Visible and Invisible Bias Via Media

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Abstract

Explores the relative powers of communication media and their programs to influence human thought and action in differing cultural contexts. Compares the telecommunication theory of transporting information through channels *logically* with human communication processes that transform their users *eco-logically*. Considers how metaphors and languages determine what is thinkable and unthinkable. Suggests perceptual rather than conceptual approaches for discovering the material, mental, and social effects of any medium whatever.

Aphorisms, representing a knowledge broken, do invite men to inquire farther; whereas Methods, carrying the show of a total, do secure men, as if they were at farthest.

Francis Bacon

By increasing the speed, scope and accessibility of communication media, professional communicators have hitherto assumed that they could increase human understanding everywhere. But their technical prowess has already succeeded in creating an all-embracing environment of instant electric information that is actually decreasing both human tolerance and mutual understanding in every human society. Improved communication has resulted in a crisis of identity that demands both change and conformity at the same time. Our human intentions have been reversed via media.

Electric information speedup is annihilating all former images that we had of ourselves; it is depriving us of both identities and goals:

> The UNPERSON is the inevitable result of improved communication. When all barriers of private consciousness are overcome, the resulting collective form of awareness is a tribal dream... The fragility and insecurity of tribal life lead to violence as a quest for identity in preliterate and post-literate societies alike.[1]

This is the communication paradox of the Second Industrial Revolution of electric information. Instead of re-enforcing and propagating what we had learned in the Age of Reason, we have recreated and magnified A New Age of Unreason: we have restored the occult arts and revived the tribal gods with new vigour, epitomized in North America by the Manson family and the Jones cult. We have converted moral Everyman into amoral Electronic-man. Today, YOU are *there*, and THEY are *here* instantly as discarnate minds via electric media. We have had the experience, but have we missed its meaning?

The logically connected order of material hardware breaks down as the new ecologically related order of information software takes over. Why did we fail to anticipate this outcome? What measures can we take to defend ourselves from such consequences now and in future?

Logic and Transporting Information

Today's dominant communication theory developed by Bell System scientist Claude Shannon is a *Transportation Theory of Communication* that treats "software" (information and design) like "hardware" (the material embodiment of software). In Shannon's words:

> The fundamental problem of communication is that of reproducing at one point either exactly or approximately a message selected at another point. Frequently the messages have *meaning*; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These semantic aspects of communication are irrelevant to the engineering problem. The significant aspect is that the actual message is one *selected from a set* of possible messages. The system must be designed for each possible selection, not just the one which will actually be chosen since this is unknown at the time of design.[2]

While Shannon developed a mathematical theory logically for *matching* outputs to inputs of telecommunication channels, his Bell System colleague Warren Weaver applied this theory analogically to "all the procedures by which one mind may affect another". Weaver assumed that Shannon's theory could be extended by statistical

methods to *match* sense, if not to *make* sense, if any communication process whatever. Weaver's assumption has been generally accepted by the academic establishment, which has perpetuated and propagated the Shannon-Weaver paradigm, for it is in keeping with their ideal of achieving *logical maturity*. But, as Weaver also notes:

> The concept of information developed in this theory at first seems disappointing and bizarre—disappointing because it has nothing to do with meaning, and bizarre because it deals not with a single message but rather with the statistical character of a whole ensemble of messages, bizarre also because in these statistical terms the two terms *information* and *uncertainty* find themselves to be partners. [2]

In the Shannon-Weaver theory all information transmitted unintentionally is treated as "noise" interfering with intended signals or messages. This theory is not concerned with the transformation of noise into new kinds of information or new knowledge. For example, radio astronomy originated in the study of radio noise or "static".

Shannon's theory is concerned with "closed" rather than "open" systems, that is, *matching* what is defined rather than *making* what is undefined. John R. Pierce, a colleague of both Shannon and Weaver, concludes that:

> It would be absurd to assert that information theory,...has enabled us to solve the problems of linguistics, of meaning, of understanding, of philosophy, of life.[3]

Every radio operator knows how to signal...—...or MAYDAY to transmit the idea or concept of "distress", but *not* its feeling or percept. On the other hand, a child's cry, like a poet's "exact word", can communicate distress to perceptive people. This is precisely where the Shannon-Weaver theory breaks down.

Whereas the scientist and technologist strip natural language of its cultural heritage in attempting to confine one word to one meaning within their particular disciplines, the poet reverberates each word across his entire language and culture in order to enrich its meaning. Lawyer George H. Kendal explores these differing approaches towards establishing "facts" in law, science, and life.[3]

No sense can operate in isolation, for each sense works through interplay with all the others. They constantly transform each other in the process of making sense through *synesthesia* as E.H. Gombrich observes:

> What is called "synesthesia", the splashing over of one sense modality to another, is a fact to which all languages testify. They work both ways—from sight to sound and from sound to sight. We speak of loud colours or bright

> sounds and everyone knows what we mean. Nor are the ear and the eye the only senses that are thus converging in a common centre. There is touch in such terms as a "velvety voice" and "a cold light", taste with "sweet harmonies" of colours or sounds, and so on through countless permutations.[4]

In contrast to the "exact definition" of the scientist is the "exact word"—*le mot juste*—of the poet. Richard Aldington explains:

> The *exact word* does not mean the word which exactly describes the object itself. It means the exact word which brings the *effect* of the word before the reader as it presented itself to the poet's mind at the time of writing the poem. (my italics)[5]

The artist starts with a desired effect and learns to create its cause with his chosen medium and audience. By contrast, the scientist looks for the effects to fit (or not to fit) his chosen theory. The scientist is concerned with defining concepts to clarify his theories, while the artist is dedicated to sharpening the perception of his audience in order to share unique human experience. *Perception* is a relation among relations apprehended in our sensory lives. It is a process of analogically relating rather than logically connecting. Different communication media create differing sensory relations in audiences of differing "mental set" (not merely ideological, but *psychic* bias) and differing cultural traditions (literate and non-literate).

Percepts are the sensory data of human experience due to direct encounter with present existence. Percepts are the raw material of Art. *Concepts* are convenient software tools abstracted from repeated percepts of past experience. Concepts are the raw material of Science. Percepts cannot be reduced to concepts, for classification automatically converts what is new or unique into hindsight. As poet Samuel T. Coleridge remarked, "To most men, experience is like the stern lights of a ship which illumines only the track it has passed."

Jokes are precepts; they cannot be explained by reducing them to concepts without destroying their humour. Like humourists, artists and inventors constantly juxtapose ordinary things in extraordinary ways to intensify awareness or to achieve fresh vision. They no only create new archetypes out of old cliches in the process of *hendiadys* (Greek: one by means of two), they also infuse old forms with new vigour. As symbolist poet Stephane Mallarmé recognized: "To define is to kill/To suggest is to create."

At the beginning of our century, Ernest Fenollosa, a lifelong student of Japanese and Chinese art, describes the contrast between Occidental and Oriental "definitions".[6] For example, if you ask an educated European what "red" is, he will explain that it is a "colour". If you ask him what a colour is, he will explain that it is a division of the

spectrum of light, or a vibration of energy of some kind. And if you ask him what *that* is, he will continue his explanation until he arrives at some modality of being or non-being which nobody understands. In contrast to this method of abstraction for philosophic discussion is the method of poetry and the Chinese ideograph. If you ask an educated Chinese what "red" is, he puts together the abbreviated representations of ROSE, CHERRY, IRON RUST, FLAMINGO in an ideogram. The "meaning" of "red" is *manifested* by what everybody knows. The Chinese "explanation" *makes sense*, like poetry, by reverberating across the entire language and culture.
While Ernest Fenollosa was studying in Japan, Gilbert Chesterton was explaining in England that:

> Much of our modern difficulty, in religion and other things, arises merely from this: that we confuse the word "indefinable" with the word "vague". If someone speaks of a spiritual fact as "indefinable" we promptly picture something misty, a cloud with indeterminate edges. But this is an error in commonplace logic. The thing that cannot be defined is the first thing; the primary fact. It is our arms and legs, our pots and pans, that are indefinable. The indefinable is the indisputable. The man next door is indefinable, because he is too actual to be defined. And there are some to whom spiritual things have the same fierce and practical proximity; some to whom God is too actual to be defined. But there is a third class of primary terms. There are popular expressions which everyone uses and no one can explain; which the wise man will accept and reverence, as he reverences desire or darkness or any elemental things. The prigs of the debating club will demand that he should define his terms. And, being a wise man, he will flatly refuse. The first inexplicable term is the most important term of all. The word that has no definition is the word that has no substitute. If a man falls back again and again on some such word as "vulgar" or "manly", do not suppose that word means nothing because he cannot say what it means. If he could say what the word means he would say what it means instead of saying the word...*precisely because the word is indefinable the word is indispensable.* (My italics)[7]

On the other hand, information scientists cannot convert percepts into concepts, nor reduce the simultaneities of actual existence into the sequentialities of theoretical models, nor confine human communication to any super-artificial intelligence, based on the two-bit wit of computer logic. Like the computer, telecommunication theory succumbs to information overload. And that can lead to

process pattern recognition, but only if we use all our wits and senses, for making sense is a human monopoly.

Rhetoric and Transforming Audiences

Cicero equated rhetoric with eloquence, and the ideal man with the *doctus orator.*[8] For more than two-thousand years, rhetoric, the art of influencing audiences, was the dominant theory of communication in the Western world. Cicero's influence is evident in European literary classics form the Golden Age of Greece (fourth century B.C.) to the Age of Reason (eighteenth-century A.D.): Plato's *Republic*, The Lord's Prayer, Cervantes' *Don Quixote*, Adam Smith's *Wealth of Nations*, and Shakespeare's plays all exhibit the simultaneous and resonant interplay of the five parts of the "word" (Latin *verbum*; Greek *logos*):

> INVENTIO: invention and discovery by profound study of the subject;
> DISPOSITO: arrangement and order of the material for striking expression;
> ELOCUTIO: adornment or "mask" by careful organization of language resources;
> MEMORIA: instant recall of facts and anecdotes, analogies and cultural heritage;
> ACTIO: delivery, involving gesture, tone, timing, stance and awareness of audience responses.

Three centuries before Cicero, Aristotle had already exposed the techniques of what Isocrates called "the craftsmen of persuasion". A century after Cicero, Quintilian was more concerned with teaching Roman gentlemen "the science of speaking well", while Longinus strove to surpass ancient Demosthenes in elating his auditors and arousing their enthusiasm (Greek *enthousia:* possession by a god).

From the advent of the Greek sophists, epitomized by Gorgias (the butt of Plato's scorn against professionals who took fees for teaching lawyers how to win arguments) until the time of Saint Augustine (fifth century A.D.), teachers of rhetoric accumulated catalogues of rhetorical devices for "moving" audiences. Cicero considered such devices as weapons which could be used for threat or brandished purely for show. During the decline of the Roman Empire, the "second sophistic" reduced rhetoric to mere verbal virtuosity.

Cicero distinguished between three styles: *the ornate or grandiloquent*, most suited for "bending" an audience; the *plain*, most appropriate for teaching or instructing; and the *tempered*, most likely to please. Saint Augustine, however, was exclusively concerned with converting audiences to a Christian way of life. Saint Augustine built his approach upon a close analysis of biblical texts and his use of the rhetoricians' art was always subordinated to his purpose as a propagandist of his faith.[9]

However, it is not how rhetoricians make divisions in theory that now concerns us, but how the resonant interplay of a medium and its program achieves an intended *effect* with its "public". Aristotle and Cicero laid stress upon the differences among audiences for their art in their times. Gutenberg technology drowned their rhetoric and publics alike in printers' ink. Today, admen aim at "carving out a public" via media and programs designed to achieve their purposes. Today's rhetoric is a body of knowledge about the rise and fall of slogans, cliches and current figures of folk awareness and how they influence audiences of different media. Rhetoric has become propaganda—a total culture in action.

Some thirty years ago, in *The Mechanical Bride* [10] Marshall McLuhan scanned the techniques of advertising aimed at creating more consumers for the outputs of mass producers. McLuhan pointed out that the modern "tyrant rules not by club or fist but, disguised as a market researcher, he shepherds his flocks in the ways of utility and comfort". McLuhan described how this tyranny is maintained by "a popular dream art which works trance-like inside a situation that is never grasped or seen. And this trance seems to be what perpetuates the widely occurring cluster image of sex, technology, and death which constitutes the mystery of the mechanical bride". Some twenty years later, McLuhan made another inventory of current ads to highlight the process patterns of a new cultural environment, as he revealed the flip from "business is our culture" to *Culture is our Business*[11], and he noted:

> Ads are the cave art of the twentieth century. While the Twenties talked about the caveman, and people thrilled to the art of the Altamira caves, they ignored (as we do now) the hidden environment of magical forms which we call "ads". Like cave paintings, ads are not intended to be looked at or seen, but rather to exert influence at a distance, as though by ESP. Like cave paintings, they are not means of private but of corporate expression. They are vortices of collective power, masks of energy invented by new tribal man...these richly significant forms are easily obscured and destroyed by the classifiers and moralizers who want to know whether they are a "good thing" or a "bad thing". There are many educated people who consider it a bad thing to study or to understand what goes on in our world. This book is not for motivated somnambulists.[11]

In his study of *Subliminal Seduction*,[12] Wilson Bryan Key exposes how some advertisers consciously hide or "embed" subliminal sex and Freudian "death wishes" as *programmed magic* to increase their sales. Anyone who doubts the existence of such techniques has only to place

an ad for "experienced embedders" in any major U.S. newspaper, and count the job hunters. U.S. Patent 3,278,676 granted to Harold C. Becker on October 11, 1966, described another method "for imparting useful information to an observer by subconscious stimulation and subsequently resulting in conscious purposive behaviour of said observer without his awareness of the basis of such behaviour,..." The actual effects of such techniques are culturally determined.

In his *Gutenberg Galaxy*,[13] McLuhan exposes the subliminal influence that printing in phonetic alphabets has had in creating and intensifying private psyches and individualist societies. McLuhan deliberately presents his writings as a *mosaic* of excerpts and aphorisms—structures, that embody depth perception of many microworlds, combined to represent the macro-world of Western civilization.

Although visible, a mosaic is not merely visual but audile-tactile in its sensory stress, like an icon or a television image. The galaxy of media is a giant mosaic that is now reshaping the nature of twentieth-century man.

In his *Understanding Media*,[14] McLuhan descends into the media maelstrom, like "the father of symbolist poetry and the detective story" Edgar Allan Poe, to discover the metamorphic powers of changing communication technology. For the main influence of any technology is not exercised consciously through concepts and opinions, but unconsciously by altering sense ratios or patterns of perception.

The technological extensions of man reshape his natural environment and thereby his human nature subliminally. My monograph on "Problems of Communicating with People through Media"[15] points out that:

> The media not only filter, distort, and add noise to the information input quantitatively, but they also transform this information qualitatively, during the total process of human communication. We know, for example, that *sleep* is induced by dimming down one or more of the sensory inputs. We have learned too, that elevating the sensory impact of a single repeated image or of a "tribal drum beat" can produce *hypnosis*—unconsciousness—by reducing both sensory closure and interplay. Through repeated intense sensory impacts we can also induce uncritical conviction, *brainwashing*, which requires some interplay but no sensory closure. At the opposite extreme, by removing all sensory inputs, we can maximize sensory closure and thereby produce hallucinations. Moreover, when all sense resources are stretched to a high degree for a prolonged period, the result is *numbness*. Eternal vigilance

> thus creates its own opposite—*indifference*...Between these diverse extremes lies "normal" consciousness which results from the constantly varying interplay of all our senses. Our awareness is of changes in, rather than steady states of, the actual inputs.

Nothing has any meaning alone but only as a *figure* in relation to some environment or context or medium or *ground* which tends to remain hidden. The *figure/ground* relation is not fixed, but constantly changes, as figures become grounds and vice versa. For example, the words you now see are figures on the ground of this page, which can become a figure in the ground of a library, and so on. By deliberately placing familiar objects in unusual environments the artist gives them new meaning. They become symbols or surreal. Highlighting a ground, on the other hand, can convert it into a familiar figure. Today's hidden ground of electric information travelling at the speed of light has transformed the meaning of all figures created in previous environments. The old ground rules break down and yield to new process patterns.[9]

Totally immersed in this new information environment, we desperately try to find our bearings in the experience of some previous age. We translate the new and unfamiliar into old familiar metaphors (Greek *metapherein*: to carry across) that both help and hinder our thinking. Languages and theories, like models and media are metaphoric: they transform one form of being into another. The dominant technologies of every age are not only metaphoric themselves but also rich sources of new metaphors. In biblical times, metaphors came from agriculture, animal husbandry, cooking, midwifery, fishing, and navigation. During the Age of Reason, they derived from bellows, levers, clocks, telescopes, microscopes, and mirrors. The First Industrial Revolution introduced metaphors of steam and steel, production goals, "missing-links" in evolution, and unlimited "progress". In the midst of the Second Industrial Revolution of instant electric information, these figures of speech still support the thinking of people unable to grasp "cybernetic feedback" or to take a "quantum leap" Through the Looking Glass from their world of mechanical connections to the microcosm of "resonant chemical bonds" and the macrocosm of "universal space-time relativity". Metaphors can determine not only what is thinkable, but also what is unthinkable. Ancient metaphors, like the Garden, the Book of Nature, the Great Chain of Being, the Music of the Spheres, Atoms and the Void, and Procustean Measures continue to exert their influence in Western thought. Once invented the old figures revive perennially with new relevance in new grounds like the mythic Phoenix.

Whereas nineteenth-century physicist Lord Kelvin insisted that

without measurement there could be no science, twentieth-century cyberneticist Karl Deutsch contends that "Without models implicit or implied there is no understanding".[16] But neither the models nor the metaphors of the First nor the Second Industrial Revolution can cope with the new situation which requires *direct perception in its own terms.*

Visual sensory bias, which has hitherto dominated Western thinking, now yields to audile-tactile sensory bias that pervades the thinking of preliterate and post-literate cultures alike. An inventory of the characteristics of *visual* and *acoustic-space structure* is given in Table 1.[9]

Briefly, *visual-space structure*, where things are connected sequentially, has separate centres with fixed boundaries; this structure is like the mind's eye which characterizes the left-hemisphere cerebral activity that dominates the thinking of literate Western man. By contrast, acoustic-space structure, where processes are related simultaneously, has centres everywhere and boundaries nowhere; this structure is like the mind's ear which characterizes the right-hemisphere cerebral activity that dominates the thinking of non-literate and Eastern man alike. Visual and acoustic-space structures are incommensurable like history and eternity, but they are complementary, as exhibited by the wave and particle aspects of subatomic matter, and by the *corpus callosum* that bridges the cerebral hemispheres. The specialization of right-and left-hemisphere cerebral functions, first described by A.R. Luria[17] and now the subject of many fragmented studies, is a cultural artifact whose structure is established by the prevailing forms of communication. Hitherto, investigation of these effects has been hindered by attempts to reduce analogical and simultaneous right-hemisphere to logical and sequential left-hemisphere cerebral functions, which, like visual- and acoustic-space structures, are incommensurable although complementary. Have academic investigators become victims of their own propaganda by applying the Shannon-Weaver model of human and machine communication alike? See Figure 1.[18]

In his classic study of *Propaganda* Jacques Ellul emphasizes that:

> *Propaganda cannot succeed where people have no trace of Western culture.* We are not speaking here of intelligence; some primitive tribes are surely intelligent, but have an intelligence foreign to our concepts and customs...A man who cannot read will escape most propaganda...People used to think that learning to read evidenced human progress; they still celebrate the decline of illiteracy as a great victory; they condemn countries with a large proportion of illiterates; they think reading is a road to freedom. All this is debatable, for the important thing is not to be able to read, but to understand what one reads....(My italics)[19]

Ellul is spotlighting the role of literacy in political and ideological persuasion—*visible* bias via media.

By contrast, Canadian economic historian Harold Innis was the first to highlight the role of staples in transforming Western psyche and society—*invisible* bias via media. For example, Innis notes that:

> Concentration on the production of staples for export to highly industrialized areas in Europe and later in the United States had broad implications for the Canadian economic, political, and social structure. Each staple in its turn left its stamp and the shift to new staples invariably produced periods of crises in which adjustments in the old structure were painfully made and a new pattern created in relation to a new staple. As the costs of navigation declined, less valuable commodities emerged as staples—precious metals, dried fish exported to Spain to secure precious metals, timber to support defence,...and finally wheat to meet the demands of an industrialized England...The changing character of the British Empire during the present century has been in part the result of the pulp and paper industry and its influence on public opinion,...In the organization of large areas, communication occupies a vital place,...Media that emphasized time are those that are durable in character, such as parchment, clay and stone. The heavy materials are suited to the development of architecture and sculpture. Media that emphasize space are apt to be less durable and light in character, such as papyrus and paper. The latter are suited to wide areas in administration and trade. The conquest of Egypt by Rome gave access to supplies of papyrus, which became the basis of a large administrative empire. Materials that emphasize time favor decentralization and hierarchical types of institutions, while those that emphasize space favor centralization and systems of government less hierarchical in character. Large scale political organizations such as empires must be considered from the standpoint of two dimensions, those of space and time, and persist by overcoming the bias of media which over-emphasize either dimension. They have tended to flourish under conditions in which civilization reflects the influence of more than one medium and in which the bias of one medium toward decentralization is offset by the bias of another medium towards centralization.[20]

In the same vein, historian of science Lynn White, Jr. reveals how introduction of the stirrup into Europe by the Mongol invaders laid

the foundation of feudalism and chivalry (French *chevalier*: knight) by providing support for "knights in shining armour".[21] Anthropologist Edward T. Hall has also amply demonstrated the role of silent language, as well as the use of time and space, for differing communication in different human cultures.[22] Whereas philosopher Ludwig Wittgenstein concluded that: "What cannot be said must be left to silence," a communication engineer has plaintively asked: "Is there anything anyone can do, or not do, that does not communicate?"

More than a century ago, French symbolist poet Charles Baudelaire wrote: "*Hypocrite lecteur, mon semblable, mon frere*" (hypocrite reader, my likeness, my brother) in his "envoy to the readers" of *Les Fleurs du Mal*.[23] Baudelaire understood how to "put on" his audience like the classical Greek actor (*hypocrite*) in order to communicate unique human experience.

The Transformation Approach to Communication begins with human INTENT, that is uttered or "outered" or expressed by a PROGRAM in some MEDIUM. The users of that medium "put it on" like a mask and become its CONTENT. Media are never neutral, for they transform sensory inputs into different sensory responses: these mental representations are never replicas or mere reflections of some "outer reality", for they are engendered through interplay with the whole of human experience, past and present. People make sense or MEANING individually while they communicate with each other through *change* that is shared. The MESSAGE comprises all the resulting material, mental, and social consequences regardless of the intent. Human communications is devoted to producing a desired message, whereas machine communication is concerned with reproducing a transmitted program. Communicating the new requires orchestration of all the material, psychic, and social resources necessary for the author to recreate his unique experience with his audience; it is both magic and miracle. The new "science" of human communication is an art that anticipates the effects of media on people; it is of precepts rather than concepts.[24]

Grammars of Media, Ancient and Modern

There is no epistemology of experience in the Western world, nor even a word for "percept" in any modern European language except English. Mediaeval Latin *perceptum* referred to both the object of experience and its psychic effect. Has the power of conceptual language to influence thought combined with the prejudice that "all media are neutral" to prevent discovery of the new grammars of the new media? More than two decades ago anthropologist Edward Carpenter explained:

> All languages are mass media. The new mass media—film, radio, TV—are new languages, their grammars as yet unknown... Writing, for example, didn't record our

language; it was a new language, which the spoken word came to imitate. Writing encouraged an analytical mode of thinking with emphasis upon lineality. All languages tended to be polysynthetic, composed of great, tight conglomerates, like twisted knots, within which images were juxtaposed, inseparably fused; written communications consisted of little words chronologically ordered. Subject became distinct from verb, adjective from noun, thus separating actor from action, essence from form. Where preliterate man imposed form diffidently, temporarily, for such transitory forms live but temporarily on the tip of his tongue, in the living situation—the printed word was inflexible, permanent, in touch with eternity; it embalmed truth for posterity.

This embalming process froze language, eliminated the art of ambiguity, made puns "the lowest form of wit", destroyed word linkages. The word became a static symbol, applicable to and separate from that which it symbolized. It now belonged to the objective world; it could be seen. Now came the distinction between being and meaning...The word became a neutral symbol, no longer an inextricable part of a creative process...The gestures of visual man are not intended to convey concepts that can be expressed in words, but in experiences, non-rational emotions, which would still remain unexpressed when everything that can be told has been told.[25]

At the same time, Marshall McLuhan further described how:

Movies and TV complete the cycle of mechanization of the human sensorium. With the omnipresent ear the moving eye, we have abolished writing, the specialized acoustic-visual metaphor that established the dynamics of Western civilization. By surpassing writing, we have regained our WHOLENESS, not on a national or cultural, but cosmic plane. We have evoked a super-civilized sub-primitive man.

NOBODY yet knows the language inherent in the new technological culture; we are all deaf-blind mutes in terms of the new situation. Our most impressive words and thoughts betray us by referring to the previously existent, not to the present.

We are back in acoustic space. We begin again to structure the primordial feelings and emotions from which 3,000 years of literacy divorced us.[26]

While communication experts have been devoting their energies to studying violence *on* media programs, McLuhan and his associates

have been exposing the violence inflicted *by* the media themselves upon their users. McLuhan emphasizes that "mass media" are characterized by and derive special powers from ability to communicate with their audiences simultaneously, rather than sequentially. Thus radio, and television, and newspapers are "mass media", whereas books are not. When television began to take over from print and radio, McLuhan was the first to recognize its new and distinctive psychic and social consequences:

> The new media and technologies by which we amplify and extend ourselves constitute huge collective surgery carried out on the social body with complete disregard for antiseptics. If the operations are needed, the inevitability of infecting the whole system during the operation has to be considered. For in operating on society with a new technology, it is not the incised area that is most affected. The area of impact and incision is numb. It is the entire system that is changed. The effect of radio is visual, the effect of the photo is auditory. Each new impact shifts the ratios among all the senses. What we seek today is either a means of controlling these shifts in the sense-ratios of the psychic and social outlook, or a means of avoiding them altogether...Today we have begun to sense that art may be able to provide such immunity...The artist picks up the message of cultural and technological challenge decades before its transforming impact occurs...The artist is the man in any field, scientific or humanistic, who grasps the implications of his actions and of new knowledge in his own time. He is the man of integral awareness.
>
> The artist can correct the sense ratios before the blow of the new technology has numbed conscious procedures. He can correct them before numbness and subliminal groping and reaction begin.[14]

Today's proliferation of media studies is itself an effect of electric media. Communication speedup draws attention to previously hidden environments. Western cultures hitherto based on Greco-Roman literacy are biased in favour of visual modes of thinking—one thing at a time, sequentially, and in proper perspective. Eastern cultures, on the other hand, are biased toward audile-tactile sensory modes—everything happening all at once, all of the time. These differences in psychic bias are *not* inherent; they are the unforeseen result of different technologies of writing. As a consequence of learning to read and write in the Greek *phonetic* alphabet, whose individual letters have neither visual nor acoustic semantic meaning, Western man began to live in artificial *visual space*. On the other hand, learning to read and write in *morphemic* script, whose characters have

either visual or acoustic semantic meaning, or both, has kept Eastern man in touch with *acoustic space*, the natural habitat of natural man. Today, however, the West is swirling East, just as the East is going West, unintentionally through their latest technologies.

We can all become explorers of communication media by observing their psychic and social effects in changing situations. McLuhan and his associates have been demonstrating how to expose the metaphoric powers of any human artifact, hardware or software, ancient or modern, with a "tetrad"[27] of four questions:

(A) What does it intensify or enhance?

(B) What does it replace or obsolesce?

(C) What does it revive or retrieve of similar nature, previously obsolesced?

(D) What does it flip into when pushed to the extremes of its potentials?

WRITING IN THE PHONETIC ALPHABET

(A) Enhances private authorship and the individual ego;

(B) Reduces aural-oral memory;

(C) Retrieves and revives secret inner life;

(D) Flips into history as the corporate record of private life.

ELETRIC MEDIA

(A) Increase speed of communication to virtual instantaneity, compress the sequent into the simultaneous, and create the new information environment;

(B) Erode visual and logically connected order;

(C) Retrieve audile-tactile dialogue, and revive tribal involvement and the occult;

(D) Reverse the order of transmission as the "etherealized" sender gets sent: you are *there*, and they are *here* instantly as discarnate minds.

MAN-MADE SATELLITES

(A) Extend the planet;

(B) Obsolesce fragmented nature;

(C) Retrieve ecology;

(D) Convert nature into art form, globe into theatre, and spectators into actors.

RE-COGNITION BY INSTANT REPLAY

(A) Amplifies cognitive awareness;

(B) Obsolesces representational images;

(C) Retrieves meaning through participation in (A);

(D) Flips individual experience into process pattern recognition.

Unlike the Hegelian "triad" (thesis, antithesis, synthesis), the tetrad is not a conceptual formula but a perceptual probe; it is an approach to

understanding the action of any medium whatever by highlighting its main psychic and social effects. And it is an open invitation to share in exploring the media with everybody to anticipate such effects consciously, rather than merely reacting to them unconsciously. Communication media not only do violence to their users, they also act as barriers to communication.

The medium becomes the message when we ignore what it does to our intents. To say that the "medium is the message" is a symbolist statement that emphasizes the power of the medium by suppressing the fact that the user is both content and co-maker of the experience. In symbolist representation, the normal ground is either changed or suppressed in order to sharpen awareness of the figure.

The mental and social consequences of printing in the phonetic alphabet are far vaster than anything ever printed, just as the effects of printing in morphemic alphabets or ideograms are far different. The former intensify left-hemisphere cerebral cortex activity which characterize the Western "mental set", while the latter involve more right-hemisphere activity which is characteristically Eastern. Will "the twain meet" by sharing concepts ideologically, or percepts ecologically?

By total immersion in our own cultural surround we become not only unable but unwilling to perceive it, until some new environment shakes us from our slumbers. James Joyce, the "first human engineer", reveals this process in the rhythm, rime, and reason of his parable of *Finnegans Wake*.[28] The sleeping giant Finn is transformed by "ten thunders of the gods" (announcing technological innovations) from paleolithic to modern "tribal" man. As Finn-again, about replay the cycle, he has learned to anticpate rather than merely react to the consequences of his material, mental, and social artifacts; this multi-sensory parable leapfrogs all futurists' scenarios.

We can also learn like McLuhan to penetrate the environments created by our technological extensions. We can expand the tetrad by making inventories of the psychic and social effects with Sensory Impact/Sensory Closure (SI/SC) charts, as exemplified by Table 2 and Figures 2-4.

We can use concepts to probe the foundations of the old ground-rules in order to discover the new laws of the new media by recognizing their process patterns directly.

Underlying our cultural crisis is the continuing vain attempt to translate the simultaneities of our new electric being into the sequentialities of our old logical thinking; also failure to recognize that the same sensory inputs via the same media produce widely different psychic and social consequences for people of differing sensory bias and cultural traditions. For example, the use of transistor radios by camel drivers of the Middle East does far more than keep them in touch

with the world. Radio vastly intensifies the aural-oral responses of tribal peoples, for every rumour is magnified and explodes in tribal fury. How does the radio medium affect Arab-Israeli tensions? Would Hitler and Mussolini have been impossible without radio, or possible with television?

If continuing studies of violence on television have failed to detect any close correlation between violent program content and violent psychic and social effects, there is rapidly growing evidence in North America that over-exposure to television is creating learning disabilities and inducing *dyslexia* among pre-school children. The result has been a crop of dropouts. Moreover, dyslexia has been recognized as the main characteristic of the current criminal population. Dr. Arthur Hurst has reported these results and suggested possible remedies.[29]

Anthropologist Edmund Carpenter describes some of the transformations induced by communication media in the psychic and social lives of tribal people in New Guinea:

> Missionaries visit Sio frequently; a local teacher has a handful of students; itinerant traders leave behind steel axes. Yet Sio remains far removed from Western centers. Stone axes were still in use when we arrived; cameras and recorders were absolutely unknown.
>
> We gave each person a Polaroid shot of himself. At first there was no understanding. The photographs were black and white, flat, static, odorless—far removed from any reality they knew. They had to be taught to "read" them. I pointed to a nose in a picture, then touched the real nose, etc. Often one or more boys would intrude into the scene, peering intently from picture to subject, then shout, "It's you!"
>
> Recognition gradually came into the subjects face. And fear. Suddenly he covered his mouth, ducked his head and turned his body away. After this first startled response, often repeated several times, he either stood transfixed, staring at his image, only his stomach muscles betraying tension, or he retreated from the group, pressing his photograph against his chest, showing it to no one, slipping away to study it in solitude.
>
> We recorded this over and over on film, including men retreating to private places, sitting apart, without moving, sometimes up to twenty minutes, their eyes rarely leaving their portraits.
>
> When we projected movies of their neighbours, there was pandemonium. They recognized the moving images of film much faster than the still images of photographs.
>
> Seeing *themselves on film* was quite a different

thing...There was absolute silence as they watched themselves, a silence broken only by whispered identification of faces on the screen.

We recorded these reactions, using infrared light and film. In particular, we recorded the terror of self-awareness that revealed itself in uncontrolled stomach trembling...But in an astonishingly short time, these villagers, including children and even a few women, were making movies of themselves, taking Polaroid shots of each other...No longer fearful of their own portraits, men wore them openly on their foreheads.

When we returned to Sio, months later, I thought at first we had made a wrong turn in the river network. I didn't recognize the place. Several houses had been rebuilt in a new style. Men wore European clothing. They carried themselves differently. They acted differently...In one brutal movement they had been torn out of a tribal existence and transformed into detached individuals, lonely, frustrated, no longer at home—anywhere...The effect was instant alienation. Their wits and sensibilities, released from tribal restraints, created a new identity: the private individual. For the first time, each man saw himself and his environment clearly and he saw them as separable.[30]

Carpenter also prescribes counter-measures for the cultural damage due to introducing radio in New Guinea:

> It is one of the ironies of change in New Guinea that the introduction of the camera, though traumatic and disruptive of tribal life, must now be encouraged to offset the even greater trauma and disruption caused by radio. Human sensory balance must now be sought in terms of media balance.
>
> A photograph moves us toward the isolated moment. It arrests time. It exists in pure space. It emphasizes individuality, private identity, and confers an element of permanence on that image. In many ways, it is the exact opposite of radio.[30]

On the other hand, children who have been over-exposed to television, in New Guinea, or anywhere else, may not be so fortunate.[31]

In summary, Greek literacy not only permitted a *second look* at Homer's "winged words", it also gave us a *first look* into the private psyche that created Western civilization. Since the advent of global electric communication, we have become immersed in a new post-literate culture that recalls the preliterate world. But electric media

speedup can give us a *second look* at how communication media—all technological extensions of man—change our thinking and being, if we learn to recognize their hidden process patterns.[9] By discovering their actual Grammar, Rhetoric, and Dialectic, we can anticipate their effects instead of merely reacting to them. Today, we can remake our Fate by *instant preplay*,[32] for we can find "the keys to. Given!" (not only the mechanical but the musical keys. All this and Heaven too!)[28] by *understanding media.*

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Table 1
Comparison of Spatial and Acoustic Space Structures

Visual Space	Acoustic Space
—In high definition tends to operate in isolation; fragmenting;	—in high definition tends to include other senses as well; holistic;
—linear, uniform, continuous, mono-directional, definite boundaries, perspective, definite goals, private points-of-view (narrow awareness);	—non-linear, diverse, discontinuous, from all directions at once, no definite boundaries, no perspectives, nor long-range goals, nor points-of-view (all-around awareness);
—static, three-dimensional, contains objects, and is contained;	—dynamic, multi-dimenstional, is not contained; objects *make* their own space;
—items important; *connections*;	—relationships important; *intervals*;
—"centres-with-margins";	—"centres-without-margins";
—individual dress; uniform;	—corporate mask; costume;
—sequential, plodding, one-at-a-time, consistent, *diachronic*;	—simultaneous, sudden, all-at-once, inconsistent, *synchronic*;
—analytic, fragmenting, specializing, centralist, individualistic;	—synthetic, integrating, generalizing, decentralist, pluralistic;
—*matching*, reducing; congruence;	—*making*, creating; consonance;
—describing, classifying;	—exploring, revealing;
—separate particles, entities or things with individual properties and motivating forces;	—interfacing, interpenetrating, interdependent fields, processes, patterns in continuing interplay and resonance;
—infinity;	—eternity;
—quantitative measuring, interpolating, extrapolating;	—qualitative transforming and combining;
—breakdown as break-up;	—breakdown as breakthrough;
—visible "figure" or "efficient cause";	—invisible "ground" or "formal cause";
—historic; under the aspect of evolution;	—mythic; under the aspect of eternity;
—showing by "illustration" for the eyes;	—revealing by "icon" for all the senses;
—"hot media" such as print; detaching;	—"cool media" such as T.V.; involving;
—information "bit", phoneme, "letter" of the phonetic alphabet; technical term;	—ideograph, morpheme, "gestalt", *logos*; poetry;
—logical "proof";	—analogical "manifest"
—quantitative projection from common denominator;	—qualitative prediction of trend reversal or "chiasms";

—mechanical, determinist;
—"atoms and the void";
—conflict; "one best way";
—compromise, homogeneous mixture;
—private identity;
—materials and machine-made products—"hardware";
—"empty space" containing separate "matter" and "radiation";
—length, mass, and time as separate "dimensions", properties, attributes, parameters of physical space; "relativity" visualized by four-dimensional geometry
—yes-or-no logic for computers;
—quantitative forecasting;
—change induced by stimulus programming "figures";
—explaining by reduction to visual forms and to semantic distinctions; learning effects; one-at-a-time;
—textbook prose, story-line; history, and exposition;

—leadership by motivation and pressure toward specific goals; generalship;
—forcing attention upon an audience through "high pressure"; lecturing;
—producer-oriented selling;
—private consciousness; opinion;
—knowing how-to-do for efficient repetition;
—static scale or human needs; unchanging human nature;

—instruction for meeting standards and solving puzzles; "matching-the-old";
—conceptual training that starts with the causes; science;
—detachment; objectivity; separation of thought and feeling; individual privacy;
—private "right" to opinion

—organic, existential;
—"music of the spheres";
—complementarity; paradox;
—integration, uniquity by relationship;
—corporate identity;
—people and multi-sensuous information—"software";
—interpenetrating "vacua" and "plena" in continual transformation

—length, mass, and time as interplay of interfacing physical spaces; non-visual representation through field equations of motion;

—yes-and-no dialectic for human brains;
—qualitative forecasting;
—change induced by organizing the "ground";
—sharing total sensory experiences; learning by effects; all-at-once;

—symbolic poetry, haiku, multilevel puns, aphorisms, insights and revelations;
—leadership through corporate participation in achieving shared aspirations; "charisma";
—"putting on" an audience by "low pressure" involvement; teaching;
—consumer-oriented marketing;
—corporate (un)conscious; consensus;
—understanding what-to-do for exceptions and entrepreneurship;
—dynamic scale of human needs; constantly changing human nature;
—education for exploration and discovery; "making-the-new";

—perceptual training that starts with the effects; art;
—participation; unity of thought and feeling; corporate togetherness;
—corporate "right" to share

and ignorance;
—communication as transportation of "software" like "hardware" via pipeline;
—conscious life and "channeling" of sensory inputs; "stimulus/response tests";

—nakedness; pornography by fragmenting and intensifying pieces of human bodies;
—fixed prices; "exchange values";
—"equitone", "flat" speech without gesture;
—hierarchy of authorities; schemes;
—private endeavour (car, house, career, wealth...);
—exercising power through positions of control "from the top down";
—choosing priorities and "saving time" for distant goals;
—judging indirectly through ideology or theory; defining meanings; organizing knowledge for rapid retrieval;
—*logical maturity* that strives to eliminate paradox;
—professional, scientist; "generalist" (sharpening and applying concepts);
—"literate", "rational"

—normally dominant in the *left hemisphere* of the brain in occidental cultures;
—abstract nature

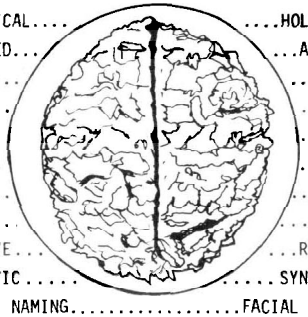
all information;
—communication as transformation through change that is shared—"grapevine";
—unconscious life and "synesthesia" through "sensory closure"; "sensory input/sensory response" inventories;
—nudity; love through integration of differing human personalities;
—bargaining; "use values";
—modulated, "musical" speech with gesture;
—community of aspirations; dreams;
—corporate endeavour (man-on-the-moon...);
—achieving effects by understanding "the law of the situation";
—making and recognizing new relationships to use time for living, learning;
—perceiving directly what is happening; exploring process patterns; organizing ignorance for rapid discovery;
—*human maturity* that learns to appreciate paradox;
—amateur, artist, "comprehensivist" (sharpening perceptual awareness);
—"pre-and post-literate"; "irrational", "tribal";
—normally dominant in the *right hemisphere* of the brain in occidental cultures;
—actual existence.

Table 2

1. McLuhan's charts are psychological hypotheses for recording and predicting individual subjective responses (SR) to sensory inputs (SI) through particular communication media. By showing which senses enter directly into the experience of any communication medium through individual sensory closure (SC), the charts can also suggest what the corporate psychic and the social consequences might be.
2. High Definition (HD) and Low Definition (LD) are terms referring to the amount of information in a sensory input or response relative to a sensory mode's "information capacity". In this respect the visual sense is unique in that it greatly exceeds all others in both its information handling capacity and its psychic effects. In HD, the visual excludes all of the other senses.
3. When a sensory input is in high definition the subjective response of the perceiver will also be in high definition, but not necessarily for the same sense. High definition auditory input, for example, produces high definition sensory effects of both visual and tactile nature. Communication media therefore do much more than transfer, they actually transform sensory inputs; the nature of this transformation depends upon the "definition" of the input, the type of medium, and the "mental set" of the recipient.
4. Every medium favours a definite ratio or proportion among the sensory responses creating human consciousness through their interplay. Any increase or decrease in one sensory component is immediately compensated for by changes in the proportions of other sensory components, since the toal sensory response tends toward constancy.
5. The origin and the prevalence of popular myths and legends, the continual changes in already existing forms of art and current advertising, the reversals of centralizing and decentralizing tendencies in human organizations, provide ample relevant material for exhibiting the effects of new media.
6. Direct correlation exists between the characteristics of a medium and the sensory preferences, the "tastes", of people who are exposed to it sufficiently to become biased. People can overcome this bias through awareness and by conscious effort—by rationing exposure to the medium and through practice in re-programming their own sensory lives.
7. The visual, auditory, tactile, gustatory, and olfactory senses, both sensory inputs and sensory responses, owe their delimitation to the analytical process of isolating single percepts from the totality of an organism's sensory experience.
8. Exteroceptive sensations include touch, temperature, sound, smell, taste and sight.
9. Interoceptive sensations include hunger, thirst, nausea, pain and the maintaing of equilibrium (which is also called proprioceptive).
10. The degree of consciousness depends upon the amount and the variety of interaction, recall, and interplay of the total sensorium.
11. Tactile sensations, both of sudden changes and of differing intervals, result not only from tactile inputs but also from sensory closure and through interplay of the other senses.
12. "Extra-sensory perception" includes both the unknown effects of interplay among known sensory modes and the effects of any hitherto undefined or undiscovered modes.

FIGURE 1

FUNCTIONS OF THE HUMAN BRAIN



- EYE -		- EAR -
LEFT HEMISPHERE		RIGHT HEMISPHERE
CONTROLS RIGHT SIDE BODY		CONTROLS LEFT SIDE BODY
OCCIDENTAL		ORIENTAL
VISUAL SPEECH		MUSICAL - ACOUSTIC
LOGICAL, MATHEMATICAL		HOLISTIC
LINEAR, DETAILED		ARTISTIC, SYMBOLIC
SEQUENTIAL		SIMULTANEOUS
CONTROLLED		EMOTIONAL
INTELLECTUAL		INTUITIVE, CREATIVE
DOMINANT		MINOR - QUIET
WORLDLY		SPIRITUAL
QUANTITATIVE		QUALITATIVE
ACTIVE		RECEPTIVE
ANALYTIC		SYNTHETIC, GESTALT
READING, WRITING, NAMING		FACIAL RECOGNITION
SEQUENTIAL ORDERING		SIMULTANEOUS COMPREHENSION
PERCEPTION of SIGNIFICAN ORDER		PERCEPTION of ABSTRACT PATTERNS
COMPLEX MOTOR SEQUENCES		RECOGNITION of COMPLEX FIGURES

FIGURE 2: SPEECH AND WRITING MEDIA

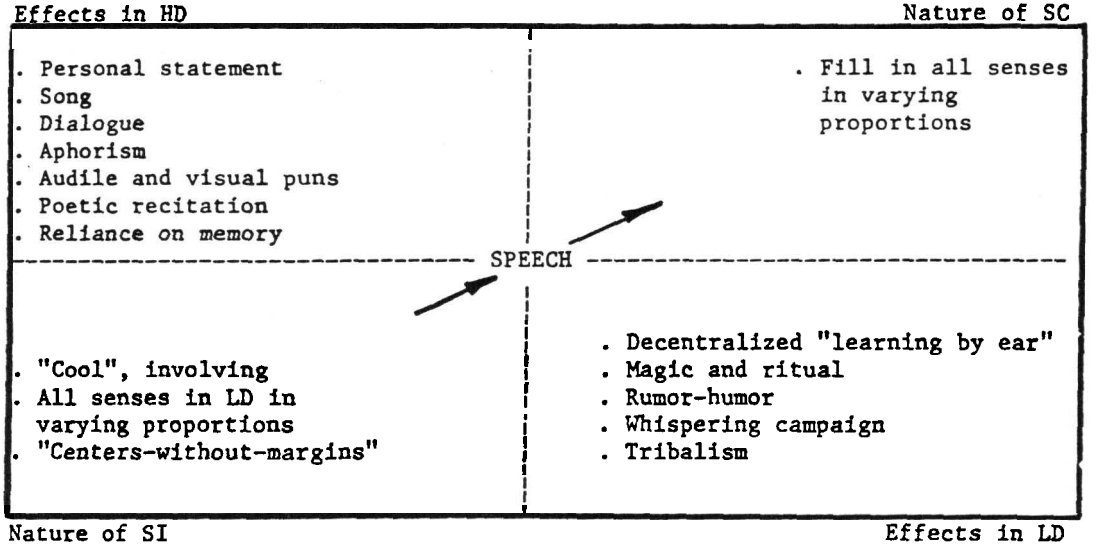
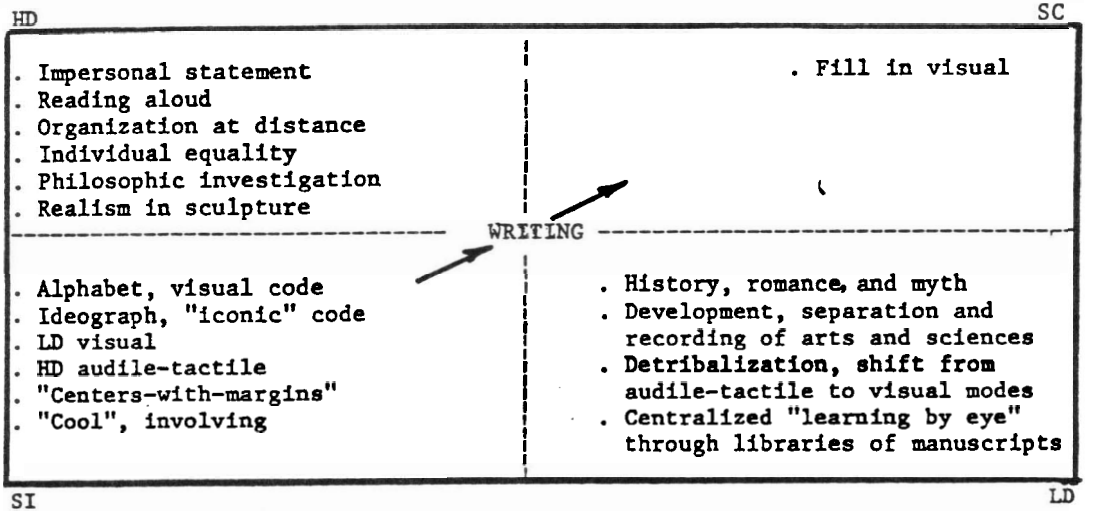


Figure 2 cont.



Notes on Figure 2

1. Speech like fire involves all the senses in various proportions. Sensory inputs of speech, normally in low definition, imply a high degree of sensory closure, that is, high participation by the recipient in order to make up for what is lacking.
2. Phonetic writing is a way of abstracting and translating the many senses involved in speaking into a single visual mode of communication.
3. Continual abstraction and translation of the non-visual world into visual forms have produced increasing visual bias of the human sensorium and have favoured visually structured forms of human knowledge and of educational, business, legal, and political organizations.
4. The spread of writing on relatively cheap and easily transportable materials, such as papyrus, enabled "civilized" men, who "played by eye", to organize armies and empires for dominating "barbarians" who "played by ear" only.

FIGURE 3: PRINTING AND PHOTOGRAPHIC MEDIA

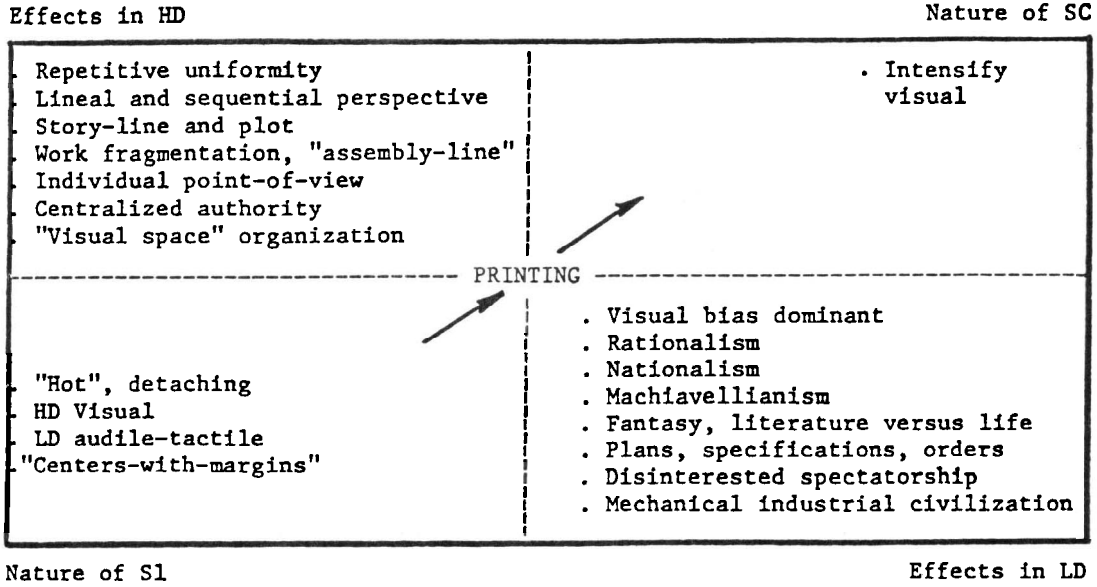
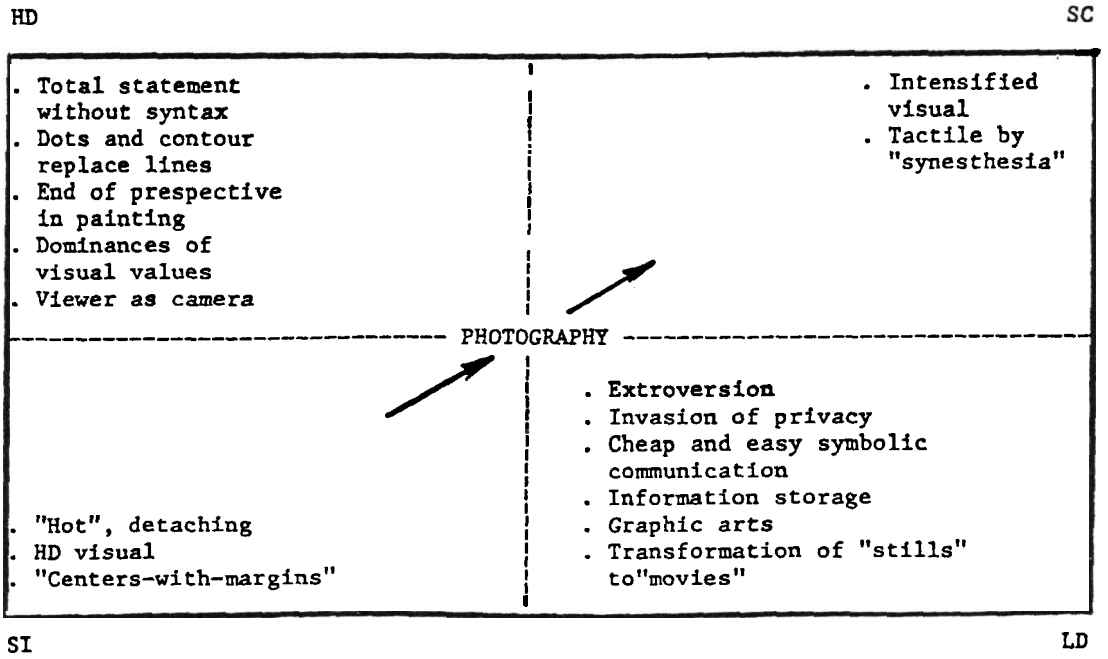


Figure 3 cont



Notes on Figure 3

1. Print is the first mechanization of handicraft. The repeatable, printed book of the Gutenberg press is the first example of mass production; it is also the first uniform, marketable product; and it is the first "teaching machine".
2. Printed books as private teaching machines not only stimulated initiative and self-reliance but also provided dictionaries, grammars, encyclopedias, and other means of uniform training for the whole community. Books established ideals for individual goals, for inner self-definition, for mobilizing public opinion, and for "nationalism".
3. By quantitatively stepping up the definition of the medium, print transformed phoentic writing qualitatively to produce new forms of sensory response, new subjective preferences with intensified visual bias. Improvements in print also made today's "speed-reading" possible.
4. Photography provides a total statement, an image of the world without lines. By still further intensifying the visual stress of print, photography raised visual values—superficial appearance, human clothing, and decorative art—to their ultimate peak.

FIGURE 4: RADIO AND TELEVISION MEDIA

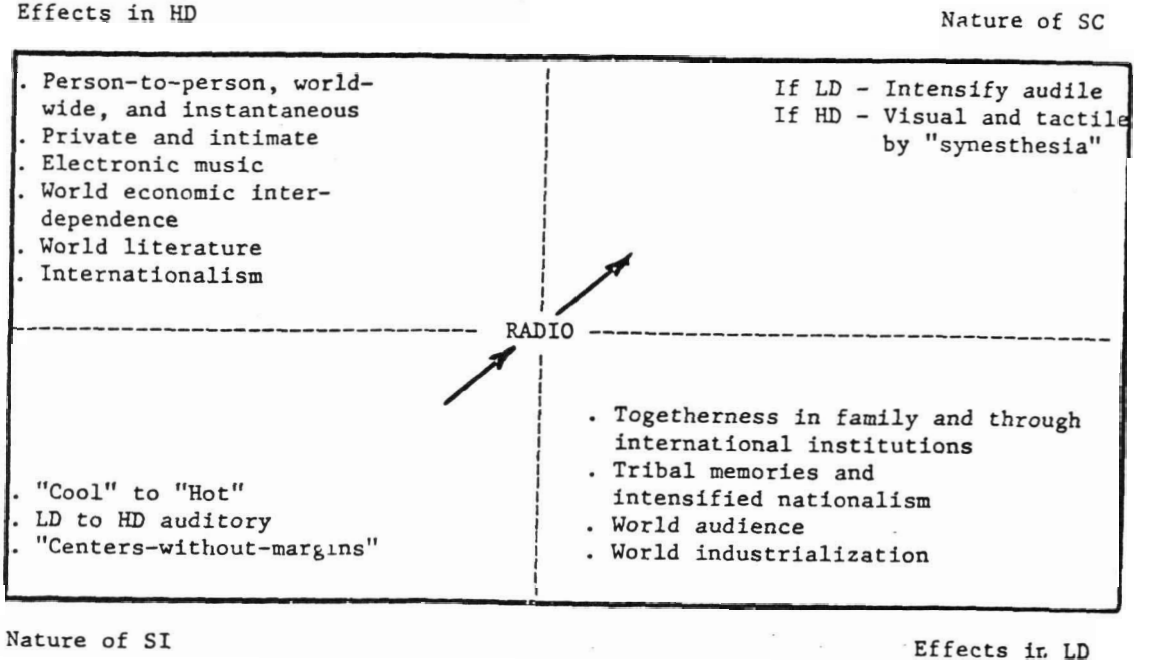
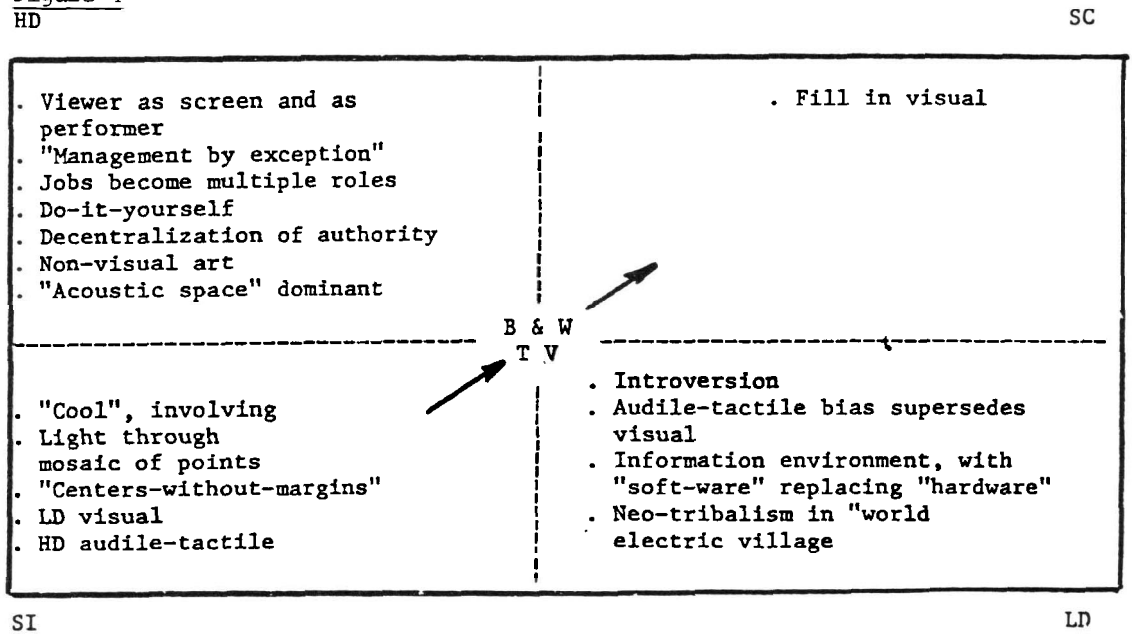


Figure 4


HD
SC
. Viewer as screen and as performer
. "Management by exception"
. Jobs become multiple roles
. Do-it-yourself
. Decentralization of authority
. Non-visual art
. "Acoustic space" dominant
. Fill in visual
B & W T V
. "Cool", involving
. Light through mosaic of points
. "Centers-without-margins"
. LD visual
. HD audile-tactile
. Introversion
. Audile-tactile bias supersedes visual
. Information environment, with "soft-ware" replacing "hardware"
. Neo-tribalism in "world electric village
SI
LD

Notes on Figure 4

1. High fidelity radio-broadcasting creates high definition visual and tactile effects through sensory closure, although low definition radio-telephone demands greater involvement to fill in what is missing.
2. Radio extends person-to-person dialogue and togetherness into all levesl of human affairs. It destroys isolation and privacy; it ends the reign of absolute authority.
3. The immediate effect of radio on tribal society is to intensify the tribal influence already present; its effect on detribalized Western man, however, is to create a deep sense of responsibility for humanity.
4. The black-and-white image of today's T.V. is in low definition, therefore, automatically involving the viewer in filling it out through sensory closure.
5. The points of light, which constitute the mosaic image on the T.V. screen, are strong in both contour and structural effects which are tactile in nature.
6. Colour T.V. and "movies" produce quite other effects, and are, therefore, qualitatively different media.
7. Black-and-white T.V. is deeply accentuating the fundamental shift in sensory bias away from the visual to the audile-tactile modes already resulting from simultaneous multi-media impacts and accelerating information flow; it is hastening the transformation of our tastes and preferences from "civilized" to "neo-tribal"; but it is having the profoundest effects upon our children, with baffling social consequences for all of us.