CHAPTER 6

Writing and the Alphabet Effect

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Writing and the Alphabet Effect: A New Mode of Information Processing

Writing goes beyond the mere transcription of spoken language. Although writing is a medium whose content is spoken language, its uses differ from those of speech. It organizes and stores information quite differently than speech; in effect, it is a different form of language. Written language has evolved in ways quite different from speech. The rules for the construction of speech and prose are quite different. Prose is not recorded speech but a much more formal organization of information. The closest form of writing to speech is poetry, which is meant to be heard. Prose is not meant to be heard and, in fact, the most efficient form of accessing the information contained in prose writing is to read it silently.

The epic poems of Homer provide a unique opportunity to compare the oral and the written forms of language. The poems were composed and presented orally long before they were transcribed in their present form "sometime between 700 and 550 BCE" (Havelock 1978, 3). Before their transcription, there was no particular order in which the various episodes were presented by the bard who performed them. Once the verses were committed to writing, however, they became objectified, an artifact that could be studied and scanned visually, their components compared, and then edited into some temporal order, as is the case with Homer's verses. "The story pieces are sorted out and numbered so as to achieve the effect of a single overall time sequence which moves forward but with interruptions, flashbacks, and digression to an appointed end. Thus arose the arrangement of our present text . . . this arrangement being the work of the eye, not the ear, a work achievable only when the various portions of the soundtrack had been alphabetized" (Havelock 1978, 19).

The very act of transcribing an oral composition requires an ordering. The text becomes a physical artifact that can be "looked at, reflected upon, modified, looked at repeatedly, shown to others, etc." (Havelock 1978). The medium helps determine the mode of organization: "Due to the transitory character of the acoustic medium, spoken language is organized by continuity, connectivity, and integration . . . in addition to intonation. By contrast, because of the visual medium, written language is organized by discreteness, and segmentation" (Ludwig 1983, 39).

The objectification of information, or the separation of the knower from the knowledge that writing permitted, encouraged abstraction, systematization, and the objectivity of scientific thought. Phonetic writing, particularly alphabetic

writing, encouraged classification and codification of information. Alphabetizing provided a natural way of ordering verbal information. It is interesting to note that the order of the letters of the alphabet never changed despite the fact that it was passed from one culture to another and adopted by so many different languages. The names and shapes of the letters changed but not the order of their presentation when the alphabet is recited as "abcdef."

The use of the alphabet as a writing code promoted and encouraged the skills of analysis, coding, decoding, and classification. Each spoken word to be transcribed had to be broken down into its phonemic components, each of which was then represented by a unique letter of the alphabet. The impact of information processing due to alphabetic writing was enormous because it introduced a new level of abstraction, analysis, and classification into Western thinking: At the same time that the Hebrews adopted alphabetic writing, they codified their law in the form of the Ten Commandments and introduced, for the first time in the history of humankind, monotheism and the notion of a prime mover or first cause.

The Greeks also made enormous intellectual strides shortly after their adoption of the Phoenician alphabet and its modification to include vowels. They were the first culture to develop deductive logic, abstract science, and rational philosophy. The Hebrews and the Greeks were also the first societies to write fairly objective histories of their own nations.

While none of these intellectual developments can be causally linked, Marshall McLuhan and I postulated (1977) that the use of phonetic writing systems created an environment conducive to the development of codified law, monotheism, abstract science, deductive logic, objective history, and individualism. All of these cultural innovations occurred primarily between 2000 and 500 BCE in the closely linked cultures found between the Tigris-Euphrates river system and the Aegean Sea. The introduction of the phonetic alphabet represents a break boundary because of the tremendous intellectual and cultural fallout that followed from its use (Logan 1986).

Zero and the Place Number System

One of the themes of this [reading] has been the way in which one notational system influences the development of another through a process of evolution. We have also seen that although the notation systems for writing and abstract numerals are independent, they arose together from impressed token logograms. Without abstract numerals, there might not have been writing, and without writing, there might not have been abstract numerals. The two systems of notation share a number of features. Writing employs a basic set of visual signs (for example, a set of logograms, a syllabary, or an alphabet) to transcribe or record the sounds of a spoken language into an array of visual signs. The language of mathematics also notates numbers and mathematical operations with a set of visual signs. For example, the operation of addition is represented with the + sign. At first, writing and mathematical notation were used to store the verbal or mathematical utterances of spoken language. As their use expanded, however, literature and mathematics emerged as languages in themselves, with their own peculiar techniques for processing, retrieving, and organizing information quite distinct from that of speech.

The cross-pollination between the two systems of notation continued, as writing evolved its more sophisticated phonetic elements. The alphabet influenced quantitative analysis because it stimulated an analytic and rational approach to the organization of qualitative information. This led to the development of abstract science and deductive logic by the ancient Greeks. In turn, logic and science stimulated the need for exact and precise quantitative analysis and measurement. This led to axiomatic geometry, the elements of Euclid, the quantitative astronomy of

Ptolemy and Aristarchus, the Pythagorean obsession with numbers, the mechanics of Archimedes, and the botanical and biological classification schemes of Aristotle.

The Semitic alphabet stimulated quantitative analysis directly by becoming the basis of a number system in which each letter was assigned a numerical value. The first nine letters represented 1 through 9, and the next nine letters represented 10, 20, . . . through 90. There were also letters for 100 and 1000. Any number between 1 and 100 could be represented by a maximum of two letters. For example, 18 would be written as יח where (ח) is 8 and (י) is 10. The Semitic number system was not a place number system in that 81 was not written (יח) but rather as (עא) where (א) is 1 and (ע) is 80. The system was a forerunner of the place number system in that it contained one of the essential features for such a system; namely, that all numbers between 1 and 9 had their own unique ideographic signs. The element lacking from the alphabetic number system (which the Greeks and Hindus also employed with their alphabets) that prevented it from serving as a place number system was the concept of zero and the zero symbol.

The place number system and the concept of zero were inventions of Hindu mathematicians as early as 200 BCE. The Hindu writing system at the time was alphabetic, as was their number system. Once the Hindu mathematicians developed the notion of zero, or *sunya,* as they called it, they quickly devised a place number system.

Sunya means "leave a place" in Sanskrit and indicates that the zero or sunya concept arose from recording abacus calculations. If the result of a calculation was 503, this could not be written as "5" "3" because it would be read as either 53 or 530, but if instead the result was written as "5" "leave a place" "3", the number being designated would be interpreted properly as 5 hundreds, no tens, and 3 units. "Leave a place," or sunya, soon evolved into the abstract number of zero, 0.

The Arabs used the Hindu system and transmitted it to Europe, where it arrived in the fifteenth century. The Arabs had translated sunya, or "leave a place," into the Arabic *sifr,* or cipher, the name we still use for zero as well as the name for the whole place number system itself. Our present-day term "zero" derives from the shortened version of the Latin term for cipher, *zepharino.* The place number system brought with it many advances in mathematics, including simple algorithms for arithmetic, negative numbers, algebra, and the concept of the infinite and the infinitesimal, and hence, calculus.

One of the mysteries associated with the invention of the place number system is why the Greeks, the inventors of vowels, who made such great advances in geometry and logic, did not discover zero. The explanation lies in the Greeks' overly strict adherence to logic, which led Parmenides to the conclusion that non-being (and hence, nothing) could not "be" because it was a logical contradiction. The Hindus, on the other hand, had no such inhibition about non-zero. In fact, they were positively inclined to the concept of non-being since it constituted their notion of nirvana (Logan 1986; Logan 1979, 16).

The Language of Mathematics

Numeric notation, like writing, grew out of the system for recording the payment of tributes with clay tokens. The language of mathematics grew out of spoken language and the need for a mathematical notation for enumeration. The mathematical statements expressed in the numerals and the signs for mathematical operations can always be translated into spoken language or writing. For example, the equation 1 + 2 = 3 may be spoken or written as, "One plus two is three." The language of mathematics may be regarded as a medium whose content is the mathematical concepts of spoken language, namely, abstract numbers and mathematical operations, such as addition, subtraction, multiplication, and division. Once a mathematical language or notation emerged, however, it took on an existence of its own and evolved in ways quite different from either speech or writing due to the unique methods of processing information that its use stimulated.

A mathematics notation allowed abstract mathematical operations that could never have been carried out in a person's head to emerge. The notation became a tool of investigation and invention. It suggested ways of generalizing results, and thus led to new concepts. The concept of and notation for zero provides a good example. In addition to the place number system, the concept of zero, originally notated as a dot and then later as a small circle, resulted in a number of new mathematical ideas. Not long after introducing zero, the Hindu mathematicians invented negative numbers which they notated by placing a dot above a number (Logan 1986; Logan 1979). For example, 3° represented minus three or three below zero, which the notation literally suggests, as the 3 sits under the zero sign.

The zero sign, sunya—"leave a place"—was also used to represent the unknown. This allowed the development of algebra because the mathematician was able to "leave a place" for the unknown and deal with it as though it were also a number. Here, we see clearly how the existence of a notation (for zero, in this case) allowed the ideas of negative numbers and algebra to develop. The notation for zero caused mathematicians to think of zero as a number like 1 or 2 and hence to consider mathematical operations with this number such as addition, subtraction, multiplication, and division. The addition or subtraction of zero leads to no change and multiplication by zero yields zero, but the division of a number by zero leads to an interesting result: infinity, another new concept or invention of the Hindu mathematicians. The idea of infinity led them also to the notion of the infinitesimal, a concept that was an essential element in the development of calculus (Logan 1986; Logan 1979).

The Impact of Quantitative and Qualitative Notation and Analysis

There is no way short of speculation to determine how the idea for numerals and writing arose from the impressed token logograms. Because of the difficulty of establishing causal relations among cognitive processes, even when historical data are readily available, it is difficult to determine how qualitative and quantitative notational systems influenced each other's development. It is evident, however, that the new level of abstraction that pictographic writing established created an environment conducive to the development of abstract numbers and vice versa. It is clear from Schmandt-Besserat's work that the processes of literacy and numeracy are more closely linked than is commonly acknowledged. Numbers and phonetic writing emerged from a single progenitor, the clay token, in which both quantitative and qualitative information had been merged. The separation of this information into two distinct streams of written words on the one hand, and numerals on the other, opened new avenues of abstract thought and information processing. Ideographic and phonetic writing represented the first means of supplementing and extending verbal language. Numerals representing abstract numbers made possible new techniques of quantitative analysis. Both these developments mark the beginning of objective learning or the separation of the knower from the knowledge (Schmandt-Besserat 1985, 149–54).

The quantitative (from the Latin *quantus*—how great) and the qualitative (from the Latin *qualis*—of what kind) are two key categories of Western thinking that have, from the philosophical thoughts of the ancient Greeks to contemporary social science, been regarded as distinct and independent modes of analysis. The common origin of quantitative and qualitative notation from clay tokens argues against the notion that these two categories form a dichotomy. The fact that the two forms of notation emerged at the same point in history indicates the cognitive power that the interplay between the quantitative and qualitative can release.

Other breakthroughs in information processing can be associated with this interplay. The letters of the alphabet were used to notate abstract numerals until the Hindus, under the influence of alphabetic literacy, invented zero and developed

the cipher system (Logan 1986; Logan 1979). It is not an accident that zero and the place number system were the invention of mathematicians who used the alphabet. The place number system and the alphabet share a number of features that contribute to their abstract nature:

1. Each system contains a small number of elements: twenty-six letters (for the English alphabet) and ten numerals.
2. They form a complete set so that the total set of possible spoken words can be represented alphabetically, and any number, no matter how large or small, can be expressed in terms of some combination of the ten numerals.
3. The individual elements of the two systems, the letters and the numerals, are atomic—that is, they are identical and repeatable.
4. The values (sound or numerical) of the aggregate elements (words or numbers) of the system depend not only on their atomistic components (the letters or numerals of which they are composed) but also on their order or syntax. In other words, both the letters and their order determine a word, and the numerals and their order determine a number. For example, ON is not the same as NO, nor is 18 the same as 81.

These similarities in the two systems illustrate two points: the alphabet was probably a stimulus to the development of the place number system; and quantitative and qualitative notational schemes are not all that different and require many of the same fundamental cognitive skills.

The common origin and emergence of quantitative and qualitative notation is only one of the indicators of the overlap of these two categories. An abstract number denotes the quantity of objects in a set, but it can also describe a quality of the set. In addition to their numerical values, the abstract numbers 1, 2, or 3 also denote the qualities of oneness, twoness, or threeness. For example, in the saying "Two's company and three's a crowd," the numbers 2 and 3 are abstract numbers and yet also describe qualities. The relationships described are quite independent of the actual 2 or 3 individuals who constitute "company" or the "crowd."

Abstract numbers themselves possess both quantitative and qualitative features. The difference between the abstract numbers 3 and 4 is quantitative in the sense that 4 is one more than 3, but the difference is not purely quantitative; it is also qualitative in that 3 is a prime number and 4 is not, but rather a perfect square. Another overlap of the two categories of letters and numerals is the way in which their use is combined for the purposes of creating classification schemes; for example, the call numbers for library books and license plates where letters and numbers are used together.

The link or overlap we have established both empirically and theoretically between the qualitative and the quantitative is confirmed etymologically when the terms used for the profession of writing or numerical accounting are examined. In ancient Babylonian or Hebrew, the term for one who writes and one who counts is identical, namely *spr* (Demsky 1972). There is a similar overlap of meaning of these words in English. A "teller" is one who counts or tells, and the expression "to give an account" can mean either to provide a narrative or an enumeration depending on the context in which the word is used. One finds a similar overlap in other languages. In German, the word *zahlen* has a double meaning denoting either counting or telling.

Numeracy, the ability to conduct mathematical calculations, is a cognitive skill that emerged as a result of the development of quantitative notation. Although there are individuals who can do calculations in their head without using notated figures, the origin of these calculational techniques required the existence of numerals. While literacy and numeracy are quite distinct cognitive skills, it is obvious that there is a strong overlap between them. The claim that some individuals are gifted with words but not numbers or vice versa has little basis in our understanding of the origins of these skills. Marked differences in an individual's literate and numerate skills could be

due to a disparity in interest rather than intrinsic abilities. Historical research has indicated that literate and numerate skills are related and associated with each other. Split-brain research supports this hypothesis, as both the literate and the numerate activities seem to be concentrated in the left hemisphere of the brain.

The importance of these observations for contemporary education is not obvious. The observations do indicate, however, that current instruction in primary school of reading and writing, on the one hand, and mathematics on the other, requires greater integration. Drawing parallels between the two notational systems could certainly help students to understand the abstract nature of the alphabet and the place number system. It might help those who are strong in math but weak in reading, or vice versa, to use their strengths with one notational system to better understand the other. These suggestions are purely speculative but certainly worthy of further examination and research. The use of the computer in education might provide exactly the correct environment for such an integration as the computer treats all abstract notation in more or less the same manner. In fact, the computer may be regarded as a device for the manipulation of abstract symbols, whether they are alphabetic or numerical.

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CHAPTER 7

Orality, Literacy, and Modern Media

Walter Ong

The late Walter Ong was Professor of humanities at Saint Louis University. He wrote extensively on the orality/literacy question, as well as on the communications dimension of the shift from the medieval to the modern era.

Fully literate persons can only with great difficulty imagine what a primary oral culture is like, that is, a culture with no knowledge whatsoever of writing or even of the possibility of writing. Try to imagine a culture where no one has even "looked up" anything. In a primary oral culture, the expression "to look up something" is an empty phrase: it would have no conceivable meaning. Without writing, words as such have no visual presence, even when the objects they represent are visual. They are sounds. You might "call" them back—"recall" them. But there is nowhere to "look" for them. They have no focus and no trace (a visual metaphor, showing dependency on writing), not even a trajectory. They are occurrences, events.

To learn what a primary oral culture is and what the nature of our problem is regarding such a culture, it helps first to reflect on the nature of sound itself as sound (Ong 1967b, pp. 111–38). All sensation takes place in time, but sound has a special relationship to time unlike that of the other fields that register in human sensation. Sound exists only when it is going out of existence. It is not simply perishable but essentially evanescent, and it is sensed as evanescent. When I pronounce the word "permanence," by the time I get to the "-nence," the "perma-" is gone, and has to be gone.

There is no way to stop sound and have sound. I can stop a moving picture camera and hold one frame fixed on the screen. If I stop the movement of sound, I have nothing—only silence, no sound at all. All sensation takes place in time, but no other sensory field totally resists a holding action, stabilization, in quite this way. Vision can register motion, but it can also register immobility. Indeed, it favors immobility, for to examine something closely by vision, we prefer to have it quiet. We often reduce motion to a series of still shots the better to see what motion is. There is no equivalent of a still shot for sound. An oscillogram is silent. It lies outside the sound world.

For anyone who has a sense of what words are in a primary oral culture, or a culture not far removed from primary orality, it is not surprising that the Hebrew term *dabar* means "word" and "event." Malinowski (1923, pp. 451, 470–81) has made the point that among "primitive" (oral) peoples generally language is a mode of action and not simply a countersign of thought, though he had trouble explaining what he was getting at . . ., since understanding of the psychodynamics of orality was virtually nonexistent in 1923. Neither is it surprising that oral peoples commonly, and probably universally, consider words to have great power. Sound cannot be sounding without the use of power. A hunter can see a buffalo, smell, taste, and touch a buffalo when the buffalo is completely inert, even dead, but if he hears a buffalo, he had better watch out: something is going on. In this sense, all sound, and especially oral utterance, which comes from inside living organisms, is "dynamic."

The fact that oral peoples commonly and in all likelihood universally consider words to have magical potency is clearly tied in, at least unconsciously, with their sense of the word as necessarily spoken, sounded, and hence power-driven. Deeply typographic folk forget to think of words as primarily oral, as events, and hence as necessarily powered: for them, words tend rather to be assimilated to things, "out there" on a flat surface. Such "things" are not so readily associated with magic, for they are not actions, but are in a radical sense dead, though subject to dynamic resurrection (Ong 1977, pp. 230–71).

Oral peoples commonly think of names (one kind of words) as conveying power over things. Explanations of Adam's naming of the animals in Genesis 2:20 usually call condescending attention to this presumably quaint archaic belief. Such a belief is in fact far less quaint than it seems to unreflective chirographic and typographic folk. First of all, names do give human beings power over what they name: without learning a vast store of names, one is simply powerless to understand, for example, chemistry and to practice chemical engineering. And so with all other intellectual knowledge. Secondly, chirographic and typographic folk tend to think of names as labels,

written or printed tags imaginatively affixed to an object named. Oral folk have no sense of a name as a tag, for they have no idea of a name as something that can be seen. Written or printed representations of words can be labels; real, spoken words cannot be.

You Know What You Can Recall: Mnemonics and Formulas

In an oral culture, restriction of words to sound determines not only modes of expression but also thought processes.

You know what you can recall. When we say we know Euclidean geometry, we mean not that we have in mind at the moment every one of its propositions and proofs but rather that we can bring them to mind readily. We can recall them. The theorem "You know what you can recall" applies also to an oral culture. But how do persons in an oral culture recall? The organized knowledge that literates today study so that they "know" it, that is, can recall it, has, with very few if any exceptions, been assembled and made available to them in writing. This is the case not only with Euclidean geometry but also with American Revolutionary history or even baseball batting averages or traffic regulations.

An oral culture has no texts. How does it get together organized material for recall? This is the same as asking, "What does it or can it know in an organized fashion?"

Suppose a person in an oral culture would undertake to think through a particular complex problem and would finally manage to articulate a solution which itself is relatively complex, consisting, let us say, of a few hundred words. How does he or she retain for later recall the verbalization so painstakingly elaborated? In the total absence of any writing, there is nothing outside the thinker, no text, to enable him or her to produce the same line of thought again or even to verify whether he or she has done so or not. *Aides-mémoire* such as notched sticks or a series of carefully arranged objects will not of themselves retrieve a complicated series of assertions. How, in fact, could a lengthy, analytic solution ever be assembled in the first place? An interlocutor is virtually essential: it is hard to talk to yourself for hours on end. Sustained thought in an oral culture is tied to communication.

But even with a listener to stimulate and ground your thought, the bits and pieces of your thought cannot be preserved in jotted notes. How could you ever call back to mind what you had so laboriously worked out? The only answer is: Think memorable thoughts. In a primary oral culture, to solve effectively the problem of retaining and retrieving carefully articulated thought, you have to do your thinking in mnemonic patterns, shaped for ready oral recurrence. Your thought must come into being in heavily rhythmic, balanced patterns, in repetitions or antitheses, in alliterations and assonances, in epithetic and other formulary expressions, in standard thematic settings (the assembly, the meal, the duel, the hero's "helper," and so on), in proverbs which are constantly heard by everyone so that they come to mind readily and which themselves are patterned for retention and ready recall or in other mnemonic form. Serious thought is intertwined with memory systems. Mnemonic needs determine even syntax (Havelock 1963, pp. 87–96, 131–2, 294–6).

Protracted orally based thought, even when not in formal verse, tends to be highly rhythmic, for rhythm aids recall, even physiologically. Jousse (1978) has shown the intimate linkage between rhythmic oral patterns, the breathing process, gesture, and the bilateral symmetry of the human body in ancient Aramaic and Hellenic targums, and thus also in ancient Hebrew. Among the ancient Greeks, Hesiod, who was intermediate between oral Homeric Greece and fully developed Greek literacy, delivered quasi-philosophic material in the formulaic verse forms that structured it into the oral culture from which he had emerged (Havelock 1963, pp. 97–8, 294–301).

Formulas help implement rhythmic discourse and also act as mnemonic aids in their own right, as set expressions circulating through the mouths and ears of all. "Red in the morning, the sailor's warning; red in the night, the sailor's delight." "Divide and conquer." "To err is human, to forgive is divine." "Sorrow is better than laughter, because when the face is sad the heart grows wiser" (Ecclesiastes 7:3). "The clinging vine." "The sturdy oak." "Chase off nature and she returns at a gallop." Fixed, often rhythmically balanced, expressions of this sort and of other sorts can be found occasionally in print, indeed can be "looked up" in books of sayings, but in oral cultures they are not occasional. They are incessant. They form the substance of thought itself. Thought in any extended form is impossible without them, for it consists in them.

The more sophisticated orally patterned thought is, the more it is likely to be marked by set expressions skillfully used. This is true of oral cultures generally from those of Homeric Greece to those of the present day across the globe. Havelock's *Preface to Plato* (1963) and fictional works such as Chinua Achebe's novel *No Longer at Ease* (1961), which draws directly on Ibo oral tradition in West Africa, alike provide abundant instances of thought patterns of orally educated characters who move in these oral, mnemonically tooled grooves, as the speakers reflect, with high intelligence and sophistication, on the situations in which they find themselves involved. The law itself in oral cultures is enshrined in formulaic sayings, proverbs, which are not mere jurisprudential decorations, but themselves constitute the law. A judge in an oral culture is often called on to articulate sets of relevant proverbs out of which he can produce equitable decisions in the cases under formal litigation before him. . . .

In an oral culture, to think through something in non-formulaic, non-patterned, nonmnemonic terms, even if it were possible, would be a waste of time, for such thought, once worked through, could never be recovered with any effectiveness, as it could be with the aid of writing. It would not be abiding knowledge but simply a passing thought, however complex. Heavy patterning and communal fixed formulas in oral cultures serve some of the purposes of writing in chirographic cultures, but in doing so they of course determine the kind of thinking that can be done, the way experience is intellectually organized. In an oral culture, experience is intellectualized mnemonically. This is one reason why, for a St Augustine of Hippo (A.D. 354–430), as for other savants living in a culture that knew some literacy but still carried an overwhelmingly massive oral residue, memory bulks so large when he treats of the powers of the mind.

Of course, all expression and all thought is to a degree formulaic in the sense that every word and every concept conveyed in a word is a kind of formula, a fixed way of processing the data of experience, determining the way experience and reflection are intellectually organized, and acting as a mnemonic device of sorts. Putting experience into any words (which means transforming it at least a little bit—not the same as falsifying it) can implement its recall. The formulas characterizing orality are more elaborate, however, than are individual words, though some may be relatively simple: the *Beowulf*-poet's "whale-road" is a formula (metaphorical) for the sea in a sense in which the term "sea" is not.

The Interiority of Sound

In treating some psychodynamics of orality, we have thus far attended chiefly to one characteristic of sound itself, its evanescence, its relationship to time. Sound exists only when it is going out of existence. Other characteristics of sound also determine or influence oral psychodynamics. The principal one of these other characteristics is the unique relationship of sound to interiority when sound is compared to the rest of the senses. This relationship is important because of the interiority of human consciousness and of human communication itself. It can be discussed only summarily here. I have treated the matter in greater

fullness and depth in *The Presence of the Word,* to which the interested reader is referred (1967, Bibliography).

To test the physical interior of an object as interior, no sense works so directly as sound. The human sense of sight is adapted best to light diffusely reflected from surfaces. (Diffuse reflection, as from a printed page or a landscape, contrasts with specular reflection, as from a mirror.) A source of light, such as a fire, may be intriguing but it is optically baffling: the eye cannot get a "fix" on anything within the fire. Similarly, a translucent object, such as alabaster, is intriguing because, although it is not a source of light, the eye cannot get a "fix" on it either. Depth can be perceived by the eye, but most satisfactorily as a series of surfaces: the trunks of trees in a grove, for example, or chairs in an auditorium. The eye does not perceive an interior strictly as an interior: inside a room, the walls it perceives are still surfaces, outsides.

Taste and smell are not much help in registering interiority or exteriority. Touch is. But touch partially destroys interiority in the process of perceiving it. If I wish to discover by touch whether a box is empty or full, I have to make a hole in the box to insert a hand or finger: this means that the box is to that extent open, to that extent less an interior.

Hearing can register interiority without violating it. I can rap a box to find whether it is empty or full or a wall to find whether it is hollow or solid inside. Or I can ring a coin to learn whether it is silver or lead.

Sounds all register the interior structures of whatever it is that produces them. A violin filled with concrete will not sound like a normal violin. A saxophone sounds differently from a flute: it is structured differently inside. And above all, the human voice comes from inside the human organism which provides the voice's resonances.

Sight isolates, sound incorporates. Whereas sight situates the observer outside what he views, at a distance, sound pours into the hearer. Vision dissects, as Merleau-Ponty has observed (1961). Vision comes to a human being from one direction at a time: to look at a room or a landscape, I must move my eyes around from one part to another. When I hear, however, I gather sound simultaneously from every direction at once: I am at the center of my auditory world, which envelops me, establishing me at a kind of core of sensation and existence. This centering effect of sound is what high-fidelity sound reproduction exploits with intense sophistication. You can immerse yourself in hearing, in sound. There is no way to immerse yourself similarly in sight.

By contrast with vision, the dissecting sense, sound is thus a unifying sense. A typical visual ideal is clarity and distinctness, a taking apart (Descartes' campaigning for clarity and distinctness registered an intensification of vision in the human sensorium—Ong 1967, pp. 63, 221). The auditory ideal, by contrast, is harmony, a putting together.

Interiority and harmony are characteristics of human consciousness. The consciousness of each human person is totally interiorized, known to the person from the inside and inaccessible to any other person directly from the inside. Everyone who says "I" means something different by it from what every other person means. What is "I" to me is only "you" to you. And this "I" incorporates experience into itself by "getting it all together." Knowledge is ultimately not a fractioning but a unifying phenomenon, a striving for harmony. Without harmony, an interior condition, the psyche is in bad health.

It should be noted that the concepts interior and exterior are not mathematical concepts and cannot be differentiated mathematically. They are existentially grounded concepts, based on experience of one's own body, which is both inside me (I do not ask you to stop kicking my body but to stop kicking *me*) and outside me (I feel myself as in some sense inside my body). The body is a frontier between myself and everything else. What we mean by "interior" and "exterior" can be conveyed only by reference to experience of bodiliness. Attempted definitions of "interior" and "exterior"

are inevitably tautological: "interior" is defined by "in," which is defined by "between," which is defined by "inside," and so on round and round the tautological circle. The same is true with "exterior." When we speak of interior and exterior, even in the case of physical objects, we are referring to our own sense of ourselves: I am *inside* here and everything else is *outside.* By interior and exterior we point to our own experience of bodiliness (Ong 1967, pp. 117–22, 176–9, 228, 231) and analyze other objects by reference to this experience.

In a primary oral culture, where the word has its existence only in sound, with no reference whatsoever to any visually perceptible text, and no awareness of even the possibility of such a text, the phenomenology of sound enters deeply into human beings' feel for existence, as processed by the spoken word. For the way in which the word is experienced is always momentous in psychic life. The centering action of sound (the field of sound is not spread out before me but is all around me) affects man's sense of the cosmos. For oral cultures, the cosmos is an ongoing event with man at its center. Man is the *umbilicus mundi,* the navel of the world (Eliade 1958, pp. 231–5, etc.). Only after print and the extensive experience with maps that print implemented would human beings, when they thought about the cosmos or universe or "world," think primarily of something laid out before their eyes, as in a modern printed atlas, a vast surface or assemblage of surfaces (vision presents surfaces) ready to be "explored." The ancient oral world knew few "explorers," though it did know many itinerants, travelers, voyagers, adventurers, and pilgrims.

It will be seen that most of the characteristics of orally based thought and expression discussed earlier in this chapter relate intimately to the unifying, centralizing, interiorizing economy of sound as perceived by human beings. A sound-dominated verbal economy is consonant with aggregative (harmonizing) tendencies rather than with analytic, dissecting tendencies (which would come with the inscribed, visualized word: vision is a dissecting sense). It is consonant also with the conservative holism (the homeostatic present that must be kept intact, the formulary expressions that must be kept intact), with situational thinking (again holistic, with human action at the center) rather than abstract thinking, with a certain humanistic organization of knowledge around the actions of human and anthromorphic beings interiorized persons, rather than around impersonal things.

The denominators used here to describe the primary oral world will be useful again later to describe what happened to human consciousness when writing and print reduced the oral–aural world to a world of visualized pages.

Secondary Orality

. . . With telephone, radio, television and various kinds of sound tape, electronic technology has brought us into the age of "secondary orality." This new orality has striking resemblances to the old in its participatory mystique, its fostering of a communal sense, its concentration on the present moment, and even its use of formulas (Ong 1971, pp. 284–303; 1977, pp. 16–49, 305–41). But it is essentially a more deliberate and self-conscious orality, based permanently on the use of writing and print, which are essential for the manufacture and operation of the equipment and for its use as well.

Secondary orality is both remarkably like and remarkably unlike primary orality. Like primary orality, secondary orality has generated a strong group sense, for listening to spoken words forms hearers into a group, a true audience, just as reading written or printed texts turns individuals in on themselves. But secondary orality generates a sense for groups immeasurably larger than those of primary oral culture—McLuhan's "global village." Moreover, before writing, oral folk were group-minded because no feasible alternative had presented itself. In our age of secondary orality, we are group-minded self-consciously and programmatically. The individual feels that he or she, as an individual, must be socially sensitive. Unlike members of a primary oral culture, who are

turned outward because they have had little occasion to turn inward, we are turned outward because we have turned inward. In a like vein, where primary orality promotes spontaneity because the analytic reflectiveness implemented by writing is unavailable, secondary orality promotes spontaneity because through analytic reflection we have decided that spontaneity is a good thing. We plan our happenings carefully to be sure that they are thoroughly spontaneous.

The contrast between oratory in the past and in today's world well highlights the contrast between primary and secondary orality. Radio and television have brought major political figures as public speakers to a larger public than was ever possible before modern electronic developments. Thus in a sense orality has come into its own more than ever before. But it is not the old orality. The old-style oratory coming from primary orality is gone forever. In the Lincoln–Douglas debates of 1858, the combatants—for that is what they clearly and truly were—faced one another often in the scorching Illinois summer sun outdoors, before wildly responsive audiences of as many as 12,000 or 15,000 persons (at Ottawa and Freeport, Illinois, respectively—Sparks 1908, pp. 137–8, 189–90), speaking for an hour and a half each. The first speaker had one hour, the second an hour and a half, and the first another half hour of rebuttal—all this with no amplifying equipment. Primary orality made itself felt in the additive, redundant, carefully balanced, highly agonistic style, and the intense interplay between speaker and audience. The debaters were hoarse and physically exhausted at the end of each bout. Presidential debates on television today are completely out of this older oral world. The audience is absent, invisible, inaudible. The candidates are ensconced in tight little booths, make short presentations, and engage in crisp little conversations with each other in which any agonistic edge is deliberately kept dull. Electronic media do not tolerate a show of open antagonism. Despite their cultivated air of spontaneity, these media are totally dominated by a sense of closure which is the heritage of print: a show of hostility might break open the closure, the tight control. Candidates accommodate themselves to the psychology of the media. Genteel, literate domesticity is rampant. Only quite elderly persons today can remember what oratory was like when it was still in living contact with its primary oral roots. Others perhaps hear more oratory, or at least more talk, from major public figures than people commonly heard a century ago. But what they hear will give them very little idea of the old oratory reaching back from preelectronic times through two millennia and far beyond, or of the oral lifestyle and oral thought structures out of which such oratory grew.

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