking. Epicurus' talk of 'actual linguistic meanings' marks him as literate.

Some caveats. Literacy, being able to read and write, is not responsible for bringing 'language into consciousness' in any general sense. Each aspect of language comes into consciousness to the extent only that one has a model or theory or concept for representing that aspect of language. Furthermore, some other activities bring aspects of language into consciousness just as well as writing does – rhyme and alliteration are cases in point. Distinctions between 'straight' and 'crooked' speech (Feldman, 1991), between story and song, or between questions and statements are marked in many, perhaps all, languages, written or not. Hence, my suggestion is rather that writing brings some distinctions into consciousness, among them, the notion of literal meaning. I will elaborate this hypothesis by appeal to some historical data and some experimental data of my own and others.

**The invention of writing systems**

The implications of writing for cognition have been overlooked, in part because of a faulty theory of writing. The Aristotelian assumption, accepted until quite recently, is that writing is the transcription of speech. That assumption has informed the histories of writing as well as the theories of reading. Some recent writers, Harris (1986) prominent among them, have suggested that the Aristotelian view is based on anachronism. To assume that writing is putting down speech assumes that the writers already have a concept or concepts of speech that they try to honour in their script. Historical evidence is just the opposite. Early scripts show no sign of an awareness of language as a series of sentences, words or sounds. Earliest scripts represented, for example, 'three sheep' with three tokens, one for each sheep, rather than two tokens, one for each word (Schmandt-Besserat, 1992). The inference is that writing represented things, not words; the discovery of a word was, and continues to be, for children growing up in a literate society, one of the great cognitive achievements. Again, this may require a qualification. Words, as lexical entities, are part of the cognitive competence of speakers. What is to be learned is a concept of word, a concept that includes not only 'sheep,' but also 'three' and 'what.' This is the concept that was and is so difficult to achieve. The very idea that speech could be inventoried in the way that objects can be inventoried is a remarkable insight indeed.
A similar story can be told, indeed has been told (Olson, 1993; Sampson, 1985), for the discovery of the phoneme as represented by a letter of the alphabet. The problem was not one of representing sounds by letters, but of coming to hear words as composed of constituents that could be represented by letters. Again the story is complex and not completely relevant here, but simplifying brutally, we could say that rather than the alphabet being a product of the ‘genius’ of the Greeks, it was the simple product of attempting to use a Semitic script, a script well suited to represent Semitic languages, to represent the Greek language, for which it was ill suited, with the consequent attempt to ‘hear’ Greek in terms of the categories provided by the letters of the script. The unventuried sounds discovered by the Greeks were what we now think of as the vowels. We shall see how this works when we consider how children learn to spell.

The upshot of this story is that the history of writing is not one of learning to transcribe speech, but rather of learning to ‘hear’ and think of language in terms of the categories and distinctions provided by the writing system. The history of writing is, in large part, the history of bringing speech into consciousness. Not all aspects of speech, of course, but at least those aspects marked in the writing system. Sentences, words and phonemes are such aspects. (Illocutionary force is not well represented by an alphabetic writing system, and recovery of force has remained one of the largely unresolved aspects of language, a point that figures centrally in Olson, 1994.)

I want now to turn to some of the experimental data on consciousness of language as it develops in children, again to show that ways of thinking about language are influenced in important ways by familiarity with a script. Again, a caveat is in order. Since Levy-Brühl (1926), at least anthropologists have been leery of the comparisons between adult members of traditional (sometimes unlettered) cultures and child members of literate Western cultures. And rightly so; the assumption invites domination and sometimes conquest. But corresponding changes have occurred in our thinking about cognitive development. We no longer think of conceptual development simply as an unfolding, but rather we see children as constructing for themselves many of the same concepts that we recognise as having been constructed historically. Among them are some particular concepts of language to which I now turn.

### Children’s metalinguistic development

Consider first children’s knowledge of phonemes. Phonemes are subsyllabic constituents of speech. To be a speaker is to ‘know’ in some sense the phonology of the language. Isolating phonemes and knowing about phonemes is quite a different thing, for that involves bringing phonemic constituents into consciousness and turning these constituents into objects of reflection. It is the relation between knowledge about phonemes and writing systems that concerns us here.

The traditional assumption, the one traceable to Aristotle’s view that writing is transcription, and one still common in some theories of reading, is that as children know the phonology of their language, the problem in reading is learning how to express that knowledge with letters of an alphabet. The problem with the traditional view is that there is no basis for saying that speakers know about their phonology independently of the scripts invented for representing speech. Harris (1986) pointed out that the Greek inventors of the alphabet never succeeded in developing a phonological theory for the simple reason that they mistakenly took the alphabet as that theory, ignoring phonological distinctions not represented by the alphabet. An example in English is the distinction between long and short /a/. /At and are differ only in the length of the vowel yet both
are expressed by the same letter form a. To claim that a letter was invented to ‘represent’ an otherwise known sound involves an anachronism; rather it was the invention of the letter that allowed the sound to be heard as a sound. The letter invites the formation of a new equivalence class.

Complexities of the relation between sounds and letters have led some ‘whole language’ writers to claim that reading can proceed without regard to the relations between phonology and alphabet by focusing on the ‘meaning.’ Left unanswered, however, is what precisely they are making sense of. In my view, what they are making sense of is when they learn to read is how writing relates to speech.

I shall mention two lines of evidence that indicate how writing systems influence the perception of speech. Some two decades ago, Read (1971) examined children’s invented spellings, that is, how children who did not know ‘correct’ spellings made up spellings for words. Notable among his findings were the following invented spellings, characteristic of most of the children he studied:

- day DA
- lady LADE
- feel FEL
- and
- bait, bet, but BAT
- but also
- igloo EGLIOW
- fell FALL

He interpreted the findings as indications of children’s implicit phonological knowledge, which surely it must be. But the evidence may be viewed in another way, namely, as a matter of analysing one’s speech in terms of the categories offered by the writing system.

Consider how this would work. The children all knew the alphabet, that is, the names of the letters and how to draw them. Their task, as they saw it, if I may be so bold as to speak for these preschool children, was to interrogate their pronunciation of words in terms of the letter names they knew. Thus, knowing the letter a was called /a/, they listened to their pronunciation of such words as dog and hat and hearing that sound represented it by a, producing DA and LADE. The same is true for all so-called tense vowels for which the name of the letter corresponds to the sound it represents. So too for bat, bet, and hat, for which the sound of the letter name /æ/ is closest to the vowel sound in the word and so is written as a to produce BAT in all three cases.

The more complex are children’s inventions for so-called lax vowels, the short a, e, i, o, and u. These are the sounds the letter supposedly represents, rather than simply the letter name. It is the difference between hat and hate or between beet and bet. Whereas adult spellers use a for both long and short /æ/ as above, children inventing spellings write the short /æ/ with an e so that fish is spelled FES and the short /æ/ with an a so that fell is spelled FALL, and so on. As Rea points out, children detect the phonetic relationship, the similarity in sound, rather than the phonemic relationship. In my terms, the children hear their speech in terms of a similarity relation between the names of the letters and the sounds in their speech.

The relation between speech and writing may be stated more generally. It is that the alphabet provides a model, a set of constituent forms and sounds, in terms of which the children analyse their speech. The units of speech they detect are not the phonemes of the language, but rather the sounds corresponding to the names of the letters. The writing system provides a model for speech and thereby brings that speech into consciousness. Note that it is not that one becomes conscious
of one’s speech generally, but rather that one comes to hear one’s speech as composed of those constituents represented by the alphabet. Incidentally, this would help to explain the well-known fact that knowledge of the alphabet is a good predictor of children’s progress in learning to read.

One criticism that may be leveled against the more general claim that learning an alphabet is learning a model for the sound patterns of one’s speech is that these findings may be simply ‘developmental,’ that is, a characteristic that children grow out of rather than a reflection of a particular form of knowledge. This possibility has been ruled out by recent cross-cultural findings.

It is well known that people familiar with an alphabet ‘hear’ words as composed of the sounds represented by the letters of an alphabet. People tend to think that there are more sounds in the word *pitch* than in the word *rich*, although linguists assure us that there are not (Ehri, 1985). Similarly those familiar with an alphabet are able to delete the sound /s/ from the word *spit* to yield */pit* or to add an /s/ to *pit* to make the word *spit*. Morais, Bertelson, Cary, and Alegra (1986) and Morais, Alegra, and Content (1987) found that Portuguese fishermen living in a remote area who had received even minimal reading instruction were able to carry out such segmentation tasks, whereas those who had never been exposed to the alphabet could not. Similarly, Read, Zhang, Nie, and Ding (1986) found that Chinese readers of traditional character scripts could not detect phonemic segments, whereas those who could read Pinyin, an alphabetic script representing the same language, could do so. Thus, to learn to read any script is to find or detect aspects of one’s own implicit linguistic structure that can map onto or be represented by that script. In this way, the script provides the model for thinking about the sound structure of speech. The model provides the concepts that make these aspects of speech conscious.

Knowledge of phonology may have little impact on thinking. I detailed it only because it shows in a clear way how the writing system brings an aspect of speech into consciousness. I want now to show that writing serves the same role in bringing meaning and, in particular, sentence meaning into consciousness. To anticipate our conclusion, it is an awareness of sentence or linguistic meaning that gives literate thinking its particular properties.

Members of traditional cultures have been shown to treat alternative expressions having the same sense as being ‘the same.’ In contrast, members of literate cultures tend to use the stricter criterion of verbatim repetition as being ‘the same’ (Finnegan, 1977; Goody, 1987). The very notion of *verbatim*, according to the wording, is medieval in origin, suggesting that the concept is a relatively modern one.

Some recent work on children’s understanding of the relations between ‘what is said’ and ‘what is meant’ has shown that preschool children have particular difficulties with just this set of concepts. Hedelm and Hjelmquist (1988) showed preschool children a collection of animals including a black dog and a white dog, all of which were fed in turn except for the white dog, which remained standing outside the barn. Children were told to pass on to the newly arriving zookeeper the message ‘The dog is hungry.’ The children successfully relayed the message. Then the zookeeper asked, ‘Did you say the white one was hungry?’ to which children under five replied, ‘Yes,’ whereas those over five replied, ‘No.’ These findings are similar to those reported earlier by Robinson, Goelman, and Olson (1983).

Our research (Torrance, Lee, and Olson, 1992) tested preliterate children on their ability to distinguish a verbatim repetition from a paraphrase. We asked children, the youngest of which
were three years of age and the oldest, ten, to make judgments as to whether or not ‘Teddy Bear’ should be awarded a sticker on the basis of how well Teddy responded to various requests. In one series of trials Teddy’s task was to say exactly what a story character, Big Bird, had said when he came into the kitchen. These were the verbatim trials. In a second series of trials, Teddy’s task was to say what Big Bird wanted – he did not have to use the same words. These are the paraphrase trials. Practice trials involving correction preceded the experimental trials. In each trial the child was asked to judge whether or not Teddy got it right and so deserved a sticker. If so, the child was given the privilege of rewarding Teddy with a sticker or saying ‘No sticker, Teddy’. Needless to say, children delighted in their role as judges.

As predicted, children under five years succeeded with the paraphrase items while failing the verbatim item. What they found difficult was to withhold a sticker from Teddy when Teddy was to say the same words, for example, ‘Big Bird is hungry,’ but had actually said, ‘Big Bird wants food’. Thus although they can repeat a sentence from an early age, only when they are about six – becoming readers in Canadian schools – do they succeed in rejecting paraphrases when asked exactly ‘what was said’. Interestingly, the pattern can be reversed if one uses well-practiced nursery rhymes in which wording becomes the critical factor. On these trials, children succeed on the verbatim items, correctly rejecting paraphrases. However, they now fail the paraphrase items; they fail to acknowledge that the paraphrase expresses the same meaning as the original expression.

Although it remains to be shown, the distinction between verbatim repetition and paraphrase, we suggest, is not merely ‘developmental’, that is, something that will be overcome with age. Rather, we suggest that it reflects a new consciousness of the semantic properties of language, the notion of fixity of wording that comes from reading and otherwise dealing with written texts.

**Thinking**

Unlike knowledge about phonology, knowledge about ‘actual linguistic meanings,’ that is, the meaning tied to the actual linguistic form, the ‘very words,’ does have implications for the evolution of a literate mode of thought.

The relations between writing, literal meaning, logical form, deduction and proof are, it goes without saying, extremely complex. But it seems safe to say that logical proof depends upon the form of an expression, not its content. Deciding on the truth of a belief on the basis of evidence is presumably universal to the human species, if not to lower creatures. But deciding on the validity of an argument depends upon judgments of necessity holding between words and statements. Proof involves the notion that something follows necessarily from what was said. It requires some distinction between an inference and an implication. But if something is to be derived from a statement (rather than the situation described), some means must be available for preserving and referring to that statement. This is where, by hypothesis, writing comes in; writing is ‘closed’ (Barthes, 1977) in a way that speech is not. The implication is seen as following from the statement as fixed and as distinguished from its paraphrase.

Fixity is not enough. Proof requires the meaning to be fixed as a literal meaning as well. Metaphor is incompatible with proof. Proof assumes literal meaning. Logic and literal meaning seem to be mutually defining. Literal meaning is that meaning for which rules of logic hold. To return to Lloyd (1990, p.22): ‘metaphors... are disastrous in scientific explanations and they make a nonsense of syllogistic.’
Systematically applied, this way of taking expressions results in a new genre, scientific or philosophical discourse. Such discourse is not only intended to be taken literally, it tends to control how it is taken by restricting the type of speech acts involved to a single type, namely, assertives. Expressions not even labelled as assertives are known to be such by their position in the genre.

These rules do not easily apply to ordinary expressions, for ordinary expressions may not specify how they are to be taken, whether as statements, promises, predictions, or the like. To illustrate, an utterance such as ‘Dinner is at eight’ could be taken as a statement, a promise, an invitation, or even an admonition if one were late.

Implication depends upon how utterances are taken. Consciousness of the fact or possibility that utterances can be taken literally — according to the very words — is at the heart of literate thinking.

That ways of taking utterances determines how we reason from them is nicely shown in some research by Cheng and Holyoak (1985). Adult subjects were to judge the truth of a logical rule by testing examples against that rule. However, subjects’ responses tended to reflect their interpretation of that rule. Although intended as a logical premise if p, then q, subjects tended to translate it into a pragmatic statement suitable for granting permission. Thus in testing the validity of the rule ‘If one is to drink alcohol, then one must be over eighteen,’ subjects were likely to think of two implications, one valid, namely, p only if q (one can drink alcohol only if one is eighteen), and one invalid, namely, if q (one can). p (if eighteen, then one can drink alcohol). The latter, although congruent with a permission statement, makes the logical error of treating the conditional as a biconditional.

But not all ways of taking utterances are available to everyone. The option of taking utterances literally according to the very form of the expression seems itself to be a literate enterprise. Consider the famous studies of reasoning among the unlettered peasants of Uzbekistan in the 1930s. A sample from one of the interviews is as follows:

In the far North, where there is snow, all bears are white. Novaya Zemlya is in the far North and there is always snow there. What colour are the bears there?

To which a non-literate subject, not unusually, responded: ‘I don’t know. There are different sorts of bears.’ (Luria, 1976, pp.108-109)

Luria called such responses failures to infer from the syllogism. In general, when subjects had no knowledge of the facts alleged in the story, they were unwilling to draw any inferences from it, if the alleged facts contradicted their beliefs, they based their conclusions on what they knew rather than on what the questioner has intended as the premise.

Of course, there is nothing wrong with such reasoning. The problem comes from the researcher failing to indicate how to take the statements in the story. He intended it as a premise; the subject took it as hearsay. But that is not the whole story. The legacy of Western literacy is the ability, on occasion, to take utterances literally according to the narrow meaning of the words employed.

Taking an expression literally was not a problem only for Luria’s illiterate subjects; it is a problem extensively discussed in the anthropological literature. Since Levy-Bruhl, anthropologists have been puzzled by some expressions that seem to be characteristic of at least some traditional societies: ‘Twins are birds’ of the Azande or ‘Corn is deer’ of the Huichol. Western literate cultures provide two mutually exclusive ways of taking such expressions as literal or as meta-
phorical. The problem is that these options seem not to be available in traditional societies. But why should members of another culture be forced to choose between the alternatives valued in our culture? This is a theme carefully developed in Lloyd (1990) and Frye (1982).

Perhaps the conclusion is that it is never possible to deal with expressions in ordinary language as if they were verbal formulae. For that reason, science has increasingly come to rely on mathematics and other formal models. But that does not take away from the point that a consciousness of the verbal form and its attendant sentence meaning is what allows discourse to achieve the explicitness and formality distinctive of modern science and the distinctive mode of thought that it entails.

Furthermore, it is this role that underwrites the importance of literacy in education. In this context, literacy is to be thought of as a particular way with words, their meanings, and their roles in expressions and not merely as the ability to inscribe. The very meaning of literacy has to, indeed already has begun to, change.

References


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