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THE GLOBAL VILLAGE

Transformations in World Life
and Media in the 21st Century

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AND

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Is it a fact . . . that, by means of electricity, the world of matter has become a great nerve, vibrating thousands of miles in a breathless point of time? Rather, the round globe is a vast head, a brain, instinct with intelligence! Or, shall we say, it is itself a thought, nothing but a thought, and no longer the substance which we deemed it!

NATHANIEL HAWTHORNE
(*The House of the Seven Gables*)

Preface

I

Marshall McLuhan and I constructed this book from two points of view: the aesthetic and the technologic. Chapters 1 to 6 are an aesthetic meditation on how Marshall arrived at the tetrad through art and rhetoric. Chapters 7 to 9 concentrate on electronic communication technologies and demonstrate how speed-of-light technologies could be used to postulate possible futures. One might determine the final end of each electronic technology by its intensive enlargement or amplification. The four phases of the tetrad manifest the cultural life of an artifact in advance (whether it be a computer, data-base device, satellite, or global media network) by showing how a total saturated use would produce a reversal of the original intent.

To McLuhan, graphing the human use of an artifact could predict what society might do with a new invention. Hence, one could accept or reject from the beginning the future effects of any new artifact. For example, had a tetrad been constructed of the total human effects of atomic energy, we might have deployed all our secret services during World War II to frustrate the use of the atom as a weapon for any combatant, including ourselves. In more recent times, we might have foreseen that the effects of the contraceptive pill would create a deep birthrate plunge in many Western societies.

McLuhan believed an investigation of this book's precepts, his last collaborative work, would prove out his most profound thought: that the extensions of human consciousness were projecting themselves into the total world environment via electronics, forcing hu-

mankind into a robotic future. In other words, man's nature was being very rapidly translated into information systems which would produce enormous global sensitivity and no secrets. As usual, man was unaware of the transformation.

Because the present is always a period of painful change, every generation views the world in the past—Medusa is viewed through the polished shield: the rearview mirror. The Romans were obsessed with the world of Greece, the Greeks with the tribalists who preceded them (including that great primitive Socrates, whom Plato worshipped all his life). Plato did not have a clue as to what had brought literacy into the world or what it had done to philosophy. He spent his life as an amanuensis of Socrates, turning orality into an art form so as to cope with the new written literacy. But this is normal. People spend their lives making reasonable simulations of what has been done in the preceding age. The Renaissance man lived in the Middle Ages, mentally and imaginatively—deeply thrust through with uncritical classicism. The nineteenth-century man lived in the Renaissance. *We* live in the nineteenth century. The image that we have of ourselves, collectively, in the Western world is from that period. Tom Wolfe looks like a reconstituted Horace Greeley. Sherlock Holmes reigns on public television as an encyclopedic hero, a posture he would not have achieved in Victorian England. The typical American suburbanite lives in the frontier world of the nineteenth century; for him, Luke Skywalker is simply Billy The Kid revisited.

What is happening at the present time is that changes are occurring so rapidly that the rearview mirror does not work anymore—at jet speeds, rearview mirrors are not very useful. One must have a way of anticipating the future. Humankind can no longer, through fear of the unknown, expend so much energy translating anything new into something old but must do what the artist does: develop the habit of approaching the present as a task, as an environment to be discussed, analyzed, coped with, so that the future may be seen more clearly.

The tetrad replays various futures; it suggests experimental alternatives. The tetrad can therefore shift our perceptive focus from the past into the present. Take, for example, the book. Xerox makes it possible for every person to become his or her own publisher. We no longer need to mechanically print, repetitively, a

particular text with little change. We can make a book to which people can constantly add pages—if necessary, from other books. Add the electronic data base for exploration and one might have access to the most unlikely combinations. Unlikely combinations produce discovery. *The Global Village* is not a nineteenth-century book, one of encyclopedic expectations; it is a book which never has the final answer, which brings the past into the present for the purpose of seeing an alternative future, a future where the whole of the economy appears to be moving rapidly toward tailor-made, individually committed services.

Marshall McLuhan, in his final years, wanted to talk to a new generation, one which was twenty to twenty-five years beyond *Understanding Media: The Extensions of Man* (1964). He said that the sons and daughters of the "Flower Children" would transform the world because they would find words to translate what had been ineffable to their parents.

The ineffable to McLuhan was what was dimly seen by those at Woodstock and Haight-Ashbury—that the entire world was in the grasp of a vast material and psychic shift between the values of linear thinking, of visual, proportional space, and that of the values of the multi-sensory life, the experience of acoustic space. Culturally, what is happening now is titanic. It needs a completely new frame of reference. McLuhan provides one. He presents it in a triad of new terms: visual space, acoustic space, and the tetrad. *The Global Village* is devoted to defining and explicating all three as it shows how world culture is repositioning itself to accept a completely different perceptive mode—the mode of the dynamically many-centered.

Visual space is the mind-set of Western civilization as it has proceeded over the last 4000 years to sculpt its monolithic linear self-image—a self-image which emphasizes the operation of the left hemisphere of the brain and which, in the process, glorifies quantitative reasoning.

Acoustic space is a projection of the right hemisphere of the human brain, a mental posture which abhors priority-making and labels and emphasizes the pattern-like qualities of qualitative thinking. McLuhan pointed out repeatedly that the passion of the visual space mind-set leaves little room for alternatives or participation. When no provision, for example, is made for two entirely different

points of view, the result is violence. One person or another loses his identity. Acoustic space is built on holism, the idea that there is no cardinal center, just many centers floating in a cosmic system which honors only diversity. The acoustic mode rejects hierarchy; but, should hierarchy exist, knows intuitively that hierarchy is exceedingly transitory.

McLuhan espoused oriental values as primarily acoustic. Encyclopedic visual space is a mode developed by Plato, polished by Aristotle, and injected wholesale into Western thinking. The two value systems have interpenetrated each other for centuries, certainly when passed from hand to hand in slow print form. But, now the acoustic and the visual are separately slamming into each other at an explosive speed of light. Electric flow has brought differing societies into abrasive contact on a global level, occasioning frequent worldwide value collisions and cultural irritation of an arcing nature, so that, for instance, when a hostage is taken in Beirut an entire nation on the other side of the world is put at risk. McLuhan said, "in the last half of the 20th Century the East will rush Westward and the West will embrace orientalism, all in a desperate attempt to cope with each other, to avoid violence. But the key to peace is to understand both systems simultaneously."

Simultaneous understanding, or "integral awareness," can be seen in the tetrad. McLuhan invented the tetrad as a means of assessing the current cultural shift between visual and acoustic space. At present, every artifact of man mirrors the shift between these two modes.

In this book, we present a model for studying the structural impact of technologies on society. This model emerged from a discovery that all media and technologies have a fundamentally linguistic structure. Not only are they like language but in their essential form they *are* language, having their origins in the ability of man to extend himself through his senses into the environment.

Our research, at the Centre for Culture and Technology in Toronto, constituted an inquiry into the formal aspects of (linguistic) communication which, in the process, uncovered a tetradic structure: all media forms (a) *intensify* something in a culture, while, at the same time, (b) *obsolescing* something else. They also (c) *retrieve* a phase or factor long ago pushed aside and (d) undergo a

modification (or *reversal*) when extended beyond the limits of their potential. The result is a four-part metaphor.

When this four-part "structure of the word" (*logos*) is applied to technologies one is able to ascertain the dynamic and social impact of any human artifact on the society into which it is extended; this can be formulated in a simple four-part analysis which is inclusive and, apparently, irreducible. In *The Global Village* we have confined our most widespread analysis to the approaching worldwide impact of video-related technologies which, in their present guise, forecast the most foreseeable future.

For Marshall McLuhan, the meaning of meaning was relationship. In the writing of this book from 1976 to 1984, I was swept into the ideational whirl of his family and associates. In the late forties, Marshall debated poetics with Ezra Pound at Saint Elizabeth's and, through letters, drifted into an intense exchange of critiques concerning Pound with others, such as Hugh Kenner and Felix Giovanelli. In a similar way, I was caught up in a quick-fire exchange of analytical facts and opinions with Marshall, his friends, and colleagues, both in Toronto and elsewhere. McLuhan and I talked; made critical tapes on our ideas; and revised commonly circulated preparatory texts, especially on the structuring of the tetrad. Marshall would take the same ideas and share them with such luminaries as Glenn Gould, John Cage, and Pierre Trudeau. Constant refinement through the minds of others was his way of working. In discussing his penchant for sharing his ideas in development with whoever would listen, McLuhan once told Eric McLuhan and myself—Eric, who was so important in later years in helping his father to record ideas and conversations for revision—"Truth is not matching. It is neither a label nor a mental reflection. It is something we make in the encounter with the world that is making us. We make sense not in cognition, but in replay. That is my definition of intellection, if not, indeed, scholarship. Representation, not replica."

II

In the weeks just before his final stroke in 1979, McLuhan was preoccupied with death. The thought had sprung out of our dis-

cussions about the central metaphor of *Understanding Media*, the Narcissus myth.

One Saturday morning, in examining the opening of our book, *The Global Village*, Marshall noticed the relationship between the astronauts' first view of the earthrise (see Chapter 1) and the mirror image percept he had first examined in 1963. When we went to the moon, he said, we expected photographs of craters; instead, we got a picture of ourselves. Ego trip. Self-love.

The mirror image, I countered, is another way of saying water, which stands for change in man and nature. Narcissus fell in love with his image in the water. "No," said Marshall, "that's the popular conception." Narcissus, as Ovid paints him, is a primal youth, has never seen a mirror or his image. "He fell in love with someone else." That's the mythical and satirical point. For him, the watery mirror was death.

Marshall paused and walked across the living room to place a log on the fire. "Had you thought of the nature of hell in ancient Near Eastern literature?" I asked Marshall. Hell is a watery place. Remember Gilgamesh. The Bible refers to it as Sheol. The Greek shades wander in a dark and misty underworld. By concentrating only on the watery image, Narcissus performs a sort of dreamlike closure, Marshall said. Eventually, like Alice, he must pass through the vanishing point, to see both sides of the mirror. Marshall seemed thunderstruck. "That's what death must be like; one sees oneself simultaneously, as oneself and as the other." Like seeing your own face, warts and all, on the TV screen for the first time. The actor without his makeup. The anchorman without his hairpiece. Christ walks on the water. Peter falls through it. Water is death for humans and a container for the diabolic.

"The diabolic?" I said. From a Christian viewpoint, the Devil brought death into the world. When we outer ourselves, we are in a saving community, the realm of consciousness. When we are innering, within ourselves, through the mirror as it were, we are in danger of being lost in the funhouse of our unconscious. Trapped inside one's skull. A definition of insanity? It's quite explicit in the Gospels: "Unless you die again, you cannot be reborn." That's Poe's maelstrom; into the vortex and out again, surviving not only because you travel light but are prepared to jettison everything. One dies and is reborn. One is immersed and rises again. The

cross of the pagan: he cannot return from hell. Judgment Day for the Christian is seeing himself on earth and in the hereafter simultaneously, which is the unique characteristic of speed-of-light technologies. "When you see yourself on TV, as I have, you are innering and outering simultaneously." A diabolical plot? (Later, McLuhan's letters would reveal that he told Jacques Maritain that the Prince of this world must be a great electrical engineer.) We concluded that video-related technologies might produce a form of psychological death for all mankind by separating it permanently from the natural order, the book of nature, through Narcissus-like self-involvement, a conclusion reached by McLuhan operating on three analytical levels at once: the perceptual, the historical and the analogic. That was McLuhan's rhetorical style, to explore, and re-explore, a subject with a myriad of ideas, each seeming to have an equal judgmental weight, rather than a single point of view. I hope this explanation is of some help to the first-time reader. *The Global Village*, after all, is the first right-hemisphere book as well as McLuhan's last work.

As I review the copyedited manuscript I am pleased that so many of our tetradic projections are as relevant in 1988 as they were when *The Global Village* was being put together (from 1976 to 1984). Yet new technologies are arising which beg for analysis, like cellular phone systems and digitally controlled 360-degree film projection processes. But that's another book.

Lewiston, New York
August 8, 1988

B. R. P.



The Resonating Interval

All Western scientific models of communication are—like the Shannon Weaver model—linear, sequential, and logical as a reflection of the late medieval emphasis on the Greek notion of efficient causality. Modern scientific theories abstract the figure from the ground. For use in the electric age, a right-brain model of communication is necessary to demonstrate the “all-at-onceness” character of information moving at the speed of light. As voice, print, image, and sensory data proceed simultaneously, figure and ground are often in apposition rather than in a sequential relationship. For example, the consciousness of the data-base user is in two places at once: at the terminal and in the center of the system.

An artifact pushed far enough tends to reincorporate the user. The Huns lived on their horses day and night. Technology stresses and emphasizes some one function of man's senses; at the same time, other senses are dimmed down or temporarily obsolesced. The process retrieves man's propensity to worship extensions of himself as a form of divinity. Carried far enough man thus becomes a “creature of his own machine.”

The trick is to recognize the four-fold pattern of transformation before it is completed. At full maturity the tetrad reveals the metaphoric structure of the artifact as having two figures and two grounds in dynamic and analogical relationship to each other. The resonating interval defines the relation between figure and ground and structures the configuration of ground. Through comprehensive awareness we may see both past and future at once. Strictly left-brain thinking, or “analysis,” allows technology to move as a dumb force because without

perceiving all four-fold processes in operation, we are unconscious of their overall effects.

After the Apollo astronauts had revolved around the moon's surface in December of 1968, they assembled a television camera and focused it on the earth. All of us who were watching had an enormous reflexive response. We "outered" and "innered" at the same time. We were on earth and the moon simultaneously. And it was our individual recognition of that event which gave it meaning.

A resonating interval had been set up. The true action in the event was not on earth or on the moon, but rather in the airless void between, in the play of the axle and the wheel as it were. We had become newly aware of the separate physical foundations of these two different worlds and were willing, after some initial shock, to accept both as an environment for man.

The same may be said for the left and right brain.¹ We must once again accept and harmonize the perceptual biases of both and understand that for thousands of years the left hemisphere has suppressed the qualitative judgment of the right, and the human personality has suffered for it. The isolation and amplification of one sense, the visual, is no longer enough to deal with acoustic conditions above and below the surface of the planet.

The book of nature contains innumerable borderlines and interfaces. The resonant interval may be considered an invisible borderline between visual and acoustic space.² We all know that a frontier, or borderline, is a space between two worlds, making a kind of double plot or parallelism, which evokes a sense of the crowd, or universality. Whenever two cultures, or two events, or two ideas are set in proximity to one another, an interplay takes place, a sort of magical change. The more unlike the interface, the greater the tension of the interchange.

The tetrad, like the metaphor, performs the same function that the camera did in the *Apollo 8* mission: it reveals figure (moon) and ground (earth) simultaneously.³ The left brain with its sequential, linear bias, hides the ground of most situations, making it subliminal. Left-hemisphere thinking, as a dominant mode, is linear and tends to place emphasis only on the connected; it is

steeped in a priori notions of order, masking the complementarity of both right and left brain modes.

The terms *figure* and *ground* were borrowed from gestalt psychology by the Danish art critic Edgar Rubin, who about the year 1915 began to use them to discuss the parameters of visual perception.⁴ At the Centre for Culture and Technology, we broadened Rubin's usage to take in the whole of perception and consciousness. All cultural situations are composed of an area of attention (figure) and a very much larger area of inattention (ground). The two are in a continual state of abrasive interplay, with an outline or boundary or interval between them that serves to define both simultaneously. As in the paintings of Van Gogh or cloisonné art, figures rise out of and recede back into ground, which is configurational and comprises all other (available) figures at once. For example, at a lecture attention will shift from the speaker's words to his gestures, to the hum of the lighting or street sounds, or to the feel of the chair or a memory or association or smell, each new figure alternately displacing the others into ground.

One sees a ready comparison with Gombrich's description of *synesthesia*.⁵ Writing in *Art and Illusion*, E. H. Gombrich sees the interplay of sensory input and response as a kind of mosaic, a configuration:

What is called "synesthesia," the splashing over of impressions from one sense modality to another, is a fact to which all languages testify. They work both ways—from sight to sound and sound to sight. We speak of loud color or of bright sounds; and everyone knows what we mean. Nor are the ear and the eye the only senses that are thus converging to a common center. There is touch in such terms as velvety voice and a cold light, taste with sweet harmonies of color and sounds. . . .

The common sensorium, which is Goethe's proper use of the word *Wellinneraum*, contains all potential figures in sensuous latency at once. In this respect, ground provides the structure of or style of awareness, the way of seeing or the terms on which a figure is perceived. The study of ground on its own terms is virtually impossible, as by definition it is at any moment environmental and subliminal. The only possible strategy is to construct an anti-environment, which is the normal activity of the artist, the only

person in the culture whose whole business is the retraining and updating of sensibility.

In the order of things, ground comes first. The figures arrive later. Coming events cast their shadows before them. The ground of any technology is both the situation that gives rise to it as well as the whole environment (medium) of services and disservices that the technology brings with it. These are the side effects, and they impose themselves haphazardly as a new form of culture. The medium is the message. As an old ground is displaced by the content of the new situation, it becomes available to ordinary attention as figure. At the same time a new nostalgia is born. The business of the artist has been to report on the nature of ground by exploring the forms of sensibility made available by each new ground, or mode of culture, long before the average man suspects that anything has changed.

Audile (acoustic) space and tactile (visual) space are in fact inseparable. But in the interfaces created by these senses, figure and ground are in dynamic equilibrium, each exerting pressure on the other across the interval separating them. The interface therefore, is resonant and not static. That pressure creates a condition of continual, potential transformation called *chiasmus*. Resonance is the mode of acoustic space; tactility is the space of the significant bounding line and of interval.

The tetrad, taken as a whole, is a manifestation of human thinking processes. As an exploratory probe, tetrads do not rest on a theory but a set of questions; they rely on empirical observation and are thus testable. When applied to new technologies or artifacts, they afford the user predictive power; in this sense as well they may be viewed as a scientific instrument. Once again, insofar as the tetrads are a means of focusing awareness of hidden or unobserved qualities in our culture and its technologies, they act phenomenologically. From Hegel to Heidegger, phenomenologists have engaged in an attempt to get at the hidden properties, or concealed effects, of language and technology alike. To do so they have tackled a right-hemisphere problem using left-hemisphere techniques and modes of cognition—which is comparable to tap-dancing in chains! The tetrad offers a way out of this dilemma.

Until now, the conventional form in analysis or exposition has been triadic and logical, as in the syllogism. It is a propositional

left hemisphere form, rigid and connected, in the pattern of efficient cause.⁶ Whether syllogistic or Hegelian-dialectical, for some inherent reason the triad eliminates ground. When a fourth term is added, the structure becomes resonant and appositional and metaphorical: simile, metonymy, synecdoche yield to metaphor.

The tetradic representation of processes had led us to an awareness that all our artifacts are in fact words. All of these things are the outcries and utterings of man. In Douglas Fraser's *African Art as Philosophy*, it is mentioned as a feature of some traditional societies that speech and weaving are synonymous:

Among the Bambara and the Dogon, the gift of weaving is closely associated with that of speech. *Soy* the Dogon word for cloth means "it is the spoken word" (Griaule, 1948, p. 30). Weaving, along with speech, was a gift from the creator to help man. . . .

Each tetrad is the word or the *logos* of its subject, and all these words are peculiarly human, with the utterer as the etymology. They constitute, in opposition to the Shannon-Weaver construct, a right-hemisphere theory, or model, of communication; and, as they provide both exegesis and etymology of a (rhetorical) utterance, they serve to bring up to date the ancient and medieval tradition of grammar-allied-to-rhetoric in a way that is consonant with the forms of awareness imposed on the twentieth century by electronic technology.

They are equally applicable to the full range of human artifacts whether hardware (objects) or software (ideas), although our left-hemisphere training makes them easier to apply to the former than to the latter. They provide an analytic of their subjects from the standpoint of *logos* and formal cause. Just as all artifacts are words, all words and languages are artifacts; each of which manifests a four-part structure in the form of double-ends joined. There appear to be no exceptions. This is the right-hemisphere aspect of language. All nonverbal objects, whether safety pins or ICBMs, including also the laws of science and institutions, share this same four-part *logos*-structure in their manifestations and effects.

The tetradic metaphor opens up to the matter of the grammar and syntax of each artifact. There seem to be only four features, and they are in analogical proportion to each other. The role of

the metaphor is the elevation of hidden ground into sensibility. For example, "hearts of oak," where the hidden ground is "hearts of our people." A double figure-ground relation is established so that: "ordinary hearts are to these hearts as ordinary wood is to oak," and the complementary structure also applies: "ordinary hearts are to ordinary wood as these hearts are to oak."

As we have said before, technologies, like words, are metaphors.⁷ They similarly involve the transformation of the user insofar as they establish new relationships between him and his environments. A double figure-ground relationship is brought into play with "natural man is to man-with-artifacts as is the natural environment to the man-made environment." And the complementary, "natural man is to the natural environment as is man-with-technology to the man-made environment."

The parts of the tetrad have the same complementary character:

Retrieval is to obsolescence as enhancement is to reversal

—and—

Retrieval is to enhancement as obsolescence is to reversal.

The relationship of elements reflected in the metaphor is another way of saying that the left and right brain may be capable of interchange, but are nevertheless incommensurable. The left hemisphere places information structurally in visual space, where things are connected sequentially—having separate centers with fixed boundaries. On the other hand, acoustic space structure, the function of the right brain in which processes are related simultaneously, has centers everywhere with boundaries nowhere. The former is like a painting or a photograph in perspective. The latter may be likened to a symphonic surround.

The left and right brain relate yet lack a common basis for comparison. Simultaneous interplay cannot be reduced to linear (sequential) representation in much the same way that a synchonic chord of music cannot be experienced as a diachronic tune. There is evidence that the whole brain functions more like a hologram⁸ than a one-thing-at-a-time computer; and, in the same sense, every human artifact is a medium of communication whose message may be said to be the totality of the satisfactions and dissatisfactions it engenders which, at the speed of light, reveal simul-

aneous process patterns. To arrive at this set of process patterns, one asks the questions:

1. What does any artifact enlarge or enhance?
2. What does it erode or obsolesce?
3. What does it retrieve that had been earlier obsolesced?
4. What does it reverse or flip into when pushed to the limits of its potential (chiasmus)?

As framed, the tetradic metaphor amplifies the potential equilibrium of the relations being explored; it obsolesces simile, metonymy, and connected logic; it retrieves understanding, or meaning, by virtue of replay in another mode; and it reverses into allegory or parallelism (see Fig. 1.1).

The tetrad, as a right-hemisphere visualization, helps us to see both figure and ground at a time when the latent effects of the mechanical age tend to obscure the ground subliminally.⁹ Its chief utility is that it raises the hidden ground to visibility, enabling the analyst to perceive the double action of the visual (left hemisphere) and the acoustic (right hemisphere) in the life of the artifact or idea. As such, the tetrad performs the function of myth in that it compresses past, present, and future into one through the power of simultaneity. The tetrad illumines the borderline between acoustic and visual space as an arena of spiraling repetition and replay, both of input and feedback, interlace and interface in the area of an imploded circle of rebirth and metamorphosis.

The action of any artifact (or its corresponding idea) is diachronic as it undergoes a progressive history and development from enhancement—which should be regarded as a form of amplification—to obsolescence (A to B to D to C). It is synchonic if one were to view the artifact mythically as a configuration ($A/D = C/B$ and $B/D = C/A$). When the artifact manifests itself at high relief, which means its development has been nominally revealed, all its process patterns may be said to be simultaneous, like an electrical circuit. The balanced tetrad possesses two grounds and two figures in ratio to each other.¹⁰

The Greeks and the Romans invented the historical sense (the diachronic) so that it would be possible to carve up and deal with time as a rational control device. Emphasizing figure to the virtual

Tetrad Structure

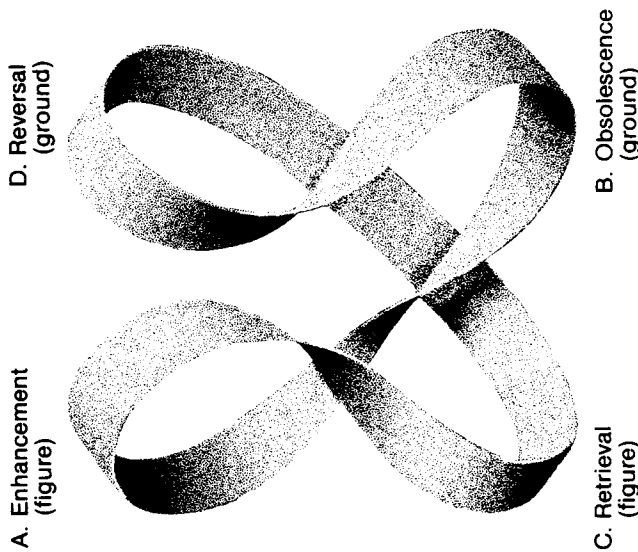


Fig. 1.1.

exclusion of ground is a recent Western innovation—mostly nineteenth-century. Yet large areas of the planet still perceive time as circular or synchronic, testifying to the idea that human experience may occur in nothing but the present. Such a duality of attitudes suggested to T. S. Eliot that past, present, and future exist as one thing: time considered as sequential (left hemisphere) is figure and time considered as simultaneous (right hemisphere) is ground.

The tetrad not only reveals the configurational character of time, but also that the artifact (or founding idea) is always the product of the user's mentality. The tetrad includes the ground of the user, as utterer; and paradoxically, includes the user as ground. We make ourselves and what we make is perceived as reality. For example, an analysis of the effects of the printed word on another

environment usually engenders quite different results. The tetrads too point in the United States, China, or Africa would have three different grounds.

The tetrad helps us to see "and-both," the positive and the negative results of the artifact. For instance, the automobile amplified one's ability to cover distance more quickly and, to a limited extent, carry cargo. Yet, almost from its beginning, this invention simultaneously affected man's relationship to time and space, obsolescing the forms of social organization rooted in pedestrian and equestrian traditions. The township and the neighborhood collapsed. The inner city was left to nonhuman-scale development, while that space in the city that had been set aside as human-size living space was shifted to the suburbs.

The gasoline automobile brought back a sense of private identity and independence which had first manifested itself on the American frontier and, to a lesser extent—as Mark Twain tells us—in the social threads of the farm and village. Pushed to an extreme, in urban sprawl, congestion, and pollution, the automobile reverses into the electric mini-car and encourages renewed activity in jogging, bicycling, and urban nature preserves.

Even before the Organization of Petroleum Exporting Countries' price squeeze, over-amplification had made the automobile a monster. When the figure (car) is on the verge of swallowing the ground (environment) it becomes grotesque. Tribalism as the ground of pre-literate humanity, as Nevitt puts it, was a prodigy of "rhyme without reason" which, before the Greek city-states, allowed no private identity. Civilization, the artifact of literate man, when pushed to its farthest limits trumpets "reason without rhyme" and makes a meal of all humanity. The tetrad could serve us by revealing the all-embracing system—whether of a monolithic state or a well-intentioned business monopoly—before the figure-ground interface is erased.

The new video-related technologies promise to impose a new monopoly of ground over figure. Whatever is left of mechanical age values could be swallowed up by information overload. Media determinism, the imposition willy-nilly of new cultural grounds by the action of new technologies, is only possible when the users are well-adjusted, i.e., sound asleep. The vortex of side effects was penned by James Joyce: "willed without witting, whorled

without aimed." There is no inevitability, however, where there is a willingness to pay attention.

The tetradic analysis is a way of anticipating the changes in the *ma* (negative space); or, of anticipating and perceiving the *ma* as part of the overall configuration—as a complete entity—rather than of restricted and fragmented portions. The impetus of change is like the force of excited motion in the atom. It may proceed at great velocity but eventually returns to its lowest state. Nothing essential has been lost; simply a metamorphosis of mass into energy and vice versa. Technological enlargement is a process toward excess. As part of his spiritual health, man should make as his first object the recognition of pattern as a means to avoid excess and achieve equilibrium. As Aristotle suggests in *De Anima*; it is inherent in the psychologic structure of the artifact. It is accomplished only by conscious choice. Angelism, sometimes called discarnatism, allows technology to move as a dumb force, because without perceiving all four-fold processes we are unconscious of its effects. Discarnatism floats in the abstract clouds, without any relation to ground, or environment—the besetting sin of academic hypothesis.



The Wheel and the Axle

Touch is the resonant interval or frontier of change and process, and is indispensable for the study of technological effects. Interface is the basis of the relationship between visual and acoustic space. Much of present-day confusion and ferment stem from the divergent experience of Western literate man on the one hand, and his new surround of simultaneous and acoustic knowledge on the other. Part of this problem stems from an inadequate understanding of the nature of the archetype. An archetype has both an overt and hidden side (figure and ground). The tetrad reveals both. The hidden effects of any archetypal situation are the aspects which truly shape our behavior.

Many academic fields of inquiry have been stymied by a misunderstanding of how visual and acoustic space relate to the notions of the electronic and synchronic. This confusion mirrors the whole disjointedness of Western education, which emphasizes left-brain over right-brain cognition; and, which may be traced back to the writings of both Plato and Aristotle. The tetradic analysis corrects this imbalance.

The idea of interface, of the resonant interval as "where the action is," in all structures, whether chemical, psychic, or social, involves the factor of touch. Touch, as the resonant interval or frontier of change and process, is indispensable to the study of structures. It involves also the idea of play as in the action of the interval between the wheel and the axle. Play literally constitutes the basis of human communication since human beings do not match ideas so much as reinterpret them.

Electronic man, having found himself in an arena of simultane-