

REPORT ON PROJECT  
IN  
UNDERSTANDING NEW MEDIA

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To HARLEY  
Than whom . . . -  
Marshall

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## PURPOSE OF PROJECT 69

Project 69 in Understanding Media proposed to provide an approach to media and a syllabus for teaching the nature and effects of media in secondary schools. A new tactic was used, namely to consider not so much the constituents nor the "content" of media, as their effects. I therefore raise the question at once: "Why have the effects of media, whether speech, writing, photography or radio, been overlooked by social observers through the past 3500 years of the Western world?" The answer to that question we shall see is in the power of the media themselves to impose their own assumptions upon our modes of perception. Our media have always constituted the parameters and the framework for the objectives of our Western world. But the assumptions and parameters projected by the structures of the media on and through our sensibilities have long constituted the over-all patterns of private and group association in the West. The same structuring of the forms of human association by various media is also true of the non-Western world, as of the lives of preliterate and archaic man. The difference is that in the West our media technologies from script to print, and from Gutenberg to Marconi, have been highly specialized. Specialism creates not stability and equilibrium, but change and trauma, as one segment of experience usurps and overlays the others in aggressive, brawling sequence and cycle.

All that ends now, in the electronic age whose media substitute all-at-onceness for one-thing-at-a-timeness. The movement of information at approximately the speed of light has become by far the largest industry of the world. The consumption of this information has become correspondingly

the largest consumer function in the world. The globe has become on one hand a community of learning, and at the same time, with regard to the tightness of its inter-relationships, the globe has become a tiny village. Patterns of human association based on slower media have become overnight not only irrelevant and obsolete, but a threat to continued existence and to sanity. In these circumstances Understanding Media must mean the understanding of the effects of media. The objectives of new media have tended, fatally, to be set in terms of the parameters and frames of older media. All media testing has been done within the parameters of older media --- especially of speech and print. The popular Lasswell formula, for example, applies only to speech and won't work even for writing let alone print or photography.

In top-management study and planning today assumptions and objectives are recognized to be distinct entities. Let me quote from a Westinghouse "Long Range Planning" brief of August 3, 1960:

"Now it is imperative that whenever there is a change so that actual developments do not coincide with your assumptions, you must change your assumptions and you must change any plans that were based on the assumption that has now turned out to be erroneous. ...It is absolutely imperative that you must know what your assumptions are, and that you must recognize that things are not going to develop in the future in accordance with your assumptions.... Now, the primary difference between an assumption and an objective, is that an assumption pertains to things that are beyond your control, and an objective pertains to things that are achieved through your own effort."

What the writer of this brief does not know is that assumptions can also come within the range of prediction and control just as soon as it is recognized that the new media of communication in any age, as they penetrate

and transform the older media, are the source of new assumptions and consequently the causes of change in our objectives.

The study of media constituents and content can never reveal the dynamics of media effects. Media study has lagged behind all other fields in this century, even behind economics, as the following quotation from W. W. Rostow's The Stages of Economic Growth (Cambridge University Press, 1960, p. 90) will show:

"The argument of this book has been that once man conceived of his physical environment as subject to knowable, consistent laws, he began to manipulate it to his economic advantage; and once it was demonstrated that growth was possible, the consequences of growth and modernization, notably its military consequences, unhinged one traditional society after another, pushed it into the treacherous period of preconditions, from which many, but not all of the world's societies have now emerged into self-sustained growth through the take-off mechanism described in chapter 4."

Media study has not begun to approach the awareness of this "take-off mechanism" of social change involved in the shaping and speeding of information for eye and for ear and for touch and kinetics.

Project 69 set out to bring media study within the range of the expanding awareness here indicated by Rostow in economics. My assumptions then, were:

- (a) that nothing had yet been done to bring understanding to the effects of media in patterning human association,
- (b) that such understanding was quite possible; media assumptions do not have to remain subliminal,
- (c) that the absence of such understanding was eloquent

testimony to the power of media to anesthetize those  
very modes of awareness in which they were most operative.

My objectives were:

- (a) to explain the character of a dozen media, illustrating the dynamic symmetries of their operation on man and society,
- (b) to do this in a syllabus usable in secondary schools.  
(Secondary schools were chosen as offering students who had not in their own lives become aware of any vested interest in acquired knowledge. They have very great experience of media, but no habits of observation or critical awareness. Yet they are the best teachers of media to teachers, who are otherwise unreachable.)

Marshall McLuhan

## ITINERARY AND SUMMARY OF ACTIVITIES OF THE CONSULTANT

My itinerary is complicated by the fact that ordinarily I make numerous trips to Management Training Centers, and that these visits coincide with frequent consultations with capable educators in these top management centers. These trips do not appear on my present itinerary. During this past year I have had a dozen sessions with Peter F. Drucker and Bernard J. Muller-Thym. Both of these men, who are considered the greatest management consultants in the world today, are former professors of philosophy. I find it much easier to talk about the meaning of media to such men than to educators. The reason is this: Drucker and Muller-Thym deal daily with management in the world's largest business organizations. They are acutely aware of the effects of media, new and old, on decision-making in big business. The educator feels protected by bureaucratic structures which ensure him a comfortable decade or so of culture-lag. The executive has no such protection. Curtis of General Motors was fired when he failed to guess right about the small car. Television is responsible for the small car craze, and hence the small car has come to stay. Curtis said it would go away. He knew little of any media save the car. Educators know less about the new media than Mr. Curtis because their decisions are not based on immediate contemporary pressures, nor are their wrong decisions tested every few months on the adequacy of their students to cope with a new world.

My first trip for Project 69 was to Philadelphia (June 18-19, 1959) to confer with Dr. Skornia and Dr. Gilbert Seldes about an over-all plan for the project. This was an especially fruitful session since Seldes was himself in the midst of exploring patterns for his own new Annenberg school.

Jim McPherson and others about the project. It was recommended that I swing the stress for the remaining months to the development of testable hypotheses for media research. These resulting hypotheses now appear in connection with the media charts submitted in this report. I am indeed grateful to the Washington Committee for this suggestion. It paid off in a big way.

February 28-March 5: The DAVI Convention in Cincinnati where I was a member of a continuing panel. The major effect of this conference for my studies was the sudden awareness that my approach to the media is close to the Systems Development type of effort. I owe this discovery to William Allen, Rand Corporation, and James Finn, DAVI President. As a result I have begun to work with our electrical engineering department here at Toronto. As a further result I spent a day in April with Gordon Brown, Dean of Electrical Engineering at MIT. I shall now continue to push media study in the direction of electrical Systems Development.

March 18-20: Began discussions with Robert Shafer of Wayne, and Lee Dreyfus of Wayne educational TV station, about the possibility of doing a video tape on the Gutenberg era. Subsequent trips were necessary for the rehearsal and shooting of same, as follows: March 31-April 1; May 27-May 28; June 3-June 6.

April 9-12 I conferred with David Riesman and Henry Morgan about my media hypotheses. Morgan of psychology was very critical and helpful. Riesman was very enthusiastic and encouraging.

May 2-4: At the annual Institute in Columbus, Ohio. Here I had a most



exciting and profitable session with Samuel Renshaw, distinguished psychologist, about my media hypotheses. He confirmed my basic suggestion by telling me that "In the Second War we found that to train for visual virtuosity we had to train not the eye but the ear of the subject."

Ross Mooney gave much help and took me over the Adelbert Ames perception lab.

May 14-18: Conferring with Dick Evans about the Syllabus. But also took opportunity to visit the phonoscope experiment in Galveston with Harold Wigren. Here as with all the new media they are eager to show that TV can attain all the old effects of the live classroom. It is also a revolutionary medium requiring totally new educational objectives. These will not be attained until phonoscope has revolutionized our commercial lives. Education follows behind commerce in leadership.

May 27-28 and June 3-6, in Detroit were mostly concerned with making The Gutenberg Galaxy. But I had some important talks with that remarkable person Ethel Tincher. Mrs. Tincher, high in the policy-making and administration of the Detroit Public Schools, has for many years been pushing the study of media. She is vividly aware of the futility of our one-way educational flow in the electronic age. Moreover she has had much experimental proof in teaching media in the classroom. The results have always amazed her. In a letter of August 15, 1960, she reports:

"In the pamphlet I sent you regarding the study of teenage listening habits in Detroit, there is a reference to the fact that in only one class surveyed could there be found any real questions about the honesty of the disc jockey payola racket. In this class there happened to be six kids who had been in my experimental class in the mass media. I questioned the teacher after the study was

done, and he told me that these kids had been very articulate about a number of ramifications of payola, apparently helping to change the opinions of other members of the class. This in spite of the fact that we had no moralizing as a part of the course. Although this is not a scientific study, it bears out what I have discovered time and time again, that if we as teachers do not attempt to impose our standards upon our students, but help them to evaluate for themselves what is happening to them as a result of their deep involvement in the media, they can be depended upon to raise the level of their own taste, and to make inferences and to draw deductions from other areas of entertainment and education. Also, it seems to verify the two-way flow of communication theory.

Project 69 travel was amply rewarding in insight and friendship.

Unfortunately, it had adverse effects on my health, requiring hospitalization and a long period of rest, delaying the conclusion of these reports and the summarizing of the results of this project.

Marshall McLuhan

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GENERAL INTRODUCTION TO THE LANGUAGES AND GRAMMARS  
OF THE MEDIA

## GENERAL INTRODUCTION TO THE LANGUAGES AND GRAMMARS OF THE MEDIA

Early in 1960 it dawned on me that the sensory impression proffered by a medium like movie or radio, was not the sensory effect obtained. Radio, for example, has an intense visual effect on listeners. But then there is the telephone which also proffers an auditory impression, but has no visual effect. In the same way television is watched but has a very different effect from movies. These observations led to a series of studies of the media, and to the discovery of basic laws concerning the sensory effects of various media. These will be found in this report.

In 1915 Heinrich Wofflin published his Principles of Art History which has since then revolutionized the study of many matters besides art. His entire approach confirms what I discovered about media: "the effect is the thing that counts, not the sensuous facts," (Dover Publications, p. 62). This is also the theme of E. H. Gombrich's Art and Illusion (Pantheon Books, 1960), in which he provides "a study in the Psychology of Pictorial Representation," bridging and fusing much recent perception study with the history of culture.

Switching attention to effects away from "the sensuous facts" highlighted such facts as that the two-dimensional in visual presentation is in effect very tactile, resonant, and auditory. Three dimensional representation on the other hand remains primarily visual, pictorial, retinal --- abstract and exclusive of the non-retinal. The implications of this for the difference between the effects of movies and television will be shown later. In direct connection with this, it is most illuminating, at the very beginning of Georg von Bekesy's Experiments in Hearing (McGraw-Hill

1960), to find him contrasting two-dimensional and three-dimensional paintings. His purpose is to explain how in the study of hearing, "mosaic" methods of research are more effective than "perspective" methods.

Acoustical research is necessarily "depth" study since hearing is from all directions at once. Two-dimensional mosaic structures with their multi-levelled effects are therefore of great relevance to auditory research. There can be no fixed point of view with perspective and vanishing point, in such study. But Bekesy is naturally apologetic in abandoning the conventional "perspective" patterns of research (such as are still used in audio-visual media study):

"It is possible to distinguish two forms of approach to a problem. One, which may be called the theoretical approach, is to formulate the problem in relation to what is already known, to make additions or extensions on the basis of accepted principles, and then to proceed to test these hypotheses experimentally. Another, which may be called the mosaic approach, takes each problem for itself with little reference to the field in which it lies, and seeks to discover relations and principles that hold within the circumscribed area." [light through]

Bekesy then proceeds to introduce his two paintings:

"A close analogy to these two approaches may be found in the field of art. In the period between the eleventh and seventeenth centuries the Arabs and the Persians developed a high mastery of the arts of description and portrayal and they used the mosaic style.... Later, during the Renaissance, a new form of representation was developed in which the attempt was made to give unity and perspective to the picture and to represent the atmosphere....

"When in the field of science a great deal of progress has been made and most of the pertinent variables are known, a new problem may most readily be handled by trying to fit it into the existing framework. When, however, the framework is uncertain and the number of variables is large the mosaic approach is much the easier."

Bekesy has not meditated on the fact that, since Cézanne, artists and physicists alike have abandoned perspective for mosaic in the West. As the number of variables co-existing in a single field have mounted in ordinary experience, the neat packaging job of perspective, and of pictorial space filled in with familiar objects, has become irrelevant to human problems of experience.

For the moment, let me say that the present report on Project 69 follows the mosaic or "field" or auditory procedure, rather than the perspective pictorial pattern of the Renaissance. Just as Bekesy found perspective irrelevant to acoustical research, so today by virtue of electric information movement all of us live globally in a kind of tribal drum of simultaneous resonance. When information moves to and from all directions and locations at the same moment, we return to a mode of experience that is structured as an auditory field of simultaneous relations. Even our visual experience is now a mosaic of items assembled from every part of the globe, moment by moment. Lineal perspective and pictorial organization cannot cope with this situation.

In this connection I would like to report a discovery concerning the role of writing in creating what is now to mathematics and physics the obsolete fiction of "Euclidean space." THE IMPLICATIONS OF THIS DISCOVERY FOR ORIENTING US TODAY IN THE ELECTRONIC AGE ARE SO GREAT THAT I FEEL NO QUALMS IN STATING THAT IT JUSTIFIES PROJECT 69 MANY TIMES OVER. THAT IS TO SAY, WERE THIS PROJECT TO HAVE NOTHING AT ALL TO REPORT IN MEDIA STUDY BEYOND EXPLAINING THE ROLE OF THE WRITTEN WORD IN BRINGING INTO EXISTENCE "EUCLIDEAN SPACE," IT WOULD YET OFFER A MASSIVE AND CHALLENGING SET OF DATA FOR THE ATTENTION OF WESTERN MAN.

In his extensive survey and analysis of the illusion and ambiguities of perspective and the third dimension, E. H. Gombrich (Art and Illusion) again and again reverts to the Greek miracle: "the discovery of foreshortening and the conquest of space early in the fifth century," (p. 116). The cause of this "miracle" was the phonetic alphabet. Again, let it be stressed, concern with the sensory data rather than effects has for many centuries concealed the operation of this cause. It was never at any time the "content" of phonetic writing, in whatever language, that had the effect of evoking the third dimension. The "content" of phonetic writing is speech. Such is not the case with non-phonetic writing. Pictographic and ideogrammic systems of writing are not silent speech. They are situational gestalts which appeal greatly to electronic man today. Both the phonetic alphabet and perspective alike become alien to electronic man in the magnetic age. Since we consider that our way of life is rooted in literacy it concerns us deeply to know why our children will increasingly spurn it, just as our artists and physicists rejected perspective a century ago.

I think the best way I know to explain this matter further is to cite the evidence of Tobias Dantzig in his Number: The Language Of Science (Anchor 67). This book which Einstein proclaimed "the most interesting book on the evolution of mathematics that has ever fallen into my hands," fell into my hands at the Washington, D. C. airport. This is relevant to the present report since I was then in Washington in connection with Project 69. Pages 139-147 provide all that is needed to understand why phonetic writing created Euclidean space, or the Greek miracle of perspective and naturalistic illusion. The same pages also explain why the Western world since



Newton has steadily dissolved Euclidean space and pictorial illusion, and shifted to non-Euclidean geometries and non-objective art. In a word, here are all the clues to the mystery of the rise and fall of Western man, the mystery of his detribalization by literacy and his retribalization by electric communication.

WHY DID THE PHONETIC ALPHABET HOICK MAN OUT OF THE AUDITORY SPACE OF THE TRIBAL DRUM INTO THE CIVILIZED, HOMOGENEOUS AND CONTINUOUS SPACE OF LINE AND PLANE AND PICTURE? THE ANSWER IS: BECAUSE THE PHONETIC ALPHABET ALONE, OF ALL FORMS OF WRITING, TRANSLATES THE AUDIBLE AND THE TACTILE INTO THE VISIBLE AND THE ABSTRACT. LETTERS, THE LANGUAGE OF CIVILIZATION, HAVE THE POWER OF TRANSLATING ALL OF OUR SENSES INTO VISUAL AND PICTORIAL SPACE. More than anybody else, the mathematician is aware of the arbitrary and fictional character of this continuous, homogeneous visual space. Why? Because number, the language of science, is a fiction for re-translating the Euclidean space fiction back into auditory and tactile space.

The example Dantzig uses on page 139 concerns the measurement of the length of an arc:

"Our notion of the length of a curve may serve as an illustration. The physical concept rests on that of a bent wire. We imagine that we have straightened the wire without stretching it; then the segment of the straight line will serve as the measure of the length of the arc. Now what do we mean by 'without stretching?' We mean without a change in length. But this term implies that we already know something about the length of the arc. Such a formulation is obviously a petitio principii and could not serve as a mathematical definition.

"The alternative is to inscribe in the arc a sequence of rectilinear contours of an increasing number of sides. The sequence of these contours approaches a limit, and the length of the arc is defined as the limit of this sequence.

"And what is true of the notion of length is true of areas, volumes, masses, movements, pressures, forces, stresses and strains, velocities, accelerations, etc., etc. All these notions were born in a 'linear,' 'rational' world where nothing takes place but what is straight, flat and uniform. Either, then, we must abandon these elementary rational notions - and this would mean a veritable revolution, so deeply are these concepts rooted in our minds; or we must adapt these rational notions to a world which is neither flat, nor straight, nor uniform."

Now Dantzig is quite wrong in supposing that Euclidean space, linear, flat, straight, uniform, is rooted in our minds at all. Such space is a product of literacy and is unknown to preliterate or archaic man. Mircea Eliade has recently devoted a volume to this theme (The Sacred and the Profane, Harcourt Brace, 1959), showing how the Western notions of space and time as continuous and homogeneous are quite absent from the lives of archaic man. They are equally absent from Chinese culture. Preliterate man conceives always of uniquely structured spaces and times in the manner of mathematical physics.

The invaluable demonstration of Dantzig is that in order to protect our vested interest in Euclidean space (i. e. literacy) Western man devised the parallel but antithetic mode of number in order to cope with all of the non-Euclidean dimensions of daily experience. He continues:

"But how can the flat and the straight and the uniform be adapted to its very opposite, the skew and the curved and the non-uniform? Not by a finite number of steps, certainly! The miracle can be accomplished only by that miracle-maker the infinite. Having determined to cling to the elementary rational notions, we have no other alternative than to regard the 'curved' reality of our senses as the ultra-ultimate step in an infinite sequence of flat worlds which exist only in our imagination.

"The miracle is that it works!"

Again let us ask why should the phonetic alphabet have created the fiction of flat, straight and uniform space? The phonetic alphabet, unlike the complex pictographics evolved by priestly groups of scribes for temple administration, was a stream-lined code for commerce. It was easy for anybody to learn and to use and it was adaptable to any language whatever. The reason for this adaptability was that phonetic characters had no semantic meaning beyond their neutral sound. This divorce from semantic meaning enables them still to be a means of translating the sounds of any tongue into uniform, homogeneous visible form. The user of the phonetic alphabet can translate any culture into it. But no other culture can translate the alien into itself. The Graeco-Roman galaxy had a one-way road of conquest of all other cultures in the phonetic alphabet. But above all, let us note that this one-way road led from sound to sight. This was the road that boicked Western man from the tribal space of ear and tactility to the civilized visual space of the straight, the flat and the uniform. Print, of course, gave much greater stress and emphasis to the pictorial space of the straight, the flat and the uniform. But the phonetic alphabet was the first technological medium that gave obvious salience to the fact that all media are natural resources or staples. Number, as Dantzig implies, is subservient to letters and meaningless without a civilized, pictorial culture to support it.

Today in the electronic age we are post-number, just as we are post-literate. There is a mode of calculation that is pre-digital and pre-number, says Dantzig:

"It is a binary system, i.e. a base of two. These savages have not yet reached finger counting."  
(p. 14)

So the binary computers are post-number just as photographs and television are post-literate.

Personally, I feel quite helpless and panicky as I contemplate the range of new assumptions and frames and parameters which our new technology has imposed upon us. If the great culture of number was needed to keep the technology of letters in precarious poised continuity these past centuries, where is the wisdom to manage human values in the post-number, post-literate magnetic age? Are we not still inclined to suppose that our former objectives are still valid even though all of our assumptions and parameters have changed? What are we to say of the hypnotic daze of such people? Educators present a uniform, homogeneous front of somnambulism.

Number is as obsolete as letters in the age of the computer. But the values of civilized life, brought into existence by the phonetic alphabet need not dissolve with the alphabet. There are means of sustaining civilization by the very same media which have dissolved the older media and technologies.

It is the purpose of this report and its syllabus to explore and to demonstrate some of these means. But in concluding this general introduction I want to revert to Georg von Bekesy's discovery that you can't investigate auditory problems by conventional scientific methods of perspective. The auditory must be handled on its own terms, and these call for a mosaic approach, not a three-dimensional perspective approach. The auditory forbids perspective if only because it is inaccessible to any fixed position. Yet without an arbitrarily fixed position there cannot be a point of view.

Today it is axiomatic that we live in a global space fed by information from every point on the sphere at the same time. What possible relevance to the student of media could a point of view be in such circumstances? He must adopt the mosaic approach. He must deal with all media at once in their daily inter-action, or else pay the price of irrelevance and unreality. He must deal with each medium as it affects all of our senses, not as it makes an impression on one sense. Because any medium which singles out one sense, writing or radio for example, by that very fact causes an exceptional disturbance among the other senses. Speech is the only medium that uses all the senses at once, and therefore in the multi-media electric age the structure of speech probably holds the orchestral clues for cultural control and equilibrium. We may be forced, in the interests of human equilibrium, to suppress various media as radio or movies for long periods of time, or until the social organism is in a state to sustain such violent lopsided stimulus.

Nothing could be more unrealistic than to suppose that the programming for such media could affect their power to re-pattern the sense-ratios of our beings. It is the ratio among our senses which is violently disturbed by media technology. And any upset in our sense-ratios alters the matrix of thought and concept and value. In what follows I hope to show how this ratio is altered by various media and why, therefore, the medium is the message or the sum-total of effects. The so-called "content" of any medium is another medium. So that the concept of "content" naturally begins with writing, whose "content" is the medium of speech. But the effect of writing is not at all the effect of speech. The content of radio is usually speech also, but the effect of radio is neither that of speech nor of writing.

## GENERAL INTRODUCTION TO CHARTS

Such are the relationships and discoveries which I seek to demonstrate and clarify in the sections which follow.

## GENERAL INTRODUCTION TO CHARTS

My notion that it would be possible to the shape of the syllabus for secondary schools to teach the languages and grammars of media, new and old, is now given tentative formulation in what follows.

The language and grammar of a medium have nothing to do with its content or programming. Those who do much programming for any given medium, like English or radio, usually acquire some intuitive notion of its grammar, but they are not expected to know how to verbalize their knowledge. Grammars for spoken languages are attempts to translate the oral pattern into the grammar of the written word. Napoleon was said by Newman to have had the advantage of his enemies in that he understood the grammar of gunpowder. The grammar of the atom bomb we have not yet begun to grasp. "Grammar" as applied to any medium of communication, therefore, implies the ability to translate the modal powers of that medium into some other medium, whether speech or photography. To translate is not unlike the procedure of modern physics which explores structures by bombarding unknown nuclei with nuclei of known structure. Note that this procedure assumes that light will come from the unknown, not to the unknown. It is the reverse of ordinary method. Consisting mainly of juxtaposition, this mosaic procedure, which I try to follow throughout, waits for light through the situation. It does not primarily try to play light on the situation.

This procedure requires detachment such as comes from dislocation. In a strange country we are compelled to translate our own culture into the strange one, or the strange one into our own. (See Ed. Hall, The Silent Language, Doubleday, 1959.) Today we live, all of us, in many new countries



of the mind in which our knowledge of familiar meanings merely serves to blind us to the new situations. We must battle down the familiar classifications if we are to come to grips with the new. This is much easier for young students for whom familiar knowledge of older forms is no more entrenched than knowledge of the new. Adelbert Ames has built a complex visual lab just for this purpose: to train the student in the ambiguities of the third dimension. William Empson's Seven Types of Ambiguity (1932) had done the same job for those who still clung to the illusion that simple, direct, plain English statements had only one meaning.

Since Blake and Rousseau, the main effort of art and education has been the pursuit of "the innocent eye" and of "spontaneity." In other words, for two hundred years the West has been fighting off the rigid assumptions and patterns of print. Today we reverse that struggle and try to cling to the vestiges of print culture even though the industrial assembly-lines themselves are obsolete. That is to say, that one major projection of the print form is the assembly-line. That same line has long been the raison d'être and bulwark of literacy, of classroom layout and procedure.

This is one way of translating Ames' phrase: "perceptions are not disclosures." We see and feel via the patterns of familiarity imposed by our various media. Only the highly trained artist in the various senses of eye, ear, touch and in the various media of languages and so on, only the artist can achieve "innocence" of vision, or control of experience. Until the artist in all these media has coded their message for us we go on looking at them through the horse-collar of earlier experience. Since, however, a new medium tends to brainwash us of all experience in older media, we have a unique task today. For now we have to conduct education amidst multiple

media and cultures. We cannot achieve even for a short time any homogeneous experience as a condition for the training of the young. We grew up in a relatively continuous and homogeneous world. Our children live in a network of complex and separate nuclei such as naturally occur under conditions of electric movement of information. The adult world today is simple. The child world is sophisticated. This is a rough situation for teachers. But the only strategy is to involve the young far more in the teaching-learning process than formerly. This can be done especially well in teaching the languages of the media, for the children know these much better than the teacher.

We are obliged today to learn the language of objects, and especially of those objects that are media. For they can pull the rug out from under your world or pop a new one under you while you are unawares.

At the end of his classic study of Art and Illusion, E. H. Gombrich says:

"In investigating the growth of the language of representation we may have gained some insight into the articulation of other languages of equivalences. Indeed, the true miracle of the language of art is not that it enables the artist to create the illusion of reality. It is that under the hands of a great master the image becomes translucent."

Such is also the case with the study of media. Even the study of ads, if pushed to a sophisticated point, reveals them as translucent frames which flood us with awareness of great vortices of assumption and human drama.

The charts provided for each of the media in the syllabus proceed from  
A SIMPLE FACT: Any medium whatever is an extension, a projection in space or in time, of our various senses. Speech is the only medium that uses all

the senses at once. Speech as encoded visually in writing is not speech any longer. It is given a visual bias of great intensity by being reduced to writing. Moreover as written it is abstracted from all the other senses. Speech on radio is similarly reduced to one sense, the auditory-aural. Radio is not speech though it seems, like writing, to "contain" speech. Our illusion of "content" derives from one medium being "within" or simultaneous with another. For this reason instrumental music has no "content" and non-objective art likewise is an abstract manipulation of the modalities of sight.

Had Project 69 done nothing more than to isolate the fact that the "content" of any medium is another medium, it would have justified the expense involved many times over. Because, until this principle of "content" as an illusion of media-mix is grasped, there is and will continue to be a futile effort to measure the transfer of content as if it were some pellet moving from point to point like Zeno's arrow. The "illusion" of content likewise syphons off all attention from the forms and effects of the media. The fact that radio created Fascism, and at this writing is loading all semi-literate areas into frenzied tribal manifestation --- this fact could never be discovered by all the testers in the world as long as they paid attention to "what is being said" on the radios of the world. The message of the radio experience as radio, has nothing to do with the other medium of speech, or the medium of music, which appears as the radio program.

In my charts I show as best I can how to spot the message of medium as medium. No attempt is made in them to exhaust the available evidence. My entire syllabus proceeds on the principle that Low Definition (LD) is necessary to good teaching. The completely expressed package offers no

opportunity for student participation. LD works by withholding information. LD media like telephone and television are major educational instruments because they offer inadequate information.

A major aspect of media effects and development appears in the case of the road as a means of transportation. Like writing or radio the "content" of the road is always another medium or other media, whether pedestrians, equestrians, wagons or cars. Depending on the type of vehicle-medium, the nature of the road-medium alters greatly. The same is also true of speech or of movie. No medium has its meaning alone or in isolation from other media. The nature of print in relation to its roles and functions and its operation on human attention changed very much with the advent of the telegraph newspaper. It changed even more with photo-engraving. Movies and television gave to print such drastic new meanings as to make its role in the classroom vague and obscure.

Returning to the road for a moment, let me quote a page of observation which is accompanied by a chart:

Poly-Antics of the Highway  
(Explanation of chart, p. 17)

At first the tractless pastoral countryside, as in the television Western Rawhide.

A road comes into existence to fetch rural produce to town areas and is in Low Definition, coexisting with pedestrian and mounted man.

As road goes into High Definition, it fetches the town to the country.

It next becomes a substitute for the country, and we can "take a spin" in the country.

As it improves, it destroys the country by simply making it less and less country-like. A little later it becomes a wall between man and the country.

As it continues to improve, or be more of a road, speed of movement in and out of city destroys the city.

The next phase is for the highway to become city, and to become country (parkway). Planners talk of cities of a hundred million people and three thousand miles long.

The country on either side of such highway cities could well return to tractless waste.

As highway becomes city, it is linked by airway. Airway is for travel and highway is for living. That is, as travel improves it ceases to be an experience of travel at all. Over Rome or over Tokyo by jet is all the same.

The dweller in the motel-like highway city has no strong sense of really living there, any more than the jet traveller has of being there.

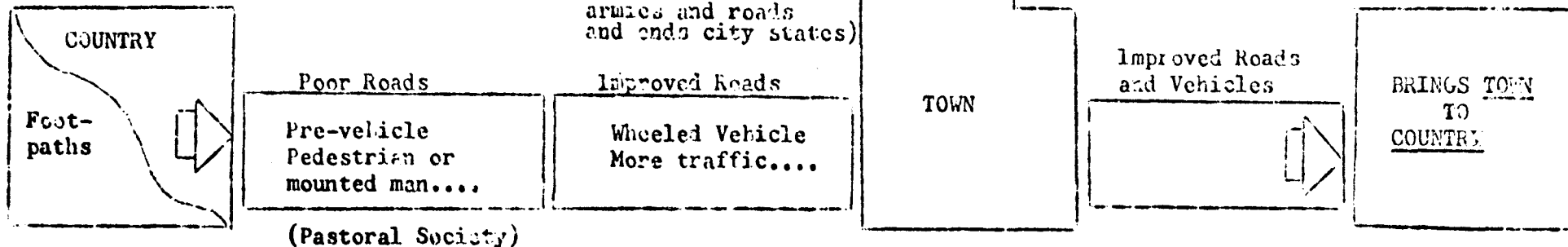
In large metropolitan areas, the arts tend to be supported not by the natives, but by tourists and the natives tend to revert to the state of provincial bumpkins. As Margolis points out in his teenage piece (American Scholar, Spring, 1960), the juvenile gangs are the only authentic face to face community in the metropolitan areas. Socially this parallels the physical return to the tractless waste of the rural environment of the highway city, in the airway age.

illustrating the strange reversals of function which the road undergoes as it moves from LD to HD, or from a rudimentary state to a highly developed one.

Most media undergo such transformations as the urgency of use and demand cause them to be shaped to ever Higher Definition. I shall never forget my amazement at discovering a few months ago that any HD medium like radio or movie underwent a kind of reversal of form when experienced. In a word, an HD auditory medium like radio has an intensely visual SC, or Subjective Completion. But an LD auditory medium like telephone has no such visual SC. The user of the telephone does not visualize much if at all. He tends to use all of his senses at once.

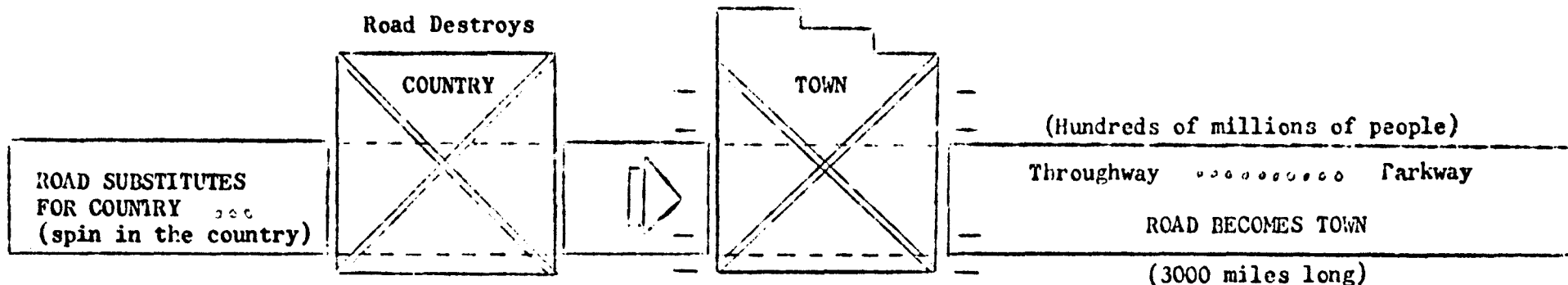
# 100 YEARS OF THE HIGHWAY

(Papyrus creates  
armies and roads  
and ends city states)

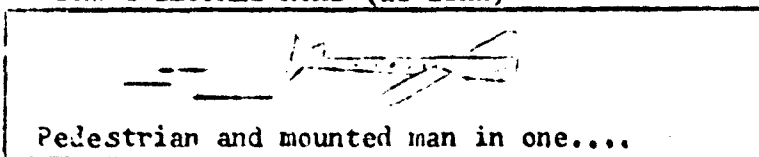


Road Decentralizes  
and destroys

Road Destroys



AIRWAY BECOMES ROAD (as link)



CREATING NEW  
KIND OF  
COUNTRYSIDE

COUNTRY RE-APPEARS

Road disappears (as link)

in primitive mode in decentralized  
railroad age with ecological scientists  
as princes of new pastoral world.

These are the matters which appear in my media charts. They are testable by ordinary experience; but are, of course, easy to be brought to the sort of tests which Professor Charles E. Osgood carries out in The Measurement of Meaning (Urbana, 1957). Ordinary language about the various media has already registered enormous areas of collective observation. These collective attitudes and attributions, approved by long-continued use, are a kind of evidence which is available to every child. The fact that the testers have not yet discovered this very rich material leaves it fresh and unspoiled for the classroom study of the media.

Just as all media, including speech, are technological extensions of our various senses, so the communal processing of these extensions of our senses is that which drives the various media through their numerous phases of transformation. The technology of speech or writing or railway depends on a large degree of communal agreement and cooperation. And just as our individual experiences of our individual senses get processed by some sort or inner common sense which gives unity to the diversity of our sensations, so with the media as extensions of our senses. These co-operative technological extensions of ourselves undergo a social or communal processing which gives them unity, and which ensures also that they will always be changing their forms as they continue to inter-penetrate and to "translate" into one another.

With regard to this communal processing of all types of information, I would like to draw attention to the fine paper of Richard L. Meier on "Information, Resource Use, and Economic Growth," (read at Ann Arbor, Michigan, April 1960). Not only does he point to the media of communication

as staples or natural resources, and to our senses as the climate of information, but the natural effect of the electric is to substitute information movement for transportation of things. As information movement increases, "machines can be designed which normally make for fewer mistakes than humans." That is, as information moves into very high level phases there occurs the same reversal and substitution of forms that we noted in the poly-artics of the highway. Above all, information movement at electric speeds results in a society "capable of substituting one set of raw materials by others," (p. 8). "Now, however, it is impossible to specify any set of resources which are crucial," (p. 9). Just as any High Definition medium like radio translates itself into visual experience, so in any high-level information society, one subject-matter can be substituted for any other as an educational base. The creative process itself becomes the means and the object of education in the dialogue of high level communication. The faster information moves, the more the forms of knowledge, process, and experience become accessible to observation. The medium becomes the message.

Speech underwent many changes very swiftly as phonetic writing came into use. Print had even more spectacular effects on speech, but in somewhat similar directions to the effects of writing. Since the charts which follow require some more specific understanding of the dynamics of SI-SC and HD-LD than I have offered so far, I hope now to provide those data. I am going to draw heavily on E. H. Gombrich's Art and Illusion (Pantheon Books, 1960) simply because he has taken these matters as his province in his book. His ample use of current perception study will give comfort to the scientifically-minded. Let us first briefly consider the dynamics of



High Definition and Low Definition (HD-LD) as they emerge in this study.

On page 68 he notes:

"Now the historian knows that the information pictures were expected to provide differed widely in different periods. Not only were images scarce in the past, but so were the public's opportunities to check their captions. ...How many travelled widely enough to tell one city from another?"

Low Definition images were merely take-off strips for private fantasy:

"All they were expected to do was to bring home to the reader that these names stood for cities," (p. 69).

But to that very degree they elicited maximal effort on the part of the beholder. Of a sixteenth century picture of Rome, Gombrich says:

"I am fond of this coarse woodcut because its very crudeness allows us to study the mechanism of portrayal as in a slow motion picture," (p. 70).

Those words can be applied to television as compared with the movie photograph. It is the crudity or low level of visual information in the television image (LD) which involves the beholder in process. The television mosaic has other basic differences from the movie image, but already television has created a vast new trend of do-it-yourselfness and of eager participation in all kinds of processes. The small car, the small boat, water-skiing, weekend painting are only the most obvious developments which now involve people in complex tactile processes. The movies by contrast are HD consumer goods, and helped to create the first great age of consumer goods. Television is a "cool" LD medium. It makes people dubious about merely consumer packages.

Television is ushering in an age of symbols and of status rather than of rivalry in consumer patterns. That is inherent in the "language" of

this LD medium. Its mosaic has brought us back to the two-dimensional and to the fascination with tactile process. Gombrich writes:

"It has become increasingly clear since the late nineteenth century that primitive art and child art use a language of symbols rather than 'natural signs.' To account for this fact it was postulated that there must be a special kind of art grounded not on seeing but rather on knowledge, an art which operates with 'conceptual images.' The child - it is argued - does not look at trees; he is satisfied with the 'conceptual' schema of a tree that fails to correspond to any reality since it does not embody the characteristics of say, birch or beech, let alone those of individual trees. This reliance on construction rather than on imitation was attributed to the peculiar mentality of children and primitives who live in a world of their own.

"But we have come to realize that the distinction is unreal. Gustaf Britsch and Rudolph Arnheim have stressed that there is no opposition between the crude map of the world made by a child and the richer map presented in naturalistic images. All art originates in the human mind, in our reactions to the world rather than in the visible world itself..."

The "crude map of the world made by a child" is an LD affair visually. Tactually it is not LD at all. Tactility seems very LD when in association with the visual. The child and the primitive trust and rely on touch and sound as much or more than on sight. But the tactual is profoundly constructivist rather than representational. The tactual image with its LD effect evokes a major stress on "creative participation" and empathy in the beholder. As photography and photoengraving raised visual and pictorial experience to very High Definition (HD) in the later nineteenth century the artists of all media agreed to present their work in Low Definition. In 1896 Bernard Berenson in his work on the Florentine painters expressed the new strategy of culture against the new media as follows:

"The painter can accomplish his task only by giving tactile values to retinal impressions."

The task of art is to correct the bias of technological media. The Romantics fought against the High Definition and rigid psychic effects of the printed word. The symbolists and the painters of the same time answered HD pictorial effects with LD tactile effects in paint and in poetry. Today with the sculptural mosaic of the television image bombarding us with tactile values the role of the artist is no longer to give "tactile values to visual impressions." But without careful study of Heinrich Wölfflin and E. H. Gombrich the student of movie and television imagery will be left high and dry on the shores of "program content."

The general principle that LD or Low Definition situations are especially evocative of participation of the beholders is illustrated many times in Gombrich. The correlative principle that HD or High Definition situations keep the public in an external, consumer role is likewise illustrated over and over again. On page 272 for example he shows how we learn from oversimplified hypotheses rather than from the carefully elaborated ones:

"In order to learn we must make mistakes, and the most fruitful mistake which nature could have implanted in us would be the assumption of even greater simplicities than we are likely to meet with in this bewildering world of ours."

Kepler easily disproved the inspired guess of Copernicus. But it was Copernicus, not Kepler, who made Newton possible.

The age-old clash between walking and marching is the clash between LD art in which there is much participation in the creative process, and HD art which tends towards abstract pictorial illusion.

"There are few civilizations that even made the change from walking to marching, and only where the image has been developed to a high degree of articulation does that systematic process of comparison set in which results in illusionist art," (Gombrich, p. 314).

But HD art and technology speeds the process of change and transformation. It is an absolute principle that to the degree that any situation is put in HD by a flow of much information, that situation is at the point of drastic change and of the manifestation of opposite characteristics.

"An artist of our own day, Georges Bracque, has recently spoken of the thrill and awe with which he discovered the fluidity of our categories, the ease with which a file can become a shoehorn, a bucket, a brazier. We have seen that this faculty for finding and making underlies the child's discoveries no less than the artist's," (Gombrich, pp. 313-314).

Bracque merely anticipated Information Theory and computers by seventy years, in making this discovery of the substitutability of categories at high information levels. But the result of these discoveries was the immediate return to the primitive in cubism and non-objective art. The principle involved in this reversal of characteristics which accompanies all HD situations, I illustrated in "The Poly-antics of the Highway." It appears in all my charts as the crossing of the SI-SC diagonal over the HD-LD diagonal. It is known in rhetorical theory as the figure of chiasmus, as when we say time wounds all heels. Two statements of opposite intent are made at the same time. "When we were Jung and easily Freudened" as Joyce puts it in Finnegans Wake. Chiasmus is indispensable to understanding media since all information flow by feed-back - that is by its effects - operates simultaneously in opposite modes. But until I worked out the charts it was impossible to show this to anybody. This was because we still rely on pictorial modes even in the non-visual electronic age.

One more illustration from Gombrich illustrates the above point:

"I believe the student of these inventions will generally find a double rhythm which is familiar from the history of technical progress but which

has never yet been described in detail in the history of art - I mean the rhythm of lumbering advance and subsequent simplification. Most technical inventions carry with them a number of superstitions, unnecessary detours which are gradually eliminated through shortcuts and a refinement of means. In the history of art we know this process mainly in the work of the great masters. Even the greatest of them... began their careers with a very circumspect and even heavy technique, leaving nothing to chance," (p. 331).

Artists and inventors, that is, begin in HD and end in LD, leaving more and more for the public to do for themselves.

SI-SC

STRUCTURAL IMPACT VERSUS SUBJECTIVE COMPLETION

The following discussion concerns the diagonal from the lower left of the charts to the upper right. SI, or Structural Impact, refers to sensory impressions as they affect the beholder or audience. SC, or Subjective Completion, concerns the effect of this impression as it is processed by the audience. In psychology the SC is referred to as projection. In systems development SI becomes input and SC is output. The French painter André Girard who has worked with CBS and NBC for years told me that it was his admiration for the technique of Rouault that interested him in television. For, he pointed out, television is like Rouault in providing an image by light through, not by light on. Rouault painted his canvasses as if they were stained glass windows. Seurat and Rouault, that is to say, anticipated the television image in their image techniques by several decades. Such is always the case with art vis-à-vis technology. And art provides new SC before technology provides new SI. Art is thus not only "ahead" of its time, but provides the indispensable corrective for the impact of technology on human sensibility. For new SI is ordinarily provided with old SC in our psychological "set" or conditioning. And when we use old SC for new SI we enter a schizoid state. Our senses dissociate. We are diseased.

On page 217 Gombrich provides me with an illustration of how SI-SC merge with HD-LD. He is speaking of how the impressionists exploited "the charm and challenge of incomplete representation:"

"But where the earlier masters prepared the beholder for this artifice and facilitated the projection, the impressionists wanted him to enjoy the challenge

of a visual shock.... The amount of information reaching us from the visible world is incalculably large, and the artist's medium is inevitably restricted and granular.... in the end he will always have to rely on suggestions when it comes to representing the infinitely small," (pp. 217-20).

Pursuing the same theme of incomplete or LD representation as a means of getting specially controlled SC he cites J. J. Gibson's Perception of the Visual World on the presentation of texture by a distribution of pigments to "stand for the whole to be imagined." Roy Campbell, the South African poet, however, records an experience that shows how the visual presentation of texture is quite misleading unless backed up by prior experience:

"The strange, crisp, salty consistency of snow was another puzzle. From paintings I had imagined it to be like wax, and snowflakes to be like shavings of candle grease."

A young lady from India who had looked forward to her first snowfall, was terrified when it occurred because it seemed to her to be an invasion of locusts. Our SC depends much on previous SI, and of course we have had ample evidence of the bewildered Arab when shown a picture of a horse, or the Eskimos for whom movies are cryptograms until the illusions are explained in detail.

Perhaps the most useful formulation is that of Adelbert Ames: "perceptions are not disclosures." SI is not SC. The impression is not the experience. The beholder must collaborate in creating the illusions of space, as of time. The receiver of a structured impression, such as any medium offers, must be attuned to that structure. It must be for him a sort of familiar keyboard on which he can play a great variety of melodies.

Such, for us all, is our native tongue. Such is the written and the printed word. Such are the impressions from all our technology.

"Psychologists have long recognized that our reaction to images also transforms what we 'see' in a much more radical way than we usually notice," (Gombrich, p. 279).

"The fact that the area of the mirror that reflects the face is always exactly half the size of the face is so startling as to meet with skepticism on the part of most people who have looked into mirrors all their lives. Obviously, therefore, that is not what they see. They see the face in the distance behind the mirror surface, and thus they see it correspondingly larger," (Gombrich, p. 279).

SI and SC or impression and response are much like the old pair of "seeing" and "knowing."

"What we see when we respond to moistness or smoothness is the 'global' quality itself, not the elements of local color and reflection.....," (Gombrich, p. 333).

That is, the SC of many visual presentations is not visual at all any more than the SC of radio's SI is auditory.

What I'm trying to do in these charts and in the questions and suggestions that go with them is to discover the dynamic symmetries and contours of the media. There is no point in being apologetic since the entire effort is experimental. As Gombrich puts it again, in a sentence that also seems to me to illustrate the relations between SI-SC:

"Not even the most skillful artist should claim to be able to plan a single stroke with the pen in all its details. What he can do is to adjust the subsequent stroke to the effect observed in the previous one..... In this new process of schema and modification, the artist is one controlling fact, the public another," (Gombrich, p. 357).



At the very least, my SI-SC diagonal prevents any oversight of the principle: "the effect is the thing that counts, not the sensuous facts."

## INTRODUCTION TO SPEECH

## INTRODUCTION TO SPEECH

"Speak that I may see you."

"Let us draw nearer to the  
fire and see what we are  
saying."

"Man is distinguished from  
the brute by the power of  
speech."

Speech, as a medium which employs all the senses at once in harmonic ratios, as it were, draws attention to the ambition of Richard Wagner, the composer, to produce a new art form which would orchestrate all of the arts in a single experience.

What is happening in the electronic age may seem contradictory. On the one hand there is an extension of each of our senses which amounts to the externalization of our sensorium. On the other hand there is the unified field of experience and multi-media created by the mere fact that the electronic is simultaneous no matter how many modalities or senses or media are in play.

Not only are the individual media "languages" in the sense that they are syntactic patternings of experience, but the electronic dimension forces upon our attention the need to harmonize the various media in the way in which the many forms of human speech harmonize our various senses.

Edward T. Hall, in The Silent Language (Doubleday, 1959) is concerned with working out a grammar capable of providing tools for analysis of any cultural situation. As an anthropologist he approaches cultures as "silent languages." But the student of media will quickly discern how to adapt Hall's tools of analysis to media study. So far as the present approach to

the understanding of media is concerned, the whole of The Silent Language is relevant.

Hall's concept of "the organizing pattern" concerns the fact that "there is no such thing as 'experience' in the abstract, as a mode separate and distinct from culture." Hall is saying here, in effect, what I formulate as "the medium is the message." I think he could well do with some study of the ways in which the dominant technology of any culture simply repeat themselves in the variety of matters offered by our senses, individual and collective.

Since speech is itself a master technology, it goes without saying that the Sapir, Whorf, Hall, Trager, Lee axis have long followed this line of study. Not being perhaps particularly familiar with the types of cultural analysis directed by the artists of this century toward human technologies as art forms, the social scientists have been unduly shy of a plenary art approach to technology.

In The Books at the Wake, by James Atherton (Faber, 1960), it is mentioned Finnegans Wake is a history of writing. "We begin with writing on a bone, a pebble, a ramskin...leave them to cook in the muttering pot: and Gutenmorg with his cromagnon charter..."

The problem for the artists in our time is to say everything at once, and this is the problem in a variety of ways for every kind of person in an electronic age.

In these few words from Finnegans Wake, Joyce is saying, amongst other things, that the dawn of human culture (Gutenmorg) is a cromagnon (or

primitive affair) but also Gutenberg the dawn of the Renaissance accelerated our rediscovery of the cromagnon beginnings of human culture. Letters, the language of culture, when given the new stress of print, hastened our rediscovery by historical analysis of the pre-literate cromagnon world. Letters translated us out of the all-at-once auditory and tactile world of pre-literate man, while Numbers: The Language of Science (Tobias Dantzig, Anchor Books No. 67) developed parallel with letters as a means of translating the visual and the literate back into the non-visual and the tactile.

The artist faces the problem of responding to this type of awareness with new forms of relevance for mankind. Pre-literate society enthroned the artist as medicine man. Post-literate society (the electronic) must enthrone the artist as navigator.

Since the purpose of writing was to translate a non-visual multi-sensuous world into a picture or visible world, it is not strange that we should be confused today. For electronic technology does not merely translate the pictorial back into the audible and the tactile; it also presents all of the senses directly and without translation of any sort.

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READINGS AND SUGGESTIONS - SPEECH

The Silent Language, Edward T. Hall (Doubleday, 1959)

Number: The Language of Science, Tobias Dantzig (Anchor Books No. 67)

The ancient Oracles at Delhi and elsewhere were said to have had elaborate communications systems. By the time their royal clients arrived at the shrine, a fairly complete idea of the clients' problems had been received.

What was the advantage to all concerned of dealing with the clients' problems in a cryptic way? Why do oral societies rely so heavily on aphorism? (See The Waning of the Middle Ages, by Huizinga.)

Why should interpersonal dialogue be considered most nearly adequate to the highest modes of the learning process? Why should the study of speech reach new planes of clairvoyance in the age of the tape recorder?

Experiments in Hearing, Georg von Békésy (McGraw-Hill, 1960)

Sensation and Perception in the History of Experimental Psychology, Edwin G. Boring (D. Appleton-Century Co., New York, 1942)

Boring provides clues to the changing attitudes and theories of the Western world toward our various senses.

A phonetically written language will inevitably develop the habit of making words refer to things. A pre-literate language, on the other hand, has no such habit. Word is thing. The work of Dorothy Lee and the work of Bronislaw Malinowski on native speech habits documents this aspect of pre-literate language. A good deal of their material is embodied in

"Thinking Through Language" which was prepared by E. S. Carpenter apropos of the media test enclosed in this report.

Almost nothing has been done to study the effect of phonetic writing on our attitudes towards "meaning." In ETC Magazine, for winter 1955, Richard Dettering has an essay on "What Phonetic Writing did to Meaning" (p. 121ff) - what our culture today in part is confronted by is the collapse of a "picture theory" of language.

Scientific American Magazine, essay on LOGLAN: James Cooke Browne, June 1960, Vol. 202, No. 6, pp. 53ff.

"This logical language is now being synthesized on modern linguistic principles, largely to examine the hypothesis that the world view of the members of a culture is determined by the structure of their language."

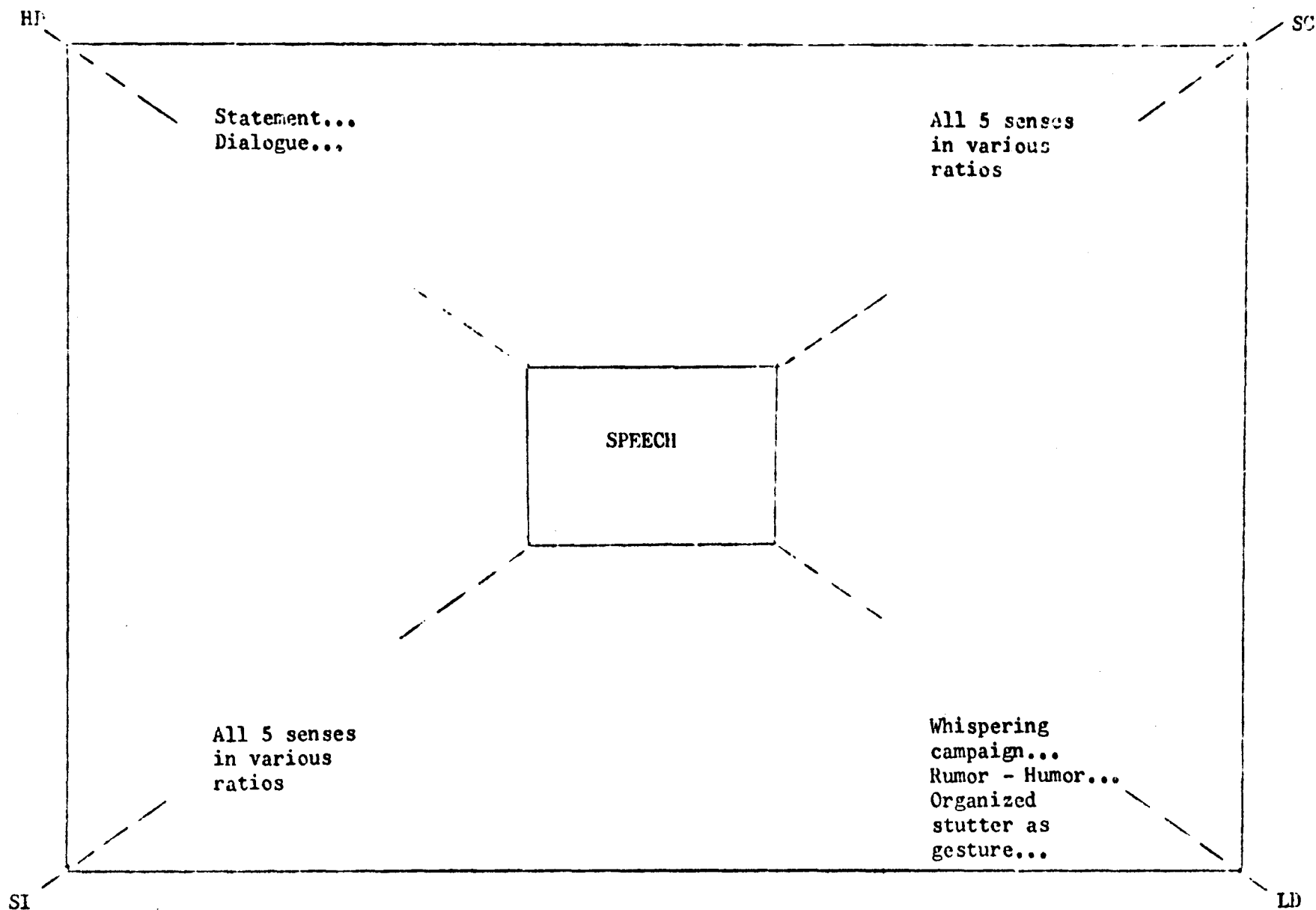


COMMENT ON SPEECH CHART

As the only medium using all the senses at once, speech also uses all of the senses in LD. Since the SI is in LD, the SC or response is one of deep participation, in all senses also. That is, if any one sense were given HD in speaking, we would not tend so much to respond with all senses, as with those complementary to the one in HD. If a person clutches you while talking to you, the ratio among sight and sound aspects of speech will alter. Speech on radio gets such High Definition in the auditory sense that we respond with strong visual stress.

When SI is in Low Definition, the SC response tends to involve all of our senses more than when the SI is in High Definition. Since speech has all senses in SI (and all of these in LD) the SC effect is the richest possible to any medium. Since the SI-SC are similar, this makes for maximal stability of the medium.

As speech tends towards HD it can move through the phases of dialogue and statement all the way to proclamation. Notice that as it goes over more HD, it increasingly excludes participation. In LD speech evokes ever more participation. "The eloquent shrug," "the word to the wise," etc. Stutter is so very LD as to produce the most painful pressure of participation on the hearer.



## INTRODUCTION TO WRITING

## INTRODUCTION TO WRITING

The Greeks made a myth about King Cadmus as he who introduced the phonetic letters to Greece. The myth says King Cadmus sowed the dragon's teeth and they sprang up armed men.

H. A. Innis has devoted an entire book to explaining the meaning of this myth. The book is Empire and Communications.

A myth is the explaining of a complex action and reaction in a few words. The phonetic writing permitted the spread of writing on cheap materials like papyrus which could be swiftly transported over land enabling men to organize armies at a distance. In the same way, phonetic writing was able to take over many languages and culture in the Greco-Roman name. It is a one-way conquest since the other peoples, while being taken over, are quite unable to take over themselves.

Phonetic writing is, above all, a way of translating the audible into the visible. The oral and tangible world of the pre-literate man is translated and made explicitly visual by the phonetic alphabet. This is the traditional distinction between the barbarian and the civilized man. The barbarian plays it by ear. The civilized man plays it by eye. The barbarian lives in the all-at-once world of many directions and many levels of meaning at a single moment. Whereas the literate man lives by the eye, one-thing-at-a-time, one direction at a time, one level at a time. The man of the written word has at command an instrument of organization and of analysis which seems quite mysterious and superhuman to the man of the ear. The movie of the Bridge Over the River Kwai is a full length dramatization

of this clash between the men of the eye (the English) and the men of the ear (the Japanese colonel). The practical one-thing-at-a-time men are quite able to make the bridge, but quite unable to control its uses.

The translation of the non-visual world into visual formulas continued educationally, and legally, and politically, throughout the Medieval period with ever-increasing stress on visual system in all levels of organization and knowledge, until the time when Gutenberg gave a new meaning and intensity to this visual stress.

Writing does not occur in Nomadic societies, but only after people have developed the special skills associated with sedentary life. This specialism extends to the sensory life as well, and writing becomes possible when a dissociation occurs among the senses. So-called Euclidean space, i. e. uniform, single-plane, homogeneous space, is unknown until men have learned the art of writing phonetically which is to say the art of translating the non-visual senses into a uniform, spatial language. (See The Sacred and the Profane, by Mircea Eliade, who shows how Euclidean space is unknown to pre-literate man.) Dantzig, throughout his book on Number, holds to the theme that mathematics, especially since the Renaissance, has been characterized by the effort to translate Euclidean space back into the other senses. Especially now with the omnipresence of nuclear spaces resulting from the development of electronic technology, we no longer live in Euclidean space in the West. The new media of communication translate all events into nuclear time and space configurations.

We are in exact antithesis to Euclidean man of 3000 years ago who was totally engaged in translating all of his institutional arrangements

from auditory and tactile into visual terms. Today, after thousands of years of organizing all of our experience in visual terms, a nuclear technology drives us in the direction of organizing even the visual in non-visual forms. The front page of a newspaper appears to the eye, but is organized by telegraphy. The newspaper page is thus a nuclear field of events.

In a word, all that Western man has done since writing began he is now reversing. The purpose and challenge of writing cannot be the same, therefore, as when we were engaged in the opposite move of translating man's age-old primitive heritage into visual forms. When Rousseau proclaimed that man is born free, but is everywhere found in chains, he would seem to have been straddling between these two worlds of the primitive and of the nuclear. Because the chains which bind man are the institutional arrangements which he has contrived by means of visual organization and codification of his non-visual life.

PROJECTS AND QUESTIONS - WRITING

1. What would be the problems of introducing the phonetic alphabet today into Japan and China?
2. Would the consequence of introducing the phonetic alphabet into China today be as drastic as when the Romans introduced the same alphabet to Gaul?
3. Will the ideogram survive in some new roles in the same way as the printed book finds new work to do in the electronic age?
4. What are some of the advantages of the ideogram over our alphabet?
5. Does a form of writing which involves complex situations at a single glance favor cultural continuity and stability?
6. By contrast, does a form of writing that favors attention to one-thing-at-a-time foster instability and change?
7. In other words, is the man of the ear a conservative, and the man of the eye a liberal?
8. Why should writing weaken the human memory? Pre-literate men amazed at the efforts of the white man to write down his thoughts and sayings ask: "Why do you write; can you not remember?"
9. Why should a pre-literate people have no concept of words as referring to things, but only of words as being things?

10. Is the "content" of writing the medium of speech? Is it possible for any medium to have a content except it be another medium?
11. Is the medium the message?
12. Is it possible for a mathematical proposition or demonstration to have content?



READINGS AND SUGGESTIONS - WRITING

Empire and Communication, H. A. Innis, Oxford University Press, (1950)

The Chinese Written Character as a Medium for Poetry, an Ars Poetica, Ernest Fenollosa, New York, Square Dollar Series

The Hand-Produced Book, David Diringer, Hutchinson's Scientific Publications, (1953)

The Voices of Silence, Andre Malraux, Doubleday, New York, (1953)

The world of sculpture is poised on the frontiers between sight and sound, resonating with a vocal quality, but not being enclosed pictorial space.

The myth of Cadmus directly concerns the first effects of the invention of phonetic writing. May this also be the case with the myth of the Gorgon? May one effect of print have been to turn the mind to stone, even in the moment of imperishably arresting the moment of thought?

Consider the nature of myth as including simultaneously the causes and effects of a complex process.

From Script to Print, H. J. Chaytor, W. Heffer and Sons, Cambridge, (1950)

This unique book shows the effect of manuscript culture in changing the forms of making, and of study and communication of poetry,

Chaytor points to the loss of memory which comes with writing. We may ask: "Why should the translation of sound into sight cause memory blockage?"

### WRITING (CHART)

In the case of writing by means of phonetic characters, men discovered how to translate the multi-sensuous thing that is spoken, language into one sense only. The peculiar effect of translating the many senses of the spoken word into the visual mode of writing is to abstract one sense from the cluster of the human senses. This simultaneous abstraction and translation of several senses into one sense naturally resulted in a change of ratio among the senses.

It is the advantage of these charts that they enable one to spot readily the components which enter into the experience of any one medium.

One can, then, with equal readiness, spot the omitted senses which remain to be filled in. That is to say, in the case of writing, all the senses except sight are omitted. This is a major reason why the phonetic reader is very strongly introverted. He has so much to fill in. While the written form or manuscript stepped up the visual form of experience to relatively High Definition (H-D), print as technology stepped it up very much more indeed.

Once more, the advantage of this chart method of study is that once you know what properly applies to any corner of evidence in the chart, it is possible to fill in a good deal that belongs in the other corners. For example, if you know that early movies were visual in Low Definition (L-D), and that later movies were visual in High Definition (H-D), you would already know a great deal about what characterized early and later movies in S-C (Subjective Completion) and L-D (Low Definition).

Such a procedure was followed by scientists recently in the discovery of cortisone. They knew in advance enough to eliminate all but fifty-seven possibilities.

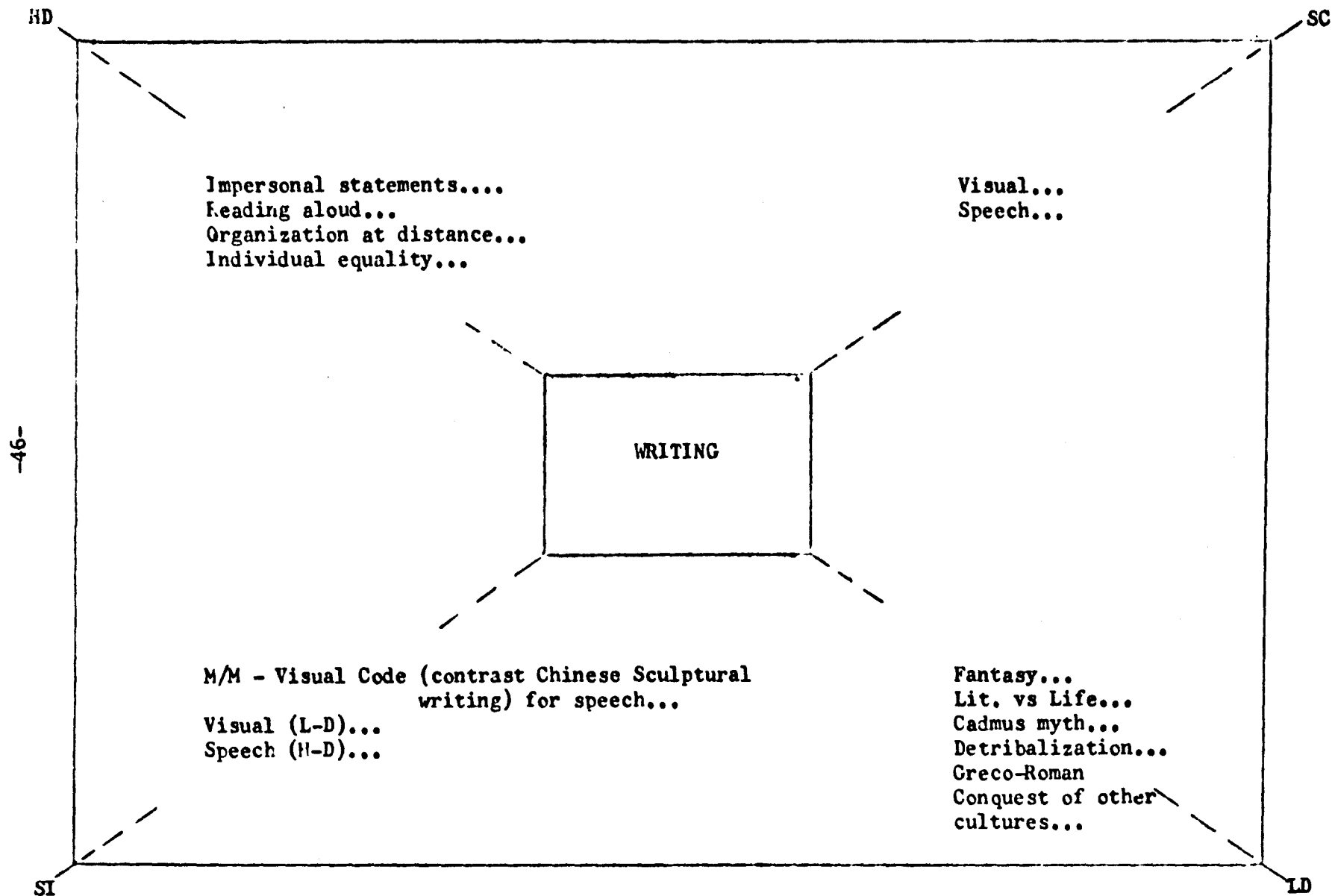
These charts offer the possibility of direct participation in research to anybody who has had experience of these forms. It is said that Cecil Rhodes in the same way had only to wash the mud off the diamonds in his backyard. Another way of doing direct research on the impact of media is to ask yourself what popular myths and legends which occurred at the time of the new impact might contain relevant material about the social action of these new forms. For example, the myth of Cadmus, and the myth of the Gorgon. For later periods of the modern world it is necessary only to observe the changes which occur in already existing art forms; painting, poetry, music. Thus the new kind of writing represented by Montaigne's Essays or Machiavelli's Prince contain major evidence of the effect of Gutenberg on Western Europe.

Our chart indicates that the SI consists of visual characters. Unlike print, writing is LD. The SC therefore is quite different from print. The reader of the manuscript had to read aloud. It was part of his SC response to a Low Definition situation. But the translation of speech into merely visual characters gave extremely High Definition to the visual component in speech with many consequences for the languages so written. Written languages tend toward streamlining of inflection and syntax alike.

The SC for writing consists in varying degrees of auditory-tactile response. We cannot read even print without incipient movements of the larynx. But writing being LD compared with print, evokes much more

participation than print. So that whereas the manuscript reader in his "carrell" chanted, muttered and sang, the print reader makes his auditory SC within, and for the rest is content with "incipient movements" of the throat.

The HD effects of writing are to enhance the power of the state at the same time that the individual "discovers himself" in the act of reading and writing. Among the traditionally recognized LD effects of writing is the famous dichotomy of "literature and life." The very act of reading encourages a fantasy life. But writing exists by creating a dichotomy of sight and sound, and sets up a vast series of splits in human awareness, such as are unknown in pre-literate or archaic societies.



## INTRODUCTION TO PRINT

## INTRODUCTION TO PRINT

Print would appear to be the first mechanization of a handicraft. A similar technology seems to have been achieved much earlier in Korea, and it is surely no coincidence that the Koreans are the only other people who are known to have developed a phonetic alphabet.

Without the abstraction involved in a phonetic alphabet, the breaking up of the senses necessary for print technology would seem to be impossible. The basis of print technology is the extension of the phonetic alphabet principle from sound to movement. Just as the phonetic alphabet separates sound from meaning, so print separates letters from movement. The motions of the scribal hand are broken up into movable types. Static segmentation of the scribal motion is the base of print technology, leading to the book which is the first teaching machine.

Since Gutenberg, the mechanization of many kinds of motion have been achieved. The principle is always the same. Segmental analysis of the total action involved, and the laying out of this action as a series of static repeatable segments in what we have since called the assembly line. Such assembly line necessarily involves uniform, repetition of a specialist action. As a form of production, it is now ending with the advent of automation.

Automation depends upon an exactly synchronized information flow from electronic tapes, and substitutes the multi-levelled complex for the single-plane assembly line.

In the age of John Gutenberg, people did not understand the kind of

revolution that had occurred with printing. Rather, they thought that it was a means of providing ordinary people with instructional materials. The book as the first form of mass production made the identical item available for all men.

As compared with the laborious pace imposed upon the manuscript reader, the reader of the printed page could move as if upon Macadamized surfaces. The narrow and arduous track of learning became a throughway overnight. When information movement undergoes some striking alteration in time, or space pattern, the form of human association and knowledge undergo similar revolution. When print made all knowledge available in uniform and repeatable form, what we call Renaissance individualism and nationalism appeared at once.

Today, if the only means available to man for self-expression were the forms of commercial advertising, self-expression as an aim or goal for educated man would quickly fade from the picture of our lives. With print it became possible for the first time to dream of self-expression and of earthly fame. Because the exactly repeatable forms of print made possible the extension of the private image and private point of view on an enormous scale. By manuscript means, it is quite futile to dream of publishing oneself to the world, and today once more men who must use the great collective forms of movie and broadcasting have very little opportunity for self-expression.

Print made possible individualism because the book as private teaching machine fostered initiative and self-reliance. The book created the ideals of inner self definition and inner goals. The printed page could by its



exactly repeatable form open up new markets of the vernacular tongues where before the market had tended to be for Latin books alone. The same repeatability of the printed form made possible totally new aims in education; namely a uniform training for the whole community.

Nationalism was born of this possibility of organizing an entire language area on a uniform political basis. Print became the basis for a kind of national mobilization of manpower. Just as armies depend upon uniformed men acting as replaceable parts in a smooth working military machine, so the uniformly educated citizen body becomes an inexhaustible manpower pool. Napoleon was the first to manipulate the resources of print in this way, mobilizing public opinion on one hand by his press, and manpower by means of the citizen army, on the other hand. Print in this respect afforded to Western man a vast new staple or natural resource which gave to the political power direct access and control over the citizen mind.

If print was the first form of mass production, it was also the first means of providing markets with uniform commodities. Uniform commodities lend themselves quite naturally to uniform pricing. The very idea of uniform pricing was as revolutionary as uniform commodities. Handicraft economies are related to bazaar type markets where prices are the result of much haggling. Today, under electronic conditions, it is interesting to watch the pressures whether in collective bargaining in motor sales, or in discount houses, which are driving us back to the conditions of hagggle and the oriental bazaar.

Equally new after print was the discovery of the split between producer and consumer, and also between the ruler and his subjects.

Specialism of function at many levels is characteristic of mechanization. Today, the reverse is true. Specialism disappears with mechanization. In management and decision-making, many people today must have a kind of over-all competence in all aspects of an operation. Encyclopaedism and fussion of function is as characteristic of the twentieth century as specialism had been previously. In fact, we have come to use the word specialist as a term of dubious praise.

Like any other medium, print is a vast staple or natural resource. It promotes the uniform, repeatable movement of information which yields the homogeneous citizen body. Without such a uniformly processed citizen body the manpower potential of a community cannot be released. Without citizen homogeneity, no economic take-off into the region of perpetual growth and change. Without print, a society remains a "backward sluggish country." Whether computers and electronics will enable such societies to by-pass literacy as a stage of development, remains to be seen.

PROJECTS AND QUESTIONS - PRINT

1. Let us try to discover any area of human action or knowledge unaffected by the forms and pressures of print during the past five centuries.
2. If the forms of print have shaped all the levels of action and organization in the Western world up until the advent of nuclear technology, does this explain and justify the type of stress which we allow to our printed forms in educational establishment?
3. If a nuclear technology is now succeeding to the mechanical print technology of the past five centuries, what problems does such a transition present to the educator? To the political establishment? To the legal establishment?
4. What would happen to the society that did not recognize or identify these problems at all?
5. What happened to Medieval education when it failed to understand the nature of print?
6. Consider why anthropology with its pre-literate concerns should have so much in common with post-literate and nuclear forms of communication?
7. How did uniformity and repeatability of the print production process affect human arrangements in time and in space?
8. Why should the speeding of information flow for the print reader create historical perspective and background? Why should the much slower information flow of the manuscript make such background impossible?

Why should the electronic speed of information flow eliminate historical background in favor of "you are there?"

9. Why is homogeneity of space and time arrangement natural under print conditions of learning?
10. Why was it revolutionary for Columbus to assume that he could keep moving in a straight line, in one direction? Why are there no straight lines in Medieval maps? Why was it unthinkable for them that space should be continuous and homogeneous?
11. Why should the Columbus pursuit of the straight line in navigation have been necessary in order to discover the round earth?
12. Are the flat earthers on strong ground in terms of our Western devotion to Euclidean space?
13. In garment making and hence in clothing styles, the straight seam was impossible before the sewing machine. Trace some of the implications of the straight line and of mechanism in one or more other fields of human organization.
14. How much is our notion of "content" affected in the case of printing by the blank page as filled with moveable types?

READINGS AND SUGGESTIONS - PRINT

The Bias of Communication, H. A. Innis, Oxford University Press, (1951)

Explorations in Communications, Marshall McLuhan and E. S. Carpenter, Beacon Press, (1960)

From Script to Print, H. J. Chaytor, W. Heffer and Sons, Cambridge, (1950)

Ramus, Method and the Decay of Dialogue, Walter Ong, S. J., Harvard University Press, (1959)

Apropos of this book, Father Ong traces the rise of habits of visual organization of knowledge in the later Middle Ages before and after printing. Dialogue is necessarily non-visual and involves minds in maximal participation in the processing of knowledge. Renaissance method increasingly eliminated such participation.

Today, with nuclear non-visual forms of knowledge presentation, we turn again to dialogue.

The Right to Learn, Glen McCracken

The Right to Learn underlines the unexpected effects of one medium upon another. Film releases aspects of the printed page not available to the person dealing with the printed page alone.

The movie as sequence of still shots has deep affinities with the Gutenberg assembly line of movable types, but whereas the movie viewer is in the role of the camera, the print reader is in the role of projector. It occurred very early to the manipulators of the printed word that print afforded a means of snapshotting the mind in action. In other words, a means of self-investigation of the type undertaken by Montaigne in his

essays. The whole Senecan enterprise in prose is part of this snapshotting of the mind in action. Self-investigation is the correlate of self-expression. In the same way, self-portraiture among the painters is the correlate of perspective, or vanishing point and point of view.

PRINT (CHART)

Here is the perfect example of a transformation of a medium by stepping up the degree of its definition. What may appear as quantitative improvement brought out qualitative changes.

This should suggest to us ways of observing the altering ratios of sense as producing a totally new focus of attention and awareness.

Just as speech is "contained" in writing, so with printing. At first print strove to imitate the texture of the manuscript. The manuscript was "contained" in writing.

The subliminal or Low Definition (L-D) presence of one medium in another has conferred upon the Western world an obsession with "content." This is easily checked. As for example in scientific formulas which contain nothing whatever but which are structures commanding other structures. With the prevalence of multi-media experience in the past century, artists and scientists alike have sought "pure" music, "pure" poetry and in general to purge one structure from other structures. In poetry and criticism, this has meant the repudiation of "content" as having validity or relevance.

As our chart indicates, the structural impact (SI) of print is visual in HD. The corresponding SC of print is audible-tactile in LD.

In terms of social effects, the HD modes of print create uniformity, repeatability, lineality, individualism and "point of view." The LD effects here as always are relatively subliminal: for the individual, a rich "inner" life of dreams and fantasy. Habits of inner drive, inner direction, and

self-set objectives or fixed points of view are only a few of the galaxy of effects of print on readers. (A fuller story of these is given in the attached transcript from the Gutenberg Galaxy kinescope.)



HD

SC

H-D - Uniform repeatable...  
Lineal...  
Sequential...  
Point of View...  
History...  
Calculus...

PRINT

M/M Visual (H-D)...  
Speech (L-D)...

Fantasy...  
Individualism...  
Nationalism...  
Authority...  
Reader as projector...  
Assembly line...

SI

LD

## **INTRODUCTION TO PRINTS**

## INTRODUCTION TO PRINTS

It would be a sufficient justification to include this section on prints if only to bring to the students' attention the work of William M. Ivins, Jr. His Prints and Visual Communication (Routledge and Kegan Paul, 1953) stresses the meaning which prints have had in the development of science. Until there was some uniform and repeatable means of transmitting non-verbal information, it was impossible for scientists to communicate. Mr. Ivins helps us to define a "backward country" as "one of those that have not learned to take full advantage of the possibilities of pictorial statement and communication," (p. 1). He spots, at once, the disadvantages to knowledge of the "persistent habit of regarding prints as of interest and value only insofar as they can be regarded as works of art," (p. 1). He will receive increasing recognition as a master of media analysis, because of such critical awareness as this: "Historians of art and writers on aesthetic theory have ignored the fact that most of their thought has been based on exactly repeatable pictorial statements about works of art rather than upon first hand acquaintance with them. Had they paid attention to that fact, they might have recognized the extent to which their own thinking and theorizing have been shaped by the limitations imposed on those statements by the graphic techniques. Photography and photographic process, the last of the long succession of such techniques, have been responsible for one of the greatest changes of visual habit and knowledge that has ever taken place and have led to an almost complete rewriting of the history of art as well as a most thoroughgoing revaluation of the arts of the past," (p. 2). Mr. Ivins does not merely offer valuable data, he offers us better ways of perceiving data --- an approach rather than conclusions.

We must look on prints "from the point of view of general ideas and particular functions, and, especially we must think about the limitations which their techniques have imposed on them as conveyers of information and on us as receivers of that information," (p. 3).

To extend this kind of awareness, not only to prints but to all media, is the aim and scope of understanding media.

The approach of Mr. Ivins readily reveals why historians until recent times "have rarely found anything they were not looking for," (p. 4). This remark of Mr. Ivins reinforces the insight of Siegfried Giedion in Mechanization Takes Command that "anonymous history" must be the students' main resource today. "Anonymous history" is without a point of view, since it is the actual mosaic of discoveries and developments which the collective and cooperative energies of men have patterned.

A private perspective or point of view directed towards such patterns is something for which we must now write a history, since it is a dated and dubious form of effort.

PROJECTS AND QUESTIONS - PRINTS

1. Why is it possible to give accurate verbal instructions for the construction of a bucket, say, but quite impossible to describe a bucket? How does this problem relate to the importance of prints in the development of many forms of knowledge? (Ivins, P. 57.)
2. Apropos of page 50 of Prints and Visual Communication, consider some of the ways in which in other fields as well, technical advance may be a setback for knowledge.
3. What has been the effect on the newspaper story of the line engraving? (Ivins, p. 98ff.)
4. How did it happen that Dickens became a novelist by the accident of supplying copy for popular pictorial artists?
5. In what other media is the cartoon most effective?
6. Is the print, engraving, cartoon, etc., a low or high definition form of statement?
7. Why could animated cartoons not possibly have the same effect in movie and television?

READINGS AND SUGGESTIONS - PRINTS

Prints and Visual Communication, Wm. M. Ivins, Jr., Routledge and Kegan Paul (1953) London.

Art and Geometry, Wm. M. Ivins, Jr.

This book is concerned, among other things, with the nature of Euclidean space. One of its themes is that it was not until the Renaissance that Western man finally freed the visual from the tactile. We have seen how print culture strongly stressed segmental one-thing-at-a-time approach to problems of organization of space and time.

1. What variations of attitudes to space and time might have occurred as a result of prints and engravings?
2. Would the preferred subject matters of the engraver provide a clue to the latent resources of the medium?
3. Look at the famous Illuminations of Rimbaud as a kind of newspaper hodgepodge landscape, the idea for which he seems to have picked up from the popular magazines of his time. Why should such amusing and ingenious adaptations of popular art impress the highbrows? Is highbrowism today an attitude of those of shaky literacy?
4. Check James Atherton's The Books at Finnegans Wake for the very high degree of interest which Joyce maintained in the most commonplace forms of popular culture.
5. Why should Pablo Picasso take such an interest in American comic strips when the academic world does not?

6. E. H. Gombrich's Art and Illusion (Pantheon Books, 1960) should be read by all students of media. On pp. 157ff, he tells the story of printed pattern-books which led to the rise of cartoons and comic strips. The story is continued on pp. 335ff with full awareness of how the LD print creates HD creative participation.

## PRINTS (CHART)

Prints, like cartoons, are of the lowest definition possible. Their fascination depends upon the systematic withdrawing of data. Note how such Low Definition (L-D) forms are automatically effective in other Low Definition (L-D) media such as television.

I have deliberately put the tactile component of prints in the High Definition (H-D) corner in order to challenge some attention. The tactile sensations are probably Low Definition (L-D) at best as compared with eye and ear. But all the more for that reason they would seem to imply and involve maximal participation from the perceiver.

Wm. M. Ivins suggested, in Art and Geometry (Cambridge, Mass., 1946) that the Greek geometric sense was profoundly tactual and that Euclidean geometry thus had to wait further development until the visual sense had been abstracted from the tactual sense in the Renaissance. (See television chart for other tactile aspects.) In fact, it was only the pictorial abstractness of print that made possible the diminishing of the tactile values sufficiently to advance mathematics to its eighteenth century phase.

As our chart shows, however, the SC for the print is not visual, but participation of all the senses. The stark outline of the cartoon and the print alike tend to activate tactile and auditory senses.

But just how tricky the analysis of the quality of prints can be is revealed by Wolfflin in his Principles of Art History (Dover Books, pp. 33-34). He analyzes two engravings, one by Durer, one by Rembrandt. The Durer he shows has an SC that is highly tactual. The Rembrandt has an SC



that is highly visual. It is not necessary for all observers to be agreed on the SC (or the HD-LD, for that matter) of a given image or medium. The processing which the SI undergoes in each of us is bound to vary, just as the effect of radio or movie differs widely as it is processed through different cultures. The French reported in the 1920's that movies had restored their sense of their own physical bodies. In England and America the movies intensified the merely "neural itch." The crusade D. H. Lawrence staged for wholeness in sex was the artist replying to the media and upset sense ratios.

It is no accident that the great age of prints and engravings is also the great classical age of music. The tactile SC of prints is closely tied to auditory and musical experience.

## INTRODUCTION TO PRESS

HD

SD

Math and science...  
into abstract visual frame  
Pictorial space...  
Perspective...  
Line of force...  
Abstract pictorial statement...  
Syntactical net of rationality...  
Tactual...  
Contour...  
Sculptural...

PRINTS

M/M...  
Visual - H-D...  
Audible - L-D...  
Tactile - H-D...

Great age of prints  
Classical period of  
music

SI

BD

## INTRODUCTION TO PRESS

When someone like Orson Wells makes a bid to have an existence in newspaper or on radio, or as an intellectual, it is very confusing to the categories ordinarily created by the movie medium. By and large, the newspaper accepts as newsworthy figures created by any medium whatever, whether spots, or radio, or theater, or movies. In fact, if someone appears in the news who does not already have some existence in some other medium we think of them as just ordinary people.

The power of various media to shape and to project huge public images of private citizens is basic to an understanding of media. In the case of the newspaper, the image which is given to the reader is of the community itself. The public press presents a kind of group picture or verbal telephoto of the global human community, hour by hour. This image is made by means of a collage or assembly of dozens and even hundreds of small items much as a wire photo is achieved by means of numerous dots forming a stippled pattern.

The make-up of each page must tend toward a selection in order to include a very large range of human interests. The mosaic of human interests thus achieved creates a strong impression of depth and range so that the ordinary reader is quite satisfied that he has made a real contact with the collective life of the community under the dateline indicated at the top of the page. Of course, if a reader suddenly discovers that he is reading yesterday's newspaper, the sort of disillusionment and letdown is acute indeed. Jazz musicians use as one of their strong figures of speech the phrase that recorded music is as stale as

yesterday's newspaper.

A newspaper seen on the kitchen floor often reveals startling aspects unnoticed when in the hands of a reader. If a newspaper were used as wallpaper, it would be in order to stress its peculiarities of layout and design. Any newspaper page tends to have many of the characteristics of the Marx Brothers' gag circus. By definition, no two items in a newspaper can have any connection one with the other. The only connection between any two items in a newspaper is indicated by the dateline. The fact that it happened on our planet on a given day affords the only logic or rationality.

David Riesman once conducted an inquiry among students at the University of Chicago as to why people read newspapers. The only consistent reason discovered was so that people could achieve some privacy in public conveyances. Perhaps the other side of the same picture is in order that people in the privacy of their homes can maintain contact with the public world.

Our public myth or theory concerning the importance of the newspaper in our political lives is not only valid but worthy of the utmost study. It is literally true that our politics depend heavily upon the existence of the newspaper. So does our commercial life. A most helpful way of getting at all this is to look at the patterns of society before the newspaper existed. It is only necessary to imagine ourselves totally dependent for news on radio and television. One of the best ways of understanding a newspaper is to watch the stages of development which the press has undergone. When it consisted of a sheet or two, the press was little more than an editorial. At a later stage, the press set out to gather news in order

to gather readers. Then, in order to gain more readers, it had to organize the distribution of news and the postal services began to grow. (See The Bias of Communication by Harold Innis, and Mass Communication by Erik Barnouw.)

As Barnouw pointed out, newspapers fairly soon discovered that what they printed was news. In fact, until they printed it, it wasn't news. This is a basic principle of understanding all media. A movie star is somebody who appears in movies. An author is somebody whose book gets published. The medium itself usually creates the commodity of fame and reputation.

In pre-print days, only very extraordinary people could be known beyond the borders of their own village. After print, an absolute nobody might become world famous. The newspaper carries this capricious aspect of publicity to the extreme.

An excellent way of discovering the form and meaning of the press medium is to watch its changed patterns as new technology intervenes. For example, the telegraph and cable services naturally had the most direct effect upon the newspaper, conferring upon it at once the dimension of "world telegram" or "globe and mail." And the items on the page were similarly altered. The individual news item, after the telegraph, tended to become even more isolated from any point of view or perspective. Correspondents from every part of the globe had only to neutralize their stories by withholding personal feelings for attitudes in order to simplify the job at headquarters of assembly of a daily global image of the new global village. So-called "objective" reporting is simply the omission of point of view.

The news editor can deal more easily with neutral items. When such items pour in over the wires at high speed, there is no possibility of arranging them in a consistent perspective. And in all electronic kinds of data processing, private point of view tends to yield to a group awareness. The all-at-once of instantaneous speeds has very little room for the one-thing-at-a-time or private point of view of the pre-electronic arrangement of information.

PROJECTS AND QUESTIONS - PRESS

1. Does the aspect of newspaper as inclusive image of the community commit the newspaper to the job of exposing private manipulation of the communal thing? Is there an inevitable clash between the public nature and function of a newspaper and the private points of view of many of the interests in a community?
2. Consider the same news story as handled on radio and television, and in the newspaper. Do you think of any one of these ways of handling the news especially adapted to any particular kind of news? Does world news, for example, seem most appropriate in headline form? Does local news find its most appropriate form on the radio?
3. Which medium, press, radio, or television is most effective in gaining the participation of the viewer? Does the newspaper reader tend to be a mere spectator of events? Is the radio listener more closely involved? Is the television viewer most challenged to participate in action?
4. Does the newspaper typically create the outlook of the sidewalk superintendent in all community matters?
5. Is the job of the newspaper to dramatize the issues within a community?
6. How did the news photograph alter the nature of the newspaper and the news story?
7. How had the print affected the nature of news coverage prior to the photograph? (See Ivins' Prints and Visual Communication.)



8. Has the influence of radio and television been to encourage newspapers to a more editorial attitude to the news? If news can be given by radio and television, does the newspaper see its unique advantage to consist in background to the news?
9. Why should the newspaper find so little sympathy with historical perspective on any matter? (See Time Magazine as newspaper trying to achieve historical perspective.)
10. What devices does a newspaper employ to provide a sense of continuity from day to day for its readership?
11. Why should the newspaper, in processing opinion in such ways as to produce homogeneous emotions and attitudes, be a major means of mobilizing the manpower resources of a nation?

READINGS AND SUGGESTIONS - PRESS

1. At what point does the enlargement of type tend to push the printed word into the area of graphic art and design? Consider the British habit of putting headlines on separate sheets beside the newspapers. Does the headline as a form try to be a capsule story? Does it have its meaning in itself, or is it necessarily linked to a follow-up story? What can we learn about the headline form from its variants in radio and television? What are some of the uses of headlines made by John Dos Passos in his novels? Does the headline resemble the world of the newsreel? Since the printed word is itself a visual code for speech, does the headline form of print tend to break speech out of the code into actual auditory effect?
2. Are noisy headlines a substitute for shouting newsboys?
3. Wynn discussing Nasser's nationalist aims indicates that they are tied to a newspaper campaign. Let us ask ourselves whether nationalism would be possible without newspapers. If so, why? Is nationalism essentially visual in mode as compared with, say, radio? Does it involve the visualization of a vernacular unity rather than the auditory experience of vernacular unity? How far can the auditory experience of vernacular unity extend? How far can the visual experience of national unity extend? Would radio have a nationalistic or merely tribal effect in grouping experience and loyalty?
4. What has been the effect of television programs in shaping the handling of news items and editorial discussions?

5. Apropos of question 4, some journalists maintain that the effect of this on the newspaper story was to curtail length of coverage and to reduce items. Was the effect of television to inject a much stronger personal dimension in news commentary?
6. Reader surveys of reading habits of newspaper readers has strongly indicated that people accept the total page as a reading ration giving the same kind of attention to advertisements as to anything else. A. J. Liebman (the Wayward Press section of the New Yorker magazine) reported how in the 1952 election, a New York Times fan discovered that his friends who also subscribed to the New York Times did not know which side it was supporting. He took the following action to offset this deplorable state of affairs. He had a pro-Republican editorial from the Times reprinted as a full page advertisement in numerous newspapers across the land, hoping to get some attention for these opinions in advertisement form which they had failed to evoke in their editorial space.
7. Consider why the effect of the telegraph on the newspaper should be to eliminate point of view in favor of field of pluralistic points of view.
8. Do headlines act as mandates much as dress models in shop windows? That is, if we read the headline "British furious with Ike" is this in effect an order to the British to feel furious? How would any large population know how to feel about a large number of ever-changing matters without a daily press? Does this imply that the newspaper exercises a tyranny over our thoughts and emotions? Does it at least

choose the subjects concerning which we shall think, and feel from day to day?

9. Does the press provide a sort of landscape background for personal and national experience? Do advertisements for national brands belong to the same landscape? If neither press nor advertising existed, would we be likely to have thoughts and feelings different from those we have at present? What happened in New York during the newspaper strike, a few years ago?
10. See Mr. T. S. Eliot's poem "The Boston Evening Transcript." What does Mr. Eliot suggest in this poem is the function of a newspaper? Look at "The Waste Land" by Mr. T. S. Eliot—a poem laid out in the manner of a newspaper landscape.
11. See a book by K. Capek called In Praise of Newspapers. It is a kind of metaphysical eulogy of the personal lyric quality which newspapers introduce into life.
12. Why does the newspaper insist upon human interest? Does the newspaper get human interest from books and literature, or is it peculiar to the newspaper?
13. Why is Charles Dickens in a special way a novelist who derived his focus and techniques from the newspaper? How does the work of Edgar Allen Poe belong to the newspaper?
14. Why should the detective story in the fact of its form be tied to the press? (A detective story gets its form from being told backwards

like a symbolist poem, in which the writer begins with the effect he wishes to achieve and then makes the poem to achieve that effect.) See Poe's essay "The Philosophy of Composition" in which he describes the making of the raven.

## PRESS (CHART)

The advantage of this chart approach in dealing with the newspaper is that it enables us to appreciate the press as a complex word of art without being sidetracked by this or that "pigment" or news item. Just as art forms are maximal modes of organizing our sense lives, so we have been hindered from seeing these forms in modern technology if only because they have been stepped up to such high collective intensities. The teamwork involved in constructing such a daily pyramid as a newspaper so far exceeds any earlier human possibilities of organization as to make of a newspaper an unclassifiable art form. Having been taught for centuries that art is a private form of self-expression, we have no means of apprehending the artistic character of non-individual social activity. As someone said in beginning a study of photography, nobody can commit photography alone. This is true of English, or any other mass medium.

Media study serves to begin the process of alerting the perceiver to the art values in collective media. As the so-called mass media threaten the individual, surely his best comeback is private enjoyment of the collective pressure. For here he enjoys a one-way advantage. The mass media may be able to swallow him, but they cannot enjoy him.

One need never have heard of "screaming headlines" in order to know that the SC for the newspaper is bound to be auditory. All one needs to know is that the SI is visual in HD. The SC or sensory completion will be auditory for sure.

The SI-SC diagonal strongly suggests the processing of a structured

image through a single or private sensorium. The HD-LD diagonal tends to represent the social or collective effects of a structured image on society. In the case of the newspaper, the very layout of the page is an assembly of book pages or columns. The press layout is collective as sure as the book page layout is private. And the newspaper provides, by its very selection of items, a kind of collective SC or response for the whole community. The paper reports collectively, as it were, to the private citizen. It tells him how the whole community or even the world feels about a particular episode. Naturally, therefore, the press as a form prefers collective episodes, involving many people. As an HD or "hot" medium, it prefers hot items. Massive events, floods, droughts, hurricanes are the ideal material for the press form. War and the threat of war are even better than natural catastrophes for this very "hot" medium.

Whereas, then, the press can provide a collective, social response for the private reader, it can also provide a private experience for the same reader, subjected to collective pressures. So on our HD-LD diagonal we find, unexpectedly, the collective in the HD corner, and the private in the LD or subliminal corner.

## **INTRODUCTION TO PHOTOGRAPHY**



ED

SC

Collective S-C for private S-I...  
Private S-I...  
Multiple points of view...  
Collective responsibility...  
Inside story...collective professional  
Visual nationalism...  
Hyperbolic, big noise as v.i.p.

auditory  
"sensational"

PRESS

Visual in H.D...

Private S-C  
for collective S-I...  
Bad news to sell  
good news...

LD

SI

## INTRODUCTION TO PHOTOGRAPHY

In his book, Painting and Reality, Etienne Gilson points out that up until Giotto paintings had been things. From Giotto to Cezanne, paintings have become things once more.

In his Prints and Visual Communication, William M. Ivins, Jr., traces the rise of the print with its "network of rationality" or mesh of lines for capturing the external world.

The minute mesh of lines, or statements about the external world suddenly yield in the photograph an image without lines. Reality is there as a total statement without syntax. It was as if by reversal that things drew themselves instead of being drawn. This automatic character of uniformity and repeatability which at first was felt in the printing press and in industrial output began about a century ago to characterize all levels of human activity. Handicraft values and habits of individual discrimination and enterprise seemed to be disappearing on all sides. But in the electronic age, do-it-yourselfness seems to return to all phases of human action, giving to the qualities of the handicraft a value higher than they ever had before. Nowhere does this transformation appear more strongly than in the domain of photography itself. Whether it be private snapshots, or home movies, the skills of managing the camera receive ever more acclaim.

One immediate consequence of photography was to end the reign of perspective in painting. By holding up the human image with new salients and intensity, the photograph created a revolution in human clothing and

personal appearance. Intensity of stress on visual values became especially characteristic of the human world. Where photography has not ruled the world of sense values, we still find stress on non-visual effects in clothing, on tactile values for example, and in resulting indifference to drab and slabby appearances. The tintype arrived just in time to record a world in which visual values had not yet achieved any power over the consumer.

Photography would seem to have created an extrovert activist and outgoing generation. For the photograph puts the viewer in the role of the camera eye---that is aggressive and eager to swallow all that it can see. It recalls the Fox-Movietone advertisement "Eyes of the World" with the roaring lion enthroned...Such, however, is not at all the image of the television monitor where the viewer is not camera eye, but screen rather. Does this mean that television will now give us an introvert generation?

PROJECTS AND QUESTIONS - PHOTOGRAPHY

1. What was the effect of photography on newspaper and magazines?
2. What did the photograph do to merchandising and packaging and promotion?
3. What was the effect of photography on international affairs?
4. A newspaper story does not necessarily cross language barriers. How about photography in this respect? Was the effect of the photograph to enlarge the domain of reporting and human awareness?
5. What effect did the photograph have on the manner of writing newspaper stories?
6. Did technicolor movies make travel unnecessary?
7. Is the effect of exact repetition by photograph an extension of the Gutenberg technology? Does this sort of repetition make for competition?
8. How does the photograph in advertising alter the form and use of words in advertising? Do similar changes in word layout occur in the newspaper as a result of photography?
9. How does plane travel relate to the world created by photography?
10. Is there more participation, less passivity in film clips than in a whole movie?
11. What has been done differently indoors, and out of doors, since the photograph? Have not big cities had to spruce up since they began to

be photographed in newspapers?

12. What has been the effect of the photograph on human attire from the tintype onward?

READINGS AND SUGGESTIONS - PHOTOGRAPHY

Prints and Visual Communication, William M. Ivins, Jr., Routledge and Kegan Paul, London (1953)

Painting and Reality, Etienne Gilson

One way in which to see the nature of photography is to contrast it with new visual experiments in the use of light through rather than light on. People like Gyorgy Kepes are experimenting with a new type of painting, more or less in line with our experience of seeing a city at night from the air—that is, a world in which light is not on the object, but comes from the object. Here is a type of experience which is characteristic of television and also of the world of stained glass. The painter Rouault, in his way, just like Seurat, in his way, would seem to have anticipated this technological change in our environment, by painting pictures as if on stained glass.

In the camera world of photography, the viewer is the camera eye. But in the world of television, the viewer is not the camera, but the screen. Psychologically there would seem to be a great gulf between these two roles. Is the camera eye world superficial and the screen world of the introvert television viewer a thing of profundity and depth?

1. Consider the theme of the family album as a motif in Western culture.
2. Is the photograph by way of being a scale model? Is the earth seen from the air itself a kind of photograph? To what extent does the photograph and the mail order catalog intertwine?
3. On pp. 86-87 of Art and Illusion (Pantheon Books, 1960) E. H. Gombrich

suggests some exercises to the student of photography; e.g.:

"Take the next magazine containing snapshots of crowds and street scenes and walk with it through any art gallery to see how many gestures and types that occur in life can be matched from old paintings."

Gombrich has in mind that even the Life photographer does not see anything except through the long-established patterns of painting technique. In the same way, people imitate art by shaping their bodies, clothes, homes and gardens to accord with the dominant pictorial modes.

4. On p. 156 of the Penrose Annual of 1960, we are told:

"It was not until the late 1800's, after the invention of photoengraving, that magazines and newspapers began to increase in number and circulation, advertising began to grow in quantity and scope...."

With photography an HD medium came to the side of the press which was already an HD medium. This was paralleled in the late 1920's when sound in HD came to the movies that were HD. In the case of sound in HD the effect was to intensify the visual power of the movie even further.

Photography in visual HD brought high tactual values to the press. That is why photography suddenly expanded the role of advertising in the press. But Africans make a further tactile SC from photography than we do. Ron Kaggart wrote to the Toronto Star from the Congo (Saturday, August 13, 1960):

"The Belgians left behind a country where they believe it really is Aunt Jemima ground up inside that box."

5. E. H. Gombrich (Art and Illusion, p. 275) points out that the painters beat photography to the draw with visual illusion.

6. See Gombrich (pp. 71-87) for the effects of pictures in shaping perception.

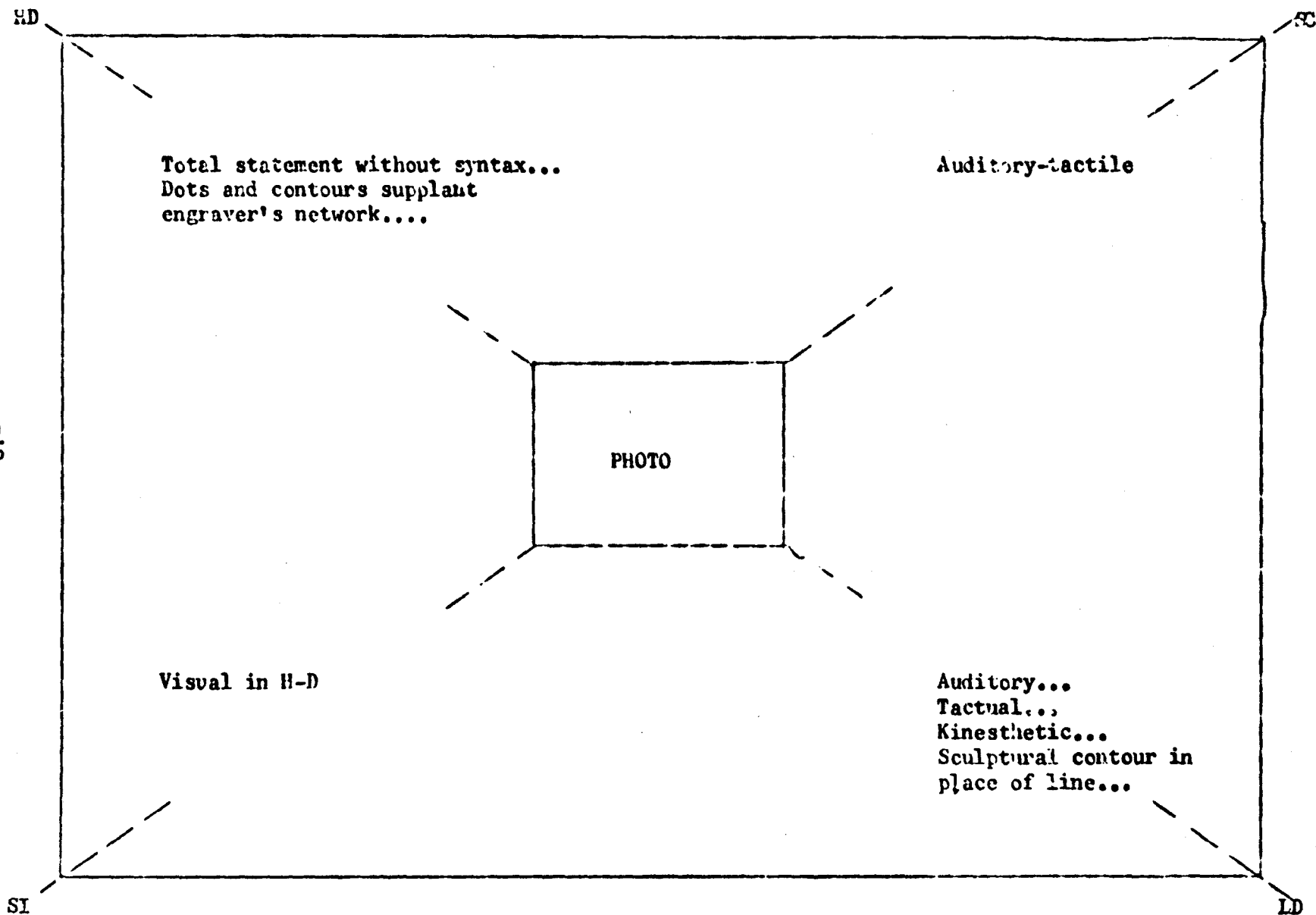


PHOTOGRAPHY (CHART)

William M. Ivins, Jr., in his Prints and Visual Communication (Routledge and Kegan Paul, London (1953)) traces the stages of lineal syntax in prints and woodcuts all the way to that point of no return where photography provides a total statement without syntax. "With photography, however, we come to a kind of print that no one could have made before the nineteenth century," (p. 116). He proceeds with his theme (p. 128): "At last man had discovered a way to make visual reports in printer's ink without syntax, and without the distorting analyses of form that syntax necessitated. Today we are so accustomed to this that we think little of it, but it represents one of the most amazing discoveries that man has ever made—a cheap and easy means of symbolic communication without syntax," (pp. 128-9).

Visual in HD means that photography enhanced the tactile-auditory complex in its SC result. Also, in so doing it flooded us with minute information about the qualities of consumer goods. Wherever new information flow is directed, there occurs new economic growth. Pictures create vast new data flow by simple non-verbal means.

## INTRODUCTION TO THE TELEGRAPH



## INTRODUCTION TO THE TELEGRAPH

Pre-electric telegraph was a very large enterprise in Napoleonic Europe so that as Dallas Smythe points out when the electric telegraph appeared, England and America had the advantage of being backward countries in this matter. Having no prior investment in pre-electric telegraph, they were free to go ahead with the electric form without loss of earlier equipment.

Whereas writing and printing, and paper, and roads, had deeply affected the patterns of human association and man's ways of organizing space and time, with the telegraph came the first breath of space-time. That is to say, when information can move instantaneously over considerable distances, space and time alike disappear into a new structure which has been called space-time perhaps because it contains neither.

In Arthur C. Clarke's Voice Across the Sea, (p. 8, Harpers, 1958) Clarke gives some basic data on the experimental origins of the telegraph, as preliminary to his long account of the laying of the first trans-oceanic cables. On p. 6 he mentions: "Cooke and Wheatstone produced their first telegraph patent in June 1837, and carried out their first practical trials in the same year over a mile and a quarter long line between two London railway stations." Sam Morse, the American painter, had produced his first working telegraph instrument in 1836. As Clarke points out on p. 9, "the beauty of Morse's system was its simplicity. It is so simple, indeed, that we tend to take it for granted and forget that someone had to invent it. Earlier telegraph systems had involved many wires and cumbersome sending and receiving apparatus. Morse produced a telegraph that needed only wire

(the earth providing a return circuit) and whose transmitter was nothing more than a key to make and break the connection. By means of the dot dash code, this single key could send any letter or combination of letters."

The telegraph and the wireless began to reshape our Western world more than a century ago. The entire structure of the assembly-line and of moveable types and of literacy was to be profoundly undermined by this electronic development. The telescoping of space and time already implicit in the telegraph contained also the principles of automation which would bring to an end the regime of the assembly-line.

PROJECTS AND QUESTIONS - TELEGRAPH

1. Do you think the telegraph has had the greater influence in shaping our attitude towards time or towards space? Does it have to be called space-time when both time and space are relatively eliminated?
2. In writing, the medium of speech is encoded in visual form. In telegraph, the same medium of speech would seem to be encoded both visually and audibly. By consulting a history of telegraphy, discover how far the originators of the Morse code accepted the plateau of print technology.
3. In a slower medium, time and space are not equally affected. Illustrate from the book, the newspaper and the private letter.
4. How could we determine the changing patterns of inter-personal life or of inter-cultural life which have resulted from the extension of the book and the newspaper? Look at the form of Pamela by Samuel Richardson to get a sample of what it felt like to be alive when the private letter was becoming part of daily life.
5. Do not the changing forms of literature and painting and music record our altered feelings about ourselves and about our ways of association?
6. Which of our media has confirmed us in the habit of thinking that the "content" of a work is the main verb, as it were, and that the medium employed is mainly a neutral "container" for such "content?"
7. For a century, we have had a daily snapshot of the globe in the telegraph newspaper page. Does the structure and character of the telegraph

page of the daily press tell us how we may expect to have to organize our approach to politics, and to the arts and culture of the future? Would the fact that people like Rimbaud and Mallarmé and Eliot and Pound have organized major artistic work in this telegraph pattern provide any help or guidance in this matter? Does the artist become a sort of radar screen for the electronic navigator?

8. Why do the daily readers of the newspaper fail to perceive that the ordinary layout of the page equals or exceeds the outrageous fantasy of the Surrealist poet and painter? Why in an age of multiple media which involve all our senses all of the time, does it become necessary for the artist to play lopscoth as it were with the human senses in order that we may retain our integrity and unity of perception? Is this not what Bernard Berenson meant when he said: "The painter can accomplish his task only by giving tactile values to retinal impressions."? Is this not why many people get lost in the presence of modern art? Are they not looking for one sense when the artist is eagerly translating one into another for them?
9. Why is the uncritical and naive print reader especially prone to fall into this fallacy of single sense and single meaning?
10. How does this create a serious crisis for a print culture in an electronic age? Why does an electronic age inevitably favor the ear over the eye? Why does the act of hearing involve all directions at once?
11. Why should the sending or receiving of a telegram seem more dramatic

than even the ringing of a telephone? What is there in the American setup which causes us to specialize the use of the brief telegraph form for grief?

12. Is the newspaper since the telegraph a sort of collective telegram?



READINGS AND SUGGESTIONS - TELEGRAPH

Voices Across the Sea, Arthur C. Clarke, Harper and Brothers, New York (1938)

Broadcasting and Television Since 1900, Maurice Corben, Andrew Dakers Limited, London (1952)

It happened over and over again in the early hours, as it were, of new inventions in the nineteenth century that commentators foresaw some of the major consequences. In Voice Across the Sea, one catches something of the excited prophetic spirit that waited upon so many nineteenth century developments. By comparison we seem to have come to take everything for granted.

1. Consider how, just as the first decades of print were dominated by the image of the manuscript so the first years of radio and television were dominated by the patterns of the immediately preceding technology. The familiar type of this pattern is "the horseless carriage" and "wireless."
2. Consider how the four hundred line image presented by the television monitor is a testimony to centuries of print culture. How necessary is this linear structure with its scanning finger moving from left to right to the existence of television?
3. The British still say wireless for radio. (See Voice Across the Sea and Broadcasting and Television Since 1900 for background material to explain this verbal habit.)
4. The physicists of our time have often urged the need for a "Unified

Field Theory" to provide a base for the inter-relationship of all knowledge. Why is such Field Theory an inevitable feature of modern physics? What problems result for other subjects like history and economics and language study from media patterns which involve the daily experience of the globe as a small tribal drum or telegraph? Is it possible to maintain as practical units our older divisions of knowledge and experience?

5. When cable service opened between England and India, John Ruskin is said to have asked: "What have you to say to India?" This is a valuable instance of typical misunderstanding of media. Arnold asked much the same question of the railway facilities of his time. Why hurry from an ignoble life in one corner of the land to an ignoble life in another corner? Both Arnold and Ruskin failed to note how the entire pattern of human association is changed regionally and globally by railway and cable. The cable by its mere existence creates a million things to say to India.
6. Dallas W. Smythe in The Structure and Policy of Electronic Communications (University of Illinois Bulletin, Vol. 54, No. 73, June, 1957, Urbana) devotes his monograph to explaining the political, military and institutional changes and dealings in, round, and as a consequence of the telegraph.

### TELEGRAPH: (CHART)

In his radio days, Walter Winchell made valid and imaginative use of the telegraph medium. He combined the sound of the typewriter and the telegraph with the shrill urgency of his own voice as he said: "Mr. and Mrs. North America, let's go to press!" The Low Definition nature of the telegraph image and message insures maximal participation of the hearer.

Because of the very nature of the Low Definition (L-D) character of the telegraph, we would expect in advance the High Definition (H-D) corner of our chart to be hard to fill in. One characteristic of the H-D corner of the chart of any medium is that it tends to be occupied by conscience individualist traits while the L-D corner tends to get filled in with unconscious collectivist traits. I had no such plan in mind to begin with, but was simply groping my way.

If private urgency and anxiety characterizes our ordinary awareness of the telegraph, it is equally certain that its overall operation is to turn the world into a sort of tribal drum ever throbbing with low insistency. A similar L-D aspect of telegraph is its power to create an inclusive global image by means of the montage of newspaper items. The simultaneity of telegraph coverage translates various media into a single global snapshot. When ordinary time and space are eliminated by the instantaneous new time and new space, or space-time, they appear in such incongruous forms as the global snapshot.

In SI we find three media: one of speech, one of the phonetic alphabet, and one of sound alone. The telegraph, like symbolist poetry, is in LD. It works by minimal means creating maximal effects in SC.

## **INTRODUCTION TO THE TELEPHONE**

HD

SC

Global stutter supplants semaphore  
telegraph...  
Note of global urgency...  
Immediacy...

Maximal participation  
of all senses

TELEGRAPH

M/M/M  
(sight, sound, speech  
in LD)

Tribal drum telegraph...  
All-at-onceness creates  
Auditory field...inclusive  
global snapshot

-96-

SI

LD

## INTRODUCTION TO THE TELEPHONE

Mr. Clarke, in his Voice Across the Sea (p. 18) reminds us that the word telephone came into existence before Alexander Graham Bell was born. "It was used by Professor Wheatstone as early as 1840 to describe a device he made for conveying musical notes short distances through wooden rods. By the 1870's, dozens of inventors all over the world were trying to achieve the electrical transmission of speech, and it was only a matter of time before someone succeeded. How true that is is proved by the fact that the American Patent Office received Elisha Gray's design for a telephone on the same day as Bell's but an hour or two later--to the subsequent great profit, needless to say, of the legal profession, which did very well out of the telephone.... Bell received the fame and his rivals are now only footnotes in the history books. There are no second prizes in the race for any great invention or discovery."

Dallas Smythe in his Structure and Policy of Electronic Communications turns in his third chapter (pp. 22ff) to tell how "the articulation of wire-telephony with wire-telegraphy in a nationwide network of facilities and service" occurred.

"When Bell and his associates offered service to the public in 1877 (the year after he received his patents) their resources were meager. Powerful, well-established, and well-versed in the means for subjugating puny rivals, Western Union Telegraph Company promptly moved to establish control over telephone service," (p. 24).

PROJECTS AND QUESTIONS - TELEPHONE

1. How would a speed-up to telephone dimension of information movement affect the pattern of authority and of decision-making?
2. Ask your friends and parents how the telephone shapes their business and social lives.
3. What, for example, is the effect of the telephone in medical practice? In political life?
4. What has been the role of the telephone in the newspaper world?
5. Consider the way in which the telephone is used in Broadway plays, or in Hollywood movies, as indicators of its real force and character.
6. What qualities of drama and action come to mind in relating the telephone to stage and movie and novel?
7. Is it natural that one medium should appropriate and exploit another?
8. Is the use of which one medium makes of another the clearest testimony to its nature?
9. Why is the telephone so irresistably intrusive?
10. Why do Europeans and especially English people particularly resent the telephone?
11. Why does an Englishman prefer to manage his appointments by telegraph and postcard rather than person-to-person telephone calls?

12. Why is it difficult to exercise delegated authority in a world supplied with telephones?
13. Is the telephone extremely demanding of individual attention?
14. Is it abrupt, intrusive and indifferent to human concerns?
15. How does the telephone affect the typewriter? Does it enormously speed up and increase the role of the typewriter? Check this question with the book Parkinson's Law by Parkinson.



READINGS AND SUGGESTIONS - TELEPHONE

In his Voices Across the Sea, A. C. Clarke, having dealt with telegraph and trans-oceanic cable entitles Chapter XIV "The Wires Begin to Speak." He says:

"The telephone was perhaps the last of the simple yet world-shaping inventions that could be made by an amateur working with limited resources. It has been stated that had Bell understood anything about electricity, he would never have attempted to make such a ridiculous device, as any real expert would have known at once that it couldn't possibly work."

In the same connection, Katherine MacKenzie in her Alexander Graham Bell, (Houghton Mifflin Company, New York, (1926)) writes on p. 41 that it was partly a failure to read the German of Helmholtz that had induced him to suppose that Helmholtz had sent vowel sounds by telegraph.

"But Bell was not to discover his error for two or three years. If vowel sounds could be sent by telegraph, he argued to himself on this premise, why not consonants? Why not speech?.... It was not until he secured a copy of the French edition of 'Sensations of Tone,' before he left Great Britain in 1870, that Bell realized his mistake. He had been trying to repeat an effect which Helmholtz had himself not accomplished... 'I thought that Helmholtz himself had done it,' Bell used to say and 'that my failure was due only to my ignorance of electricity. It was a very valuable blunder. It gave me confidence. If I had been able to read German in those days, I might never have commenced my experiments!'"

1. Is the all-at-onceness of telephone a big step towards automation and away from assembly-line sequential pattern?
2. Is the video-telephone a natural consequence of telephone? Were talkies a consequence of radio or movies?

3. How will video-phone or phonoscope alter the present uses and functions of telephone?
4. In The Case of the Lucky Loser, Erle Stanley Gardner has Perry Mason say: "But the law won't let a witness simply testify to what someone else has said over the telephone," (p. 158, Pocket Books Inc.). Does legal procedure get affected by our various media?

### TELEPHONE (CHART)

Anyone who can remember the old trunk-line telephones knows how they were a means to community rather than privacy. The same instrument, when stepped up technologically, had opposite characteristics.

Today, the older character of telephone as communal appears notably in radio programs that call private homes at random and put the private person into the public broadcast.

When two media are suddenly combined in this way, the resulting chemistry sometimes produces recurrence of primitive characteristics. The newspaper, hard pressed by television, may suddenly discover a new resources in an appeal to a more primitive medium of interchange. West coast communities which can still sustain an interest in baseball are not unfamiliar with the use of newspaper advertising for swap-deals.

If the most individual and High Definition facet of telephone is its urgent and intrusive power, the Low Definition collective aspect is its power to decentralize organizations.

In management, the end of centralized hierarchical structures comes automatically with the telephone (see page 96 of Landmarks of Tomorrow by Peter Drucker). Here is a splendid example of the chiasmic or reverse characteristics of a medium as it is pushed very far in one direction.

The exclusive person to person character of telephone results in the end of the reign of personal authority in favor of the "authority of knowledge."

In the SI corner of the chart, we note that the image provided directly by the telephone medium is auditory. But the need to hold and manipulate part of the telephone involves kinetic action as well. Our phones which now combine receiver and mouthpiece are called "French phones." The older phones had kept mouth and ear apart, in a way much more characteristic of English speech patterns.

The telephonic auditory image is weak and uncertain in quality, as compared with radio or PA systems for example, and this would suggest that the SC corner of the chart will not provide much visual accompaniment in the user of the phone. He will tend to exert his energies in strengthening the weak auditory imagery rather than by filling in the other senses. This LD character of the phone image naturally favors it as a teaching resource for studies calling for close attention and for the elimination of visual imagery. Telephone would seem to be ideally structured, therefore, for the teaching of non-Euclidean math and physics to those who have a visual bias.

In the HD corner of this, as of any medium, one tries to note the most obvious characteristics of the telephone. Stage and screen are profuse in illustration of the telephone to be dramatically intrusive. It elicits in reply to its sudden urgency and weak sound, intense listening, and eager participation of the listener and speaker alike. It is person-to-person. It is private and exclusive. Both speaker and listener are instantly abstracted from their social set-up of the moment.

In the LD corner we find, as always, the less obvious and less conscious components of the medium as a "system." Among our sensory responses, the

tactile and kinetic, perhaps some visualization? But especially all the social and collective effects of the telephone as it affects the speed-up of decision-making and the change from patterns of indirect delegated authority, to the exercise of the direct "authority of knowledge." The telephone thus brings about (along with all electronic media) that pattern of decentralized structure in education and industry alike.

## INTRODUCTION TO THE PHONOGRAPH

HD

SC

Urgent...  
Intrusive...  
Exclusive - person to person  
via auditory set-up....

-105-

TELEPHONE

Auditory in L-D

Tactual...  
Kinesthetic...  
Ends delegated authority...  
Decentralization of  
structure...  
Overriding delegated  
authority...

SI

LD

## INTRODUCTION TO THE PHONOGRAPH

The phonograph has been studied by Roland Gelatt in The Fabulous Phonograph (Lippincott, 1954). Most instructive to the student of media is the series of misconceptions which at first surrounded the phonograph as much as radio later on. "Look," said Edison, "it's like this. I start here with the intention of reaching here---in an experiment say, to increase the speed of the Atlantic cable; but when I have arrived part way in my straight line, I meet with a phenomenon and it leads me off in another direction and develops into a phonograph."

Edison once layed down a general rule for aspiring inventors: "When you are experimenting and you come across anything you don't understand, don't rest until you run it down; it may be the very thing you are looking for or it may be something far more important."

The technique of research that Edison here points to is the "mosaic" one described by Georg von Bekesy at the opening of his Experiments in Hearing. "The very thing you are looking for" is the natural way of referring to our standard method in research in which we try to get everything into a single consistent picture or perspective. The exploratory "mosaic" pattern of research is the one referred to by Edison when he says: "or it may be something far more important."

Edison had been looking for a means of speeding up telegraph transmission when he hit upon the phonograph in 1877.

Related to this episode is another major reversal familiar to the modern artist in symbolist form. I refer to the fact that at many levels



the artist today is aware of the consumer as the producer. As the electronic creates a total field situation by providing more and more information of all kinds, the audience is naturally involved more and more as producer and creator. The art forms which result from this new situation are increasingly do-it-yourself forms.

Edison's friend, E. H. Johnson, set out on a lecture tour in 1877 to expand on the marvels issuing from Edison's laboratory. "In the course of one of my lectures (in Buffalo) it occurred to me that it would be a good idea to tell my audience about Edison's telephone repeater. My audience seemed to have a much clearer appreciation of the value of the invention than we had ourselves. They gave me such a cheer as I have seldom heard," (Gelatt, p. 20).

In the North American Review of June, 1878, Edison predicted ten ways in which his invention was to benefit mankind. Most of these ways have depended upon the arrival of electronic tape to make them real. The first one, "letter writing and all kinds of dictation without the aid of a stenographer" is a case in point. In fact, it was the fate of the phonograph at first to be regarded as an adjunct of the business world and to be overlooked as a means of entertainment.

The novelty of the telephone increased this confusion. That two recent inventions should have quite different meanings was not obvious in 1878. Edison "could not or would not countenance the potentialities of the phonograph as a medium of entertainment. He insisted that it was not a toy. He resented its use for amusement. And for years he deliberately discouraged the phonograph as a musical instrument," (Gelatt, p. 44).

These types of initial confusion are of the utmost value in providing clues to the grammars or structures and patterns of the existing situations which the new medium was about to transform.

It will be many years before analysts and historians, capable of using such clues, have taken up the job of popular cultural history. Even such a concept as "popular" or "entertainment" or "mass media" provide valuable clues to the cultural assumptions of our own world—assumptions which are changing very rapidly indeed. For these terms are loaded with distrust and disapproval of the very things we are doing to ourselves by means of our own technology. Increasingly we come to confront ourselves, when we are confronted by change in our institutions. And in time this can only lead to more forethought and responsibility in the use of our own technology. It is hard now to say: "I didn't know it was loaded."

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PROJECTS AND QUESTIONS - PHONOGRAPH

1. Why did the telegraph, the telephone and the phonograph become so tightly intertwined in their origin and development?
2. What do we learn about the contemporaries of Edison from his listing among the benefits of the phonograph (a) the teaching of elocution, (b) clocks that should announce inarticulate speech, the time for going home, going to meals, etc., (c) the "Family Record"—a registry of sayings, reminiscences, etc., by members of a family in their own voices, and of the last words of dying persons.
3. What has been the effect of the phonograph on the development of the orchestra?
4. Why should the early phase of the phonograph have created a hardening of the musical categories?
5. Why should LP have ended the brief reign of the limited orchestral repertoire?
6. Why should LP have made feasible the easy and inexpensive recording of the music; vocal and instrumental, of all cultures?
7. Is the LP development dependent upon tape recording?
8. How does LP alter the roles of the phonograph?
9. Why does LP make all the musics of all the cultures of the world easily accessible?
10. How does LP affect our study of languages including our own?

READINGS AND SUGGESTIONS - PHONOGRAPH

The Fabulous Phonograph, by Roland Gelatt, Lippincott, 1954

In connection with the confusions attending the development of the phonograph, see The Wonderful Writing Machine by Bruce Blivins.

The originators of the typewriter were sure of only one thing. It could not have any commercial use. In the world of business, the personal touch of private calligraphy was indispensable. If the phonograph altered the repertoire of music and the character of orchestras and musical instrumental ensembles, consider also how printing affected the world of music, vocally and instrumentally.

1. Why should musicologists be so unwilling to consider technological effects upon various phases of the art of music?
2. How does this same unwillingness to study the operation of technologies upon the arts and sciences concern us today in the world of teaching and educational adaptation of the new media?

### PHONOGRAPH (CHART)

The phonograph presents a major item of modern folk-lore. Like almost every other item of modern technology which has flavored and shaped every aspect of our experience from childhood, it has received no attention from historians, psychologists or sociologists. The people who have studied it with minute attention are poets beginning with the symbolists who discovered in the various mechanical musical instruments of the past hundred years a new range of feelings and sensibility. Laforgue and Baudelaire are full of illusions to the mechanical and weary agitation of nerves brought on by hurdy-gurdies and mechanical pianos. In "The Waste Land" of T. S. Eliot, the entire episode of the typist and the phonograph makes the ideal pattern for the student of media. Here a great poet is interpreting the meaning of the major media of his time as they shape the lives of his people. It would not be hard to show how the phonograph, as a medium, has shaped the movie and the novel. The old song hit from "The Broadway Melody" entitled "If I Had a Talking Picture of You" draws attention to certain basic relations between movie and phonograph which could easily be extended to the printed word as well. One medium always exploits another when possible. It seems to be a basic human impulse to translate one sense into another, and one medium into another. But why should translation be such a vivid means of revealing structures of all sorts? The basic mode of research in physics is to bombard nuclei of unknown structure by nuclei of known structure. How does this parallel the study of languages and media by translation?

In the SI corner, we find an auditory image of high intensity. But unlike telephone or radio this image is mechanically produced by moving parts.

It retains many of the kinetic and mechanical qualities of the early phonographs. But the auditory image of the modern phonograph is high or rich enough to release a flood of complementary visual experience, as is indicated in the SC corner.

In the HD corner of obvious and conscious effects, we still associate with the phonograph the experience of stepped-up physical energy of the old jazz age. Energy and repetition, assertion and aggression are still part of the aura of popular phonograph music with its appeal to physical movement, however, mechanical.

It is in the LD corner, the collective and subliminal level, as it were, that the phonograph medium is most interesting. Here is the level of the "blues" and of the drama of spiritual fatigue and decay which is so much a part of the greatest in the music and poetry of the last one hundred years. The phonograph, as it were, gave mechanized expression to all the spiritual distress of the industrial age. Poe talks of this apropos of his Raven. Since then poets, musicians and painters alike have probed the metaphysical depths of melancholy, seeing man as an exiled spirit trapped in a clownish earthy costume.

ES

SC

Energy...  
 Repetition...  
 Broken record - Campbell  
 H.M.V. repeat...  
 Playback record...

Visual in H.D....  
 See Eliot...  
 See movies...  
 See "If I Had a  
 Talking Picture of  
 You..."

PHONOGRAPH

Auditory in H.D....

Mechanical and  
 tired blues...  
 Kinesthetic...

-113-

SI

LD



## **INTRODUCTION TO FILM (MOVIES)**

## INTRODUCTION TO FILM (MOVIES)

The moving picture, which could not have been invented before photography, also depends a good deal upon the nature of printing. Only our Western culture in which four or five centuries of printing had obtained could have produced the motion picture. Because the printed word is itself a sequence of black and white still shots of language in action.

The reader of the printed word is in large degree performing the role of the movie projector. By moving the still shots, or words at a reasonable pace, he creates the strong illusion of sharing the movements of another mind in action. As with movie, the book reader seems to enter into himself and to create a world of privacy and isolation.

Today, it is a common observation that circular movement, or the principle of the wheel, which we in the West take so much for granted, is an abstraction from organic form. An animal, when running, rotates, as it were, and to have abstracted this rotary character from the organic situation gave man his major mechanical triumph. As with printing, the nature of the rotary movement of wheel is uniformity and repeatability. The movie depends upon these principles in every respect.

It is perhaps historically fitting that the first movie consisted of a sequence of a dozen or so cameras set up in a line to photograph the action of a running horse. There was a wager that at certain moments the horse ceased to be in contact with the ground. And so it proved.

The technique of film is to roll up the outside world on a spool or reel in a sequence of still shots and then to unroll it backwards in order

to reconstruct the illusion of a foreward movement.

As mentioned before, the printed book had done this for the movements of the human mind, since Gutenberg, with consequences which permeated all phases of Western life and technology. The sound movie necessarily followed the development of radio technology. Sound movie transformed the visual organization of the movie experience and seemed to discourage the Russians from further experiment with the movie form. They had brought the auditory dimension to the silent movie, as it were.

That is to say, the Russians were excellent with the silent movie because their montage approach to film is itself an auditory one. They dealt with the merely visual sequence as if it were all-at-once; because the ear-bias of their newly-literate world made this easy and natural. But the arrival of sound as a sensory fact threw them off base entirely.

PROJECTS AND QUESTIONS - FILM (MOVIE)

1. In view of the various cultural backgrounds of England, France, America, Russia, India and Japan, what qualities would you expect to appear most in the movies made in these countries?
2. In his Film As Art, Rudolph Arnheim for example says that the American film-maker excels in the single shot; the Russian in montage. Why should this be?
3. Why should the European and the Russian and the Japanese have regarded the film as an art form from the first? Why should the English speaking world have such difficulty in seeing popular forms of entertainment as art forms whether the movie, the comic strip, or the common advertisement?
4. How did movies sell the American way of life to the backward countries of the globe? Consider the role of uniformity and repeatability as indispensable to competition and rivalry. How could competition thrive where unique expression and achievement are stressed?
5. Was the picture story borrowed from the cartoon world?
6. Is there any hook-up between magazine picture stories and silent movies? If so, is it in the isolation of one emotion at a time?
7. Magazines like the Saturday Evening Post have discovered that idea articles written like movie scenarios shot by shot, sell better than short stories. Check the technique of such articles.

FILM - MOVIE (CHART)

M. Artand, writing on film in Transition, notices in the first place that in the 1920's film supplied man with a sense of private identity; and in the second place that American films provided the French at least with a physical sense of their own bodies. These two observations are complementary.

It has often been noticed, as a paradoxical feature of movies, that although they must be seen by a group in order to be enjoyed they have the effect of isolating the members of the audience and of driving each into his private world. (This is not at all the effect of watching television.)

When the movies became the "talkies," HD sound intensified an already HD visual medium. Silent pictures had a strong auditory SC. When sound was added technologically as part of the SI, fantasy mounted at the expense of *NB* creative participation. But silent or talking movie SC always had a large tactile component. Aldous Huxley in Brave New World was wide of the mark in imagining that the "feelies" lay ahead in a world of nightmare Utopia. The movies were already the feelies in SC. With television, it is the SI itself which bombards us with tactile values.

*If one opposes fantasy to active participation, it can be regarded as a retrograde step when our contemporary aesthetes speak of the high quality of the silent movie - more fantasy = a strengthening of book culture.*

HD

SC

"The skin you love to touch"...

You are the camera...

World your oyster...

Extrovert jazz...

Audio  
Tactile  
Kinetic

FILM (MOVIE)

Audio.-Vis.-Kine in H.D.

Introversion...

Isolation...

Fantasy...

-118-

SI

LD

## INTRODUCTION TO RADIO

## INTRODUCTION TO RADIO

The British word wireless embodies a kind of history of the radio instrument. Because, initially, radio was not thought of as a broadcasting form at all. It was thought of as an extension of the telegraph principle--- strictly utilitarian in scope. In practice it was used for ship-to-ship and ship-to-shore communication. (See Dublin post office first broadcast, 1916, below.\*)

Further obstacles to the use of radio as a broadcasting instrument were made by the big electric industries. It was, in fact, the amateur radio hams who broke through the big monopolies and who created a popular radio audience.

Since television, radio has acquired a new batch of characteristics. It has ceased to be a network operation. It has turned increasingly to individual needs and to new kind of programming. Characteristic of this is the substitution of several small sets for the single console model--- specialized listening---specialized programming.

The car operator is catered for at various times of the day. There is the new type of coffee pot program for the housewife. There are hi-fi programs for the evening, and for the expert. Radio had, during some years, become a form for group listening. After television, it reverted to its more private, individual mode.

\*In Broadcasting and Television Since 1900, Maurice Gorham says:

"Whilst wireless telephony was still being used only for point-to-point communication, there was just one example of the use of wireless telegraph for what must rank as the first genuine news broadcast, and this happened



in Ireland during the Easter Rising of 1916. The Republicans had seized the General Post Office and numerous other buildings in Dublin, and one of their first actions was to establish a wireless station and a military post to protect it. The station was at the corner of O'Connell Street and Lower Abbey Street, and the transmitter was a one and a half kilowatt ship's set taken from a disused school of wireless telegraphy. (According to "War by the Irish," by John McCann, the Commander of the post, Captain Tom Weafer, was killed by a sniper's bullet during the first attempt to erect an aerial on the roof.) Knowing the British war-time censorship would clamp down on any news of the rising, the Republicans used the shipping wavelength to announce that the Irish Republic had been proclaimed in Dublin. The broadcast was in fact picked up by ships at sea and relayed to America, where the papers printed it. So far as I can trace, this was the first time wireless had been used not to reach a known receiving station nor to call help, but simply to convey news.

But this was still wireless telegraphy, sending its signals in Morse. True broadcasting, sending speech and music direct into people's homes, was still to come, and few people seem to have seen its possibilities lurking behind the new fact of wireless telephony. Some did. It was in 1916 that David Sarnoff in America advocated the idea of a broadcasting service under his own imaginative title of a Music Box in the home. Sarnoff was then on the commercial side of the American Marconi Company, and his memorandum to his Managing Director explaining his great idea bore no immediate fruit."

The obsession with the pattern of radio as lineal and the recognition of its real decentralized character came with the activity of the radio hams.

"Broadcasting owed its resuscitation not to press, Parliament, public, or the wireless industry, but to the amateurs; that ridiculed minority of 'hams' who spent all their leisure hours operating their home-made sets. They talked and listened to each other, played gramophone records to each other (all in the name of technical experiment) and when they could, they listened to the concerts broadcast from the Hague and the Eiffel Tower. (They were not yet able to listen to America, where broadcasting was growing fast, though that was to come surprisingly soon.) The amateurs missed the broadcasts from Chelmsford and loudly demanded some other professional transmissions with which to compare their own results. There were not many of them---some four thousand by the beginning of 1921, of whom only one hundred and fifty had transmitting as well as receiving licences---but they were endlessly enthusiastic, and they were nearly all organized in one or other of the wireless societies. They gave the post office no peace. The post office offered them special transmissions of wireless telegraphy but they demanded telephony: in other words, music and speech.

At the end of 1921, the post office received a petition from sixty-three societies representing thirty-three hundred amateurs demanding wireless telephony transmissions, 'primarily to serve the scientific purpose of improving the receiving arrangements,' but the spokesmen of the societies referred also to weather reports, news, and music, which were already being received from foreign wireless stations, in a way that showed clearly that what they wanted went beyond purely scientific tests. This time the post office yielded and authorized the Marconi Company to broadcast speech and music for the amateurs, to the extent of one program of fifteen minutes' duration each week."

This is an elementary principle of all artistic utterance and composition. As Robert Louis Stevenson once said of the daily newspaper, "I could make of this the greatest epic in the world if only I knew what to leave out."

To come to grips with the matter of dialogue somewhat more directly, it need be said that it depends upon an everyway simultaneous flow which is a very far cry indeed from the one direction, one level flow of the printed page, or of the lecture platform.

Electronic technology instructs the world again with simultaneous, every direction information flow. We cannot choose but live this way under electronic conditions. We can choose how to think but that again is very different from choosing program "content." Today, we need to understand what Berenson meant when he said in 1896: "The painter can accomplish his task only by giving tactile values to retinal impressions."

Berenson is pointing directly to the job of the painter as that of dialogue—the interplay and translation of the senses at a focal point of contemporary relevance. Mere flow of the most excellent impression does not confer relevance of function on any medium whatever. As dialogue comes back, relevance acquires primacy. Dialogue is the only means of achieving it at all, however briefly. Dialogue ends the regime of the consumer and the producer. In dialogue the consumer is a producer, and the producer a consumer.

With radio it is easy to notice one of the major features of electronic media, namely the powerful drive toward the extension of human dialogue into all levels of human affairs. The book had steadily undermined the nature and role of the dialogue in teaching as everywhere else. (See Walter Ong's

Ramus, Method and the Decay of Dialogue, Harvard University Press, 1959.)

The reason that radio fosters a return to dialogue is auditory. Actual speech, for example, is technologically a very poor medium. Speech fosters highest levels of awareness,,precisely because it does such a poor job of communication. When a medium is doing a poor job, it commands the highest degree of participation between speaker and speaker, between speaker and audience. For that reason alone, it is possible to point out that television is kinder to dialogue than is radio, or is the film.

Radio and film are technically superior to television in terms of information flow achieved. In the same way, writing is superior to speech, and print to writing. But the interchange which is dialogue reaches a higher intensity as information is withheld.

PROJECTS AND QUESTIONS - RADIO

1. What was the effect of the radio on movies? On newspapers? On magazines? On language? On the concept of time?
2. How do P.A. systems relate to radio?
3. Does the P.A. system affect the visual as well?
4. What changes occurred in radio listening and programming after television?
5. Why is radio so intensely visual in effect?
6. What was the relation of radio to the rise of Fascism, politically and psychologically?
7. Why should radio exert such force among the pre-literate and the semi-literate?
8. What was the over-all effect of radio among highly literate people?
9. Why does the twelve-year-old tend to turn from the television set to radio?

READINGS AND SUGGESTIONS - RADIO

British Broadcasting, Burton Paulu, University of Minnesota Press, Minneapolis, (1956)

Broadcasting and Television Since 1900, Maurice Gorham, Andrew Dakers Limited, London (1952)

The Art of Radio, Donald McWhinnie, London (1959)

1. Is the disc jockey a product of radio?
2. Consider the differences between a P.A. system and radio. Do they have similar characteristics when charted?
3. Would you say that as long as we are within hearing distance of radio the sound is inside your head?

## RADIO (CHART)

What then is the Highest Definition attribute of radio? The answer to this question already exists in the public image of this form.

I propose this as a basic principle of media research. Whatever the public will accept and verbally repeat about any medium, already possesses a valid base in human experience. Nobody can hire anybody to accept or repeat an attitude toward anything, except in the world of advertising. That is why a popular phrase of wide acceptance is high-level psychological evidence of collective experience.

Let us take the "radio ham" as the type of radio personality. It was the "radio ham" who forty years ago broke up the big commercial formations in the radio field. (See Maurice Gorham, Broadcasting and Television Since 1900, London, Andrew Dakers Limited, (1952).)

The complex meanings and attitudes in the word "ham" will serve as an example of what I referred to concerning popular phraseology for a basis of media research. The "ham" has very much of the private operator, very much a High Definition figure. What do we discover in the Low Definition corner of our chart? What are some of the group consequences of radio whenever it impinges on a community? Let us say, right off, that radio has a very different effect upon a highly literate community from its effect upon a newly literate society. The ratio of the senses in a society that has been reading books for centuries is not the same as the ratio of the senses in a society which has been tribal and pre-literate within living memory. Let us also say that the effect of printing upon the Chinese people, with their very ancient ideographic tradition could not possibly be the same as the

effect of printing on a mainly auditory linguistic group.

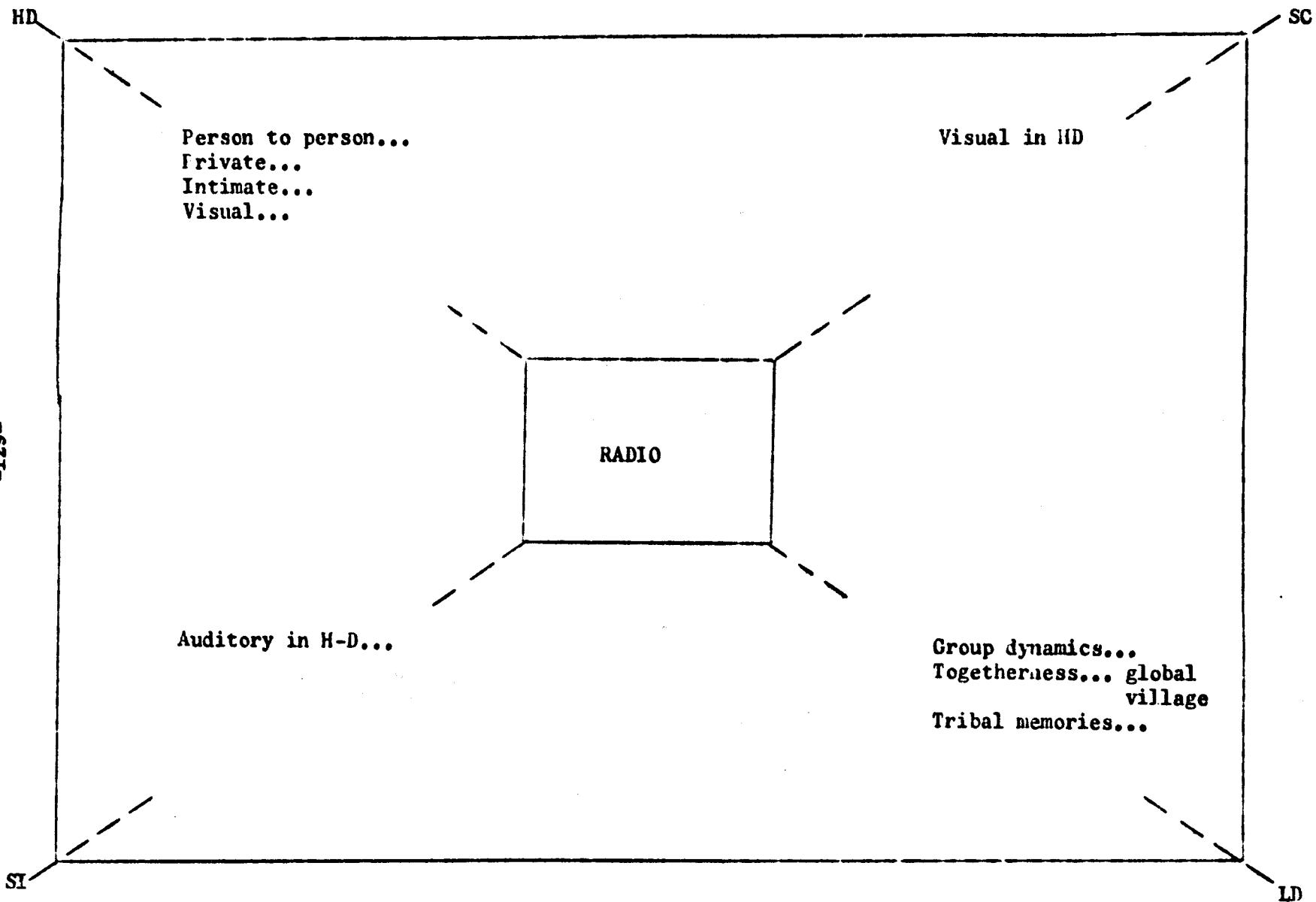
The immediate effect of radio on a tribal society is to intensify whatever elements of tribalism are present. The reasons for this are simple and natural and most ardently to be avoided. The tribal man lives in an auditory world. That does not mean that it is a world of many noises, but rather that the patterns of experience have a "field" character meaning that they are assembled from many directions at once. When Joyce calls his last book, Finnegans Wake, he means among other things that the Finn or tribal structure of human social organization is about to awaken again. When man lives globally to the notes of a tribal drum on a planet that is no more than a village in scope and extent, he cannot avoid the all-at-onceness of pattern which is the auditory and tribal type of structure. When radio was new in Europe, it awakened the old tribal energies and patterns of various European peoples giving us the form which we call fascism. The effect of radio upon the sensibilities of completely detribalized men, such as the British and the American, has been to stir up a deep sense of responsibility for the human family in the forms which we associate with socialism and communism.

Today, in North America, radio and the disc jockey have wide acceptance among the teenagers. The teenager seems in many ways to be a tribal man, suddenly intruding in our once civilized and detribalized midst. The tribal man naturally follows the family pattern of togetherness in all things. Think of the futility of Western man deploring togetherness while he bends every energy and skill to promote it by the new media.

As auditory in HD, radio naturally has an SC which is intensely visual.



The auditory radio raises tribal passions; whereas the newspaper creates nationalist, pictorial awareness of society. Both press and radio are hot (HD) media, whereas television is "cool" and LD. It is said that political rigor mortis has struck the United States since television.



## **INTRODUCTION TO TELEVISION**

## INTRODUCTION TO TELEVISION

Maurice Gorham in his Broadcasting and Television since 1900 points out how "the original Baird system was mechanical depending for its scanning process on a spinning disk: the M-EMI system was all electronic, using no moving parts." Does not this transition from the moving part to the moving of information represent the larger meaning of the electronic revolution itself? At the present moment, for example, is it not the sudden recognition that war now consists not of the moving of hardware, but of information which leaves the Western world floundering and unprepared? Economists have pointed out that as information levels rise in a culture or economy, not only does one product tend to be easily substitutable for another, but information itself tends to substitute for the previous movement of commodities. And since the movement of information constitutes by far the largest human activity today, war itself tends more and more to assume the informational character. The same factors of change of information pattern by means of new media, likewise constitute the emergence of new staples, and new natural resources in a society. Once again, the concept of wealth and resources and commodities as "contained" in the sum situation continues to prevent us from seeing that these things are, in reality, constituted by new forms of human association.

One way of illustrating this is to point to our realization today that money is not a store of value, but a means of moving information. And credit cards then take on the character of money.

It was in 1936 that the BBC began regular television broadcasting only to close down in 1939 with the outbreak of war. The British were able to pioneer television because of their large government set-up for broadcasting

and their indifference to commercial sponsors. Nevertheless, as Maurice Gorham points out (p. 234-5, Broadcasting and Television Since 1900):

"The path of the television pioneers was far harder than that of the radio pioneers of the nineteen-twenties. As has been mentioned before, transmitting television is a more complex and elaborate process than broadcasting sound, more expensive, more limited, and more apt to go wrong. In the same way, viewing is harder than listening. You cannot enjoy television whilst you are washing up, darning socks, doing home-work, playing bridge, or driving a car. You have to stop doing anything else and watch the screen as well as listen to the loudspeaker. Nowadays there is no need to draw the curtains and put out the lights, but the set has to be where the whole family can see it, and this usually means arranging a room round it, and keeping the room solely for television when anybody wants to watch; this at a time when living-space generally is more limited than it has ever been.

"Further, television reception is more difficult than reception of sound broadcasts. The most expensive set, the most elaborate aerial, will not always ensure against interference even when the set is quite close to the station. At different distances a hospital using diathermy treatment, a main road carrying a stream of motor traffic, an air-lane overhead, may all interfere with the picture, and the eye is less tolerant of distortion than the ear."

The effects of television on the American public (for ten years) have not been observed simply because attention has been focused in the wrong area. This subject is considered in the section on the Media Charts, but as with any new medium, the effect will naturally occur where there is most alteration of sensuous habit and attention and this, of course, has nothing to do with the program content of any medium.

The total contrast between the movie, and television images, closely corresponds to the huge discrepancy between the manuscript and the printed page. For those who ignore the constitution of the images, and who are convinced that the "content" of the images is the central matter, it is only

necessary to point out that they continue to identify themselves with that august company for whom in all ages the horseless carriage will never hide the noble figure of the horse.

The gegenschlein of a departing technology never fails to color our views of new technology. When this illusion reaches the intensity of suggesting that new technology should do the work of the old, a serious danger develops. For those who imagine that film and television can be integrated with existing curricula as incidental aid, it is necessary to point out the fatal past orientation of print culture.

It is precisely because print is a form of applied knowledge, the first mechanization of a handicraft, that it has both a profound pragmatic bias and a strong bend toward doing in a more efficient way what has already been done. Such a bias is not found for example in the Russian world, nor in many parts of Europe where print has only been an incidental and recent form of experience. Where print has not held sway, the human mind retains a resilience of structural design and innovation which is a major advantage when dealing with electronic media. The whole North American institution is in utmost danger from electronic media, both because the habits we have acquired from dealing with print culture are in themselves limited, and brittle, and because the challenge of the electronic media demands the utmost spontaneity and resilience.

PROJECTS AND QUESTIONS - TELEVISION

1. Engineers claim that a thousand line television image would provide almost as high definition as the present movie image. Supposing that an equally high definition of retinal impression were achieved for television, what would be the effect of its multi-point mosaic structure over and above the retinal impression?
2. Why should the broken line of the television mosaic emphasis the sculptural contours of objects?
3. Why has sculpture traditionally been spoken of as the voice of silence? Does this mean that the sculptural object exists on the frontier between sight and sound?
4. Is there any possible line of investigation suggested by the fact that sound waves become visible on the fuselage of jet planes just before they break the sound barrier? Does this suggest that the various human senses are translatable one into the other at various intensities?
5. If sculpture exists on the frontier between sight and sound, does this mean that beyond that frontier is writing and architecture and enclosed or pictorial space? In a word, must the nuclear age civilize those primitive dimensions from which we emerged by means of writing and the visual organization of experience? Can this be done without more destruction both of the primitive and of the civilized achievement?
6. Consider the power of any medium to impose its own spatial assumptions and structures. Extend your observations to discriminate and distinguish between the kinds of space evoked and constituted by the film on one hand, television on the other.

READINGS AND SUGGESTIONS - TELEVISION

Broadcasting and Television Since 1900, Maurice Gorham, Andrew Dakers Limited, London (1952)

In Medical and Biological Illustration, (Volume VII, No. 1, January 1957) discussing "The Television of Operative Surgery," Dr. David S. Ruhe and Michael R. Klein mention that their experience with motion picture utilization deserves comment. Films not of the guest surgeon's own production were used in emergencies and when patients proved unsuitable.

"Surgical films as teaching aids do not have the impact of television, nor do they create the feeling of intimacy between teacher and audience. At least one teacher has stated the importance of a personal approach in acceptance of the television medium. We would emphatically confirm this opinion."

In the same year, I heard Dr. Ruhe speaking at Omaha, Nebraska, to an NAEB Conference. One of his observations then was that on television the viewer in some mysterious way seemed to become the scalpel and to do the operation. Would not this be directly related to the very strong tactile factor in the television image?



## TELEVISION (CHART)

Let us ask again what is the most noticeable and popularly recognized feature of television? Perhaps it is the negative charge that it is the enemy of reading. If so, it may be that we shall have to pay much attention to reading as a consumer activity. The reader of print is not a camera eye but a projector of images. The viewer of television is neither camera eye nor projector, but if anything he is the screen. On the other hand what about Low Definition (L-D) with regard to television? Does not the character of the viewer being the screen at whom the images are directed form the monitor? Does this not strongly suggest that the viewer is in an extremely introverted role? Is there anything about the television generation of the past ten years to suggest a strong swing towards introversion in the youngsters of today?

The television image as at present constituted is of Low Definition or quality. This automatically involves the television viewer in a good deal of do-it-yourselfness and in strengthening the feeble image.

Students of later nineteenth century painting are familiar in the work of Seurat with the contour effects which he achieved by means of light and shade obtained by numerous points somewhat like a wirephoto today. The numerous points which constitute the monitor image have a similar contour effect lending to the television image a strong sculptural and tactile quality. Notice that this tactile quality is in the S-I (Structural Impact) and not the S-C (Subjective Completion) corner of our chart.

Our attitudes towards space could not help being affected by so radically

new a sense ratio as is constituted by this new image. The more I examine the character of the television image, the harder it is for me to find anything in common between it and the moving picture.

The S-I or image of television is a mosaic of translucent points. It is a two-dimensional image. There are no still shots that follow in sequence. The television image is low in information (LD). It is high in contour, sculptural and tactile values. These elicit the highest degree of participation response of any medium we have. But consumer values are almost eliminated. It is here that print suffers. The child brought up on television has trouble with HD visual properties of print. He may be able to accept print translated through film.

## **MEDIA EXPERIMENT**

HD

SC

You are the screen...  
You are the scalpel...  
Lo-it-yourself...

maximal  
participation  
via all senses

-137-

TELEVISION

Visual-Kine. in L-D...

Introversion...  
Cool...  
Deadpan...  
Impersonal...  
Acoustic resonance  
via sculptural form...  
Anti-consumer...

SI

LD

The RYERSON MEDIA EXPERIMENT in the maximized testing of the media was made possible by the following people:

A. Roy Low, Department of Physics

Carl Williams, Department of Psychology (University of Toronto)

Isabel Macbeth, School of Radio and Television

James Peters, Department of English

Gerald Kane, Department of Radio

William Sokira, Department of Radio

Geoffrey Jamieson, Department of Television

## MEDIA EXPERIMENT

Embodied in the present report is the account of a multi-media experiment which a group of us had carried out earlier. It was in two phases. The first phase was a simul-cast of four media, followed by a retention test. The second phase involved the same media in "high definition" or "maximal" form. The first phase, when published, got world-wide attention. The result was sensational and unexpected. Using all the approved methods of psychological testing, we had expected to obtain no significant result whatever. But the result had been notably significant.

Repetition of our experiment by others confirmed our result. Since in the first phase the use of the various media had been minimal or in low definition, it seemed worthwhile to repeat the simul-cast using the same lecture materials and the same questions with carefully randomized groups. The result, not understood at the time, was quite surprising.

Television which had priority in the first phase dropped below radio in the second phase. The other media retained their positions. This second phase closely concerns the current report on understanding media. Television, I show, is a low definition medium, and radio is a high definition medium. That is to say, the quality of sense image offered by television is visually of poor quality and in the case of radio the quality of auditory image is very high. When a low definition medium like television is augmented by studio gimmicks, its teaching impact is strikingly reduced. But when a high definition image like radio is similarly augmented, its teaching impact is increased.

To have discovered this principle alone would have amply justified

the present year's effort. Yet the discovery was made earlier, and the understanding of the discovery only became possible as a result of this year's work.

## MASS MEDIA AND LEARNING---AN EXPERIMENT

### Introduction

A seminar on culture and communications has frequent cause to concern itself with the mass media. The experiment here reported was the culmination of our first year's effort. While in a very real sense an interdisciplinary product, the responsibility for the design, analysis and presentation of results fell to the psychologists in the seminar as being most familiar with the techniques involved.

Most research on mass media is concerned with either of two objectives: studies of the influence of one medium on attitude changes, and consumer research designed ultimately to help sell soap or whatnot. Little if any work has been done on the degree to which various media facilitate or impede learning, if indeed they have any influence at all. The question does not occur readily because the mass media themselves are seldom seen as educational devices. The silent assumption that mass media exist primarily for entertainment and propaganda, which underlies most such research, automatically excludes research with an educational bias.

### Problem

In its most general form, the problem investigated can be stated thus: Is learning affected by the channel over which information comes? If so, how and to what extent? While we usually assume that television, for instance, is more compelling than radio in securing our attention, we also assume that we can easily compensate psychologically for this differential advantage. Whenever our attention is really aroused, we can and do attend to the radio address, news or weather report, with the firm conviction that



we will end up with all the information we require. An extra effort of attention, we assume, will easily make up for the fact that we could have gleaned the same information with less effort over television.

With these considerations in mind, the experiment was designed to provide the "same" information in the identical wording, to four similar audiences, each of which had the "same" motivation to seek out and remember the information presented.. Given the same objective examination on that information, would the only systematic difference remaining, namely the different media used, make a statistically significant difference to the average scores of those audiences? Television and radio were obvious choices for an experiment on mass communication. Since they are often contrasted with "real" situations, a "live" lecture audience was added. The fourth medium chosen was the printed page since it is widely regarded as the essential carrier of Culture---with a capital "C"---and is most often thought of as being threatened by the newer media in terms of its continued existence.

### Design

From the standpoint of design, all that was required was that the factual content be clearly transmitted without undue distortion over each of the four media and that it be cast in such a way that no one medium was favored over others. The method employed was the method of constant stimuli whereby the lecturer himself provides the stimulus without reliance on the peculiarities of particular medium "props." The fact that his gestures, intonations, etc., are differently transmitted by the different media is precisely the point of investigation. That is, since each medium carries the information in its own way, do these differences affect the learning

process of the audience?

The subjects were 108<sup>1</sup> undergraduates in the General Course in Arts at the University of Toronto, all of whom were studying anthropology as one of five courses comprising their year's work. The lecture topic "Thinking Through Language," was unfamiliar to them, and from their point of view, both difficult and stimulating. The class list was arranged in descending order of academic grades, based on first year results, and then arbitrarily divided into four groups or audiences on a stratified sampling basis, such that each audience contained an equal number of high, average and low students. For this purpose, "high" means grades of A and B+, "average" means grades of B and B-, "low" means grades of C+ and below. After the four audiences had been selected in this way, another person arbitrarily assigned each audience to a medium. These were announced to the students on arrival at the CBC studios. Each group went to a separate room in the CBC buildings where they were supervised by members of the seminar. The lecture was delivered before the studio audience and simultaneously relayed to the television audience and the radio audience. At the same time, mimeographed copies of the lecture were distributed to the reading group, who read at their own speed and for the same length of time as it took to deliver the lecture. Immediately thereafter, each group wrote a thirty minute examination on the lecture. This consisted of nineteen multiple-choice questions (four alternatives each) plus one broad essay type question to be answered in two hundred to three hundred words. Most students finished before the nominal time limit. The test should, therefore, be regarded as a "power" rather than a "speed" test. The papers were graded by the anthropology section of the seminar and turned over to the psychology section for analysis.

Here is a section from the lecture and its covering question:

I recall one experience I had several years ago while living with the Eskimos. I was riding along on a dog sled one bitterly cold day—the wind hit me in the back and seemed to come out the other side—when I turned to a hunter with me and said, as best I could in Eskimo, "The wind is cold." He roared with laughter. "How," he asked, "can the wind be cold? You're cold, you're unhappy. But the wind isn't cold or unhappy!" Now this involves more than just another way of speaking; it involves another way of seeing things. Consider how different human action must appear when seen through the filter of the Eskimo language where, owing to the lack of transitive or action verbs, it is likely to be perceived as a sort of happening without an active element in it. In Eskimo one cannot say: "I kill him" or "I shoot the arrow," but only "He dies to me," "The arrow is flying away from me," just as "I hear" is "me-sound-is." Similarly where we say, "The lightning flashed," as if the lightning did something, as if it involved something more than just being lightning, the Eskimo merely says "Flash." Eskimo philosophers, if there were any, would be likely to say that what we call action is really a pattern of succeeding impressions.

When we say, "The lightning flashed" we:

- a. read action into the event
- b. use an intransitive verb
- c. describe the event as being without action
- d. describe the event in the only possible way

The essay question called for an understanding of the whole lecture: "The lecturer described two native philosophies, but at the same time said that the Eskimos, for example, had no philosophers. How would you interpret these two statements in terms of the lecture."

### Controls

It is a truism that whereas the nineteenth century public sought to learn the results of science, the twentieth century public is, more realistically, interested in the methods whereby results are achieved. For this reason if for no other, some discussion of the controls used in this study forms an essential part of this report.

The term "control" itself is a highly ambiguous term, as our seminar quickly learned. As used here, it means only those measures which were taken to hold constant all factors, other than the four media themselves, which might be expected to bias the results.

It does not mean that experiments of this type are totalitarian, that social scientists are dictators at heart, that science scorns understanding and seeks only prediction and control, that our subjects were humiliated or "pushed around" without their consent, that we labored under the illusion of playing God with other people's lives, that the study was undertaken to fool, bully, delude, hoax or otherwise cajole an innocent group of students.

In terms of controls, the lecturer was his own control. His choice of topic and his organization was his own. The controls were first, that his information be basically accessible via each channel and second, that it should not rely on external "props" of any kind. Finally, and most difficult of all, the lecture had to be memorized so that the reading group would receive exactly the same content as the other audiences. In order to compensate, as far as possible, for the fact that the reading audience was deprived of both the sound and sight of the lecturer, certain key words in the mimeographed material were capitalized to give something of the same emphasis they received as delivered.

The subjects were selected to be as homogeneous as possible, i.e., same course, same class and age range, and sharing a common subject matter. Academic ability was controlled by the method of stratified sampling described above, since it was a fair assumption that good students in general learn more than poor ones, even in lectures.

Motivation was controlled by an arrangement with the class instructor who agreed to incorporate performance on our examination into the course term mark. In order to avoid undue anxiety, the arrangement was that those who did well would get a term mark bonus, while those who did indifferently or poorly would suffer no penalty. These factors also operated to produce a good attendance at the studio, and to offset, if not entirely eliminate, factors of personal preference for one or another medium. In addition, the students were fully informed about the experiment and its objectives, and afterwards, were the first group to hear an analysis of the results.

No attempt was made to equate groups for age, sex, socio-economic status, familiarity with television, radio, etc. These were assumed to be roughly controlled (i.e., equated) by random assignment to each group.

The examination was controlled by the use of the objective, multiple-choice type of question, which permits of easy quantification. The score on this section was simply the number right. It should be noted that since each question contained a best answer among the four alternatives presented, the measure yielded is a measure of immediate recognition, not recall.

No note-taking was allowed during the lecture, in an attempt to stimulate normal conditions of television and radio listening. Whereas the lecturer automatically "paced" the studio, television and radio audiences, thereby conferring a precise degree of control on them, it was not possible to duplicate this pacing for the reading audience. In this sense, this group was not as well controlled as the others.

### Results

The results given here are confined to an analysis of the multiple-choice

section of the examination. The statistics used were the analysis of variance and the "t" test of significance<sup>2</sup> of differences between means, i.e., averages.

The analysis of variance showed that media in general do make a significant difference in the amount learned as measured by the multiple-choice test. It also showed, as we suspected, that academic ability makes a significant difference in the amount learned. Having established the fact that the four media per se, were significant to the learning process, it was then possible to test the audience averages for significance of difference in order to rank them in effectiveness. This analysis showed that the television average was superior to the radio average—significant at the one per cent level of confidence (i.e., there are ninety-nine chances in one hundred that this is a true difference). It also showed radio to be significantly above both the reading and studio performances—significant at the five per cent level of confidence (i.e., there are ninety-five chances in one hundred that this is a true difference).

The graph shows the examination results by audiences and by academic ability, shown here at three levels. This display is more revealing than the averages for each medium, since it shows how the media affect each level of academic ability. The clearest indications come from the television, radio, and reading comparisons, where it can be seen that the media exert their effects at all three academic levels. Note for example that the low students on television do exactly as well as the middle students on radio, a clear instance of medium effect. Note too, that the greatest single discrepancy on the graph occurs between the good students on television and

radio. Apparently television has its greatest effect on the best students:

The studio results are puzzling. The "lows" and "highs" reflect presumably the distractions and excitement of the studio itself, but if they do, why were the middles unaffected by this to the point that they did as well as the television middle group? Originally, the studio group was proposed as the equivalent of a lecture audience. One glance at the confusion of the television studio convinced us, before the statistical analysis, that whatever this group was, it was not a lecture group. We retained it in the study but with the new name "studio" group.

The table beneath the chart (p. 150) shows the number of cases (N), and the averages for each audience together with the confidence level at which the differences can be accepted as significant.

### Conclusions and Comments

One experiment does not establish a generalization, but it is plain that under these conditions at least, certain of the mass media, and notably television, are very effective channels for conveying information. The astonishing feature of the study is the relatively poor performance of the reading group. Many members of the seminar predicted it to be the best of the four! One feature involved in these standings became clear from an examination of the results of a single question. In one portion of the talk the lecturer stressed gestures and delivery to accent his words; the question covering this passage was accurately answered by most of the television audience, half the radio audience and few of the reading audience.

It is then fair to conclude that media do make a difference in immediate recognition, using undergraduates as subjects. It is also fair to rank the

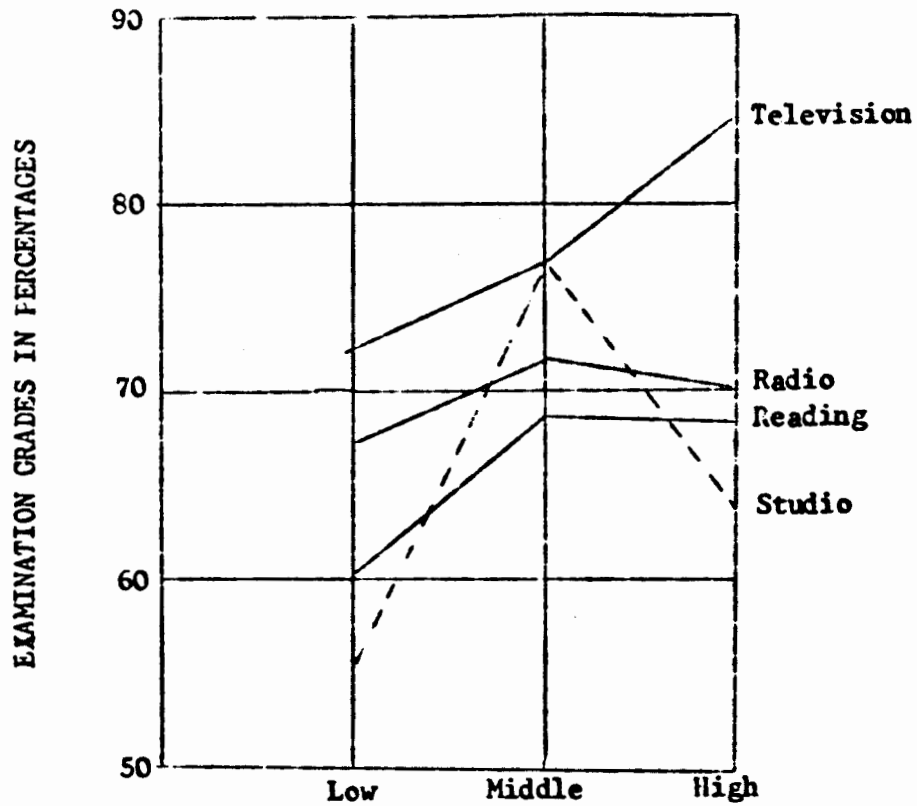
media from television through radio to reading in terms of their effectiveness under these conditions. No conclusion is drawn on the studio group.

At this stage of research, generalization is dangerous. The study does not prove that television is "better" than radio or that either is preferable to books, or that "live" audiences learn little. Would one get similar results with housewives, with engineers, or even with these same students presented with a totally unfamiliar topic, say, the devolution of estates in Athenian law? Would persons of average or below average intelligence react in the same way? Would children? These and a host of similar questions suggest that at least an interesting and important area of research has been tapped by this exploration.

\* \* \* \* \*

1. Actually the number was larger, but to make the groups as equal as possible and to make the classification on previous academic standing clear, the final number was reduced to 108.
2. Statistically speaking, a difference between two averages is called significant if it could not have occurred by chance more often than five times in one hundred occurrences. Therefore, the betting in this study is that we have ninety-five chances in one hundred of being sure that the differences obtained are "real" differences and not due to chance. In some cases, we have ninety-nine chances in one hundred of being right.





N = 108 (27 subjects in each audience)  
each "x" represents the average of 9 subjects

#### ACADEMIC LEVELS OF STUDENTS

Audience	N	Mean	Difference significant at
TV	27	77.2%	1% level
RADIO	27	69.2%	5% level
READING	27	65.1%	not
STUDIO	27	64.9%	significant

Table showing average scores by media

## MASS MEDIA AND RETENTION

We have now described in detail the experiment conducted by a Communications Seminar at the University of Toronto in February, 1954, to test learning via various media. The experiment has since been summarized in a number of journals, but unfortunately this interest has not always been accompanied by understanding.

In October, 1954, the original test was readministered to the seventy-four students available of the one hundred and eight who took part in the first experiment. They were unaware beforehand that a re-examination was intended.

The multiple-choice questionnaire used had nineteen items, each with four alternative answers. It could be expected that a group knowing nothing of the subject would get twenty-five per cent of the answers correct by guessing. Our subjects, however, were university Arts students who had taken courses in the social sciences and who could be assumed to do better than chance, even if they had neither seen nor heard the lecture. To check this, a control group was used: the questionnaire was given to fifteen second year honor psychology students, selected because, though their general training in social sciences was similar to the experimental group's, the lecture was unknown to them and they had received no instruction from the lecturer.

During the eight-month interval, some students had heard the lecture a second time when its kinescope was shown on television to the general public and some may have discussed it with friends. It is assumed here, however, that such reinforcement was random. To determine whether or not the

seventy-four students re-examined were representative of the original one hundred and eight, we compared the performance means of the two groups (figure 1). Although in each case the re-test means were slightly lower, these differences were fairly uniform, not great, and therefore, not fatal.

It was anticipated that on the average the re-examination marks would be significantly lower than the ones obtained on the first test. It was further assumed that if the media did not continue to influence the retention of learning over time, there would be no "real" differences on the re-test among the four groups who received this lecture through different media. If significant differences were found on re-examination among the groups, this could be fairly attributed to differential effects of the media through which the information was originally obtained. The results of the two tests for the seventy-four students are shown in figure 1, broken down into the four groups, each of which was exposed to one medium. For comparison, the mean percentages of the original four groups are also given.

Two questions were considered: Were the media differences demonstrated by the first experiment still demonstrable after eight months? Did the media have a differential effect on forgetting during this period?

An affirmative answer to the first question was obtained by an analysis of variance of the means of the groups on the second test. It was found that there were still significant differences (i.e., could have occurred by chance only once in one hundred times) between them. Unfortunately, it was not possible to analyze these results in more detail since there were unequal losses in subjects in the four groups, so that further comparisons were not statistically justifiable. The answer to the first question is, however,

clear: after eight months significant differences exist between the groups exposed to the different media. The results showed there had been one change in the order of ranking the four media: the studio group moved from last to second place. The results from this group were regarded with doubt in the original experiment and were not included in the conclusions; no interpretation is now made of this change in rank.

In order to answer the second question, it is necessary to compare the differences between the first and second tests for each group. The losses here when tested by analysis of variance could not be considered to differ significantly from each other. This implies that the amount retained after a period of time is proportional to the amount originally learned. In other words, the rate of forgetting information is independent of the medium by means of which it was acquired. This was graphically demonstrated, in that the original ranking of media in order of effectiveness---television, radio, print---held after eight months.

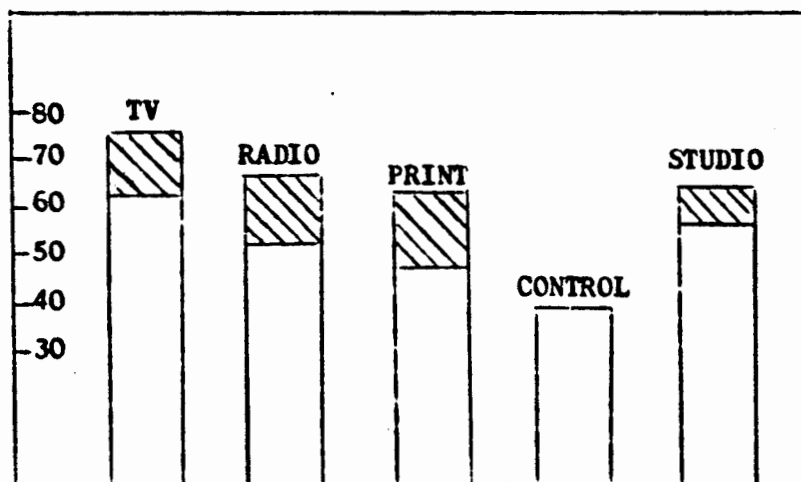
Since it was found that for every group the mean percentage for the second test was significantly lower than for the first test, a third question was asked. If, after eight months, the students have in general lower scores, how much better than intelligent guessing are their second test results? This is answered in figure 1 in a comparison of their results with those of the control group of psychology students. Their scores are better than random guessing, but significantly lower than the lowest of the four media groups.

In this particular experiment media made a difference in learning, not only in immediate recall, but after eight months. The original order of

effectiveness—television, radio, print—held after this interval. In this experiment, different media influenced retention by influencing the amount of original learning.

The qualifications given in MASS MEDIA AND LEARNING—AN EXPERIMENT about misinterpretations of the original findings apply to these later findings as well.

	RETEST GROUP			ORIGINAL GROUP	
	First	Second		Test %	
	Test %	Test %		First	
Television	75.4	61.5	14	77.2	27
Radio	65.5	52.6	21	69.2	27
Studio	62.9	56.0	21	64.9	27
Reading	63.9	47.5	18	65.1	27
			<hr/>		<hr/>
			74		108



In this repeat performance, at Ryerson Institute, pains were taken to allow each medium full play of its possibilities with reference to the subjects, just as in the earlier experiment each medium was neutralized as much as possible. Only the mimeograph form remained the same in each experiment. Here we added a printed form in which an imaginative typographical layout was followed. The lecturer used the blackboard and permitted discussion. Radio and television employed dramatization, sound effects and graphics. In the examination, radio easily topped television (see figure 2). Yet, as in the first experiment, both radio and television manifested a decisive advantage over the lecture and written forms. As a conveyor both of ideas and information, television was, in this sound experiment, apparently enfeebled by the deployment of its dramatic resources, whereas radio benefited from such lavishness. "Technology is explicitness," writes Lyman Bryson. Are both radio and television more explicit than writing or lecture? Would a greater explicitness, if inherent in these media, account for the ease with which they top other modes of performance?

Announcement of the results of the first experiment evoked considerable interest. Advertising agencies circulated the results with the comment that here, at last, was scientific proof of the superiority of television. This was unfortunate and missed the main point, for the results didn't indicate the superiority of one medium over others. They merely directed attention toward differences between them, differences so great as to be of kind rather than degree. Some CDC officials were furious, not because television won, but because print lost. Scratch most and you find student Christian-types who understand little of literature and contribute less, but, like publishers, have a vested interest in book culture. At heart

they hate radio and television, which they employ merely to disseminate the values of book culture. They feel they should dedicate themselves to serious culture. This is why they can't use radio and television with conviction and are afraid to use it comically, and so they end up with wishy-washy. They are like sixteenth century scholars who saw the book revolution as simply a means of propagating old ideas and failed to realize it was a monumental change in sensibility, in thinking and feeling.

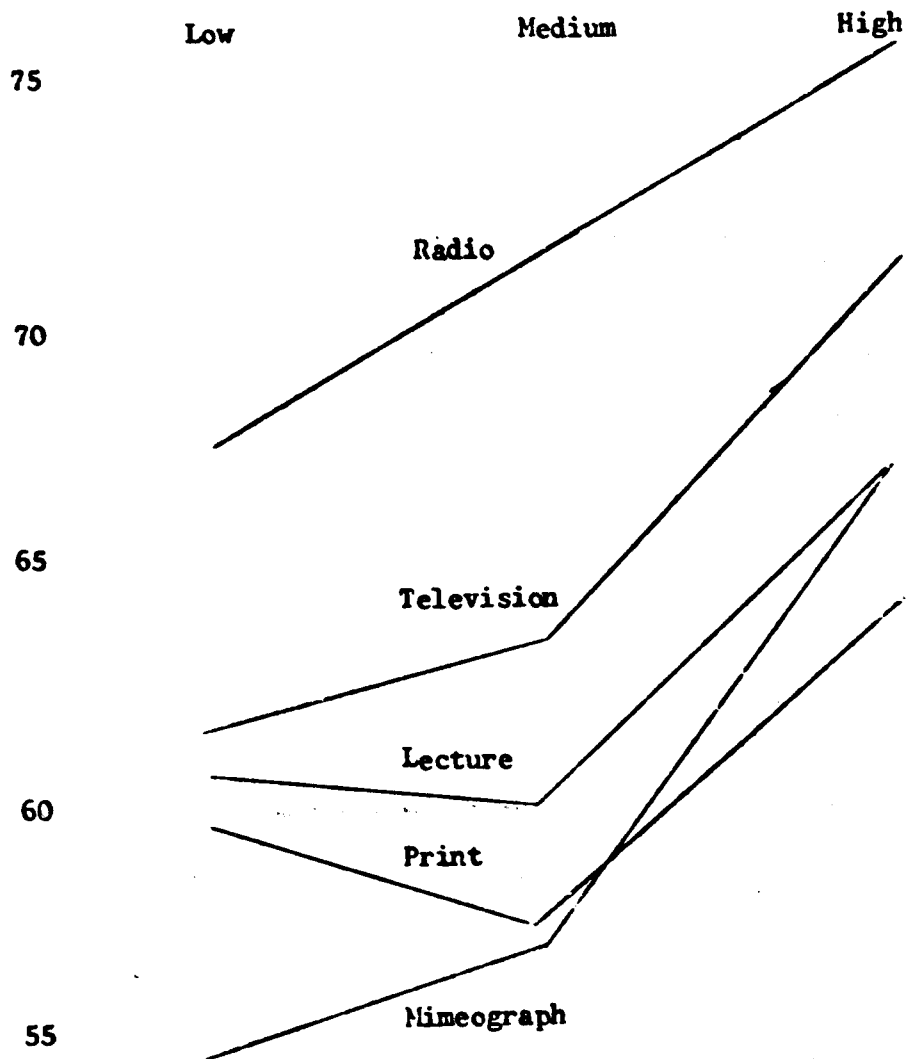
Official culture still strives to force the new languages to do the work of the old. But the horseless carriage didn't do the work of the horse; it abolished the horse and did what the horse could never do. Horses are fine. So are books.

Nobody yet knows the languages 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.

The problem has been falsely seen as democracy versus the mass media. But the mass media are democracy. The book itself was the first mechanical mass medium. What is really being asked, of course, is: Can books' monopoly of knowledge survive the challenge of the new languages? The answer is, no. What should be asked is: What can print do better than any other medium and is that worth doing?



RESULTS OF MAXIMIZED MEDIA TEST



### THINKING THROUGH LANGUAGE

(The material used in briefing the students.)

I recall one experience I had several years ago while living with the Eskimos. I was riding along on a dog sled one bitterly cold day—the wind hit me in the back and seemed to come out the other side—when I turned to a hunter with me and said, as best I could in Eskimo, "The wind is cold." He roared with laughter. "How," he said, "can the wind be cold? You're cold, you're unhappy, but the wind isn't cold or unhappy!"

Now this involves more than just another way of speaking, it involves another way of seeing things. Consider how different human actions must appear when seen through the filter of the Eskimo language where, owing to the lack of transitive or action verbs, it is likely to be perceived as a sort of happening without an active element in it. In Eskimo one cannot say: "I kill him" or "I shoot the arrow," but only "He dies to me," "The arrow is flying away from me," just as "I hear" is "me-sound-is." Similarly, where we say, "The lightning flashed," as if the lightning did something, as if it involved something more than just being lightning, the Eskimo merely says "flash." Eskimo philosophers, if there were any, would be likely to say that what we call action is really a pattern of succeeding impressions. Such differences between languages—I don't mean Indo-European ones like French and German but native ones—are really tremendous. Some languages lack tenses. Of course, I really shouldn't say "lack" because this implies a deficiency, and there's nothing deficient about these languages. In fact some can express ideas that English cannot.

Take metaphors: in English when we want to express an emotional or

philosophical experience, we have no choice but to use words which refer to real objects or real actions. For example, I might say: "I grasp the thread of your argument, but if its level is over my head my imagination may wander." How can my imagination wander? Most native languages, on the other hand, distinguish between inner psychological experiences and those that belong to the world of matter.

Let's take the language of the Trobrianders, a group of Pacific Islanders who live not far from New Guinea. Two famous anthropologists, Bronislaw Malinowski and Dorothy Lee, studied these people, and we probably know more about them than any other native group.

Now the Trobrianders are concerned with being, and only with being (nature, essence, existence). Change and becoming are foreign to their thinking. An object or event is grasped and evaluated in terms of itself alone, that is, irrespective of other beings.

The Trobriander usually refers to it by a word and one word only. To describe it would be redundant. We define an object in terms of what it is like or what it is unlike or what it can do. The Trobriander is interested only in what it is. To Trobrianders each object is usually grasped timelessly. We must describe it in terms of past, present, future, but, for the Trobriander, these distinctions are non-existent. A word for an object implies the existence of all the qualities it incorporates. If I were to go with a Trobriander to a garden where the taytu (a type of yam) had just been harvested, I would come back and tell you: "There are good taytu there, just the right degree of ripeness, large and perfectly shaped; not a blight to be seen, not one rotten spot; nicely rounded at the tips, with no spiky

points; all first-run harvesting; no second gleanings." The Trobriander would come back and say TAYTU, and he would have said all that I said and more. Even the phrase "there are taytu" would be repetitious, since existence is implied in being.

And all the attributes, even if he could find words for them in his own language, would have been repetitious since the concept of taytu contains them all. In fact, if one of these were absent, the object would not have been a taytu. If it is unripe, Bwanawa; if overripe, spent, it is not a spent taytu, but a yowana. If blighted, nukunokuna. If it has a rotten patch, taboula. If misshapen, ususu. If perfect in shape, but small, yagogu. If tuber, whatever shape or condition, is a post-harvest gleaning, ulumadalz. When the spent tuber, the yowana, sends it shoots underground, as we would put it, it is not a yowana with shoots, but a silisata. When new tubers have formed on these shoots, it is not a silisata, but gadena. In short, an object is; it cannot change an attribute and retain its identity. As soon as it changes, it ceases to be itself. As being is identical with the object, there is no verb to be. As being is changeless, there is no verb to become. Becoming involves times, but being to a Trobriander has no reference to time.

With us, however, time is all important. We cannot respond with approval or disapproval unless we know that a thing is getting bigger and better. If I am told that John Smith earns \$4000, I cannot respond to this adequately unless I compare it with another salary. But if I am told that John Smith has been promoted to \$4000, I will say "good" or if I hear that he has been demoted to \$4000, I will say "pity." But simply John Smith at \$4000 is something I cannot respond to. Our language is full of terms like demote and

promote where value is attached to change.

Our language requires that we express nearly all views in terms of time. The Trobriand language, however, has no tenses. Verbs are timeless. Being is apprehended as a whole, not in terms of attributes. This is very difficult for you and me to do. We rarely value sheer being in itself, except perhaps when we are "blindly in love." When you're in love the girl can have large feet, a small mustache, an I.Q. of six and a father in the penitentiary, but you love her for herself alone. Even mothers in our society are often incapable of valuing children in this way, demanding instead attributes and achievements before they can respond with love. Am I overstating the case when I say that most mothers love the successful child more than the unsuccessful one? The inability to react to being itself sometimes creates embarrassing predicaments for us. Several years ago a friend, visiting our house, held in his arms our youngest child, age several weeks. "Can he talk?" he asked. "No, of course not," I said. "Can he walk?" "No," I laughed. he was a philosopher, you understand. He just stood there, holding a mass of protoplasm, not knowing what to say. We would say, "How bright" or "How clever." The Trobriander would say, "How baby," and he would respond emotionally in a situation where we cannot.

In our society, the tendency both in love and friendship, is to be attracted by qualities rather than persons. We like people not for what they are in themselves, but because they are beautiful or rich or amusing, so if they lose their looks or their money or their wit, we lose our interest. But for the Trobriander, being is evaluated in terms of itself alone, not in comparison with other things. Again, this is foreign to our thinking,

except perhaps in the sphere of art, and even here, we are entering a "twilight of the absolute." Nowadays we can respond to a work of art only if we know how much it is worth, or who painted it; we are incapable of judging it for itself alone.

Generally for us, to be good, being has to be as good as, or preferably better than, something else. Our language makes it easy to compare beings at every turn. Our vocabulary provides us with a large number of comparatives. The Trobriander has no such means. Where we use similes, where we say I am your JUNIOR, where we stress self-improvement and competition, they employ metaphors. The Trobriander says young man I. The Trobriander emphasizes the status quo and cooperation. Phrases which we commonly hear—"My tov is bigger than Johnnie's"—"Your dress is prettier than Mabel's"—have no equivalent in Trobriand. To be, an object must be true to itself, not in terms of its relationship to other beings. To be good, it must be the same always. In Trobriand, nothing—not even the world—ever came into existence; it has always been, exactly as now. Their mythology contains no concept of creation from nothingness. No supreme being ever acted as creator, artificer or transformer. The Trobrianders don't find themselves in the awkward position of trying to answer that unanswerable question: "Who created the creator."

The Trobriander simply isn't interested in chronological sequence. For example, he gives his autobiography in complete disregard for chronology, an effect achieved only deliberately by our sophisticated writers. He begins with the crisis, so to speak, and weaves backwards and forwards in time with many omissions and repetitions on the tacit assumptions that your

mind is moving in the same groove as his, and that no explanation is needed.

But for us chronological sequence is of vital importance, largely because we are interested not so much in the event itself, but rather in its place within a related series of events. To the Trobriander, events do not fall of themselves into a pattern of cause and effect as they do for us. We in our culture automatically see and seek relationships, not essence. We express relationship mainly in terms of cause or purpose. The maddeningly persistent question of our young children is WHY, because this is the questions implicit in most of our ordinary statements and behavior. Every aspect of our lives teaches us to ask WHY, WHY, to seek causes. The Trobriander parent, however, does not entirely escape this questioning, for their children ask WHAT. I might add, our children do too, up until the age of about two or two and a half; then, when they are unconsciously beginning to learn the implicit philosophy in English grammar, then they ask why, why?

Yet the Trobriander has no term for why, nor for because, so as to, cause, reason, effect, purpose, to this end, so that, Malinowski's frequent why evoked from the Trobrianders either confused or self-contradictory answers, or the usual "It was ordained of old." Just as the conservative Torontonians says, "This is the way we do it here." I might add that the Eskimos always reply to questions of this type, "Happy people don't ask questions."

Now being the value only in a specific setting. Let me illustrate: The early pearl traders offered the natives money and trade goods as an inducement to get them to dive for pearls. But the natives refuse, having no use for money and little interest in foreign trinkets. The traders

noticed, however, that the Trobrianders set great store by certain large stone blades. First they imitated them carelessly, but the natives didn't want them. Next they had them made of slate in Europe and shipped half-way around the world. But the natives didn't want them. Finally they had the native stone quarried and sent to Parisian craftsmen but these beautiful blades were also rejected. And indeed, why would the natives want them? For the blades had meaning only within a patterned activity. Let me give an analogy. Let's say you're walking down a street in Toronto, you glance in a window and see a girl who has just received a Valentine. She's excited and so is the family. There's hope! Obviously, to her, that Valentine is the most valuable thing in the world. You ring the door bell and offer her a job. When she asks the salary you say, "One Valentine a week." It's a ridiculous situation, of course, because the value of the Valentine lies in the fact it's February 14, she's young and in love. In any other setting but its own, the Valentine is worthless and so is the Trobriander's stone blade.

Now the Trobrianders are not blind to causality; they are quite capable of perceiving events in a lineal pattern. But when a pattern assumes lineality, it is utterly despicable. For example, dating a girl includes giving her a gift. But if a boy gives a girl a gift so as to win her favor, he is despised. Or if she accepts him as a sweetheart just to obtain the gift, not because she loves him, she is regarded as being callous. Similarly, in activity in which the men exchange necklaces and armbands with one another, some men are accused of giving gifts as an inducement to their partner to give them in turn an especially good gift. Such men are labeled with a vile phrase; he barterers. For the receipt of a gift should not cause the



Trobriander to do something to give a gift in return; it is understood that he was going to do it anyway. In other words, the Trobriander can experience events lineally even causally, but when he does, value is either absent or destroyed. In a sense, the gift exchange is not unlike our Christmas giving. I recall that at Christmas time my mother always kept in an upstairs room several presents—the kind suitable for any age, any sex—wrapped, but unlabelled, just in case someone she had forgotten brought her a present. She would then thank them, say, "Just a minute while I run up and get your present," hurry upstairs, quickly label the present, and then present it. For Christmas presents and cards are spoiled, in a way, if we think the other person has forgotten us or perhaps didn't plan to give us anything until forced to by the receipt of our gift.

The Christmas pattern is really an exception in our society: it is perhaps significant that children enjoy it most whereas in Trobriand life, it is the rule. Trobriand behavior is not motivated by a sequence of events, or by any line of activities leading up to something. On the contrary, they do their best to ignore, to refute such a sequence or line.

But is this line really present? Perhaps it is; maybe it isn't. But we feel happier when we think it is there. Then the situation has meaning and we can respond to it. If I tell you that Sally married a millionaire, that she's selling notions in Woolworth's, that she once worked for Vogue, went to Vassar and was poor—it's mere jumble. But if I say Sally was poor, worked at Woolworth's, saved her money, went to Vassar, worked for Vogue, and then married a millionaire—now it all falls in line and makes sense. Our idea of happiness is bound with this motion along an envisioned line leading to a desired end. Our conception of freedom rests on the

principle of non-interference with this moving line which leads to a desired climax. As we see our history climactically, so we plan future experiences climactically, leading up to future satisfaction or meaning. Who but a very young child would think of starting a meal with strawberry shortcake, and ending up with spinach? The Trobriander meal has no dessert, no line, no climax. The special bit, the relish, is eaten with the staple food; it is not something to look forward to while disposing of a meaningless staple.

Now for members of our culture, value lies ideally in change, in moving away from the established pattern. We hopefully expect next year to be better, brighter, different; we hope it brings change. Our advertisers thrive on this value of the different. It's new, it's brighter! Our industries have long depended on our love for new models: 1956, just out! New! Our writers cannot plagiarize; our inventors must invent.

The Trobriander on the other hand expects and wants next year to be the same as this year. The new is not good; the old is known and valued. In repetition of experience he finds, not boredom, but satisfaction and safety. Members of our culture go into uncharted seas fearlessly. We explore new lands eagerly—mountain peaks, sea floors, inaccessible jungles and polar wastes. The Trobriander goes into known seas. He explores nothing. New lands, new thoughts, new ways, hold no interest for him. He was born into a culture that was operating long before he was born and will continue to operate long after he is dead.

(The quiz enclosed in the preceding three phases of the experiment.)

NAME:

ADDRESS:

PHONE:

CIRCLE THE LETTER BEFORE THE BEST ANSWER. DO ALL OF THEM IF YOU CAN BUT DO NOT GUESS.

1. The Trobriand Islands are in:
  - a. the Pacific
  - b. the Caribbean
  - c. near New Guinea
  - ✓ d. Polynesia
2. The Trobriander values:
  - a. creativeness
  - ✓ b. the old and traditional
  - c. the new and the different
  - d. that which is useful
3. An art form in our society is valued for:
  - a. its position within a patterned activity
  - b. itself alone
  - ✓ c. its financial value
  - d. for many attributes, not all of which concern art
4. When we say, "The lightning flashed" we:
  - ✓ a. read action into the event
  - b. use an intransitive verb
  - c. describe the event as being without action
  - d. describe the event in the only possible way
5. The stone blades were:
  - a. used as inducement
  - ✓ b. equivalent to money
  - c. part of a patterned activity
  - d. gifts in payment for other gifts
6. English does not:
  - a. stress causality
  - ✓ b. differentiate between psychological and external experiences
  - c. emphasize time
  - d. employ a variety of adjectives
7. By lineality we mean:
  - a. patterned activities
  - b. emphasis upon being
  - ✓ c. connections, usually sequential, between things
  - d. the use of gestures

8. Our language and our culture structures experience so that it:
  - a. leads or should lead to a desired climax
  - b. emphasizes repetition and sameness
  - c. can be responded to
  - d. stands by itself, without reference to other experiences
9. In our language much value is attached to:
  - a. changes in temporal sequences
  - b. essence of being
  - c. ability of emotional expression
  - d. change and becoming
10. We stress causality and lineality because:
  - a. we are interested in relationships
  - b. we are interested in being
  - c. our language and culture teaches us to value them
  - d. this is the most accurate way to describe reality
11. The Eskimo language is characterized by:
  - a. lack of nouns
  - b. lack of tenses
  - c. lack of transitive or action verbs
  - d. lack of categories differentiating living from non-living
12. The English language makes continual use of:
  - a. several tenses (simultaneously)
  - b. spatial metaphors
  - c. words describing subjective, psychological experiences
  - d. categories differentiating internal and external experiences
13. The Trobriand language emphasizes:
  - a. change and becoming
  - b. varied use of adjectives
  - c. temporal aspects of objects
  - d. being and existence
14. A noun in the Trobriand language refers to:
  - a. a highly unique object
  - b. being as a whole
  - c. an object at a particular stage of growth
  - d. useful objects only
15. Native languages differ from English because:
  - a. they cannot express causality
  - b. they are not fully evolved
  - c. they do not deal with temporality
  - d. they contain other metaphysical systems
16. In our culture we tend to judge things in terms of:
  - a. intrinsic value
  - b. qualities and attributes
  - c. aesthetic satisfaction
  - d. relation to other beings

17. Disregard of chronological sequence is characteristic of:
  - a. all primitive languages
  - b. English language
  - c. the thinking of small children
  - d. Trobriand language
18. The implicit philosophy of English grammar makes us:
  - a. seek essence
  - b. ask "why"
  - c. value money
  - d. see lineality and being
19. In the lecture an analogy was drawn between:
  - a. money and a Valentine
  - b. foreign trinkets and necklaces
  - c. stone blades and Valentines
  - d. armbands and Valentines
20. Gift exchange among the Trobrianders is significant because it:
  - a. stimulates barter
  - b. symbolizes kinship and friendship
  - c. involves gifts which influence behavior
  - d. is similar to Christmas-giving

The lecturer described two native philosophies, but at the same time said that the Eskimo, for example, had no philosophers. How would you interpret these two statements in terms of the lecture? Write 200-300 words. Use back of paper if necessary.

On the scale below indicate with a check mark how you feel about the lecture...

+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5
!	!	!	!	!	!	!	!	!	!	!
Liked very			Indifferent				Disliked very			
much							much			

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Liked very			Indifferent				Disliked very			
much							much			

## **RECOMMENDATIONS**

## RECOMMENDATIONS

Communication, creativity and growth occur together or they do not occur at all. New technology creating new basic assumptions at all levels for all enterprises is wholly destructive if new objectives are not orchestrated with the new technological motifs.

Dr. James E. Russell, of the National Education Association's Educational Policies Committee, commenting on my paper "The New Media and the New Education" (see exhibit 1) felt that I had not included consideration of the computer's effect:

"What I had in mind is the new dimension forced on education by the existence of computers and teaching machines. This runs at a much deeper level than the distinction between print and nonprint communications. It has to do with a new concept of the nature of thought... All rational propositions can be reduced to binomial terms."

As Tobias Dantzig revealed in his book on Number, primitive, pre-digital counting was binomial. Post-digital computation returns to the pre-digital just as post-literate education returns to the dialogue. However, what the computer means in education is this. As information movement speeds up, information levels rise in all areas of mind and society, and the result is that any subject of knowledge becomes substitutable for any other subject. That is to say, any and all curricula are obsolete with regard to subject-matter. All that remains to study are the media themselves, as forms, as modes ever creating new assumptions and hence new objectives.

This basic change has already occurred in science and industry. Almost any natural resource has, with the rise in information levels, become substitutable for any other. In the order of knowledge this fact has given



rise to Operations Research, in which any kind of problem can be tackled by non-specialists. The technique is to work backwards from effect or result to cause, not from cause to effect. This situation resulting from instantaneous information movement was referred to by A. N. Whitehead in Science and the Modern World, when he pointed out that the great discovery of the later nineteenth century was not the invention of this or that, but the discovery of the technique of discovery. We can discover anything we decide to discover.

In education this means the end of the one-way passing along of knowledge to students. For they already live in a "field" of knowledge created by new media which though different in kind, is yet far richer and more complex than any ever taught via traditional curricula. The situation is comparable to the difference between the complexity of a language versus the crudities of traditional grammars used to bring languages under the rule of written forms. Until we have mastered the multiple grammars of the new non-written media, we shall have no curriculum relevant to the new languages of knowledge and communication which have come into existence via the new media. These new languages are known to most people but their grammars are not known at all. We have "read" these new languages in the light of the old. The result has been distortion of their character and blindness to their meaning and effects.

In the general introduction, I've shown how all of the inter-related fictions and illusions of Euclidean space, and all of the ambiguities of the third dimension derive from the character and effects of the phonetic alphabet. Non-Euclidean space, and the dissolution of our entire Western fabric of perception results from electric modes of moving information.

This revolution involves us willy-nilly in the study of modes and media as forms that shape and re-shape our perceptions. That is what I have meant all along by the medium is the message for the medium determines the modes of perception and the matrix of assumptions within which objectives are set.

All of my recommendations, therefore, can be reduced to this one: study the modes of the media, in order to hoick all assumptions out of the subliminal, non-verbal realm for scrutiny and for prediction and control of human purposes.

Such a program can most readily be instituted today at the level of secondary education.

**WHAT I LEARNED ON THE PROJECT (1959-60)**

## WHAT I LEARNED ON THE PROJECT (1959-60)

Correction for Lasswell formula—not who is speaking to whom, but what is speaking to whom. Lasswell ignores the media, except speech; but obviously if a person is speaking into a P.A. system or into a radio microphone, etc., the who and the what are profoundly transformed.

That staples are media and media are staples. When iron ore and oil and lumber and fish are available to the population of a particular area, their patterns of association are much modified by this fact. Dorson in his recent volume American Folklore draws attention to the power of cotton in the United States in creating homogeneous culture capable of making a spontaneous folklore. The same homogenizing power over human institutions is exercised by any economic staple like wheat, or lumber in Canada, but this serves to draw attention to the same power which resides in the media of communication. The media are, in fact, themselves staples or new natural resources. Media are extensions of the human senses. They modify the patterns of human association while remaining rooted in this or that sense, and these staples are not limited to any geographical area, but are co-extensive with the human family itself.

Another peculiarity of media as staples or natural resources is this: as they step up the speed of human transactions the information levels of the community rise. As information levels rise, one commodity becomes substitutable for another. No staple becomes indispensable as information levels rise. The tendency is for information to move, rather than commodities. The stress shifts in human study and attention from subject matters to the learning process itself. The universities which have long tended to be

processing plants become models of the learning process in action instead. Let us illustrate the implications of this change from that most popular of all subject matters--the ever-present threat of war.

Today, civil defence would seem to consist in protection against media fallout. In the past, war has consisted in the movement of commodities back and forth across frontiers. Today, when the largest commodity of all is information itself, war means no longer the movement of hardware, but of information. What had previously been "a peace time" activity within our own boundaries now becomes the major "cold-war" activity across frontiers. Instead of competing for the franchise and dollars of our own citizens, we are now engaged in trying to win the favorable attention of Asian and African millions for the star turn or top show. Our own conceptions of education and of warfare are so completely tied to 3,500 years of literacy that the meaning of the electronic revolution is much less obvious to us in the West than to a Japanese or a Chinese or to an African.

Another basic aspect of the electronic is this: it telescopes centuries of development and evolution into weeks or months. In speeding up actual change, it makes the understanding of change much more feasible just as a movie of an organic process may reveal years of growth in seconds. But such acceleration of growth in no way prepares the human community to adapt to it. Suddenly there is a nine foot redwood where in the morning you had experienced a bedroom.

Our educational, political and legal establishments are scarcely contrived to cope with such change. There is no mercy for culture-lag in our new technology. There is no possibility of human adaption. Yet in all

these situations we confront only ourselves and extensions of our own senses. There is always the possibility of escape into understanding. We can live around these new situations, even if we cannot live with them.

### The New Criticism and the New Media

The so-called new criticism which followed after the new poetry which followed after the new developments in our Western world has most typically been engaged in explaining why works of art have no content and no subject matter. It was the new media themselves, from the telegraph (1830) onward which created the situation which the poets and painters tried to explain to us by "prophetic" new art forms. Is it not ludicrous that the very scientists who expected the radical changes should stand around with yammering and incoherent gesture while complaining of their inability to understand modern art?

For the past century, the artist has been our only navigator in social and political terms. The models which he makes are not wishful dreams that money can buy, but urgent factual instructions of the means of avoiding disaster. Top industry understands this, a little bit today. Artists move onward and upward in the commercial field through the departments of industrial and package design. In the field of operations research, the artist accepts the priority which is not his reward, but his responsibility.

To suppose that the teaching of media in our schools should be a peripheral feature of an august and a well-tested curriculum could be a disastrous supposition indeed.

In purely realistic terms, I feel that the associated power of specialist and vested interest of many kinds definitely insures that we shall fail to meet any and every challenge that is offered to us in the electronic age. Why should we understand new media when no generation of the Western past has understood all media? However, now that we have begun

to understand all media for the first time (see H. A. Innis, Empire and Communications) there is the outside possibility that we might decide to consider them as fit objects of study and control.

Marshall McLuhan  
Toronto, Canada  
June 30th, 1960



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**EXHIBITS**

EXHIBITS

New Media and the New Education (paper) . . . . .	i
The Teenager and the Media (script) . . . . .	xvi
The Gutenberg Galaxy (transcript from kinescope) . . . . .	xvii
The Gutenberg Galaxy (kinescope) . . . . .	one copy attached



(Exhibit 1. --- Paper presented at IAWI Convention,  
Cincinnati, Ohio, March, 1960.)

NEW MEDIA AND THE NEW EDUCATION

-Marshall McLuhan-

"The artist," wrote Wyndham Lewis, "is engaged in writing a detailed history of the future because he is aware of the unused possibilities of the present." It is quite literally true that since printing it has been the poets and painters who have explored and predicted the various possibilities of print, of prints, of press, of telegraph, of photograph, movie, radio and television. In recent decades the arrival of several new media had led to prodigious experimentation in the arts. But, at present, the artists have yielded to the media themselves. Experimentation has passed from the control of the private artist to the groups in charge of the new technologies.

That is to say, that whereas in the past the individual artist, manipulating private and inexpensive materials, was able to shape models of new experience years ahead of the public, today the artist works with expensive public technology, and artist and public merge in a single experience. The new media need the best artist talent and can pay for it. But the artist can no longer provide years of advance awareness of developments in the patterns of human experience which will inevitably emerge from new technological development.

The painters of the fifteenth century explained perspective or fixed point of view to the public when print was scarcely known. Aretino became "the scourge of princes" when print was young, and long before the newspaper took up its inevitable republican role. Petrarch developed the

sonnet as a mode of self-expression and of self-analysis before print and long before Montaigne revealed the artistic meaning of the printed page in his Essays.

In a word, the artist discerns the forms of technological change in their full cultural dimensions before the technicians actually take over.

But today, for the first time in human history, our technology includes an external projection of each of our senses. Nobody has considered the significance of this development which confers on our technology an inclusive organic relation to mankind for the first time. From the invention of the wheel and alphabet onwards, we have been accustomed to conceive technology as a progressive splintering and dissociation of what in nature is integral and organic. Thus the wheel was an abstraction from animal form, since a running animal is in a sense rotating. And the first movie ever made was of a running horse.

Today, radio, telegraph and television have no moving parts. The electronic age abandons mechanism for the movement of light and information only. Viewed in the crudist quantitative terms, the shift from mechanism to electronics presents the character of total revolution. It is inconceivable that school and society alike should not receive the full impact of this change.

Looked at more closely, the electronic mode of shaping situations reveals its bias towards field structure. But even "field," preferred by physicists, can mislead by suggesting a flat, single plane. But a multi-dimensional field is intended, an "everyway roundabout with intrusions from above and below." Thus, for example, "point-of-view," is inevitable in

print culture, is alien to electronic "field" and the affiliates of such "field." For point-of-view originates in the discovery of a fixed position as creating perspective, or vanishing point. It was this discovery in the fifteenth century that we associate with the end of medieval art. It was the same discovery taken up by map-makers and by navigators that made the world voyages possible. For prior to this discovery of space as homogeneous and lineally continuous, it was not known that one could simply proceed on and on in a straight line on a single plane. Mircea Eliade's The Sacred and the Profane (Harcourt Brace, 1959) is a study of the contrasted ideas of space and time as between modern and pre-modern man. And Harold Gatty's Nature is Your Guide (Collins, 1958) provides much illustration of pre-mechanical relation to time and space. The methods and procedures in organizing our lives in time and space which are still accepted as "natural" derive almost entirely from the introduction of mechanism into teaching and learning by means of the first teaching-machine which is the printed page.

In providing the first complete mechanization of an ancient handicraft, print created an explosion in learning in the sixteenth century. But the technology by which the mechanization of writing was achieved also invaded every phase of teaching and learning during the past five hundred years. It will repay us to consider, briefly, what happened, if only because we are today involved in a much greater technological change which concerns the nature of teaching and learning more pervasively than print ever did or could.

Basically, the mechanization of writing involved the inspired step of segmentation. Moveable types are a kind of static analysis of the movements of the scribal hand. And whether we regard the differential calculus or

assembly-lines, science and industry have since the sixteenth century, and until recently, extended the principle of segmentation to all procedures of investigation and of applied knowledge.

It is all the easier to observe the patterns of mechanical or print culture now that we have for more than a century (since the telegraph) lived with the new electronic patterns of knowledge and of human association. It may seem baffling that in the electronic age there should be such an increase of books and printing. But the same paradox occurred after printing had ended the constitutive role of manuscript and scribe. For everybody began to write a great deal after printing. And now that print has ceased to constitute the major basis for teaching and learning and is no longer the dominant technological form of our world, there is much more printing than ever before. So far as my studies have taken me, the reason for this is that a new medium splinters the older ones into a variety of new forms and roles. The typewriter merges composition, writing and print publication in a single act. Today the book has many new roles and functions, as had the manuscript in the sixteenth and seventeenth centuries.

Here, then, is a brief indication of the new patterns that entered teaching and learning as a result of printing. There was first, uniformity and repeatability which conferred the power of speed and silence on the reader. The manuscript was read slowly and aloud. The speed, uniformity, and repeatability of the printed book entirely altered patterns of study. It was then possible for the first time to read widely. And repeatability and accessibility of the book made it unnecessary to memorize all that one read as the manuscript reader had tended to do for purely practical reasons.

For the inaccessibility and non-repeatability of the manuscript made memorizing a need as it made oral learning and disputation a natural thing, capable of much greater speed and range than manuscript reading could achieve. (Today we encounter the reverse situation in which film, videotape and even photography permit the rapid grasp of complex cultural gestalts, past and present, which the printed word cannot convey even slowly.)

The portability of the book, shared with its repeatability and cheapness, created on the one hand the habit of privacy and silence, and on the other hand made possible the classroom in which all have ready for use the same data and texts. By contrast, the pre-print classroom expended much time in enabling each student to make his own text while the teacher did aloud the work of the ancient exegete and the modern editor. All kinds of rhetorical analysis, word by word, went hand in hand with minute considerations of variant readings and punctuation. (See Baldwin's Small Latin and Lesse Greek.) Thus there arose from print a new kind of corporate life in the school and a new kind of privacy in the study. The curriculum was revolutionized to include a great range of authors and several languages, such as never could have been encompassed by manuscript means.

But print at once gathered another group of changes, namely the related habits of self-expression and self-investigation. Print as a mass medium offered a sort of launching pad for the projection of the private person into the role of public institution. Pietro Aretino and Rabelais were perhaps the first to explore these new dimensions for the individual ego. Ego enlargement via print, at the same time created the sense of fame and self-perpetuation by means of the repeatability and indestructibility as it were of the private self. Marlowe's Tamburlaine and his Doctor Faustus

are excellent types of the new megalomania arising from print.

Publication for Chaucer, by contrast, meant only a private reading of his work to friends. Self-expression and self-portraiture and self-analysis swiftly merged in the sixteenth century in the great figure of Montaigne. He revealed another feature inherent in the segmental analytic patterns of print, namely "systematic doubt." After Montaigne, print laid few further patterns of the private self and began to release its powers in the reshaping of society and politics as the newspaper developed.

There is scarcely a feature of print culture which can today be discerned in the over-all field of our new electronic technology. Static fragmentation as a means of analysis and of production and expression are not to be found. Jacques Barzun in his House of Intellect, which he assures us is built on the alphabet (and print), has provided a handy testimony of the total incompatibility of the new age with the typical values and procedures of the print age. Art, science and philanthropy today, he says, represent a team destructive of all intellectual values. (He is careful to dissociate intellect from intelligence.) Perhaps he might have written a different book had he understood the private and social consequences of print as print. For one of the curiosities of print and literature is an obsession with "content" as opposed to "form." It is easy to see why the blank page awaiting an imprint should appear to "contain" things of good or ill use and report. It is in fact this formal, structural aspect of the page that obliterates awareness of the page itself as a structure. To a lesser degree, this oblivion of the structure of the page, and of print itself, extends to writing in the ancient world as well. For the alphabetic translation of the

audible into the visible had huge consequences such as mark off Greece and Rome from all other societies which lacked phonetic means of codifying and translating experience into analytic, visible terms.

Let us suppose for a moment that a team of present-day testers had been available in the year 1500 to find out whether the new book or reading machines and instructional materials were capable of doing the plenary traditional job of education in the future. Would not this team, even as it would today, ask whether the privately read word could measure up as a means of teaching and learning to the memorized manuscript and its formidable extension in oral exegesis and group disputation? Since we know that printing wiped out the educational procedures of the preceding centuries, we can say that the testers would have been quite wrong in asking whether the new could compete with the old when the new had only one mode of procedure, namely to erase and to brainwash the older culture. Our testers today are still geared to the static assumptions of the print form and ignore the structural dynamics of the electronic form. In 1500, as in 1960, they could report variations in the facility with which educational skills in a wide range of subjects are achieved by print or by educational television. But they have no regard for the new patterns of perception and sensibility which are subliminally imposed on us all by new structures for codifying and moving information. For the new structures modify our means of apprehending past and present. They recreate our sense of space and time, of teaching and learning. Basically I should say that in the electronic situation there is a great new stress on learning (creativity) and a corresponding relaxation of teaching stress.

Again let the artists of the last ten decades be our guide. The

Romantics reacted strongly against the book as book, spotting it as the enemy of nature and of natural modes of learning. They insisted upon the creative imagination as the birthright of all, and began a ceaseless quest for the inclusive and integral image. This arduous search was taken up with great intensity by the Symbolists who realized that it could not be a merely visual image, but must include all the senses in a kind of dance. En route to this discovery, Hopkins and Browning, Poe and Baudelaire, ended the print-fostered dichotomy between author and reader, producer and consumer and swept mostly unwilling audiences up into participation in the creative act. After Poe, and since Cézanne, poets and painters devised ever new modes of speaking not to their readers and viewers, but through them. As the voice of art resonated within and through the print-cultured audiences, the cry went up, and still continues: "the artist is using a private language." The artists' demand that the audiences enter the artist role as co-creators was not welcome to the consumer mind. Such is the meaning of the abstract art and the do-it-yourself kits which artists have for a hundred years been carefully preparing for this affronted public.

Of course, children love abstract and symbolist art, and experimental films. But by the time they have been given in late adolescence the cookie cutter patterns of the House of Intellect they freeze up in the presence of the playfully abstract cartoons of Picasso and James Joyce.

That situation is easy to understand. The educational establishment is also built on print and abcdé-mindedness. But today we are asking what will be the shape of things to come educationally. The answer is simple. The artists have told us in minute detail this past hundred years. They have built endless models of our challenge and our needs, and of how to live



with the new instructional materials. They have told us that there will be no more consumer packages in education—not at least if education is to have a relevance to our new world. The dialogue will replace the guided tours of data provided by the book as teaching machine. In the dialogue there is no maintaining of a point of view, but only the common participation in creating perpetually new insight and understanding in a total field of unified awareness. For dialogue is not light on, but light through, which is the difference between film and television.

Let us note that in all forms of electric circuit and appliance, whether telegraph radar or guided missile, we are confronted with the give and take of dialogue and not the one way song of lyric self-expression. Even the various forms of electric appliance impose a large measure of do-it-yourself-ness, whether the electric toaster, the vacuum-cleaner or the washing-machine.

I say, therefore, with impersonal assurance, that unless we choose to abandon all electric forms of technology we cannot possibly retain in our teaching and learning the modes of instruction and apprehension associated with the mechanical forms of print and its innumerable cultural progeny. Even if we are zealous, like Dean Barzun to retain and to maintain the characteristics of print-culture we shall need to know much more than he does about the cultural dynamics of print in individual society; and also it would be necessary to have a very complete knowledge of the new dynamics of our new technology in order to harmonize the twain. It is characteristic of the semi-aware products of print culture that they prefer to take a strong moral stand on one or another horn of a dilemma. They love dichotomics. They point with pride. They view with alarm. They then feel that duty has

been done by spiritual values. But of understanding and, therefore, of control of new situations they are bereft.

I am not optimistic about saving any of the traditional qualities in education from the electronic bombardment. It could be done by those who had a firm hold of both old and new situations. And since these of the older print-culture are not morally or mentally prepared to tackle the new, it behooves the products of the new electronic culture to seize and to maintain some of the needful qualities from the wreck of the House of Intellect. If this sounds like Robinson Crusoe revisiting the wreck, it will be a Robinson Crusoe equipped with electronic technology.

Earlier I listed some of the basic characters and consequences of printing in teaching and learning. It seemed a useful way of moving from the known to the less well known. I have insisted that any new structure for codifying experience and of moving information, be it alphabet or photography, has the power of imposing its structural character and assumptions upon all levels of our private and social lives, even without benefit of concepts or of conscious acceptance. That is what I've always meant by "the medium is the message." Moreover, a new medium bombards older media and awareness, stripping the older forms of experience to their bare bones or basic codes. That is why, today, when we are already living through intense nuclear bombardment from within our own cultures, we have achieved almost total clairvoyance of our own condition and of our debts to earlier ages. Today, we master languages and whole cultures faster than men formerly mastered an author. Our children live in a world museum of cultures from infancy, even while we continue to educate them as if they were bolted into

only one of these cultures. And these changes, or this acceleration of change to the point where change itself becomes the very matrix and foundation of society---all this is owing to our century-old shift into the electronic mode of information shaping and movement. We have left the one-thing-at-a-time of print and mechanism for the all-at-once of the inclusive "field" of electricity. And it is the very structure of this all-at-once inclusive mode in teaching and learning which automatically ends what we till now called "subjects." The electronic alters the contours of math and physics and "nature" even as it abolished literature. The nature with which we will henceforth be engagée is one whose lines of force we will travel and explore with the sensitivity of the greatest artists. The split between art and nature ends now, as surely as the division between culture and commerce. So far as the young are concerned, all these things are already accomplished. Their sensibilities have been formed almost entirely and exclusively by electronic modes of experience. Even the film, that last mechanical link with the Gutenberg era, they experience mostly as translated through the medium of television.

I put the matter this way in order to confront the educational point: "What is the difference between movie and television after all?" Just to heat up the issue a bit more, let me answer that they have scarcely anything in common except the fact that both are visible. The structure that is seen, however, is another matter. The movie is a mechanical way of rolling up the world in a sequence of small still shots, not unlike the way in which print captures the movements of an author's mind in a sequence of black and white still shots. Played back, these still shorts recreate or reconstruct an earlier action. The movie has built-in perspective and is superb in details

to fill in the pictorial space of its perspective. In contract, the television image is a continuously formed mosaic with no still shots, no reconstruction of actions, no perspective and very little detail. The television mosaic is so poor in data, in fact, that it must be mostly filled in by the viewer. And moreover it has no light on, but only light through. So that, typically, the television viewer is conditioned to expect much activity and to expect knowledge to be a kind of total revelation or illumination from within both subject and himself. As Dr. Ruke of the Kansas City Medical Center pointed out, television in medical instruction has shown (a) that the speaker, instructor, or lecturer must efface himself and (b) that the viewer, in operations for example, was less a spectator than the scalpel. The viewer does not so much see as do the operation. Even the surgeon watching the monitor while actually performing the operation frequently is surprised by aspects of the operation which the television camera picks up beyond his immediate visual range. Or rather the operation is translated into another medium, and so revealed in another mode, much as the newspaper translates our ordinary social and political lives into a special mode, providing quite new dimensions and meanings for them.

Let us say, then, that television, like radio, states much less than it suggests. That is the symbolist or do-it-yourself phase of this electric medium. Book and film, in contrast, state very fully and suggest much less than electric media. That is another way of saying that electric media deal with experience in depth, rather than spelling it out on the single plane of flat statement. The radio listener takes for granted the action of providing a visual world for the sound experiences. The television viewer must have an image he can complete for himself. So that even persons appearing on

television must not be too definite or one-sided types. The vague, ambiguous, uncommitted person, whether in politics or entertainment, will survive on television. But the definite classifiable figure who satisfies the film or newspaper medium as a right guy will frustrate the television viewer who wants to complete his own image. The flood of Jack Paars, Mort Sahl, Shelley Bermans, has scarcely begun. But a similar non-committal, ironic whimsicality will appear more and more, not only in television figures, but will evoke many persons and forms of expression, not directly related to television. The newspaper man and reader are just as baffled by these changes emanating from television depth suggestion as the bookman. Yet a century ago, the poets and painters began to unfold in detail this whole complicated story which has now become part of the educational drama.

The square and the egghead are the bookmen as seen by the new television generation. In the sixteenth century, the new book generation saw the oral and oracular previous generation much as Polonius appeared to Hamlet. The razor precision of the oral schoolmen appeared to the new literary humanists as "words words words." They called the schoolmen not squares, but dunces.

The new criticism (or reading in depth) which has appeared in our electronic era is often called scholastic in form by the literary humanists. Is it not terribly wasteful of values and opportunities, as well as destructive of harmony that unwittingly men should so embroil themselves in civil feuds arising from media change? In our age the onset of multiple media changes makes impossible the older patterns of gradual adjustment and oblivion of the obsolete. There is no time to adjust. We simply have to know, and understand, exactly what is happening; and indeed, as educators we can available ourselves

of the artists to help us to become contemporaries of ourselves. Rather we must all become creative artists in order to cope with even the banalities of daily life.

\* \* \*

## SUMMARY

1. Role of contemporary art models in predicting new patterns for teaching and learning in the electronic age.
2. The Gutenberg teaching machines and the Renaissance explosion in learning.
  - (a) The swift decline of dialogue and the seeking of an exclusively visual order.
  - (b) The rise of the consumer curriculum and the separation of teaching and learning functions.
  - (c) The "content" as opposed to the "insight" approach to learning.
3. The Nuclear bombardment in learning.
  - (a) The new electric structures for teaching and learning are basically a return to dialogue, or to the fusion of teaching and learning functions; (even the Fask, Pressey, Skinner teaching machines are basically dialogue structures).
  - (b) The presence of electronic information structures now dominating social and political thought and feeling (electronic tapes have made even the assembly-line obsolete) makes the educational adjustment inevitable.
  - (c) We now switch from subject to inclusive "field" and from light on to light through.

(Exhibit 2. --- Television Script.)

THE TEENAGER AND THE MEDIA

"Explorations"

For May 18, 1960

10:30 - 11:00 p.m.

Canadian Broadcasting Corporation

V I D E O

CS TOP OF COFFEE TABLE  
CIGARETTE BURNING IN ASH  
TRAY. PARTLY FULL BOTTLE  
OF COKE BESIDE IT.

A U D I O

MUSIC:

GIRL: (OFF) (SIGHS COMFORTABLY)

MAN: (OFF) Here...put my drink  
down...there's a good girl...

A GIRL'S HAND CAREFULLY  
BRINGS AN ALMOST BRIMMING  
MARTINI INTO FRAME AND PLACES  
IT ON TABLE.

GIRL: (SIGHS A LITTLE MORE VIGOROUSLY)

HER HAND PAUSES AND THEN  
SLOWLY MOVES BACK. PAN  
WITH IT AS SHE PLACES  
HAND BY MAN'S FACE. SHE  
IS KISSING THE MAN. HE  
IS VERY ADULT AND VERY  
ELEGANT. SHE LOOKS HIGH  
SCHOOLISH AND VERY MUCH  
IN HER TEENS. MAN IS  
LYING ON SOFA, HEAD PROPPED  
UP BY PILLOWS. GIRL SITS  
ON EDGE OF SOFA BESIDE HIM.

SHE FINISHES KISS AND  
SITS UPRIGHT. SHE TAKES  
A CIGARETTE FROM ASHTRAY  
AND TAKES A LONG THOUGHTFUL  
PUFF LOOKING STEADILY AT  
THE CAMERA ALL THE WHILE  
WITH A DEADPAN EXPRESSION.  
SHE PUTS THE CIGARETTE BACK  
IN ASHTRAY AND RETURNS AS  
THOUGH TO KISS MAN AGAIN.  
SHE STOPS PARTWAY AND ALMOST  
AS AN AFTERTHOUGHT LOOKS  
BACK AT THE CAMERA AND SAYS

GIRL: I think going steady is swell.



CU JOHN O'LEARY IN  
LIMBO

JOHN: That was Lolita, author of  
the best seller, "Innocence is for  
Adults." And this is Explorations.

CU ALAN MILLAR IN  
LIMBO

ALAN: Explorations.....with the  
story Pat Boone didn't dare report.

CU JOHN

JOHN: Our subject, the teenager.

CU ALAN

ALAN: As this program contains material  
of a shocking or controversial nature we  
suggest that some of you may wish to send  
your parents to bed.

TITLES - T/C SLIDES

MUSIC: IN FAST

EXPLORATIONS (1)

JOHN: (V.O.)

THE TEENAGER (2)

with  
MARSHALL MC LUHAN (3)

ALAN MILLAR (4)  
and  
JOHN O'LEARY

MCS ALAN

ALAN: I'm Alan Millar. John O'Leary  
and I...with Marshall McLuhan's help  
are going on safari tonight. We're  
going into the relatively unexplored  
territory of our own history, the  
undiscovered country of our own  
changing social values. Few people  
notice the changes that take place  
right before their eyes...it's this  
that we want to try and see tonight.

MCS JOHN

JOHN: This program is about the  
teenager because he makes visible  
what is as yet invisible in the adult  
world. In effect, the teenager has  
brought into the living room what we would  
still keep in the basement...or even out  
in the garage.

2-SHOT ALAN AND JOHN

ALAN: Here's the kind of questions  
you could extract from what we're  
going to talk about tonight.

LOOKS AT JOHN

JOHN: (REFERRING NOW AND THEN TO LIST  
IN HIS HAND)

Does the teenager really pity the adult for being immature? Incompetent? Has the whole purpose of teenage life changed within the past few years? Has the teenager become an object of fear in our society...perhaps the way the communist was a few years ago?

ALAN: We're going to raise a lot of questions tonight...and make a lot of generalizations. You may not agree with them...but we hope you'll think about them. To begin with...before we begin talking about the inward changes, let me show you some of the new outward symbols of our time...the new things we're now living with...

DE WITH ALAN AS HE  
BEGINS WALK. LOSE  
LIGHTS ON JOHN.

ALAN: ....There's a store in every neighborhood that more than any other is a product of our time....the appliance store.

BRING IN DOORFRAME  
WITH GLASS DOOR. ALAN OPENS  
IT AND WALKS IN. HE STOPS  
AND GLANCES AROUND.

ALAN: If there's any place one visits to go modern it's this. And not just to stock up on some cooking or heating appliances either...but for another category of goods which has transformed our world. The gadgets, the tools of the electronic media.

DB TO BRING IN COUNTER  
OR DISPLAY WITH SEVERAL  
FILM PROJECTORS ON IT.  
ALAN COMES UP TO COUNTER.

ALAN: Here are some film projectors..... the movies. I wonder what it really means to be able to flick a switch (HE DOES AND A BEAM OF LIGHT SHINES FORTH) and to bring in any part of the world...or to see the most personal relationships of mankind acted out for us. It's so easy, isn't it? (FLICKS SWITCH OFF AND ON AND OFF) A handy instantaneous gadget.

MOVES ONTO DISPLAY OF TAPE  
RECORDERS NEARBY.

And the tape recorder, it's small and portable...can go and has gone everywhere.

PRESSES BUTTON ON  
ONE

STOPS RECORDER. MOVES TO  
MIDST OF SEVERAL RECORD  
PLAYERS. STOPS BY ONE  
WITH THE LID UP

ALAN STARTS RECORD

MOVES OVER TO COUNTER WITH  
ASSORTED RECORDS FOR SALE.  
ALAN PICKS THROUGH THEM  
CASUALLY

WALKS BACK TO PLAYER

SWITCHES OFF BACH.  
MOVES TO COUNTERS WITH  
VARIOUS SIZES OF RADIOS.

PICKS UP SMALL TRANSISTOR  
RADIO. SWITCHES IT ON.

MUSIC: INDIAN

ALAN: (LISTENS BRIEFLY) India is only  
a button's push away. Space means nothing.

ALAN: With a record collection.....  
neither space nor time matter. We can  
all share in everything, from anytime and  
from anywhere. Back to Bach's day with a  
flick of the wrist

MUSIC: BACH

ALAN: Fabian, Frankie Avalon, Petrouchka,  
the voice of FDR, the music of Arabia,  
the sound of a sports car race in Florida.

Even the most puritan among us engages  
each and every day now in an absolute  
Roman carnival of the senses. New sights,  
new sounds, new fabrics, cooking,  
textures....we're all dedicated libertines.

ALAN: And radio. We have heard the  
sound of symphonies and riots and  
battles.....all without leaving our  
living room.

MUSIC: ROCK AND ROLL

ALAN: And now radio travels to beach  
parties and baseball games. Each of us  
with our own private slice of the  
modern age. We are never out of touch.

SWITCHES OFF RADIO. MOVES  
TO DISPLAY OF TV SETS OF  
ALL SHAPES AND SIZES.

ALAN WALKS FORWARD,  
A PAY PHONE COMES INTO  
FRAME. ON A STAND  
NOT A BOOTH

PUTS COIN IN.  
ALAN DIALS

PUTS DOWN PHONE

STARTS WALKING BACK TOWARD  
THE DOOR. THREADING HIS WAY  
THROUGH VARIOUS DISPLAYS.

And television. Who knows what it means to have pouring into our homes, day after day the cowboys and the rock and roll stars....the great statemen, the philosophers, the whole debate of the modern world. Undoubtedly our sense of space, of time and cause and effect must be changing. And our attitudes to life and love, to politics and religion and leisure. What of them?

Almost forgot. The telephone. We can take it for granted all right.....it's been around long enough.

#### S.E. COIN DROPPING

Surely though, distance, space, separation of person from person no longer means what it did. But notice...the image of the phone goes with the teenagers..... they're the ones completely at home using it....and they use it all the time.

#### S.E. BUSY SIGNAL

ALAN: Annoying isn't it? To be held up even five minutes.

Must be a teenager on the other end.

Well, there they are. Our new electronic media...our new gadgets. Push the button and the world is yours. You know how they speak of the world getting smaller.... it's thanks to these that it is. Everywhere is our own neighborhood. We know what it's like to go on safari in Kenya, or to have an audience with the Pope... to order a cognac in a Paris cafe or to go through customs clearance in Hong Kong.

ALAN STOPS BY DOOR

The world has not only been made smaller, it's been made available and familiar to our emotions and to our minds. The world is now a global village.

Well, if the appliance store...is the outward symbol of this age...what about the symbol of the age just past? For in contrast to all this stuff we used to have just one medium, one gadget if you like.

ALAN LOOKS AROUND

ALAN: John?

CS ROW OF BOOKS ON BOOK SHELF. SHOT FROM BACK. SEVERAL BOOKS ARE PULLED AWAY AND JOHN LOOKS THROUGH.

JOHN: Come on around.....

HE PLACES BOOKS BACK.

CAMERA TRUCKS TO END OF BOOKSHELF AND AROUND END TILL IT IS LOOKING IN CORNER OF SMALL BOOKSTORE. BACKED BY BOOKSHELVES. OUT IN CENTER AREA A TABLE PILED WITH BOOKS.

.....you're in a bookstore.....in the hallowed, respectable center of the age of print, the age of the book. In the appliance store you're very much the electronic man.....here you go back to being Renaissance man, literary man.

PICKS BOOK OFF TABLE.

A book. It's all we used to have..... there were no film projectors, no TV sets, or radios. We got all our information from this, we were educated by it, we learned about each other from it. The book was the source of our fame. We lived, loved and died, as the saying goes, by the book.

Think for a minute of how one reads. One sits alone, one's eye scans a line at a time down the page....the author's ideas come to you one at a time off the page. It's a private experience. It's not a community or family activity...you do this alone.

The electronic media haven't wiped out the book.....it's read and used and wanted. Perhaps more than ever. But the role of the book has changed. It's no longer alone. It no longer has sole charge of our outlook nor our sensibilities.

JOHN WHO HAS BEEN HOLDING BOOK  
OPEN NOW SNAPS IT SHUT

Of course the trouble is we act as though we were still solely in the age of the book. Our notions of right and wrong, our regard for one another, for education, diplomacy, politics, religion all belong to the literary man.

WALKING TO DOOR OF  
BOOKSTONE

Perhaps that's why literary man finds things today coarse or corrupt or materialistic.....

JOHN OPENS DOOR  
SLIGHTLY

S.E. SOUND OF RUNNING AND SHOUTING  
AND FIGHTING

.....he hears the sound of fighting in the street, of the rough and tumble of life.....

JOHN LISTENS VERY  
BRIEFLY

MUSIC: ROCK AND ROLL. MIXES IN  
WITH ABOVE

.....and sometimes he hears the sound of music and he finds it all rather vulgar.

JOHN TOSSES BOOK BACK  
INTO STORE. GOES OUT CLCSING  
DOOR AFTER HIM

MUSIC: UP AND IN TO MILLAR

DB OUT OF BOOKSTORE SET AND  
BRING IN MILLAR AND MCLUHAN  
SEATED OUT IN FRONT.  
BRING UP LIGHTS ON THEM.  
TAKE OUT BOOKSTORE. END  
ON TIGHT TWO-SHOT.

ALAN: With me is Marshall McLuhan.  
All right, Marshall....what does it  
mean? The book world we had....and  
the electronic world we have?

MCLUHAN: I think the best distinction  
might be found in the phrase, "with it."  
You know how today we speak of being  
with it...meaning we've understood  
completely, we've got the message as  
it were....in every way possible.  
But in the older book or print culture  
people weren't with it....they were  
away from it....by themselves with  
their own private point of view. You  
have no point of view when you're  
with it....because you accept a thing  
totally. And we're with it because  
these new media of ours....the ones  
you talked about in the appliance  
store....have made our world into  
a single unit....the world is now like  
a continually sounding tribal drum,  
where everybody gets the message....  
all the time. A princess gets  
married in England and boom boom boom  
go the drums and we all hear about  
it; an earthquake in North Africa, a  
Hollywood star gets drunk....away go  
the drums again. I use the word tribal  
....it is probably the key word of this  
whole half hour.

ALAN: Tribal? Why?

MCLUHAN: Well, I think you'll find  
everything we observe tonight about the  
new media aims us in the direction of  
tribal man and away from individual man.

ALAN: Marshall, let's just back up a  
little. If more books than ever before  
are being sold....if the libraries are  
crowded and busy....how can we, no  
matter what else may be happening, be  
said to be passing out of the print  
culture?

MCLUHAN: As John said...books are still very important but their role is changing, the nature of their importance is changing. Remember that books were our first teaching machine ....and all during the Renaissance our only teaching machine. Books are what gave the Renaissance its peculiar stamp. We had to see the world and each other through the printed line on a page. Today, there are many media of information, many teaching machines.

ALAN: By teaching machines, you don't just mean those things used in school do you?

MCLUHAN: No, no, we learn everywhere. The book's role has diminished because of all the other actors on the stage. It's no longer king, but subject. We owe a lot to the book. The assembly-line of mass production....that for instance, comes to us from the book, from the printed line where things move along and happen one at a time. And the very way the school classrooms are set up....in a grid....row on row.... each desk identical.....set up like a book page.

But now the assembly-line has changed.... it is no longer one thing at a time but wherever possible everything at once, forty or fifty operations happening instantaneously....controlled and synchronized exactly by pre-set tape. Notice the shift in image.... from the assembly-line....stretched out ....events taking place one at a time.... to the modern automated industrial complex where things happen all at once....bang. Not a line but a field. And this applies not only to products but to people....the line, the individual event was the book....the field....the all-at-once tribal drum....the new media.



ALAN: But are media, is any medium, that strong, that powerful that it can affect our lives, or alter our outlook? Aren't these things, as most people think, simply on the edge of our life, a frill to be taken or left alone....?

MCLUHAN: Well, we've seen how print affected all the aspects of our lives.... industry...education...the concept of the modern army even. Our managerial class is the product of print culture. So is the idea of romantic love. The media are at the heart of our life because the media work through our senses. And print is a medium...it changed our sense make-up from what it had been in the middle ages. Now certainly these other media will do the same; they, photography, movies, radio, TV will alter our sense world, our sense lives. These media change at once the way in which we see or hear, or touch, or feel ourselves and our world. A slight change in one of our five senses, alters the ratio among all of them. People suddenly begin to want and appreciate different things, they begin to think differently.

ALAN: All right, but to get back to your earlier word, tribal....why should all this about media mean that the individual man is on the way out and the tribal man on the way in? Why is this big change taking place?

MCLUHAN: To answer that let's get back to the teenager....for he illustrates the changes brought about by media in the clearest way. Especially if we contrast the teenager with his old time contemporary....the adolescent.

ALAN: There's a difference then between a teenager and the adolescent?

MCLUHAN: Yes, and I'd say it's the same kind of difference as exists between book culture and the new electronic media. The adolescent corresponds to the world of the book; the teenager to the electronic era. The adolescent is seeking self-definition, seeking to isolate his uniqueness from that of others, seeking to relate his self to that of others. The adolescent knew he wasn't an adult....he knew he was in life's waiting room, that his life was not really real life...that would begin only with adulthood. The adolescent is still our image of what the young person should be. Though you'd have to go back in time to see him at his best, when he really lived in a sheltered and an enclosed world.

ALAN: Let's go back then John.... to 1910.

THICK WALL - GARDEN GATE.  
JOHN PULLS DOOR OPEN.  
LIGHTS COME UP IN THE  
DARKNESS BEYOND ON A  
ROSE TRELLIS OR AIRY  
FILIGRIED GAZEBO SUMMER  
GARDEN HOUSE TYPE OF  
STRUCTURE.

MUSIC: SOFT AND A SWEET MYSTERY

DOLLY IN

MAUD: You have not been to see me in a long time.

ALBERT: No, I've been busy...I've been working on a book of poems...alone.

TAKES SHEAF OF PAPERS  
FROM HIS BLAZER POCKET

I'm going to call it a Farewell to Adolescence. Would you like me to read some of it to you, Maud?

MAUD: I'd like that very much, Albert.

ALBERT: (READING A LITTLE EXTRAVAGANTLY)

"The alder grove is dapple green,  
In spring and summer I am there:  
The grove is now December brown,  
And I am bowed with adult care.

Farewell to solitude and all such blisses  
My bags are packed and I must go:-  
For youth but a swallow is,  
It flies before the winter snow."

MAUD: (A LITTLE SEVERE AND BRINGING HIM  
BACK TO EARTH)

Albert, I hope you remember our agreement..

ALBERT: Mmmmmmm?

MAUD? The time for dreaming and poetry is  
over Albert. I cannot wait any longer.

ALBERT: But I came here today with good  
news Maud, my father has got me into the  
Colonial Service....I'm going to be  
Governor of half of Africa.

MAUD: Africa....Albert? Which half?

ALBERT: You know, I'm not quite sure...  
...but who cares my dear....as long as  
we've got each other.

THEY EMBRACE

TWO-SHOT MILLAR  
AND MCLUHAN

ALAN: The adolescent, a Romantic.

MCLUHAN: Not yet an adult. But today if  
you went to ask Maud to come into the  
garden you'd find she was already on the  
road.

LARGE SHADOW OF FAMILIAR  
BARDOT TYPE SILHOUETTE ON WALL.  
OB TO BRING IN GIRL WITH LONG  
BLONDE HAIR STANDING A LA BARDOT  
WRAPPED IN TOWEL. STEAM PILLOWS  
OUT A DOORWAY BEHIND HER. YOUNG  
MAN ENTERS. THEIR FLAT IS  
DECORATED IN NON-CONSUMER BEATNIK.  
HE IS CARRYING A BAG OF GROCERIES.

MUSIC: HARD AND "MAN WITH THE GOLDEN  
ARM" TYPE

GIRL: I've just got out of the shower.

BOY: (GLANCING AT STEAM) Yeah.

GIRL: Where've you been?

BOY: Out.

GIRL: (MOVING UP TO HIM WITH SEXY  
WALK AND SEXY POUT)

You've been away so long...what've  
you been doing? You know its our  
wedding anniversary...we've been  
married three days.

BOY: Yeah. Well I made a down pay-  
ment on a fridge. I also joined the  
health insurance plan....figured it  
would be a good thing. Oh, and I did  
a double check on this pension scheme  
the company's got....looks good,  
Dawn, we're seventeen and I think  
we're all set.

GIRL: (SIGHS AND RUNS ABANDONED  
FINGER DOWN HIS CHEEK AND THROAT)

That's what I like about you, Rock,  
you're so dependable.

TWO SHOT MILLAR  
AND MCLUHAN

MCLUHAN: The teenager in contrast to  
the adolescent acts like an adult...  
he knows he is an adult...and he now  
wants the complete package. There is  
no waiting around. He wants the lot  
and right away. Adolescence used to  
be a world within a world...an enclosed  
arena of dream and fantasy. The teen-  
ager has never been in anything but an  
adult world...any child today can  
grab a big chunk of adult life just by  
turning on the TV set, or going to a  
film, or leafing through a magazine.

He can enter at the push of a button,  
the whole spectrum of adult life...  
from its most sordid to its most  
idealistic. They have one partner  
like adults...going steady. They think  
of security, of their careers, the way  
adults are supposed to; they want the  
full charge of religion and spiritual  
values. They want the complete package  
....nothing left out. Whatever adults  
have got...they want it.

There's nothing romantic about today's teenager either. Contrast the two girls we've just seen. Maud was a romantic creature, a creature of the literary mind...she was distant and dreamlike, she was a package for the eye, she was visual....not to be touched.

ALAN: Oh yes, I remember...she was the girl who said....

CS MAUD IN  
LIMBO

MAUD: Don't kiss me, darling, you'll muss my hair....

TWO SHOT MILLAR  
AND MCLUHAN

ALAN: And in contrast to her the teenager....

DAWN IN ROOM AS BEFORE.  
THIS TIME IN SWEATER  
AND SKIRT AND SLOPPY  
SHOES. HER HAIR IS  
BARDOT-SLOPPY.

DAWN: (RUNS FINGERS THROUGH HER  
HAIR AND GROANS ADORABLY)

BACK TO ALAN  
AND MCLUHAN

MCLUHAN: You couldn't muss Dawn's hair...it's already mussed. Like Bardot, today's teenager is designed to be touched...to be in fact mussed up. There's no talk...just action.

Today's teenager is everything... like Bardot, a sex package...but also a mother, a sensible budget keeper, a household executive, an informed and understanding woman with no illusions....

For the teenager the boundaries have gone down between him and the life of an adult. But part of the trouble is that adults don't act as though the boundaries are down. Adults prefer to think of the sweet little lads and lasses in waiting, of barefoot Huck Finn and the days of pure innocence. Teenagers, children, know no innocence now...they live in a completely adult world for it's no longer possible to be isolated...or to be kept isolated. Look at the coming out parties held for debutantes....they were finally abandoned because people realized the receiving line was probably more innocent than the debbs were.

xxx

ALAN: (TO CAMERA) We've established the teenager as an adult...now what about him being tribal...what about us becoming tribal?

DB FROM ALAN AND  
MCLUHAN AND PAN RIGHT  
TO JOHN LOSE ALAN  
AND MCLUHAN

JOHN: Here are some definitions which apply to tribal man...wherever his lives, or whatever stage of development he is at.

(REFERS TO SCRIPT IN HAND)

He is impersonal, he has no feelings or attitudes that he considers his very own. It never occurs to him to hold opinions that are not those of everybody in the tribe. His face is a mask, a stolid mask...for he is not concerned with showing his emotions. He is a creature of habit, of ritual. There is no individualism...it's togetherness at all costs. In a tribe everything happens to everybody at the same time...and, nothing happens to anybody without it happening to everybody. Tribalism is the extension of the family group, and so, like the family, its codes and rules are unwritten.

ALAN AND  
MCLUHAN

MCLUHAN: You're familiar with the hero of the western film on TV...he's a tribal hero, not an individual one. He goes out to do what he has got to do...he knows not why only that he must. He is listening to an inner voice, an inner unwritten code.

Tribal life is life by the ear, and reaches as far as the ear reaches, as far as the community of common resonance can reach.

ALAN: In what way though is the teenager tribal?

MCLUHAN: Well, have a look at his dancing.

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JOHN STANDING BY WINDOW FRAME  
WITH BLIND PULLED DOWN. HE PEEKS  
THROUGH AND TURNS TO CAMERA.

MUSIC: FAINT ROCK AND ROLL

JOHN: They're dancing the Payola Rock.

AS HE TURNS BACK TO THE WINDOW  
THE BLIND FLIES UP INTO THE AIR.  
BEHIND IS A ROOM FULL OF TEEN-  
AGERS.

MUSIC: UP FULL

BLIND UP AND ROCK AND ROLL  
MUSIC LOUD AND THE COUPLES  
DANCING. PERHAPS THEIR  
SHADOWS THROWN ON CYC.

LOSE JOHN AND WATCH DANCERS  
FOR A MOMENT.

ALAN AND  
MCLUHAN:

MCLUHAN: What could be more tribal  
than that? When Dawn and Rock rock  
their faces are like masks...showing  
no emotion or pleasure. The solid  
tribal mask...the beat whose gaze is  
inward. Rock and Roll is ritualistic,  
like an African tribal dance or a  
court gavotte. Notice the choreography  
is involved and highly patterned.  
The dance is sensual but impersonal.  
And it's for the group, not for the  
individual...it's so public that its  
dance floor can even be the TV screen.  
The American Bandstand where everyone  
takes part...the audience and performer  
are one...you dance in full view not  
with your girl but with the tribe.  
You form a group space and a group emotion.

ALAN: How about a few years back?

MCLUHAN: Well in the days of the foxtrot  
...or the waltz...or the black bottom  
and all the rest, the emotion was  
private, each couple was individualized  
and separate from the others. A while  
back in the days of the rec room the  
party was atomized...separate little  
romantic couples, dancing in the dark.  
Perhaps that's where Renaissance man came  
to an end...dancing in the dark....a  
rumpus room hero.

ALAN: What other things show tribalism in teenagers?

MCLUHAN: There's the way they do their homework.. Adults are baffled when the teenager studies in a group... in the old days one studied alone. But now the dialogue is back in fashion... look at the business man's lunch... or the brainstorming sessions of the organization man. A final point about the teenager's tribalism...the three main values the teenager respects are courage, competence and loyalty. These are values of the tribe. One shows courage in battle, one is skillful and competent at one's job, and one is loyal to one's people. The teenager gains the respect of his fellows by being competent...whether by making hi-fi sets, or fixing hot rods, or making rockets for the US army. He must be good; he likes being competent...and he is liked for being competent. I suppose because of adult restrictions it is only his courage which doesn't find many outlets....just stupid ordeals such as trial by chicken race, we leave him little else.

And his loyalty...we have seen it given wholly to teenage heroes, to the disc jockeys who were accused of accepting payola. But we have seen it given also to many unexpected things.... World Refugee Year, charity drives... chamber music.

ALAN: Marshall, you've made many references to the adult world...how does this teenager feel about adults?

MCLUHAN: Well, in contrast today's teenager, who is basically serious, and ascetic and businesslike...the adult world probably presents to the young a picture of people who are immature and superficial...hopelessly wedded to their consumer goods. What the teenager means when he says the adult world is square, is that it has no depth....it is not with it....square is visual...only one sense is involved.



We said that one of the main values teenagers hold is that of competence. The teenager looks around and asks only, does it work? I think in many cases the teenager has just given up....so profound and far reaching are the follies of adults. The teenager can see the vision of one world government, or the ease with which the refugee problem could be solved....he sees these ideals as total. But when he looks at adults tackling these problems, he sees them hacking them into bits and pieces....selling them short by obsolescent arguments....nothing but bickering and squabbling. The grand design is gone....only endless argument remains.

BACK TO ALAN AND  
MCLUHAN

MCLUHAN: The teenager gets this impression of the way adults run their affairs every day, from the newspapers, from radio and TV...each day they draw for him a picture of hopeless adult incompetence. But at the same time the teenager gets from these media a very immediate and personal glimpse of some of the world's most competent people...competent whether in politics, athletics or education or entertainment. Everyone from Bertrand Russell through Adlai Stevenson, Khrushchev, Ann Heggveit, Frank Sinatra, Shelley Berman, Bishop Sheen.... the list is endless....How can his own teacher, or parent or even his own local politician possibly measure up?

ALAN: And the adult? What's his relationship to the teenager? What does he think about this?

MCLUHAN: Well, the poor old adult's in a rather awkward position....he's forced to keep some kind of control over the young....but he is now trying to control a rival. The adult has built up a vast investment in what the teenager regards as silly or obsolete. The adult can't just chuck it all. The age old rivalry between generations is still there but now compounded by technological change and made many times more difficult by the envy, hostility and frustration that the adult feels in his relations with the teenager.

ALAN: Envy? Why's this?

MCLUHAN: We're a society which worships youth....we place immense value on being young....on being rich, young and pretty as one of our songs used to put it. But we haven't got it....only the young really have youth....we can only imitate. Therefore we're insecure, we envy....we feel hostile.

In a way though we are changing places..... as the teenager is breaking out of the adolescent world....so the adult runs for shelter into many teenage pursuits and attitudes. What could be more teenish than businessmen and their new ways of pursuing leisure. Think of the equipment and investment a family needs now just to relax and rest on its holidays....do you know what they call it? Activated leisure. It's just Molly and me, and baby makes three, in our sky blue denims.

A THIN LITTLE ADULT DRESSED  
IN SKY BLUE DENIM PLAY CLOTHES.  
WITH SKY BLUE PEAKED BASEBALL  
CAP. HE ALSO WEARS A CATCHERS  
MIT AND HAS A BASEBALL. HE IS  
THROWING BALL BACK AND FORTH  
WITH SOMEONE OFF SCREEN.  
DB TO BRING IN SON AND  
DAUGHTER READING AT GARDEN  
TABLE. SON LOOKS UP TO HIS  
SISTER.

DAD: Yessir....way to go boy, way to  
go. Come on there Charlie boy.....leave  
her home boy....thaaat's it.

(THIS LITANY CONTINUES BG)

SON: My it'll be nice when Dad grows up.

DAUGHTER. Yes, he's so hard to talk to...  
you can never seem to get through to him.

THEY BOTH SIGH AND GO BACK  
TO THEIR READING AND THEIR  
CUPS OF TEA.

ALAN AND MCLUHAN

ALAN: Marshall.....I notice you don't  
seem to take a very moral attitude....  
you don't object to anything.

MCLUHAN: I think it's pointless to.... for diagnosis really has to precede evaluation. And as for moral objections to technological change....well they're usually based on irrelevant ways of thinking. Besides I think this electronic age, which has so far produced the teenager, is heading us all into one of the most exciting ages the world has seen....and I think the teenager senses this. There's no question that it's going to be a great and exciting time.

ALAN: Thanks, Marshall....I'd be the last to argue with you. Good-night.

JOHN IN DRUM STORE. DRUMS  
OF EVERY DESCRIPTION SITTING  
AND HANGING EVERYWHERE.  
JOHN PICKS UP AND TESTS  
TWO OR THREE. VERY  
CRITICALLY. ALAN ENTERS.

ALAN: What are you doing?

JOHN: I'm looking for a tribal drum.

ALAN: (TO JOHN) Good-night.

(TO CAMERA) Good-night. We hope you  
got the message.

**TITLES:**

**MUSIC: DRUMS**

**EXPLORATIONS:** (1)

**THE TEENAGER** (2)

with  
**MARSHALL MC LUHAN** (3)

**ALAN MILLAR**  
and  
**JOHN O'LEARY** (4)

**MARY JANE FERGUSON** (5)  
**SUSAN VAYDA**  
**GAIL GERBER**  
**BETH MORRIS**

**IVOR BARRY** (6)  
**JOE AUSTIN**  
**JONATHAN ERLAND**  
**MICHAEL MITTO**  
**GARRICK HAGON**

script (7)  
DARYL DUKE

design (8)  
CHARLES PLAYFAIR  
properties  
ROGER HIME

lighting (9)  
ROSS VINER  
audio  
WALTER MICHALIK  
JOHN HERRIDGE

supervising producer (10)  
VINCENT TOVELL  
program organizer  
ERIC KOCH

technical producer (11)  
GERRY LEE

produced by (12)  
DARYL DUKE

THIS HAS BEEN (13)  
A  
CBC TELEVISION  
PRODUCTION

(Exhibit 3. — Transcript from kinescope.)

THE GUTENBERG GALAXY

A Voyage Between Two Worlds

with Marshall McLuhan for the National  
Association of Educational Broadcasters,  
Harley Parker from the Royal Ontario  
Museum and Robert Shafer, Associate  
Professor of Education at Wayne State  
University

Today the globe has shrunk in the wash with speeded-up information movement from all directions. We have come, as it were, to live in a global village. Our information comes at high speed, electronic speed from all quarters. We would seem to be living, almost under ear conditions, off a small village world. I'm Marshall McLuhan. With me, Robert Shafer and Harley Parker are going to attempt a voyage through the recent centuries—five centuries—of Gutenberg culture: the Gutenberg Galaxy.

Before us are two utterly incongruous objects: a South Sea mask representative of primitive culture, pre-literate man; and a television set, representative of post-literate, electronic man. Between these two extremes exists the Gutenberg Galaxy, five centuries of print resulting from a thousand years of phonetic alphabet. And between these two strange objects is sandwiched the Gutenberg Galaxy, through which Bob Shafer, Marshall McLuhan and Harley Parker are going to attempt a voyage.

M: How should we begin this voyage?

S: We might visit the world of the Eskimo.

M: Let's discuss our polarities first. In terms of this mask at one end and the television set at the other. And the similarities between them, I

think, are really packed with a lot of very interesting material for this program. The fact that the mask is sculptural, and I would believe or state that the TV image is also sculptural: in the sense that it demands from us certain fill-ins (a tactile quality), certain fill-ins for all of our senses, just as the mask came from a world in which all the senses were simultaneous.

P: The ear-man lived in a world of all the senses, information from all quarters and through all senses at once...

S: All of this is really packaged into the television set today.

M: But the eye-man of the West would seem to have lived in a very abstract dimension of sight rather than of all the other senses, the way the ear-man lived. How did we make the transition from this echoing auditory world that the igloo shaped and the bulbous dome, how did we ever get from that ear world to the eye world that we so much take for granted?

P: It was an ear world certainly to the Eskimo who lived in it. He wouldn't live very many minutes unless he were tuned in in such a way with all his senses so that he knew what was going around him all the time, simultaneously.

M: Is this Egyptian scribe one of the key figures in creating the transition from the ear world to the eye world?

P: Absolutely, because he is dealing in hieroglyphics, pictorial messages.

M: The medieval scribe simply carried on his world of the visual, the phonetic structure, the Egyptian and Greek culture. Translation of sound into sight, isn't it, because the stylus on the clay tablet and the quill on

the scroll are ways of getting sound into sight?

P: That is the really crucial point, really the point. The man makes a squiggle and it is a sound.

M: This is a tremendous technology which enables them to translate all the other ear cultures into their own visual culture... and to control it. The same thing is going on at the present time in China; we're still translating Chinese tactile-auditory culture into our phonetic alphabet.

P: I know a Japanese editor who told me the story of production on a Japanese newspaper, in which they deal with 41 phonetic symbols and 20,000 Chinese ideograms. I asked him how they could possibly produce a newspaper under such conditions, and he told me that they did it with a staff perhaps 35 times as big as our own newspaper staff. One man for instance will have maybe 500 to 1000 of these little wooden blocks in which the ideogram is engraved, and if somebody wants "woman washing pot," the appropriate man comes up with the little ideogram for that particular thing.

S: They are undergoing a transition from the older ear world to the eye world by this means...

P: Right.

S: And they have not yet mastered this Gutenberg technology which we now see before us.

P: Here we have a thing that is very, very different indeed from the Japanese or the Chinese 20,000 ideograms. Here we have replaceable units, uniform parts put together to make words—millions of words—in a variety of

languages. We put them together in a way that has parallels to our assembly-line systems, and it's really a long, long line of words.

S: It ended the handicraft world, set up the mechanical world...

M: Absolutely, just as the alphabet... created a totally new world of producer-consumer relationships... and it gave us a kind of assembly-line which we see unfolding before us here with the alphabets. (AD PUTTING ON A DISPLAY OF MOVEABLE TYPES.) We move at that point into the world of numbers, which are also moveable in the same... (The world and language of number is parallel to the world and language of letters. The latter created the visual, Euclidean world of uniform space. Number provided us with the means of translating the visual Euclidean world back into the space of touch and sound, of tactile measurability, exactly as Norman McLaren's drama of Rhythmic here reveals to us.) The mechanization of writing took place by means of the segmenting of the old handicraft motions and actions into static types, which has its parallel in Number. The same sort of thing extended to numbers. That is, letters revolutionized math. The same sort of thing—the assembly-line, the uniformity and repeatability—idea in terms of number... How did the Gutenberg thing bring about that strange Renaissance fact of individualism and nationalism? You can see how prints would create an individual person, inner-directed, a kind of person highly self-centered and very much self-analytical.

P: One of the most fascinating sides of the Renaissance was the way in which it took its print culture as a system of esthetics. On yes, Leonardo da Vinci as a matter of fact was the type of man who could move from a work of art to a siege gun. He was capable of seeing the esthetics of all mechanical



productions, and working with them.

S: How did that really work? I'm not really clear. We talked about the esthetics of mechanics. What did da Vinci do?

P: Well, he moved through a variety of fields; as I suggested, seige guns; wave theory analysis was a very important one.

M: What about self-expression? That whole effort itself—portraiture and self-analysis, and the whole drive toward self-expression and self-investigation... this is characteristic of the Renaissance. Well, portraiture of a unique individual is typically Renaissance. There were very few portraits before... self-portraits...

P: Portraits of any kind—individualized portraits are scarcely seen before the Renaissance.

M: It is strange that print technology should have fostered this habit of self-expression and self-analysis.

P: Here in this Rembrandt we have a picture which is Rembrandt looking into a mirror, and painting himself in the mirror. You get the visual echo effect, as it were.

M: Perhaps the same kind of echo effect that we could see in the infinity sign? And perhaps the same sort of thing that we associate with the old Aunt Jemima type advertisement? The picture within a picture, within a picture, and so on into... converging on zero?

P: I don't know whether you know this old ad.. This was one in which Aunt Jemima held a package, showing a picture of Aunt Jemima holding a package,

and so on.

M: This is the perfect expression, isn't it, of uniform repeatable type converging upon zero. Infinity? We are saying here that the infinity sign as we know it was really impossible before print, really didn't happen before Gutenberg. The sonneteers were very, very much concerned with that same form of repetition. Shakespeare's:

Like as the waves make toward the pebbled shore,  
So do our minutes hasten to their end,  
Each changing place with that which goes before;  
In sequent toil all forward do contend.

This concern with time as segmented is seemingly an exact repeat of the patten of the Gutenberg types.

P: The exact antithesis to the earlier world of fill-in, lack of line.

M: Yes, that tie-in between self-expression, self-analysis, point of view, perspective, an amazing complex there of formal overlay. This sonnet:

Against death  
And all oblivious enmity shall you pace forth:  
Your praise shall find room even in the eyes  
Of all posterity that wear the world  
Out to the ending to.

This idea is related, is it not? The idea of achieving a sort of earthly eternity by repetition and extension of the self?

P: I think that this is only possible with print, and you find its parallel in the Rembrandt portrait.

M: There is another use of the same form in Macbeth:

Tomorrow and tomorrow and tomorrow  
Creeps in this petty pace from day to day.

Shakespeare seems to have been obsessed with the esthetics of print in a way

quite different from Leonardo, but we're more familiar with this repeatable uniformity, receiving form into infinity in the case of telephone poles, aren't we? In space rather than in time?

F: This looks like the trans-Siberian railroad, as we used to see in our geography books, which carries on the idea of a recession into infinity.

M: This is the exact visual equivalent of "tomorrow and tomorrow and tomorrow." Idea of the segmenting and space and time. With the Gutenberg achievement of mechanization of handicraft, we seem to have moved almost in the same way into a kind of world such as the Egyptians thought of, in connection with the god of Thoth.

P: I remember the story of Thoth who is the god of writing; who was believed by the Egyptians to have been the instigator of all the sciences, and all the other arts.

M: Aren't we saying merely, that the Gutenberg effect was to pattern in new form all the arts and sciences, mathematics, physics as well as painting, poetry, changing the concepts of time, the concepts of space, with an entire age and an entire culture.

S: The idea of a repeatable experiment is important here. Isn't it that you can have a scientific experiment which you can repeat over and over and over? It is scientific if you can repeat it.

P: Like Aunt Jemima.

M: These infinity signs are present in our culture in a variety of ways. One tremendous consequence of course in Gutenberg, as compared with the

manuscript, was the speed-up of the information movement, wasn't it? With exactly uniform materials that could be distributed from the central source, you could move by roads—and roads were soon built to carry this uniform material—you could move anywhere, you could organize whole communities at a distance. What we might call homogeneity of citizenship. By similar training and uniform educational patterns you could create a kind of manpower pool of almost uniform replaceable products.

S: If you could mass-produce print in the vernacular of a particular country, you can give everyone the same thing to read in that country at the same time. You can do this very quickly.

M: You create the boundaries of that nation at the same time you do this. As soon as they could see their own language in print form, they had begun to develop a sense of national unity, and also of national markets. This is a tremendous leap isn't it, from that Egyptian scribe world of merely translating ear into eye, here you have eye taking over totally the organization of all knowledge.

S: Well, publication is possible, here for the first time perhaps in a mass way, quite a different thing. By repetition you could publish yourself anywhere.

M: In the scribe world, publication would be to read his manuscript aloud to probably no more than thirty people at a time.

S: This was publication for Chaucer. It wouldn't have given him a very grandiose view of himself, would it, if publication only consisted of reaching a few dozen people? The print man must have felt an enormous extension and

growth of his ego by means of print. He must have felt an access of power, when his image could be multiplied so many times exactly in uniform pattern for so many unseen people. This must have created a vast dimension of Renaissance megalomania. The whole idea at that point, of his fame lasting forever of course, as we mentioned, is so much a part of that. This was true of the Renaissance man in many ways, in his exploration and his colonization, his conquest of space.

M: No accident that Columbus and print coincide. And these things were thought to be permanent. So the idea of the establishment of an empire as a permanent structure.

S: But it also offered tremendous incentives to self-expression and publication, whereas formerly people had relatively little incentive to become egotistically projected onto a whole civilization.

M: What we've been saying here really is that print in the advent of the Gutenberg era had a rather tremendous effect on human sensibility and perception in some of the ways that we have seen. I suppose that today with the speed-up of information by the electric means we're in an even greater revolution than the Gutenberg thing produced in the Renaissance?

P: Only today we're going in the opposite direction perhaps, aren't we?

M: You think that, perhaps we're driving back towards the ear world from which Egyptian scribe translated us. This is, I think, the message of our television set and our primitive mask. This is apparent in our contemporary art. Many people would regard this as a pessimistic view of development, wouldn't they, of just retrograde metamorphosis?

S: Well, we don't mean here that print is going to vanish at all, do we?

P: No, we certainly don't mean that.

M: I mean that there occurs a different ratio of the senses. After all, man lives by extending his sensibilities into the world and understanding it in that way. During the Gutenberg period you had almost complete eye orientation. Now we are moving back to perhaps what I would like to think a better orientation.

S: Let's consider for a moment a little more closely the effects on organizing a society of the Gutenberg thing. That is, for example, if you have these uniform repeatable means of delivering messages, you also have the uniform repeatable method of training citizens. You can then begin to develop a homogeneity, a sameness in the society, which gives you access to tremendous power. Teaching of reading becomes a standardized thing, what the reader reads is standardized. The print mechanism, the whole print mechanism, is standardized so that this means that the perceptions that an individual reader has...

M: As Shakespeare stressed, it creates the idea not only "all forwards do contend." It is a one-way flow of upward and upward and onward, and arriving toward self-expression, self-realization, inner-direction, self-initiative, all these forms of competitive life based on uniformity, and repeatability in life and line. That's a point we haven't made much of—the Gutenberg line. The idea of lineality. The sequential, the rigorous precision line. Well, this is the way we learn to read. It recalls Joyce's pun on the opera, the Rose of Castille: the railroad line, the r-o-w-s of cast steel. The opera and the railroad line and the line of type.

M: To get the logic of a paragraph, to read for the main line idea of a paragraph. We say, "I'm to get the man's point of view," fixed point of view. This is implicit here. This pattern has obviously given the Western world tremendous power of organization.

S: Yes, in the sense of an army for example. The uniform parts of an army as we see here in our soldiers.

M: I've been told that in the case of Napoleon, in order to train his men in sufficient precision and accuracy he used to tie their feet together eighteen inches apart, so that he could have uniform marching lines, firing lines, complete power over his soldiers.

S: Actually, let's take a look at these soldiers. They are very much uniform entities in themselves. Each is uniformly dressed, each carries a weapon which is uniform and certainly replaceable, and quite subject to change and standardization, and the uniformity extends...

M: The marching men in front of us now. The men are breaking their step because they are marching over a pontoon bridge. But without these forms of organization we would hardly recognize our world today.

P: It struck me as exactly the same thing works with soldiers as I said about the type font. Repeatable uniform parts that can be placed in a variety of ways to make a variety of meanings.

M: And mobile types like mobile units: squads...

S: And this uniformity exists in many, many places (in a variety of ways) in our society as we walk about. Aren't we trying to make the point really

that these methods, techniques of communication, do formulate our modes of thinking, our ways of thinking. So that it becomes pervasive. So that everything we attack, we attack in a certain way which is a result of this technology? So that seeing these uniform modes in a variety of places in a variety of ways is so much a part of our common everyday world that we think little about it, or how it got that way.

M: We associate the same structure with the classroom, with the seating plan, the grid system...

S: Yes, the grid system. A teacher and a class with seats bolted to the floor is a very good example of this idea of uniform parts, interchangeable parts...

P: Children all studying the same subject at the same time.

M: Visually it is the exact counterpart of the book pages, with the teacher like the page heading, and the lines underneath... the moveable types being the students.

S: Well, they're not particularly moveable; the students are slightly moveable.

M: I wonder whether the rebellion on children today in classrooms and against the book has anything to do with the new electronic age we live in?

S: I think very definitely. I think the patterns that we have seen developing in schools...

M: Or the breaking down of patterns...



S: Into more organic forms... children working in small groups, working on different projects, doing different things at different times...

M: More dialogue, more discussion, instead of a one-way flow of information?

S: I would think that this break-up of the grid system in the classroom may be leading to the break-up of uniformity in other aspects of our society as we move along to different kinds of patterns.

M: We used to ask, "What's your line?" or "What line of work are you in?" "Do you follow me?" or "I don't follow you," meaning I don't get anything at all from what you're saying. The broken line of your discourse provides me with nothing.

S: The whole progressive education movement we might say was a kind of rebellion against lineality and grid structure.

M: But that's been going on for a long time---the Romantic poets were violently opposed to it too, just as much as Rousseau; but this same lineal structure has appeared in our novels, our movies, it's in almost every organized experience we are accustomed to deal with.

S: The interesting thing is that change never takes place completely and arbitrarily. We have several modes present simultaneously. We still have classrooms with desks bolted to the door... uh, to the floor, and we have classrooms where they are not; and we have uniformity present in a variety of ways in our society, and we have many places where uniformity is breaking up.

M: But there is no danger of uniformity breaking down for awhile in these areas of assembly-line production we associate with the motor industry.

S: Well, the parking lot I am sure will be with us for a long time.

M: The uniform products.

S: There is a type case: cans of soup.

M: Fixed prices, uniform prices, uniform commodities, replaceable parts.

The whole idea of the supermarket is perhaps in itself a temple of uniformity in many ways, as is the assembly-line. But the assembly-line is the classic type of it.

S: Into infinity. Production.

M: Tanks a million.

S: Tanks a million. One can imagine an assembly-line going into infinity perhaps...

M: But look what is about to happen—automation, tapes, synchronized information coming from numerous directions all at once, very much like our global village in which the single line or structure seems to yield to a non-linear complex.

S: Back to our Eskimos.

M: Back to the primitive world, back to the ear world of many directions at once.

S: And we still have a transitional feature: the electric typewriter.

M: Those keys are so strikingly reminiscent of the McLaren Rhythmic, and yet here is a handicraft world. Here is the Gutenberg thing carried all the

way to the point where it returns to the old handicraft pattern of do-it-yourself. The McLaren translation of the Gutenberg thing into number terms reminds us perhaps that modern math, higher math and physics have been engaged in translating the old visual space, eye space, back into the space of touch and movement and of hearing.

S: Is this why it is said that the Chinese and Japanese make better physicists and mathematicians than we do?

M: Even the Russians—they play it by ear. They don't try to visualize these relationships in the world of nuclear physics.

S: They are not looking for a single line to pursue.

M: They are not looking for a line because it isn't there.

P: I think, Marshall, we missed possibly the idea, that as the McLaren film reminded us, that the film too is sequential in exactly the same way as the Gutenberg line. You make a film by making still shots on a piece of celluloid. Put them together and you have the whole action reconstructed.

M: When you put the film together, you reconstruct the world of free movement of the old handicraft world. You don't break it up. By breaking it up into static and film, you merely move into the world of free wheeling motion again. This is the kind of return like the typewriter, do-it-yourselfness at the end of an assembly-line of consumer goods.

S: We have these modes present at the same time in society, don't we? We have the new electronic modes which are perhaps like the television set pushing us into the tactile world? Back to the primitive mask, so that we have

perhaps made some indication why these strangely sorted objects here—the mask and the television set have some congruity after all. We have a great deal of trouble sometimes living in a world where these antithetic modes are present simultaneously. Apparently, education is now facing a tremendous problem of transition between the two worlds. In fact, they both co-exist. What are some of the things we can do, I wonder, to perhaps live in a world where Gutenberg is received? The problems of living in a global village. While making a transition from one vast embracing technology to another would seem to call for the utmost attention, offering the utmost challenge to human understanding. This entire global village that we see before us suggests that we are moving educationally into a set of challenges and opportunities which are quite fantastic. Whether people are prepared to meet these things or not, I don't know, but I think that we are doing something about it right here. I think that our global village is a theme which might well sign off this program, and after our little voyage through five centuries of print culture. Thank you.

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