A R C H I T E C T U R E AND C O M M U N I C A T I O N

by

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ABSTRACT

In dealing with Architecture and Communication it will be necessary to establish initially the different thought patterns in oral and visual cultures. Once this has been determined, we can more readily assess the paths which the newer systems of communication are taking. The Middle Ages afford the bridge whereby we can scan the Western world in both its oral and visual manifestations.

The mass media, in the broad sense, deal with the systems of communication which play an important role in determining "the things to which we attend". It has been suggested by various scholars, writing on the effects of the media of communication, that they have played a significant part in shaping political, religious and economic institutions. For the architect, an enquiry into the role of communications in determining spatial concepts may be of great value, for it may be equally true that changes in communication alter "the things to which we attend".

Despite the pervading concern today with this field, architects have yet to undertake an investigation of the role of structures as messages of archetypal forms of human concern, influenced by oral, written, printed, telegraphic, photographic and electronic systems of communication.

Using the distinctive bias of these media, one may find it possible to formulate a new and valid space concept for our age. Even if this is not as yet possible, it may at least indicate new paths to be taken in a re-assessment of concepts of architecture based on perspective and the printed page. Marshall McLuhan's Gutenberg Galaxy has been the motivating force of this approach and the inspiration for the mosaic pattern of the thesis.

In the section dealing with symbolism, it will be useful to attempt to determine the province of art and language. Through a treatment of some of the basic anthropological, philosophical and psychological conditioning

affecting our perception of the world, we can formulate ideas about man's symbol-making processes. Some of the basic ideas underlying art and the symbolic process and how these vary with different civilizations may suggest new departures for our existing spatial biases.

There are today trends in language and communication study which fall under the general heading "area of meaning." Do parallels exist in recent Western architecture? For example: are the concepts of "area of meaning" as advanced by S.I. Hayakawa in Language in Thought and Action and "universal space" as exemplified by traditional Japanese architecture and the recent work of Mies van der Rohe the same things in different contexts?

McLuhan has suggested that our departmentalized approach to viewing things is the outcome of five hundred years of print culture. I should like to suggest that perspective (which is more or less contemporary with Gutenberg's invention) is the analogy of print culture. Can we then extend this parallelism to the more recent media of communication? That is, does Ronchamp represent a way of constructing space similar to, say, television, or is it a throwback to the 15th century? Is Henry Moore's concept of working from the centre of gravity of the solid sculptural block a prophetic statement of TV which derives its light from within itself in contrast to the printed page which requires light upon it? These questions, if answered, can lead to new insights for the architect.

Due caution must be exercised when undertaking studies of architecture as messages of forms of human experience, religious, political, economic and social. Too often there is a tendency to place undue emphasis on early sources. Certainly the study of historical precursors can be a provocative and satisfying adventure in assessing the image man was attempting to project at a given historical period. Yet the inherent, but not always obvious dangers in such a study are many. I will attempt to point out some of these pitfalls.

A spatial concept, to be valid for our age, ought to emphasize the

relationship of man to man. The concept of architecture in a world, theoretically at least, of equals, is irrelevant without its social context.

As we are products of all that has gone before us, it is inevitable that we derive architectural points of departure from what has gone before. It is equally true that never before have there been so many new forms of communication combining to help establish a contemporary spatial metaphor.

To create a compatability between the past and the present, we ought, in the words of Marshall McLuhan, to "take a fresh look at tradition considered not as the inert acceptance of a fossilized corpus of themes and conventions, but as an organic habit of re-creating what has been received and is handed on."

This thesis will attempt to examine the necessary "fresh look."

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I. INTRODUCTION

One of the most decisive inventions in man's history is the phonetic alphabet; not merely the ability to record a concept by means of a symbol in writing, as in ideogrammic or hieroglyphic or pictographic writing, but the transcription of sounds, individual sounds, into written symbols.

The great dividing line of cultures can be seen in terms of those having the use of a phonetic alphabet (such as have all the languages of Europe) and those having no alphabet, or a system of writing other than phonetic. The former can be classed as visual cultures, the latter as oral cultures.

The basis of this differentiation is in the kind of mental process that is encouraged by these two systems. In the pictorial system, used to this day in China and Japan, there are no sounds involved in the writing; rather they are pictures of things, objects which surround man and for which he has names in his spoken language. It is a system requiring thousands of individual characters to record thought, so there can be no typewriters, no economical alphabet technology such as we possess. The language written in this way must be translated mentally into the oral values for each symbol.

In the phonetic system there is no such obstacle to the understanding. There are only so many sounds that the human mouth is taught to make in any one society and when a phonetic system is used, no more than between ten and thirty individual symbols need to be invented to record the language as it is spoken. These symbols are not pictures of meanings of sounds, they represent the sounds themselves. The mental process involved in decoding the symbols is extremely simple for the practiced eye. Meaning becomes abstracted from sound and the visual appearance of the printed word is enough to make an immediate impression on the mind without translation into the oral equivalent. This fact of oral or visual orientation determines man's most basic attitudes and interpretations of the world about him.

The transition in the Western world from oral to visual was a slow one, spreading over three thousand years. A basically oral, scribal culture remained throughout the Western world until the middle of the fifteenth century when the printing press heralded and made possible the coming of mass literacy.

The mediaeval world was made up of a non-literate mass of people presided over by a literate and semi-literate royalty, clergy and lawyer class. However, this elementary literacy was not sufficient to make the break away from the "tyranny" of the spoken word. The monk, the most literate of all the educated mediaeval population must have read as little in one whole year as we might read in three or four days or a week. We can hardly imagine, with our eyes capable of scanning a page of the newspaper in seconds to find points of interest, how slow the mediaeval reading process must have been. The mediaeval man was not at ease with the written symbol, as we are today. The rooms were too ill-lit for reading quickly, the script was often by another hand, unfamiliar contractions had to be enlarged and spelling was erratic. Before the written page could be properly understood, it had to be slowly translated into auditory symbols with which the reader was completely at home. Our tendency is exactly the opposite; more often than not, when confronted with an unfamiliar term, we ask to see the word in print before we can fully comprehend. This constant translation of visual into auditory symbols made reading a noisy affair throughout the Middle Ages and well into the age of print. The monk's carroll was a "singing booth".

It is always easier to understand another culture once our own learned biases have been made evident. Much of our criticism of cultures not sharing our visual bias stems from our lack of understanding of the values of oral culture.

The invention of movable type by Gutenberg in the fifteenth century was a major turning point in Western history. It is difficult to convince people today, so accustomed are we to visual symbols, of the basic differences between

the kind of culture which existed before print and our own. McLuhan states in his article "Inside the Five Sense Sensorium:"[1]

> People who live in an oral-aural world know none of the impersonal or detached attitudes of a visual-literate people. But it is not easy to explain this matter to literate societies. They tend to imagine that the numerous conventions of seeing and organizing their world are quite natural... That a non-literate man has no perspective experience and that natives cannot see photos or follow movies comes as a shock at least to the provincial Westerner. Just as difficult for the Westerner to understand is why the introduction of the phonetic alphabet among natives should be a traumatic experience. For the translation of the magical oral world into the neutral symbols of the phonetic alphabet is a total metamorphosis for native societies.

The essence of visual culture - and the results are everywhere around us - is individualism. Reading habitually, silently and alone permits a man to become divorced intellectually from his fellows. One cannot read silently in groups. One hears or speaks only in a collective manner. It was not until print that the sounded-out reading of the Middle Ages ceased. The technique of uniformity and repeatability was put to its most distinctive use, in the reproduction of the printed word.

The Renaissance, gripped with the fervour of widening horizons of learning made available by the new printing press, was a veritable boiling pot for new concepts of self-expression, self-fulfilment and the challenge in every sphere of learning to established ideas.

When men come into contact with events and different people through books, in other words with experiences that they have not lived through themselves, they begin to assess these events dispassionately and connect them with one another in an 'ordered' fashion, in terms of causation. Also, the highly literate man can extend himself beyond the narrow limits of his town or village and begin to see the unknown without fear because of this preparation.

Visual man seeks for the exact representation of natural forms in pictures. Our haughty criticism of mediaeval "naivety" for not achieving

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[1] In Canadian Architect, Vol. 6, No. 6, June, 1961, p.50.

representational fidelity is most unjust. Neither these mediaeval men nor their Greek brethren was striving for representative detail, rather the creation of an impression, of his own involvement with the object immortalized in paint, sculpture or architecture. The friezes and vase designs of antiquity, ikons and missals of the Middle Ages are ample evidence of this.

One of the most "unnatural" results of print culture is the separation of the senses so that the visual takes precedence over all others. Our emphasis on the single point of view, to the detriment of all other involvements, in various aspects of life is seen in the proscenium stage of the theatre, the mechanistic view of history in which a single event is seen to control the whole outcome of life, as in the 18th century biological "great chain of being". We constantly try to "picture" words, and our excessive concern for spelling betrays this attachment to the visual side of language.

Outward conformity leaves the visual man free to deviate inside, since the important thing is what shows. We find it difficult to understand why Soviet or Chinese citizens do not feel free to rebel inside, why they often admit of crime when it was only contemplated, never committed. We tend to superimpose on all other cultures our assumption that every man thinks for himself and assesses for himself, that every man considers himself an entity in his own right.

In any oral society, the individual's relationship to his fellows in the community is radically different from ours. We usually think of primitive tribal peoples as free and easy-going, innocent and uncomplicated. Nothing could be farther from the truth. Oral man is rigidly circumscribed by his place in society (McLuhan uses the word "tribalized" to express this idea) with no idea of self-worth in our sense of the word. Every attendant need of individuality such as privacy and personal rights is lacking in oral society. Each man is individual only insofar as he performs a specific function in the workings of society, and study, play or work performed in solitude is rare.

Language in an oral world, including the scribal manuscript tradition, is a dynamic, living force, involving an interplay of senses and imagination that is incomprehensible to us. Sounds for mediaeval oral man are dynamic indicators of movement, events and activities. There was no passive listener, much less spectator, in the Middle Ages.

Participation and personal involvement was of a scale unheard of in our time. The play audience did not watch the play, silent, immobile and critical as we do. A mystery-play audience, like the pit which Shakespeare describes, was a noisy affair.

We are prone to accept the maxim that the fruits of oral society are of necessity unreliable as indicators of how society worked and behaved. We assume, since to us "seeing is believing" that ear information is unworthy fact, subject to change at any moment from individual to individual. To judge so is to judge hastily. Throughout history, it can be seen that the oral societies are the most static, unchanging and unprogressive. People in oral societies have prodigious memories, far better than our own, for the simple reason that it is the human memory, with its immense powers of retention that provides the statute books, the moral precepts, the do's and don't's that hold the whole fabric of society together. In this kind of social structure, the learner does not take it upon himself to change what he has learned.

No invention prior to our twentieth century can rival the printing press in its all-pervasive effects on human values and organization. To it we owe our belief in democracy, the dignity of the individual, our nationalism, perspective, applied knowledge and technology; in all, a fair-sized portion of the reigning values of Western civilization up until today.

We are now in the midst of another major cultural change - this time away from the purely visual, towards a greater interplay of senses. Much education is presented in the form of electronic and oral media. With the super-organization by electronic devices, men are losing the sense of

individualism and are reconsidering the collective ideal, the "global village" as McLuhan calls it.

Our physical environment is now often the result of considerations other than the purely visual, thanks to the creative genius of men such as Frank Lloyd Wright and Le Corbusier. Spaces are not only enclosed and private, but also open and interacting. We are moving away from the vistas of Haussman's Paris and the Versailles of Louis XIV to the architecture of an electronic world in which space loses its static quality and becomes truly dynamic.

> What are some of the discernible dispositions with which TV has imbued its publics in the past ten years? I am working from the observation that our technical media, since writing and printing, are extensions of our senses. The latest such extension, TV, I am suggesting, is an extension, not just of sight and sound, but of that very synesthesia which the artists of the past centuries have stressed as accessible via the tangible-tactile values of the new vision. TV is not just sight and sound, but tangibility in its visual, contoured, sculptural mode. What have been the specific changes in our attitudes to public space, to privacy and to the nature of environmental materials resulting from TV?...[2]

All these things are long in coming.

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[2] Ibid., p.51.

II. THE THINGS TO WHICH WE ATTEND

The mass media, in the broad sense, deal with the systems of communication which play an important role in determining "the things to which we attend." To the scanning eye they reflect those images which make concrete the inward imagery of the "average man's" world. Facts play only a secondary role in what is delivered to the public. Although the latest baseball scores must be accurately reported, news items themselves depend more on "story" content than on facts. A world of phantasy abetted by opulent symbolism spreads a film of reverie before our eyes. In the maze we can discern the effects of our technology and its heterogeneous space ideal.

> ...Vast road nets, huge dams, towering skyscrapers, gothic "halls of learning", bridges thrusting across wide canyons, great amphitheaters, enormous houses - even the huge congested mass of men and machines struggling through the canyons of our cities - are but the pomp and majesty of a technological democracy. Traffic congestion wastes untold amounts of time and money and for Americans time is money. Until the automobile we had sufficient space. Technological goods and services are used to increase, not decrease, congestion. As more people pour into our cities, planners bewail the strangulation of urban life and propose "logical" traffic plans. But the congestion of cities creates great audiences and thus offers unlimited opportunities to see and be seen by others...[1]

The image of life centred around the hearth crumbles with the invasion of the new communication systems. In essentially economic organizations there is no moral imperative to tell the truth. As a source of ethical teaching the home is invaded by these commercial interests, bringing the essence of contemporary life in all its technological glory into the living room. The fireplace as a gathering spot for family exchange has made way for the TV room. This new command centre dictates a new and different core for the home. The variety and richness of human achievements are vividly brought to our attention by the devices of communication. The telephone has made possible domestic and social communication which do not depend on the sending of written

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[1]H.D. Duncan, Communication and Social Order (New York: Bedminster Press, 1962), p.276.

or remembered messages. In the transportation field, the motor car has tended to isolate man, as does print culture. The automobile once more establishes degree, prestige and social values. If we consider the impact of only one of these media, perhaps their scope and extent can be more fully appreciated.

Robert Sarnoff, chairman of NBC, in a speech delivered in New York on December 5, 1962, summed up the impact of the television industry in this way.

> ...NBC News reaches more homes than the combined circulation of Life, Look, Time, Newsweek and U.S. News and World Report, plus the total circulation of all major dailies in New York, Chicago and Los Angeles.

And, continues Sarnoff, "Remember that these figures do not include CBS and ABC."

Yet in at least one respect the popular arts of photography and particularly motion picture let us down. The point being, that as social function, and not as modes of perception, these media permit us only a form of one point or individual perspective. Thus, in the movie we, each one of us, see the picture in our own perspective. In Communication and Social Order, H.D. Duncan quotes George Mead on the effective isolation of the members of a compact audience at a movie.

> ...(this isolation) is in crying contrast with the shared response of those that, each at his own breakfast table, read the morning press. (p.393)[2]

For Mead the movie "has no creative audience such as have been the inspiration of the moving speeches of great actors. Under the power of an orator one is in the perspective of the whole community."[3]

It is in this context of the whole community that the electronic media play a significant role.[4] "Perspective" becomes a misleading word. Simult-

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[2]See also Elias Canetti, Crowds and Power (New York: Viking Press, 1962) p.36

[3]Duncan, op. cit., p.393.

[4]This is so even if we disregard the present level of programming as of low standard.

aneity and interaction are more appropriate, for there is no social imperative to protect the silent reverie of our neighbour.

We are all seeking to create an environment which will justify our longings and fulfil the chief desires of our hearts. To simply adapt or adjust to an existing environment is sufficient only for a lower organism. But our answer to the new technology has been one of conspicuous failures, preferring that technology be glamorous rather than efficient. This tendency has had a significant effect on what was at one time, despite exterior ornamentation, considered chiefly as a functional structure. The glamour of the North American office building now dictates that it be designed as a place to socialize and not merely as a place to work. As Duncan has pointed out:[5]

> Women find husbands where they work, not where they live. The "other woman" in American popular dramas is not a siren from the demi-monde, but a colleague in work. She, we are told, "understands" and is "interested" in the husband's work and she does so in far greater elegance and luxury than the wife.

The mass media have made of cars, clothes and houses, highly communicable symbols of power. Designed, advertised and distributed as mass symbols, they have become official insignia to the detriment of individual achievement. A house by Corbusier, a sculpture by Moore is not, except in "inner circles" a sufficient mark of rank because it is not yet identified in the public mind through the mass media.

If human communication in society is an attempt to create symbols whose use is believed to uphold social order, then it is little wonder that various scholars, writing on the effects of the media of communication, have suggested their vital role in shaping political, religious and economic empires. Taking speech as a close correlate of man's tendency to congregate, Dewey has discussed communication, with art as the ideal type of communication, to illustrate the function, as well as the structure of the relationship between the self and its environment. The tendency which marks much contemporary art, when it

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[5]Duncan, op. cit. p.276.

is successful, is to usher in new modes of art through education of the organs of perception, and help us to experience the world about us in new ways.

Since Architecture creates the spatial environment, its forms offer many clues to the class patterns of a community.

> Political rallies, sporting events, all civic spectacles are a presentation to general publics - a presentation of the community to itself. Who may come, how they are seated, how they are addressed, by what means, by whom they are controlled, how they dress, how they relate to each other, and how they communicate with the actors are indications of how inferiors and superiors relate in a given society. How the general audience is stratified, and how those in various levels relate to each other is another.[6]

The architect's planning partly determines the kind and extent of these relationships.

The artist's ideas and attitudes about the community generally may or may not coincide with those in control of the mass media, but since the artist too creates the forms by which our civilization will be judged, his relationship to the communication media must become more intimate. Only when this occurs can:

> Crenelated towers which become clean soaring planes in space filled with interlocking cubes of glass and steel replace feudal with technological majesty.[7]

Architecture is an indicator of past, present and future. We depend upon the visible products of man's imagination for an extended knowledge of the human past. Not only is that past which is significant in present experience conveyed by these symbols, but the prophecy of the future is inherent in our present adaptation of these forms together with our unique contribution. In his The Shape of Time, Kubler assesses the message which these symbols of communication convey:

> From all these things a shape in time emerges. A visible portrait of the collective identity whether tribe, class or nation,

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[6]Duncan, op. cit., p.295.

[7]Ibid. p.365.

> comes into being. This self-image reflected in things is a guide and a point of reference to the group for the future, and it eventually becomes the portrait given to posterity. (p.9)

For the architect then, an enquiry into the role of communications in determining spatial concepts may be of great value, for it may be equally true that changes in communication alter "the things to which we attend." Yet one must constantly keep in mind that historical recall can never be complete nor entirely correct. Communication and its historic transmission series of sender, signal and receiver are subject to successive relays which deform the message. Thus, due caution must be exercised when undertaking studies of architecture as message sources of forms of human experience, religious, political, economic and social. Often, there is a tendency to place undue emphasis on early sources. Certainly the study of historical precursors must not be neglected. It can be a provocative and satisfying adventure in assessing the image man was attempting to project at a given historical period. Yet the inherent, but not always obvious, dangers in such a study are many and I will attempt in Chapter IV to point out some of the pitfalls.

A mosaic pattern, taken across the face of interacting disciplines will be used in the present work in an attempt to give wider definition to the field of force.

> The mosaic approach is not only "much the easier" in the study of the simultaneous which is the auditory field; it is the only relevant approach. For the "two-dimensional" mosaic or painting is the mode in which there is muting of the visual as such, in order that there may be maximal interplay among all of the senses. Such was the painterly strategy "since Cezanne" to paint as if you held, rather than as if you saw, objects.[8]

It will become apparent that the entire world is a source of shared purpose and that independent systems of expression that may occasionally converge are no longer tenable. It will also permit an orchestration in

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[8]H.M. McLuhan, Gutenberg Galaxy (Toronto: University of Toronto Press, 1962), p.42.

preference to fusing of human arts, interests and pursuits. Orchestration permits discontinuity and endless variety without the universal imposition of any one social or economic system.

Our working proof, particularly prior to the fifteenth century, of the existence of nearly all older peoples is in the visual order. In this role architecture has, through its structures, served as messages of archetypal forms of human concern. The influence of various systems of communication in these roles is one of the concerns of this thesis. Using the distinctive bias of the media, one may find it possible to formulate a new and valid space concept for our age. Even if this is not as yet possible, the investigation may at least indicate new paths to be undertaken in a re-assessment of concepts of architecture based on perspective and the printed page.

McLuhan notes[9] how two of our contemporary media have already influenced and altered "the things to which we attend."

> ...It needs no very sharp observation to note that the moving radar antennae, which feed radar screens, are as dynamic and spherical in their coverage as any auditory "field of relations" can be. And this is equally true of the TV image. It is a two-dimensional mosaic mesh, a simultaneous field of luminous vibration which ends the older dichotomy of sight and sound...
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> What we must grasp is that TV has the power of imposing its own conventions and assumptions on the sensibilities of the viewer. It has the power of translating the Western literate back into the world of non-literate synesthesia, just as effectively as the phonetic alphabet can hoick the native out of his haptic matrix into a world of mechanistic individualism and sequential cause-and-effect relations.

In assessing the role of mass media Mumford has held that "as far as architecture is concerned the great misdemeanor of the printing press was not that it took literary values away from architecture, but that it caused architecture to derive its value from literature."[10]

And with the Renaissance the great modern distinction between the literate

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[9]McLuhan, "Inside the Five Sense Sensorium", p.50.

[10]Lewis Mumford, Sticks and Stones (New York: Dover Publications, second edition, revised, 1955), pp.41-2.

and illiterate extended even to the building process itself.

> ...the master mason who knew his stone and his workmen and his tools and the tradition of his art gave way to the architect who knew his Palladio and his Vignola and his Vitruvius.[11]

Thus masonry, for example, in the Renaissance derived from description rather than from actual material. Masonry joints were both concealed and created according to the book. With the advent of the printed text as the architect's Bible, what was formerly a "role" became a "profession". A role implies interaction, a profession hierarchy in which an artisan often divorced from craft tradition instructs those of a lower echelon in their duties. (This world of roles still lingers in many "primitive" and less technically advanced civilizations).

But if electric media play no favourites and consequently any place is a centre and no place a margin, then our very concept of spatial awareness is altered, both in private and public existence. As McLuhan has stated,[12] "the very concept of privacy, which originated with print culture in the 16th century, can no longer be sustained by the traditional means of partitioning space".

The implication is that when sense ratios change, men change.[13] This is what occurs when any one sense or bodily or mental function is externalized in technological form. In The Silent Language, Hall summarizes his views of these extensions of bodily function.

> Today man has developed extensions for practically everything he used to do with his body. The evolution of weapons begins with the teeth and the fists and ends with the atom bomb. Clothes and houses are extensions of man's biological temperature-control mechanisms. Furniture takes the place of squatting and sitting on the ground. Power tools, glasses, TV, telephones and books, which carry the voice across both time and space are examples of material extensions. Money is a way of extending and storing labor. Our transportation networks

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[11] Ibid, p.41.

[12] McLuhan, "Inside the Five Sense Sensorium", p.52

[13] See McLuhan, Gutenberg Galaxy, p.265.

> now do what we used to do with our feet and backs. In fact, all man-made material things can be treated as extensions of what man once did with his body or some specialized part of his body. (p.79)

The ultimate goal to which man's extensions will reach is, of course, unknown. But Norbert Wiener's The Human Use of Human Beings, published in its original form as early as 1950 gives us some idea of what is to come. In it Wiener discusses communication between Man and Man, Machine and Man and ultimately between Machine and Machine. The possibilities of machines here outlined seem to render Stuart Chase's prediction that man will always be necessary to programme machines as either premature or chauvinistic.[14] In any case the absentee landlord picture Wiener paints for the architect may be distressing to more than a few contemporary designers who honestly like to have the good earth cling to their boots during inspection tours.

> In short, the bodily transmission of the architect and his documents may be replaced very effectively by the message-transmission of communications which do not entail the moving of a particle of matter from one end of the line to the other.[15]

Machines have been taught to play chess. The matches have been assessed as correct but not inspiring. Perhaps this is what prompted Chase's remark referred to earlier. It is presently held that art as a machine product may at best be a pale reflection of the spontaneous flow of man's creative spirit. Thus architecture, if not as an engineering discipline but as an art, may become one of the great balancing forces of the human mind. Man's ultimate function may be to immerse himself in creative endeavours as the only escape from the erector set he has fashioned and which is in turn fashioning him. In this respect the questions raised by the work in cybernetics calls not for pessimism, through fear of being replaced by an electronic gadget, but for unparalleled optimism. In such a world man will have put the

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[14]Stuart Chase, The Power of Words (New York: Harcourt Brace, 1954) p.48.

[15]Norbert Wiener, The Human Use of Human Beings (New York: Doubleday, 1954), p.98.

drudgery of the work-a-day world behind him. Plazas, the most basically social manifestation of the architect's vocabulary may once more become the image of an age, and without their former limitations of class distinctions.

At least one architect, Le Corbusier, had the prophetic nature to envision our technological (but not our social) world before the coming of the giant computers and before we had learned to use the magic words "cybernetics" and "feedback".[16]

> Ville Radieuse is a paper city; its activity is the motion of draftsmen, typists, accountants, and meetings of the board. Carried on in an atmosphere of conditioned air, corrected light, and bright decor, by electrical communications, with efficiency and speed.[17]

and in Corbusier's own words:

> The city that can achieve speed will achieve success. Work is today more intense and carried on at a quicker rate. The whole question becomes one of daily intercommunication with a view to settling the state of the market and the condition of labor. The more rapid the intercommunication, the more will business be expedited.[18]

But modern daily intercommunication has little aesthetic enjoyment connected with it. In the competitive industrial-technological society of the 20th century, the ends of work are too far removed from the tasks at hand. Bernard Leach, speaking in a private interview in Kyoto, Japan, in 1962, said the amount of aesthetic enjoyment varies with the distance from men's hearts. Each extension of crafted product from hand to tool to machine to factory has borne out his observation. Specialization of labour and consequent difficulties in communication have created a situation which is incompatible with contemporary thinking.

For this reason, many of the problems today confronting the architect (mechanical equipment, lighting problems, acoustical factors) call for a new

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[16]See Goodman, Paul and Percival, Communitas (New York: Vintage Books, 1960), p.44.

[17]Ibid., p.44.

[18]Ibid., p.44.

system of production, management and decision-making. Authority imposed from the top down and fixed spatial sequence are out of the same barrel. Both are too slow and segmented to fit in with new materials and methods of construction. Organic, integrated architectural solutions can only result from close, constant teamwork.

The qualities which make of our contemporary architecture such a decisive turning point in the development of modern theories of design are both idealogical and technical. Historically this has rarely been the case. The Industrial Revolution was a momentous dual change-over - from handicraft to machine methods, from an emphasis on the craftsman to one who services a machine. As Robert Sarnoff's figures have indicated, the Electronic Revolution, following less than 150 years later is even more pervasive. It undermines the foundations of five centuries of idealogy fashioned on linear perspective and the printed page. Certainly never before in history have so many new media of mass communication affecting so great a segment of population contrived to enforce a new approach to perception, to life itself. But whereas the Industrial Revolution merely strengthened the linear format of our lives by adding the assembly-line to the specialist working in isolation, and the segmentation of interacting branches of knowledge, the Electronic Revolution scraps the fragmentary approach for a discipline of interaction.

In Contemporary Sculpture, Giedion-Welcker assesses the contemporary situation:

> There is a renunciation of the old structural development, sentence by sentence, in favor of a dynamic association of ideas, accomplished by a successively penetrative effect rather than a consecutive use of words. (p.xx)

One of the immediate stimuli to the creation of new forms in architecture has been a rediscovery and a reanimation of the primal visual images and oral values latent in the TV medium. "Its two-dimensional, contoured character fosters the tactile interplay of the senses which painters since Cézanne had

stressed as needful".[19] TV gives us the optical disintegration of material solidity by light so as to enable movement to become a plastic element. It is little wonder that Reyner Banham refers to television as "...the symbolic machine of the Second Machine Age".[20]

The return to the "primitive" in art is an attempt to counteract that architecture which Mumford suggests has been derived from literature. It may, as well, be a good starting point from which to reassess our contemporary civilization. Siegfried Giedion, in his The Eternal Present, tells us that "Abstraction, transparency, simultaneity and symbolization are means of expression which appear both at the dawn of art and today". (p.46) Modern art and primitive art have in common the absence of literary influence. In Ronchamp, Corbusier has discarded the literary format in architecture. The synthesis and simultaneity of outer and inner forms is once more a contemporary format.

Today it is still possible to design on the basis that the anticipation of effect is not only a legitimate but a necessary way to achieve organic control of the creative process. But design must become a process of simultaneous operations, organized with great attention to synchronization and involving interdependence and participation. With design based on perspective effects, the structure is translated out of organic and simultaneous form into a static or pictorial mode with a preferred viewing point. One achieves the feeling of organic oneness or interplay of spaces by treating structure as a field of static or pictorial space through transparency and interpenetration. Architecture can no longer be taken in at a glance. The eye is channeled, diverted and led through a field of viewing experiences. The flux of an electronic age which presupposes no closures or completions, but ever-widening

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[19] McLuhan, "Inside the Five Sense Sensorium", p.51.

[20] Reyner Banham, Theory and Design in the First Machine Age (New York: F.A. Praeger, 1960), p.10.

vistas is in sharp contrast to the causal thinking of the past centuries.

Although the evolution of electronic architecture is yet in its infancy it appears as a vital creative force, intimately connected with the overall orientation of our age.

> No artistic utterance exists which does not reflect man's attitude toward space. Every artistic utterance is a direct, though unconscious, projection of the impact of the world upon man; otherwise it could not have been conceived.[21]

The process of communication is in itself an agent without direction of its own. It must be channeled and depends upon man's capacity to make use of it. Communication springs from the whole man, mind and body but is now often aimed at the subconscious and "below the belt". In a very broad sense communication includes all possible ways in which one mind may affect another: written and oral speech, music, the pictorial arts, theatre, ballet and in fact all of our human behaviour. Language and art are the distinguishing human forms of communication. Each is a process of mind whereby man begins to abstract symbols of things and happenings from actual things and happenings.

Siegfried Giedion has suggested in Mechanization Takes Command that the starting point for a new artistic expression:

> ...is made possible only by a spatial vision that has broken with copying and perspective; an approach that allows structure, color and form to be gathered into planetary systems; that changes bottles, glasses, plates, pipes, tables, musical instruments, into objects that lay bare the very essence of their meaning. (p.360)

For Giedion both the physicist and the artist in the twentieth century have penetrated to the heart of the matter. "Objects (have become) transparent and their essence was revealed by methods other than rational perspective".[22]

Moore's sculpture and drawings extend the range of the senses, giving

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[21] S. Giedion, The Eternal Present (New York: Bollingen Series xxxv.6.1, Pantheon Books, 1962), p.6.

[22] S. Giedion, Mechanization Takes Command. (New York: Oxford University Press, 1948), p.717.

the tactile and auditory as much significance as the visual. His shapes are not set off against a background of space, they are a part of space, their pierced forms alternating solid and void in an inseparable whole.

> This is what the sculptor must do. He must strive continually to think of, and use, form in its full spatial completeness. He gets the solid shape, as it were, inside his head - he thinks of it, whatever its size, as if he were holding it completely enclosed in the hollow of his hand. He mentally visualizes a complex form from all round itself; he knows while he looks at one side what the other side is like; he identifies himself with its centre of gravity, its mass, its weight; he realizes its volume, as the space the shape displaces in the air.[23]

This is very much in keeping with McLuhan's idea that tactility can be described as "the mode of interplay and of being rather than of separation and of lineal sequence".[24] The reduction of tactile quality in the arts as well as in our modes of life and habits of language are marks of a kind of sophistication. In itself, sophistication is an artificial quality, but in trying to break with style, it establishes a style of its own. Sophistication and refinement in architecture come at the end of an era. Detail becomes important only after the concepts of spatial configuration and the philosophy of design are firmly established. Yet the decorative aspects of materials and objects are closely related to their communication function. Unconsciously we all look for nonverbal clues in buildings, landscapes and interiors. These we know have something to say about the status, prestige, taste and values of those who use, construct or own them.

Harold Innis has provided much of the early impetus for the study of the effects of communications on civilization. In The Bias of Communication he sums up the relation of communication to time, space and space-time:

> ...The character of the medium of communication tends to create a bias in civilization favourable to an overemphasis on the time concept

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[23] From Henry Moore, Notes on Sculpture, quoted in footnote 3, in L.R. Rogers, "Sculptural Thinking," in British Journal of Aesthetics, Vol.2, no.4, October 1962, pp.299-300.

[24] McLuhan, Gutenberg Galaxy, p.240.

> or on the space concept and only at rare intervals are the biases offset by the influence of another medium and stability achieved...(p.64)[25]

He suggests that new architectural forms derive from the influence of the mass media, if not directly, then by way of economic systems. "Increased newspaper circulation supported a demand for advertising and for new methods of marketing, notably the department store".[26] Elsewhere he suggests that the rise of the coffee-houses in 17th century England is a direct result of censorship of the press.

Innis seems to suggest, and rightly so, that certain media (and systems) require buildings in their own right. Manuscripts and books created a demand for libraries of one sort or another. The newspaper and tabloids, once they had become more than small hand operations, required huge areas to house the great printing presses. Movies, once their popularity outgrew the saloons and nickelodeons, required the picture house. Cyclorama creates viewing problems which make the older theatres at best compromise solutions. Radio and TV require the acoustically controlled broadcast studios as well as transmission towers. In addition, as has been suggested, the latter two media come into the home and create needs and demands which influence our private lives up to twenty-four hours a day.

Print orientation implies great emphasis on a particular aspect of life to the detriment of a more fully developed personality. A part of man's being naturally suffers in such a situation. The influence of Zen from the East has done little to change the situation, being generally applied as a system for advancing the appreciation of the rustic, the natural and the ingenuous. But the presentation of the anomoly of question and answer for meditation and response brings into play the senses, feelings, intellect and intuitions. For

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[25]See also Norbert Wiener, The Human Use of Human Beings, p.91-2

[26]Harold Innis, The Bias of Communication, (Toronto: University of Toronto Press, 1951), p.77.

the Japanese, interplay is enhanced by their inability to handle concepts or to present doctrines discursively. Thus a word does not fix a notion with a definite degree of abstraction or generality but rather evokes a profusion of images completely unsuited to formal precision. Kepes treats this situation in his article "Arts and Science" appearing in Explorations vol.1.

> The Far Eastern discipline of sensibilities (the highly developed appreciation of its harmonies, its tastes and flavours) grew out of the feeling that men lived most fully by opening themselves to the universal rhythm of Nature. Nature was approached and entered through rapt contemplation of its forms, to the end of visualizing the world in terms not of likeness but of what the Chinese called 'rhythmical vitality' - the essence of things in their characteristic life of movement. The patterns seen were not frameworks binding details but patterns of living order.
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> Western poets have at times given us a vision of this accord between man and nature.(p.78)

These considerations, combined with the breakdown of perspective systems, are freeing art and architecture from both geometrical optics and from the geometric models of regular solids. Thus music is free to break loose from restricting ratios, and architecture from the precise and fixed rectangle. Architecture has in a sense decreed that musical composition be reassessed. Huge new auditoriums have called for new music to be written expressly for them. The classical composer such as Handel or Bach wrote for the relative intimacy of the drawing room. The transfer of this music to gigantic structures breaks up the pattern of sight and sound because of the time discrepancy between hearing and seeing. The new a-tonal music, whose harmonies can not be split fits easily into the new auditoriums.

The hanging roof of Ronchamp Chapel indicates that we need no longer model ourselves on Euclidian forms. The "floating" ceiling designed by Le Corbusier is separated by a clerestory from the solid concrete wall below. A free-flowing, hovering plastic hollow is formed. Light penetrating through this clerestory space, invisible from below, suffuses the undulating majesty of the space. Without benefit of geometric linear perspective, but with the semi-acoustic dimensions of filtered light, the enclosing form of the roof balances

seemingly without support in space. To have expressed the structural supports would have denied man his creative part in the completion of the work of art. At the same time it would have denied the believer the potential of a transcendant and immanent Deity maintaining the roof in place.

In Architecture You and Me, Siegfried Giedion has pointed out that Ronchamp Chapel reflects a transformation into a new form of spatial awareness.

> This means that the centre of the ceiling, which up to now has been the position of maximum height, has become its lowest point. The curve rises toward the encompassing walls, indicating by this that it does not terminate there, but that it extends further into the exterior. (p.187)

Once more under Corbusier's influence the ceiling, as had previously been the case with the roof, has been permitted to become an area of fullest freedom for the imagination. Symbolic strength is given to the hollowing out of space but in a new manner, described by McLuhan in "Inside the Five Sense Sensorium":

> ...this new feeling (for space) is directly attributable to the highly empathic and haptic TV image which evokes the immersion of deep participation, not just the retinal experience, in the viewer.... The new attitude to space is here. And the preference for the wrap-around space of the small plane, the small boat, or the small car, is for a space that we don't get into but which, as it were, we put on. (p.52)

This is the space of Ronchamp and with it a way out of the straight-jacket of standardized sizes and the economics of conformity imposed by the advertising hucksters has been achieved. The outside of the chapel is as much a part of the design as is the interior. Huge pilgrimages can gather round the exterior pulpit and become a part of the service. The Madonna is equally visible from interior or exterior. Corbusier has as well created two distinct types of worshippers, those belonging to the open crowd and those belonging to the closed.[27]

With these departures from conventional building forms the time has come

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[27]See Elias Canetti, Crowds and Power, p.21-2.

again "to think about the possibilities of what happens when compositions are built up about unfamiliar points of view, unconventional cutting of the field of vision and arbitrary use of colour". Design must be "absolved from the insistent popular demand for conventional verisimilitude."[28]

I suggest that this task is, intentionally or not, the province of the mass media. Because of their wide influence, they are capable of breaking down the conventional patterns which retard progress. From the 1890's to the early 20th century, Toulouse-Lautrec made advertising posters with which the walls of Paris were covered. They could not be evaded. "...In them great liberties were taken with traditional forms and colours. Many of them were two-dimensional in design....And they all had their undoubted effects on the public's eyes...."[29] No less important were Puvis de Chauvanne, Gauguin, Munch, Beardsley and Art Nouveau generally.

> The shock of his posters was for many people an ocular liberation. The public learned from them that verisimilitude was far from being the be-all and end-all of picture-making. Incidentally, these posters made it obvious to even the most obtuse that the Impressionist emphasis on the envelope was after all not much more than reporting and had not essentially altered the hardened tradition of picture-making - that actually Impressionism was only a technical variation on the standard academic themes...[30]

Thus the sphere of perspective drawing which provided a geometrical rationalization for pictorial statements of space relationships was invaded. What was essentially a technique of making informative pictures became before long a necessary part of all pictures. Highly paradoxical in this matter is the fact that a space conception which disregards the way our brain actually structures the world about us should become so all-pervading. Kepes deals with this question in The Language of Vision:

If any meaning of depth is to flow from foreshortening and

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[28]William Ivins Jr., Prints and Visual Communications, (London: Routledge and Kegan Paul, 1953), p.149.

[29]Ibid. p.150.

[30]Ibid. p.100.

> diminishing by the use of perspective, the observer must be acquainted with the objects in their actual three-dimensional characteristics. A memory constancy,moreover, is attached to familiar things of our surroundings. We keep a constant size and shape in our perception... (p.87)

The amplified perspectives of photography, film techniques and advertising are all attempts to break with or at least stretch the limiting confines of geometric perspective.

Even neglecting contemporary detailing, it is a simple matter to tell whether the author of a project is still spiritually in the Renaissance or in our emerging space metaphor. In discussing Laszlo Moholy-Nagy, Reyner Banham places great emphasis on the influence of mass media on his theories of perception:

> His early imagination was coloured by an agency that had come into the world at about the same time as himself, the illustrated magazines, to such an extent that he was overcome with disappointment on finding that Szeged, the nearest town of any size to his boyhood home in Hungary, had no skyscrapers.[31]

What is truly significant in Moholy-Nagy's work is his treatment of the extensions of the existing cultural concepts of the educated Europeans. Not only does his Von Material zur Architektur discuss the influence of photography, microphotography, crystallography, kinetic sculpture, films, illuminated advertising, montage and primitive art, it gives the impression "that for Moholy art started in 1900."

> ...his view does not really extend back beyond the Eiffel Tower. He harks back to neither the geometry of Greece, nor the masonry of the Middle Ages, he is not interested in temples and cathedrals, his theories are to derive their authority from the present condition of culture, not from history.[32]

Perhaps sufficient has been said for the moment to show that the influence of various mass communications on architecture is not merely wilfulness or novelty on my part. While this topic has not been investigated formally,

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[31]Banham, op. cit. p.315.

[32]Ibid., p.314.

it has occupied the minds and work of artists, writers and critics for some time.

Great care must be exercised lest we impose a visual order based on "a priori" conventions drawn largely from the field of painting. Instead of an extension of our sense ratios we would merely be substituting one mode of perception for another. James M. Fitch has stated in Architecture and the Aesthetics of Plenty that transparency when applied to architecture carries certain media problems with it.

> Transparency, as an aesthetic criterion, dictates certain formal qualities in architecture - simplicity, structural clarity, repose. But the transparency at the biological level, often raises exactly contrary demands - complexity, opacity, changeability. How are the two contradictory sets of values to be reconciled?(p.22)

and in terms of setting off application against principle he states:

> ...glass does not simplify the design process whether viewed from the angle of physics, physiology or psychology. It requires a massive assortment of auxiliary devices.(p.22)

Perspective and print emphasized the visual side of experience until they dominated the entire field of attention. The filling of the field of perception by one sense only is often used as a working definition for hypnosis. Prior to the trance state (and after) it is possible to achieve haptic homogeneity through an interplay of all the senses. In the years since the Industrial Revolution, the new systems of communication have multiplied at an unprecedented rate. Newspaper, radio, electricity, photography and TV administer a shock to our nervous systems when first introduced for they alter the existing sense ratios. But as long as perspective and literature are prime determinants in architecture, building will inevitably start from the outside, that is the facade. By selecting only one of the innumerable sensations to which our perceptive organs pay heed, we get the fixed moment in space, the picture stage representation parading as architecture. Once perspective is accepted for what it is, a learned process, it will be possible to break - perhaps only partially for the present generation - from the accepted "right way" of viewing our

structures.

> Far from being a normal mode of human vision, three-dimensional perspective is a conventionally acquired mode of seeing, as much acquired as is the means of recognizing the letters of the alphabet, or of following chronological narrative.[33]

We need only look at the unsophisticated, yet more inclusively perceptive drawings of children (up to the age of nine or ten) to realize this fact.[34] The various alternate perspective methods, aerial, chiaroscuro, fixation, relative height, distance and overlap that we continually use, not to mention the art work of the Japanese, Chinese and early Europeans, indicate that the arbitrary selection of a single, static position creating pictorial space with a vanishing point, is by no means universal. Some of the finest Japanese modern figure work in the Western manner indicate how very foreign the idea of perspective is when consciously attempted relatively late in life, when it is not a life-long habit.

In effect, perspective "froze" the visual field, eliminating the time element in experiencing space and thereby destroying the dynamic relationship between the two. Chinese and Japanese paintings reverse this role which becomes a method of experience rather than a scientific principle.

The newspaper format with its varying type sizes, its collage-like pattern determined by the simultaneous presentation of wire-press photographs, bold-face type headlines, and minor headlines in a different colour all helped to break up the linear pattern of the printed book. (The newspaper was a collage long before the dadaists took it up and TV, I suggest, is an electronically ordered collage.) Even the narrow margin separating columns of print dissolved under the double and triple column heading, the three column photograph and the front page corner column posting the latest race results.

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[33]McLuhan, Gutenberg Galaxy, p.16.

[34]See Sir Herbert Read for a discussion of The Significance of Children's Art.

There remained little in common with a print culture book. The format does approximate more closely the written record of a tribal civilization with a highly developed oral tradition. The layout of the Talmud is a case in point.

Wright's prairie houses were a revolt, among other things, against perspective pictorialism in architecture. The pattern of these prairie houses is the pattern of the newspaper. Heavy shadowed areas below projecting roof lines, replace the bold faced headlines, the various receding and projecting planes and fenestration conforming to the lesser headlines and photographic inserts. Many of Mondrian's geometric compositions are merely the newspaper format with emphasis on either the margin or the column itself.

The technique of Cubism emphasized the two tendencies influencing the new vision in the arts, that is, the deliberate simplification of volumes and the disintegration of mass through light. The associative dynamicism of these cubist works evokes a continuous sequence of mental vistas. Images projected onto a universal time-space plane represent a close parallel to the emphasis on simultaneity in the TV medium.

This contemporary quality, while reconstructing subject-matter into something that is wholly new, is, or ought to be, by force of association, virtually familiar.

Thus, the early definitive work of the Cubists, "highly fragmented simultaneous vision of scattered aspects of the visual scene"[35] was actually predated by the newspaper format as we know it. Boccioni and the Futurists, contemporary with much Cubist work but long after the tabloid, realized the concept of the city as a field of interacting powers and influences. (Yet the fact that architects and city planners have been slow in realizing this is one of the main theses of Jane Jacob's book The Death and Life of Great American Cities.) The simultaneity that characterizes the newspaper layout in its combining of many viewpoints and impressions was to lead to a field theory of

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[35] Banham, op. cit., p.113.

space in architecture as were the new discoveries in science and mathematics. It is the play of space which constitutes the distinguishing characteristic of contemporary architecture. Since architecture is a dynamic discipline the concept of space is an ever-changing process. Each succeeding epoch should determine the formulation which is pertinent to its way of life.

> ...the formulation of space is fundamental to architecture, and (that) it is the changes which occur continuously, in the formations of space that provide the unquestionable basis of the history of architecture.[36]

As a conditioner of modern architecture, the newspaper format was only a beginning, for it required, as did chiaroscuro and the printed book, "light on"[37] its subject matter to render it visible. As the enclosing walls of structures became "free-agents" divorced from the age-old task of carrying loads, cumbersome materials could be replaced by light and even transparent substances. Thus, the material-immaterial era entered architecture. (This, as I have suggested, is the electronic or TV phase of architecture).

Every architectural concept finds its basis in the dynamic dualism of solid and void. All other manifestations are combinations of this dualism. Whether solid, or void, or solid-void predominates depends on the nature of the plastic image which is to be conveyed. When a stable visual whole is achieved, inevitably both background and foreground are present in the visual field in a planned fashion. But there is little or no choice in the matter. Background, whether fragmentary or organized, fluid or determined, always exists. The architect's role demands that he organize the entire visual field so that even disparate elements appear to belong to a unified whole. Although it may seem a far easier task to accomplish this by matching, it is only one way and the most obvious.

Our mind is capable of organizing independent and seemingly opposed

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[36]Siegfried Giedion, Architecture You and Me (Cambridge: Harvard University Press, 1958), p.112.

[37]McLuhan, Gutenberg Galaxy, p.105.

spatial units into a meaningful whole. The gestalt psychologists have based their reasoning on the mind's dislike of chaos. Whatever enters into our field of vision is soon ordered and adjusted by a neat and orderly process of mind. Whatever is extraneous to the ordering process is then rejected and may continue as a peripheral annoyance or disturbance until we become accustomed to its presence. The lack of sensitivity at any given period is a result of this compromise which the mind is continually forced to accept. As a moulder of environment, the architect then has the responsibility of reducing these jarring notes (and this does not simply mean getting rid of opposites) thus cutting down the number of mental compromises, and ultimately maintaining if not raising the standard of sensitivity to one's surroundings.

The high finish and transparency of machine tools, steel and glass establish a new continuity between the moulded space within our structures and the free space without. As has been stated, Corbusier accomplishes this effect in Ronchamp Chapel by a visual separation of wall and ceiling. Paul Rudolph virtually eliminates enclosures in his new parking garages. In Language of Vision, Kepes discusses the contemporary trend:

> Contemporary architects are moving away from one-sided emphasis on the facade of a building, and the best examples of contemporary architecture show a perfect integration of the actual building, the active "envelope", the divisions created by the materials and the living spaces between these materials. Light screens, curtains, glass walls are employed to amplify this integration optically and to create a living, flowing space articulated within and without: a single living unity.[38]

"In the electronic age which succeeds the typographic and mechanical era of the past five hundred years, we encounter new shapes and structures of human interdependence and of expression which are "oral" in form even when the components of the situation may be non-verbal."[39]

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[38]Gyorgy Kepes, Language of Vision, (Chicago: Paul Theobald, 1951) p.32.

[39]McLuhan, Gutenberg Galaxy, p.3.

The reorganization of scientific life must bring with it a reorganization of artistic life. Our present inability to understand the symbolic function of architecture is symptomatic of our transitional age. "The culture of print has rendered people extremely insensitive to the language and meaning of spatial form."[40] This, the authors state, "is one reason for the Architectural and City Horrors tolerated by predominantly book-cultures."[41]

Our thought patterns lag behind the transitions being wrought by a new age.

> ...We have in the past century moved out of a mechanical into an electric, organic, culture. That is, we have increasingly moved out of a segmental, specialist phase of knowledge into a period of interplay and, as it were, dialogue among all kinds of knowledge.... Under conditions of simultaneity of access to information, Cuba is not a margin politically nor is Laos, yet our assumptions are still otherwise. Hence our confusion.[42]

Contemporary artists do not show us chaos but a different way of perceiving space. The very name "action painting" with its emphasis on speed and the "stream of consciousness" breaks the usual idea of oil painting as a slow, modelled medium which can be worked and reworked as fancy or inspiration dictate. The new paintings with their cascades of colour are like the gleaming neon tubes of any large metropolis, magical in their splashing emotions and frenzied activities. Their mode of expression is "oral", even to the pulsating hum which accompanies their use. Our teen-age rock-and-rollers partake of that same total immersion which distinguishes "action painting". It is the new jazz of the painters' and teenagers' world. Is there a counterpart for the architect? If, for a moment, the notion of sequence in architecture, as exemplified by Renaissance perspective (growing out of the linear format of the printed book) is set aside, it is possible to experience any city

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[40] Carpenter and McLuhan, "Culture Without Literacy" in Explorations vol.1, p.123.

[41] Ibid.

[42] McLuhan, "The Humanities in the Electronic Age", in the Humanities Association Bulletin, vol. 34, No.1, Fall, 1961, p.8.

as a vast polyphony of jazz improvizations. The raucous automobile horn, the screeching subway brakes, the hubbub of rushing bodies, the clank of horse-shoes, the woosh of rubber tires over man-holes, the ticking of the automatic signals, the distorted melody of the organ grinder, the wheeze of the high-speed elevator car, all these structure the city every bit as much as the visual aspect which so dominates contemporary thinking. Perhaps here we are given an insight into the mysterious dimension of architecture as frontier between the spaces of sight and sound. Corbusier has suggested that architecture is only partially in the visual mode, the frontiers being best felt at night.

Architecture cannot exist without finite boundaries. These limiting boundaries make intangible space perceptible. The ways in which we structure these boundaries is of great importance, for they can either limit our range of sense perception or extend it. Our communication media have a positive role in the determination of the space concept. TV, which favours simultaneity of visual and auditory gesture opens the frontier of auditory space. This acoustic space is invisible and therefore does not exist for most of Western eye culture.

For literate man, we have said, space itself is defined by "light on" subject matter. Darkness is an enemy obliterating the station points with which we identify ourselves. But acoustic space is defined by man and only in so far as he is the module does it exist. Acoustic space cannot be seen, yet it does exist, peopled by ghosts and half-world creatures. For how many children is the darkness of a lonely room as tangible as the most palpable sensation. Yet to deny this world to adults is not in keeping with the facts of existence. In Crowds and Power, Canetti indicates the pervasiveness of the idea, in all cultures of an active invisible world.[43] That the idea of an extension of space - auditory space - is not idiosyncracy or willfulness, we

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[43]See Canetti, Crowds and Power, pp.42-7 and 262-272.

can learn from observations of other and earlier cultures. Inevitably we must admit that for the adult as for the child, space is occupied. We would do well to study the workings of early civilizations and "primitive" groups in this regard. Not to reconstruct the "voodoo menace" of space itself but to give freer play to our imagination and senses and to realize that we are, at least in some aspects of life, capable of structuring "acoustic space."

Bruno Zevi contends that "Our illiteracy regarding space derives from the use of plans, elevations and sections, that is, horizontal and vertical planes which enclose and divide space."[44] It is television and some of our recent experimental movies which are helping to redefine our spatial thinking. The former medium particularly will gradually enable us to perceive space as a simultaneous awareness of multiple images in a non-linear fashion. As Edmund Carpenter states in "The New Languages", in Explorations in Communication, "a given idea belongs primarily, though not exclusively to one medium, and can be gained or communicated best through that medium."(p.67)

An interruption of a movie plot by a commercial would be unthinkable. In television the commercial, particularly for the younger generation weaned on this medium, is not an interruption. It is a "necessary" part of the structure of the medium format, as is the commercial flashed on the screen and superimposed on the action.[45] It is natural for a culture to exploit its media biases and TV exploits the simultaneous.

At this point in history the earth is becoming a vast collective society under the pressure of the new media of communication, the disappearance of the time element and the breakdown of artificial barriers such as race and nation.

> Now, in the electric age, the very instantaneous nature of co-existence among our technological instruments has created a crisis quite

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[44]Bruno Zevi, Architecture as Space, ed. J. Barry, trans. M. Gendel, (New York: Horizon Press, 1947), p.22.

[45]See Carpenter, "The New Languages", in idem and H.M. McLuhan, eds., Explorations in Communications (Boston: Beacon Press, 1960).

> new in human history. Our extended faculties and senses now constitute a single field of experience which demands that they become collectively conscious. Our technologies, like our private senses, now demand an interplay and ratio that makes rational co-existence possible. As long as our technologies were as slow as the wheel or the alphabet or money, the fact that they were separate, closed systems was socially and psychically supportable. This is not true now when sight and sound and movement are simultaneous and global in their extent. A ratio of interplay among these extensions of our human functions is now as necessary collectively as it has always been for our private and personal rationality in terms of our private senses or "wits" as they were once called.
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> Hitherto historians of culture have tended to isolate technological events much in the way that classical physics dealt with physical events.[46]

As the "retribalization" and hence interdependence of man increases with the breakdown of the favoured point of view, and the growth of electronic systems of communication, the individual uniqueness enjoyed in a "detribalized" society must be nourished and perpetuated lest it disappear. Here is raised what will be one of modern man's great problems - the preservation of the "I" in a group oriented culture.

The role of the architect is significant in preserving the status of the individual. He can as easily relegate him to an anonymous pigeon-hole. If he chooses the latter course, he dams up his own unique opportunity for maintaining the dignity of man as well as his client's opportunity for a creative expression of his unique personality.

> Everyone who has thought even casually about the subject knows that the specific property of architecture - the feature distinguishing it from all other forms of art - consists in its working with a three-dimensional vocabulary which includes man (italics mine).[47]

If the ultimate goal of architecture is social, and I believe that it is, then stereotyped architectural expression cannot communicate this aim.

Law Whyte asserts that "the characteristic variability of the human species refutes every sharp classification..."[48] For him, this variable creature exists in a "unitary" system which, much in keeping with McLuhan's

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[46]McLuhan, Gutenberg Galaxy, p.5.

[47]Zevi, op. cit., p.22.

[48]Lancelot Law Whyte, The Next Development in Man (New York: New American Library, Mentor Books, 1962), p.47.

formulation,

> ...emphasizes process, development and transformation. This is a perpetually changing universe, and conceptions of unchanging permanence must play no part in the basic formulations of the systems.[49]

A world of transition is today a fact. The mass media are helping to smooth the way for most of us. They are helping man to bridge his differences. It is a role of great social function. Yet inherent in this role is a great danger. While adding new ways of seeing things, the mass media also provide endless diversions, often seriously affecting people's willingness to pay attention to things requiring other than minimal participation. Television requires a degree of immersion previously unknown. Its mandate is more complete than any other form of communication which has invaded the home.

Aimed as they often are at the lowest common denominator of man, the mass media can pursue an insidious and malignant course unperceived by the rational side of man.[50] To control communication processes demands initially the recognition that a danger does exist. Secondly it is essential that man make use of the two distinguishing characteristics of his species, art and language, to demonstrate his superiority over instruments of service. On this basis it will then be possible to subordinate the media of communication to human needs.

With these observations in mind, we may now turn to a consideration of the province of art and language as they affect man's symbol-making processes.

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[49] Ibid., p.5.

[50] See Dan Lacy, Freedom and Communication, (Urbana: University of Illinois Press, 1961), pp.36-41.

III. ART AND LANGUAGE IN THE SYMBOL-MAKING PROCESS

> Art is a fundamental experience. It arises at the dawn of man's need for expression. It precedes architecture. The period which elapsed between man's first attempts to distill his feelings through visual forms (outline and colour) and the birth of architecture, at the beginning of the Sumerian and Egyptian civilizations, was several times longer than the entire historic period.
>
> Siegfried Giedion, The Eternal Present

We need not, as did Plato, cover the obscure origins of art with the myth of Prometheus.[1] Together with the gift of fire, Prometheus apparently stole the arts of weaving and metal-working from the gods to aid the human creature, who, in the primaeval distribution of assets was a forgotten man. Plato's successor, Aristotle, treated art as one of two initiating forces of the world. More recently, in Philosophy in a New Key, Susanne Langer speaks of the vegetative period of artistic activity, linguistic and mythological and ritual growth as an apparent facet of primitive mankind.

> A crude pre-Athenian peasant makes a Herm for the protection of his home, and produces a statue of archaic beauty; an Indian carves a totem-pole, and achieves a composition; he fashions a canoe or molds a water-jar, and creates a lovely form. His model is the human body, the tree trunk, the curled, dry leaf floating, the shell or skull or cocoa-nut from which he drinks. But as he imitates such models for practical ends he sees more than the utilitarian import of their shapes; he literally sees the reflection of human feeling, the "dynamic" laws of life, power, and rhythm, in forms on which his attention is focussed; he sees things he cannot name, magical imports, rightness of line and mass, his hands unwittingly express and even overdraw what he sees, and the product amazes and delights him and looks "beautiful". But he does not "know", in discursive terms, what he is expressing, or why he deviates from the model to make the form more "significant".(p.204)

Primitive man found the need for art in the light, or more accurately the darkness of magical necessity. Giedion discusses this in a selection from his book on the beginnings of art, The Eternal Present.[2]

> Nothing is more destructive of the true values of primaeval art than the glare of electric light in this realm of eternal night. Flares or small stone lamps burning animal fat, of which examples have been found,

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[1] See also Wiener, op. cit., p.184.

[2] In Carpenter and McLuhan, eds., Explorations in Communication, p.79.

> permit one to obtain only fragmentary glimpses of the colors and lines of the objects depicted. In such a soft, flickering light these take on an almost magical movement. The engraved lines, and even the colored surfaces, lose their intensity under a strong light and sometimes disappear altogether. Only in this way can the fine veining of the drawings be seen unsmothered by their rough background.
>
> Maybe enough has now been said to show that prehistoric man did not associate the caverns with architecture. In his view the caverns simply provided him with places that he could use for his magic arts.

The only difference which seems to exist between the need for art of primitive societies and of advanced societies is the propensity of the latter to want to "know in discursive terms" what he is expressing or why he deviates from the model to make the forms more "significant".

> When he emerges from his savage state and takes discursive reason seriously he tries to copy more accurately; and the ambition for naturalistic, literal representation, for rational standards of art, moral interpretations, and so forth, confuse his intuitions and endanger his visual apprehensions.[3]

BUT THE NEED FOR ART IS A PARTICULARLY HUMAN CHARACTERISTIC, A PART OF THE GREATER PROCESS OF SYMBOLIZATION

Thus, every species of animal, vegetable and mineral which has survived to the present has done so, to the best of our knowledge, without the benefit of art, - every species except man.

> What is lost in Nature's guaranty of safety is made up in the advantage of greater plasticity. The human animal does not, like the bear, grow himself a polar coat in order to adapt himself, after many generations, to the Arctic. He learns to sew himself a coat and put up a snow house. From all we can learn of the history of intelligence in pre-human as well as human societies, this plasticity has been the soil in which the human progress began and in which it has maintained itself. In the ages of the mammoths, species after species without plasticity arose, overreached itself and died out, undone by the development of the very traits it had biologically produced in order to cope with its environment. The beasts of prey and finally the higher apes came slowly to rely on other than biological adaptations, and upon the consequent increased plasticity the foundations were laid, bit by bit, for the development of intelligence.[4]

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[3]Langer, Philosophy in a New Key, (New York: New American Library, Mentor Books, 1955), pp.204-5.

[4]Ruth Benedict, Patterns of Culture (Boston: Houghton Mifflin, 1946; New York: Mentor Books, 1960), p.27.

Benedict goes on to elaborate the prerequisites for survival. "We must accept all the implications of our human inheritance, one of the most important of which is the small scope of biologically transmitted behaviour, and the enormous role of the cultural process of the transmission of tradition."[5]

From the views of an anthropologist we find that organisms, if they are to persist, develop the necessary apparatus for survival and discard those which outgrow their usefulness. In accordance with this principle, the human animal is said to be in the process of discarding the appendix which has no longer any apparent function. But art, despite Plato's fanciful explanation of its origin, useless in the fight for physical survival, does not seem to be in imminent danger of being discarded.[6] In fact, the opposite seems to be the case. Art is becoming a compulsion. We have created a mass market for this commodity. In the Gutenberg Galaxy, McLuhan discusses the role of art as a consumer commodity.

> The public became the patron. Art reversed its role from guide to perception into convenient amenity or package. But the producer or artist was compelled, as never before, to study the effect of his art. As manipulators of the mass market tyrannized over the artist, the artist in isolation achieved a new clairvoyance concerning the crucial role of design and of art as a means to human order and fulfilment. Art has become as total in its mandate for human order as the mass markets....(p.275)

The continuing need in man for art, which has spread from the relatively closed world of initiates, priests, freemen and nobles to the market place, finds its justification, I feel, in the ability of art to provide for the enhancement of life. Kepes has explained it in Language of Vision.

> In each age of human history man was compelled to search for a temporary equilibrium in his conflicts with nature and in his relations with other men, and thus created, through an organization of visual imagery, a symbolic order of his psychological and intellectual experiences. These forms of his creative imagination directed and inspired him toward materializing the potential order inherent in each stage of history. But

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[5]Ibid., p.28.

[6]Although not generally thought of today as a prerequisite for physical survival, art, in primitive communities, is considered essential in the fight for life, as it exists in the realm of magic. Thus, the drawing of a buffalo was necessary for the success of the hunt.

> until today, the symbolic organization of psychological and intellectual conflicts has been limited in its power because it was fastened to a static system of object concepts. Today, the dynamics of events, and the new vistas of a mobile, physical world, have compelled us to exchange a static iconography for a dynamic one. Visual language thus must absorb the dynamic idioms of the visual imagery to mobilize the creative imagination for positive social action, and direct it toward positive social goals.(p.14)

Art is, in terms of the Gestalt psychologists, an inevitable drive for completion or equilibrium and can be considered as an extension of what man once did with his body, as, for example, the dance of primitive societies. To make this life a "something" beyond mere animal existence is the function of art. But this art is only a part of a greater ability which is uniquely human, that is, the power of symbolization.

THE ABILITY TO ABSTRACT BY VIRTUE OF SYMBOLS HAS LED TO CASSIRER'S REDEFINITION OF MAN AS A SYMBOL-MAKING ANIMAL RATHER THAN A RATIONAL ANIMAL.

Our intercourse, our dealings, in fact our very lives depend upon our ability to abstract sense-data and to symbolize the information in a way sufficiently uniform to carry on the business of the world. This is true at the most primitive level of sign, even before our signals have become ordered symbolism or language. McLuhan gives an up-to-date definition of symbolism which has sufficient elasticity to be valid over a wide range of space and time: "A collocation, a parataxis of components representing insight by carefully established ratios, but without a point of view or lineal connection or sequential order."[7]

For several years psychologists viewed sense-data as the key to our knowledge of the world about us. Our intelligence was ultimately tied to the impressions which were available to us through the senses of sight, sound, smell, taste and touch. The mind functions as a recorder of this information and on

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[7]McLuhan, Gutenberg Galaxy, p.267.

the basis of our backlog of experience, impression and association combines these elements to create human intelligence.

> In general, sensory impulses from the sense organs in various parts of the body are transmitted by the main sensory nerve tracts, through the brain stem and nuclei of nerve cells at the top of the brain stem, to the cerebral cortex. In one of the nuclei, the optic thalamus, these impulses are, as it were, sorted out, and those from different senses transmitted to different receptor areas of the cortex, for vision, hearing, touch, and so on. Surrounding the receptor are areas in which the sensory messages appear to be elaborated by thought and memory processes on which depend our meaningful perception of the world around us.[8]

In the sense-data scheme we had in effect a huge mental tape-recording apparatus; compared by Langer[9] to a telephone exchange, which, depending on our native intelligence and experience, we could draw on to order and catalogue any new data to which we were exposed. Colin Cherry in On Human Communication states that Langer's idea is already dated and naive in its limitations. Basically this comparison of the brain to a telephone exchange is with "a pure Cartesian model."

> A more relevant analogy, perhaps no more than a metaphor, might be to compare the brain to a gigantic totalizator, at a race track, which accepts the tokens (money) from the outside world (bettors), calculates the odds hypotheses (horses) to give the greatest expectation of goal attainment (profit) according to assumed standards of utility.(pp.299-300)

We may here interpolate the idea of the simultaneous processes of which the human mind is capable and which it uses until we find it necessary to commit our thoughts to paper. We have in effect the necessary apparatus for the electronic systems of communication of the 20th century. But as writers from Blake through Ruskin to Giedion have suggested, we are still functioning with only partial potential because of the tyrannies of perspective and the printed page with their fixed station point and linear development.

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[8]M.D. Vernon, The Psychology of Perception (Middlesex: Pelican Books, 1962), p.188.

[9]Langer, Philosophy in a New Key, p.24.

THE EXAMPLE OF "GIFTED" PEOPLE WITH THE RESTRICTED USE OF THE SENSES INDICATES THAT THE ACCUMULATION OF SENSE-DATA IS NOT THE PRIME INGREDIENT OF INTELLIGENCE

Helen Keller has shown us how a human with only two of the five senses intact can live a life immeasurably richer than an animal with all faculties intact. This achievement has been possible only through the ability to abstract symbols and to deal with them when the actual stimulus is not present. The idea of a process of symbolization in animals has been investigated thoroughly by Yerkes and Kellogg.[10] A distinctly human characteristic, it is not found in animals. Although the lower levels of the animal world make use of the same sense faculties, being able to accumulate sense-data as are humans, their use of these clues is to activate a set reaction in response to the survival instinct. To the animal, one signal is restricted to one symbol and of necessity to one contextual reaction. Hayakawa in Language in Thought and Action has commented that "a fundamental way in which human noise-making systems differ from the cries of animals is that language can be about language." (p.15)

FOR MAN AN OBJECT MAY HAVE INNUMERABLE SYMBOLIC MEANINGS AND SHADES OF MEANING VARYING WITH ITS CONTEXT.

R. Wittkower, in Studies in Communication, gives us the example of man's ability to reinterpret symbols in the field of architecture:

> In Graeco-Roman architecture, the gabled portico belongs to the temple. It designates the building as a sanctuary. Palladio, in the sixteenth century, gave the motif a new meaning: he introduced it into domestic architecture as a symbolic reference to the eminence of the owner. In the Age of Liberalism, art and learning came to be regarded

[10] W.N. Kellog and L.A. Kellogg, The Ape and the Child; R.M. Yerkes and A.W. Yerkes, The Great Apes, both quoted in Langer, Philosophy in a New Key, p.85.

> as sacred dominions which should be open to all, and so "temples" were erected to art and wisdom. Finally, the symbol was transferred to railway stations, banks, and exchanges. The symbol owed its power to the remembrance of its sacred origin; whenever it was revived with a new meaning, it retained its association with dignity and grandeur, and gave prominence to values which had gained high currency in their respective cultural setting.(p.120)

Pre-literate societies attach great importance to the uttered word which assumes magical power. Thus, the symbol or name for a god is taken as conjuring up the god itself and was not pronounced other than by the priesthood on special occasions for fear of incurring divine retribution. Much of the mysticism of the Kabbala centres around the potency of word magic.

> The notion that name and essence bear a necessary and internal relation to each other, that the name does not merely denote but actually is the essence of its object, that the potency of the real thing is contained in the name - that is one of the fundamental assumptions of the mythmaking consciousness itself.[11]

In our present society, word magic is the chief tool of advertising and propaganda campaigns.

Since symbols are the medium through which man conceptualizes or conceives things or objects, the extent to which our experiences can be analyzed and dealt with should be limited by the actual number of concepts we can assimilate and handle. This being the case, we would require a different and unique symbol for every new idea. We would be in much the same position as someone learning the Chinese written language. A different ideogram for each and every different "thing" would be needed. But this presents a most unwieldy structure with which to work. The range of meaning has therefore been extended without adding symbols by the use of contexts in the written language which are represented by tonal values in the oral tradition. The meanings attached to symbols themselves exist in a time dimension or historical context. In addition to each original meaning of a symbol of verbal communication, there are the compounded changes brought about by semantic transition. This living

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[11]Ernst Cassirer, Language and Myth, trans. S.K. Langer, (New York and London: Harper, 1946), p.3.

aspect of language is reflected by the historical character of our dictionaries. Referring again to Hayakawa:

> A dictionary definition, therefore, is an invaluable guide to interpretation. Words do not have a single "correct meaning"; they apply to groups of similar situations which might be called areas of meaning. The particular context will help us discover the point intended within the area of meaning.[12]

The idea of contextual evaluation and relationship brings us once again to the present necessity of widening our contexts of meanings, a process hampered by five hundred years of assessing things through a fixed perspective point. Writers on the problems of extended vision such as Harold Innis, Edmund Carpenter and Gyorgy Kepes have suggested in Explorations the point of view of not having a point of view. Instead, the problems and situations which concern us today require a "hovering" attitude; that is, being slightly divorced from our constantly accumulating data and obtaining conclusions only in regard to a specific problem. By synthesizing our knowledge in response to a given stimulation only (thus eliminating the preconceived idea) our answer will be "correct" in relation to the specific problem itself at a given moment. In this way it will be as organically logical as things in a world of constant flux can be. This is not advanced in an attempt to do away with the necessity for judgments and inferences. Life would be intolerable, although perhaps simpler, without them. It is rather an effort to extend our point of view and to broaden the validity of our judgments and actions. The idea of the linear approach must be modified by the new coaxial vision in which a series of simultaneous images present themselves to the senses so that we may experience the whole man or the world in the "round".

> Every language tends to be temporal and linear; one word must follow another. But the space-time world we are driven to comprehend, the world out there, is curved; a spiral process of events. So the fit is not too close.[13]

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[12]Hayakawa, op. cit., p.65.

[13]Chase, op. cit., p.288.

NOT ONLY DO OUR APPARATUS FOR PERCEPTION DIFFER FROM INDIVIDUAL TO INDIVIDUAL, OUR BACKLOG OF EXPERIENCE IS ALSO DISSIMILAR.

Recent research into the psychology of perception indicates that there may be as many individual interpretations of sense-data as there are people to receive these data. In the concluding chapter of The Psychology of Perception, Vernon sums up the situation as follows:

> It has become abundantly clear from the preceding discussion that perception is by no means always a simple, straightforward and unambiguous process, but is in fact liable to many variations and interruptions. These are caused partly by the great complexity of the perceived field of view as constituted by our normal surroundings; and partly by limitations in the perceptual capacity of the observer. He can view only a small part of his surroundings at any one moment; and even when he scans them deliberately, there is much that he tends to overlook or to perceive incompletely or inaccurately. Undoubtedly during the course of his life he learns to perceive more, and more correctly, especially when he has an interest in so doing, or when he has received special training. But the effects of knowledge and experience are in themselves liable to produce selective perception and the funnelling of attention to objects and events about which special knowledge and experience have been acquired. The consequence is that no two observers may perceive a given scene in exactly the same manner, and that they may disagree considerably as to its nature and contents.(p.237)

This leads us to observe that there does not appear to be a body of impartial "facts". In their article "Perceiving the World" Krech and Crutchfield have this to say from the point of view of the material perceived:

> Data do not have a logic of their own that results in the same perceptions and cognitions for all people. Data are perceived and interpreted in terms of the individual perceiver's own needs, own emotions, own personality, own previously formed cognitive patterns.[14]

A sound in the night may conjure up varied ideas of steamboat, lunch, bomb or police to different individuals depending on experience, occupation and way of life. But in all probability, each will identify the original source of stimulation as a kind of whistle. Thus we have a single concept giving rise to an array of personal and unrelated conceptions. Before

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[14]D. Krech and R.S. Crutchfield, "Perceiving the World," in Wilbur Schramm ed., Mass Communications, (Urbana, University of Illinois Press, 1960), p.128.

deciding on a course of action, the average human will attempt to determine the context of the whistle. For the individual who sees the consequence of the whistle to be to his disadvantage, his reaction will be on the instinctive level. "When the chips are down," says Wilbur Schramm in Mass Communications, "the biogenic ones (drives) are likely to win over the sociogenic...." (p.210)

In addition to the varying individual reaction to similar symbols, as a whole, different cultures react to similar symbols in startlingly varied ways. Anthropologists find the examples of different primitive cultures useful for study in that they are relatively free from extraneous cultural overlays. Ruth Benedict, in Patterns of Culture evaluates the situation in these terms:

> ...the most illuminating material for a discussion of cultural forms and processes is that of societies historically as little related as possible to our own and to one another. With the vast network of historical contact which has spread the great civilizations over tremendous areas, primitive cultures are now the one source to which we can turn. They are a laboratory in which we may study the diversity of the human institutions. With their comparative isolation, many primitive regions have had centuries in which to elaborate the cultural themes they have made their own. They provide ready to our hand the necessary information concerning the possible great variation in human adjustments, and a critical examination of them is essential for any understanding of cultural processes. It is the only laboratory of social forms that we have or shall have.(p.29)

The beard in Western art was often used to characterize manliness, virility and courage, while the Romans thought it proclaimed the uncivilized. In the Orient, this appendage served to denote the "hairy-faced barbarian" or foreigner. In any case the ability to abstract symbols into a variety of contexts is a peculiarly human characteristic. Symbolization has been considered so basic that the entire framework of human existence depends on it for survival. Once a rudimentary symbolic agreement has been reached, life can be conducted at a level beyond the pointing stage. To attain a higher level I suggest that symbolism must be extended and ordered to produce language. The presence of art at the pre-literate level in which behaviour, associated with bodily action is formalized as the dance has also been noted.

Now it is necessary to relate symbol, language and art.

SYMBOLISM AS THE PRIME ABSTRACTION AND THE PREREQUISITE TO DISCURSIVE LANGUAGE

A symbol is an arbitrary designation which may refer to actual things and objects as well as to abstract ideas. In fact, abstract ideas may be dealt with only through symbols, while actual things and objects can be pointed out as a means of identification. The only condition that need concern us in the case of actual things and objects is that they be readily available for reference. If a certain "thing" is beyond the experience of one of the communicating parties, it can be conjured up discursively only in terms of analogy which implies an already existing sophisticated system of abstraction.

Symbols need not be imitative of the things they represent except in the poetical or literary sense of onomatopeia, where the chug-chugging of the engines is taken to represent a train.[15] This has, in fact, been advanced by some theoretical linguists as the genesis of language. Sapir, in the introductory chapter of his book Language denies this natural-instinctive-sounds theory.[16]

> However much we may be disposed on general principles to assign a fundamental importance in the languages of primitive peoples to the imitation of natural sounds, the actual fact of the matter is that these languages show no particular preference for imitative words. Among the most primitive peoples of aboriginal America, the Athabaskan tribes of the Mackenzie River speak languages in which such words seem to be nearly or entirely absent, while they are used frequently enough in languages as sophisticated as English and German. Such an instance shows how little the essential nature of speech is concerned with the mere imitation of things.(p.8)

Even when the imitative form is used, the symbol does not suggest "train" directly but what "train" does. Furthermore, if we are talking to other humans

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[15]See also E.H. Gombrich, Art and Illusion (New York: Bollingen Series, XXXV.5., Pantheon Books, 1961), p.361.

[16]Sapir's is the presently accepted theory.

and we say "train" without "train" actually being present, our experience leads us to conclude that these other people will conceive the idea of train in a manner sufficiently similar to that envisaged by the speaker that there is little possibility of a misunderstanding.

THE TRANSITION FROM SYMBOL TO LANGUAGE THROUGH IMPOSED ORDER.

When we begin to accumulate symbols and place them in a "logical" order which we have predetermined by a "grammar" or "rules of syntax" so that they convey meaning to others we have graduated from symbolic representation to language.[17] If, then, we assign symbols such as "dog" to a domesticated canine, "boy" to a young male human and "biting" to an action in which one party partakes of another, then by saying "dog bites boy" we convey a specific meaning to all those who have agreed upon our symbols. Thus we have completely unrelated symbols, each with a meaning of its own, expressing by means of language a unified action. In highly analytic languages, such as English, the phrase "bites boy dog" would fall apart as language and convey no unified meaning because the normal word-order pattern of the language has been disrupted. For those who maintain that a disruption in word-order does not interfere with basic communication, let me take nine common words as an example. While slightly more complicated than our original example, it is still a simple sentence employing only one two-syllable word and in no way indicative of the complexities and intricacies of compound English usage:

> The child asked the man to tell only this.
> The child asked only to tell the man this.
> The child asked only this, to tell the man.
> The child asked only the man to tell.
> The child asked to tell, only the man (would not let her).
> Asked to tell the man this, the child only (fibbed).[18]

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[17]See also Gombrich, op. cit., p.375.

[18]Charleton Laird, The Miracle of Language (Greenwich, Conn.: Fawcett Publications, 1957), p.168. See also Ivins, Prints and Visual Communication.

A simple change in word order creates sentences with entirely different meanings one from another.

If we take the prime purpose of language to be the communication of ideas, it must partake of two essentials: 1) specialized symbols or vocabulary which can convey only the meanings arbitrarily assigned and 2) progression of ideas in an arbitrary order determined by thought patterns formalized into "grammar." It is interesting to note how differently the two forms of language, spoken and written, handle this second prerequisite. We do not, in ordinary conversation, speak in perfect sentences, and our speech, interlarded as it is with personal phrases and habits that have no place in writing, cannot be analyzed in terms of the elaborate system of grammatical rules laid down to describe the written forms of our language. Randolph Quirk, in his article "Colloquial English and Communication", in Studies in Communication explains:

> This is partly because the eye and the ear are not used to sharing - indeed are not capable of assimilating - the same linguistic material, any more than the tongue and pen are capable of reproducing the same linguistic material.(p.172)

Or, as T.S. Eliot put it in a more lyrical vein: "An identical spoken and written language would be practically intolerable, since no one would listen to the first nor read the second."[19]

PAINTING IN RELATION TO THE CATEGORIES WHICH HAVE BEEN ESTABLISHED FOR SYMBOLISM AND LANGUAGE.

Should an artist take a canvas and in each of its four corners (assuming that it is rectangular in this day of odd-shaped canvases) paint a symbol representative of four unrelated objects, readily recognizable because of their

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[19]See also A. Lloyd James, Our Spoken Language, dealing with the alteration of our sense lives through literacy, quoted in McLuhan, Gutenberg Galaxy, pp.87-8

occurrence in daily life, we as an audience, would look at the canvas and enjoy the notations as entities in themselves. Gombrich discusses "the beholder's share" in his Art and Illusion:

> We are so trained in assigning to each image its potential living space that we have no difficulty whatever in adjusting our reading to a configuration in which each figure is surrounded by its own particular aura. This happens every time a group of figures is assembled within one frame without being intended to share a common spatial setting. Once more we read such images by applying a rapid test of consistency. We understand without hesitation that the animals in the drawing by Maria Sibylla Merian (plate 188, p.230) are to be read as individual specimens.(p.230)

Yet the overall picture would convey little meaning because the symbols enter into no easily recognizable relationships.

There is no reason to believe that we would entertain the four unrelated symbols as a gestalt except in so far as they fall within the maximum of eight (different) objects which is quoted as the upper limit for a trained viewer to be able to bring into the field of perception. Pepper discusses this in the Principles of Art Appreciation:

> ...an element pattern is the number of things taken in at one grasp of attention without grouping or other aid. These may be from one to seven or eight. Taking eight units as the upper limit,...(p.62)

Again, referring to normal associative powers, any recognizable relationship that did exist would not be meaningful other than as a simple figure, rectilinear or circular, and the four disparate elements would have no contextual relationship.[20]

Here we are at the basis of difference between painting and language. Language can be compared to the integer "12" which contains in it the factors "3" and "4", while painting can be equated to the integer "3" which has no factor but itself. Painting is, then, a "prime symbol" in which the whole cannot exist without its parts. ("12" can exist by virtue of "6" and "2" as well as "3" and "4", but "3" can only exist as a function of "3".) If our

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[20]See also Gombrich, op. cit., p.262.

canvas with its four symbols (which are then its prime symbols) were divided into four canvases, it might conceivably convey four complete pictures. Thus while language can be comprised of completely unrelated symbols, a painting to be indivisible can exist only when it is a completely integrated symbol. Wittkower states that "...formal, descriptive signs isolated from the conceptual whole can either not be interpreted at all or become ambiguous."[21]

For the sentence "dog bites boy" we can also say "domesticated canine bites young male human" and convey the same idea, but if we remove a portion of a painting, we cannot substitute anything which will say the same thing. This is because painting (other than painting which uses, for example, a cross as part of its visual vocabulary), has no vocabulary, only relationships and therefore conveys meaning as it expresses contextual relationships. If we have a certain pattern which is duplicated in two entirely different pictures and as well (were it possible) completely out of context, the pattern might suggest anger, happiness or nothing at all, depending on its relationship to the context. However, if we took "boy" out of context and placed it in a completely different sentence it would still convey the idea of a young male human in its new role because, as we have seen, language is largely dependent on the relatively unique meaning of "boy". We have discussed previously Hayakawa's "area of meaning" theory; nevertheless, in any given historical period, the word "boy", for instance, must have certain fixed limits of meaning in order to make it usable.

To say that everything which expresses symbolic relationship is art, is naturally a fallacy. Mathematical symbols enter into relationships and convey concepts to us through that medium. But mathematics cannot exist without language because its relationships are dependent on definitions. While "x" plus "y" equals "z" may represent any number of abstract qualities, as soon as

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[21]R. Wittkower, "Visual Symbols in Art, in Studies in Communication, Communications Research Centre, University College, London (London: Martin Secker and Warburg, 1955), p.112. On the same page, he gives experimental evidence of his statement.

we designate "x" as "3" and "y" as "2", we have no choice but to call "z", "5". Here we enter the region of "a priori" analytics which are, in reality, identities. Saying "3" plus "2" is the same as saying "5". Thus mathematics has a vocabulary which is unlike language in that it does not deal with data in terms of substance, but in terms of relationships which must, nevertheless, be defined explicitly in the case or problem at hand. Even though mathematics conveys symbolic relationships, it is not art but rather specialized language. Art is essentially non-discursive, while all the symbols employed in mathematics have distinct names. In Symbolism, Whitehead discusses the difference between language and mathematics in his treatment of a specific mathematical case, that is, algebra:

> There is also another sort of language, purely a written language, which is constituted by the mathematical symbols of the science of algebra. In some ways, these symbols are different to (sic) those of ordinary language, because the manipulation of the algebraical symbols does your reasoning for you, provided that you keep to the algebraic rules. This is not the case with ordinary language. You can never forget the meaning of language, and trust to mere syntax to help you out. (p.2)

PAINTING, WHICH HAS NO DISCURSIVE VOCABULARY, EXISTS AS A SYMBOLIC FORM WHICH EXPRESSES RELATIONSHIPS AND WHICH NEED HAVE NO RECOURSE TO CONVENTIONAL REPRESENTATION.

If art, and particularly painting, is a symbol or a "thing" rather than language, it need not represent an object to any great extent, if indeed at all. Even in the case of representative painting where unified symbolism is obtained through the use of familiar objects, the picture is not a duplicate of what it represents, but an image which conveys to us an idea. A painting of a vase is not a vase but the judicious application of gobs of paint to express the idea "vaseness." We may exaggerate or understate certain parts of a nude figure we are representing but that does not make it any less intelligible to an audience as long as they find elements in the delineation which

depict the familiar human form. H.J. Chaytor speaks of an analogous application of this idea in his article "Reading and Writing":[22]

> The eye of the practiced reader does not take the whole of the lettering, but merely so much as will suggest the remainder to his experienced intelligence. Similarly, if we listen to a speaker with a difficult delivery, we instinctively supply syllables and even words that we have failed to hear. Nor does the eye halt at each separate word. When we read our own language, we halt at a point in the line, notice a few letters on either side of it, and proceed to another halting point; the eye has not seen the whole formation of every word, but has seen enough to infer the meaning of the passage.

The visual symbol may be said to convey concepts which we receive and colour or interpret as befits our nature, previous experience and individualistic tendencies but which must contain sufficient constancy to previously known clues to be intelligible.

> ...with the aid of the physiological adaptation of the eye we soon get the feel of relationships, and the world assumes its familiar face. Without this faculty of man and beast alike to recognize identities across the variations of difference, to make allowance for changed conditions, and to preserve the framework of a stable world, art could not exist...[23]

THE MATHEMATICAL AND LINGUISTIC SYSTEMS OF ABSTRACTION, THE VARIETY OF PERCEPTUAL APPARATUS AND IMPRESSIONS, AND A LONG TRADITION OF SUPPLYING THE MISSING LINK IN A WORK OF ART, SHOULD ALL BE CONDUCIVE TO A FAVOURABLE CLIMATE FOR MODERN PAINTING, BUT ARE NOT.

If a painting need not represent the object it depicts to any appreciable extent, why the baffled looks which accompany the viewing of, let us say, a painting by Mondrian?[24] This difficulty in viewing works using geometric shapes with their "purity" of form was anticipated as early as the 16th century by Vasari. In discussing the two Singing Galleries of the Florentine

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[22] In Carpenter and McLuhan eds., Explorations in Communication, p.122.

[23] Gombrich, op. cit., p.52.

[24] I will later suggest that the newspaper format ought long ago to have prepared us to understand Mondrian's painting.

cathedral, one by Luca della Robbia, the other by Donatello, Vasari's comment is pertinent because it takes into account the link between the imagination of the artist and that of his public:

> He (Donatello) left it rough and unfinished so that from a distance it looked much better than Luca's: though Luca's is made with good design and diligence, its polish and refinement cause the eye from a distance to lose it and not to make it out as well as that by Donatello, which is hardly more than roughed out.
>
> Artists should pay much attention to this, for experience shows that all things which are far removed, be they paintings, sculptures, or whatever, have more beauty and greater force when they are a beautiful sketch (una bella bozza) than when they are finished.
>
> And quite apart from the distance which has this effect, it also frequently appears in sketches which arise all of a sudden in the frenzy of art that expresses the idea in a few strokes, while a labored effect and too much industry sometimes deprive of force and skill those who cannot ever leave their hand from the work they are doing.[25]

Applied to a painting by Mondrian, which exists primarily as an intellectual relationship, the title is an additional, invaluable aid to preparing us with a context for the work and a "mental set" which we can bring to bear in its perception and evaluation. As Gombrich states:[26]

> It is clear that an entirely new idea of art is taking shape here. It is an art in which the painter's skill in suggesting must be matched by the public's skill in taking hints.

The extreme modernists, the so-called "abstract expressionists", or the action painters have really only presented frenzied, yet logical developments and extensions of the theme of the "willing beholder responding to the artist's suggestion."

We find in Gombrich again a clue to the art patterns of our 20th century and to the "skipping skill" in reading the printed page which we have previously referred to:

> The artist gives the beholder increasingly "more to do", he draws him into the magic circle of creation and allows him to experience something of the thrill of "making" which had once been the privilege of the artist. It is the turning point which leads to those visual conundrums of twentieth-century art that challenge our ingenuity and make us search our own minds for the unexpressed and inarticulate.[27]

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[25] Quoted in Gombrich, op. cit., p.193.

[26] Gombrich, op. cit., p.195.

[27] Ibid., p.202.

But if the object with which we are dealing is completely non-representative, it cannot readily convey a concept in the nature of familiar things, just as language cannot convey feelings or emotions directly. (Presumably, if a poet could convey the feeling of "happiness" by saying "I am happy" he would, but he cannot. He must imply happiness by association.) Jacques Barzun, in The House of Intellect, gives us a biting, yet illuminating commentary on the present tendency to verbalize the expressive content of a painting or piece of sculpture. This should not be confused with the use of "clueing" titles which help to establish a sympathetic "mental set":

> Historically, painters' and sculptors' minds have most often been of a virginal innocence towards ideas. The ability to construct by hand visually expressive artifacts often goes with inarticulateness, or at least the power to body forth makes words unnecessary. What do we find today? That inspired by the general pedantry, modern painters compose around their work statements which they believe to be impressive and explanatory. In New York three years ago,an exhibition was held entitled "Twelve Americans." Here is one of the creeds printed in the catalogue: 'For me the challenge of painting lies implicit within the act - to penetrate inherited conceptual deposits and attempt the possible impingement of spirit, the personal image remains the enduring command of conscience.'
>
> Hardly science, you say. True, but full of the air of science. Note the geological flavor of "deposits", the pseudo-experimental suggestiveness of "penetrate", "possible impingement of spirit", and the psychological profundity of "personal image."(p.220)

CREATED AS A TOOL TO HELP US FIND OUR WAY THROUGH THE WORLD OF THINGS, OUR LANGUAGE IS NOTORIOUSLY POOR WHEN WE TRY TO ANALYZE AND CATEGORIZE THE INNER WORLD. Gombrich, Art and Illusion.

If everything which is expressed in painting could be expressed in everyday discursive language, there would be no need for painting or art in general. What is it then, that art expresses that language is unable to? It cannot be anything which is exterior to ourselves or we could point to it and come to some agreement as to its nature, whether a river, a person or a building. Then it must be something within ourselves which can only be understood by others when it has been externalized.

If we are happy, we can give vent to this happiness by jumping in the air, banging our heels together and shouting wildly. If we are angry, we may alleviate the condition by kicking our grandmother downstairs. But if, like most people, we only think ugly thoughts or berate our children when in an angry state, we have simply redirected our emotion, not expressed it. Could we express this anger or happiness in words, we would undoubtedly do so because of the convenience and simplicity. But language expresses emotions and feelings in a vague fashion only. We may understand why a person is happy - a recent inheritance - but we can never comprehend the actual feeling through language. We must perforce express these emotions by proxy through the artist, the creative man. But we must realize that the expression of an emotion through an artist's symbols has validity only by means of the life which the beholder imparts to them.

The true artist, by virtue of his special nature, can express feelings and emotions in music, painting, architecture which we can only feel. This special nature consists to a great extent of the pattern of trial and error, that is the continual process of experimentation in which the true artist indulges. In Art and Illusion Gombrich treats the "achievements of the successful innovator":

> Art itself becomes the innovator's instrument for probing reality. He cannot simply battle down that mental set which makes him see the motif in terms of known pictures; he must actively try that interpretation, but try it critically, varying here and there to see whether a better match could not be achieved. He must step back from the canvas and be his own merciless critic, intolerant of all easy effects and all short-cut methods. And his reward might easily be the public's finding his equivalent hard to read and hard to accept because it has not yet been trained to interpret these new combinations in terms of the visible world.(p.302)

The artist is able, by his nature and by concentrated effort to articulate what he feels. If we as an audience share this feeling on seeing or hearing the work, we have expressed ourselves through the artist, who has revealed the emotion as a purely perceptual thing to be grasped intuitively, so that, "when we understand, we understand directly." It would be erroneous to say that the

artist awakens emotions and passions in us which did not previously exist. He can only externalize for the individual those feelings for which he already has the capacity. These are naturally limited by experience, sensitivity and awareness of his surroundings and the habit of working in a particular medium.

Thus, while the idea of language per se is removed from painting, we do not take away the communication of ideas and images. Painting not only communicates ideas and images through expressive relationships, but creates forms symbolic of human feelings and emotions as well.

TO EXTEND AND CLARIFY OUR SEPARATION OF ART AND LANGUAGE, THE FOLLOWING IS INTENDED TO SUMMARIZE THE FIELD OF EACH AND TO ENLARGE ON THE ARTIST'S POSITION.

> There is no communication without a system of signs be it discursive or non-discursive. Art and language are forms of communication. We may assume that since they both continue to exist side by side that they do not fulfill the same function. What is the province then of language and of art?[28]

The measure of art must be in terms of adequate or inadequate. It is within the range of probability that what is adequate for one party will not be so for another. But this is not to suggest that art or its evaluation and criticism is basically willful. Art to be significant must have a context for its creator; none of us can create in a vacuum. The sum total of all our experience at any given moment is all that the ordinary human being can know. The artist, by virtue of his nature, which is more finely tuned, and of his experimentation, has a wider range of experience (in a limited if not general sense). The greatest artist can be the most ingenuous of people.

The world which can be known empirically or rationally denies the creative intuition as being ineffable or unknowable and therefore not subject to provable systems. But it cannot deny the existence of a creative synthesis

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[28]Colin Cherry, On Human Communication (New York: Science Editions, 1961), p.7.

which did not exist before, but which the artist was able to deduce on the basis of his insight. Once the synthesis occurred, presumably we could all come to the same conclusion, if our intelligence or technical capacity permitted. But the very fact that this does not occur in, let us say, painting, leads us to conjecture that the artist's vision is not merely a further step in a pre-determined direction but a unique contribution requiring a unique nature and symbolism. If our rational tendencies revolt at this hypothesis, it may suffice to say that the artist is always contemporary while the public lags behind. The gestalt psychologists might prefer to return to the greater range of the artist's perceptive experience. Because of it he is able to increase the range of simple forms to which all experience can be reduced. The greater mass of humanity, through a dearth of experience, cannot expect to have such an extended range of gestalts and therefore must be relatively symbolically naive.

It would be well to point out that by the wider experience of the artist I do not mean that he has necessarily experienced more of life than other people, but that he has greater insight into the nature of his experiences. They do not exist merely as episodes or happenings, but as clarifications of the life process. Again this does not mean that the artist, being more aware of life, will be more in harmony with it; rather the opposite. His view of life "in the raw" is not a palliative but an obsession which drives him to search further for the meaning of existence, at times in disregard of its more materialistic aspects. Beards, dirty clothes, rudeness are not necessarily manifestations of a creative individual. The true artist is not a physical but a mental bohemian.

IV. HISTORICAL RELAYS

> We have long come to realize that art is not produced in an empty space, that no artist is independent of predecessors and models, that he no less than the scientist and the philosopher is part of a specific tradition and works in a structured area of problems. The degree of mastery within this framework, and, at least in certain periods the freedom to modify these stringencies are presumably part of the complex scale by which achievement is measured.
>
> Ernst Kris.

We have dealt in Chapter III with the reception of stimuli, their abstraction into symbols and the communication of information by way of the receiver's reconstruction or interpretation of the available, inferred and imagined data. As architects, we are primarily concerned with visual symbols, often to the exclusion of auditory, tactile and olfactory perception. Even when we deal with only visual messages, we sharply restrict our intake of information generally in reference to our particular "mental set" - that is, the preconceived notions which are the result of our prior experience, cultural orientation and accumulated knowledge.

To simplify life we generally dismiss immediately those data which do not conform to our previously fixed mental states. We absorb those which have a relationship to our ideas by recasting them to fit those ideas, (often changing the original meaning completely), and assimilate without question or interpretation those data which can later be regurgitated whole when required.[1] It is unfortunate that those messages which find response in the brain are only those which we judge in some way or other useful or important to us. While this limited perspective is useful in some of the more practical aspects of life, such as crossing the road or driving a car, it tends to limit our perceptive interpretation to those things we instinctively like. Gombrich suggests[2]

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[1]Schramm, "The Nature and Behaviour of Attitudes," in idem ed., Mass Communications, p.209. See also D.K. Berlo, The Process of Communication (New York: Holt Rinehart and Winston, 1960), p.94; also J. Ruesch and W. Kees, Nonverbal Communication (Berkeley: University of California Press, 1956), p.4.

[2]Gombrich, op. cit., p.276.

that in our perception we are completely self-centred, and at the same time states:

> ...if the schema remains loose and flexible, such initial vagueness may prove not a hindrance but a help. An entirely fluid system would no longer serve its purpose; it could not register facts because it would lack pigeon-holes. But how we arrange the first filing system is not very relevant.[3]

We have, in our discussion of symbols, language and art, stressed that all perception involves largely unique interpretation. The work of architecture which is to communicate meaning to us does so through a world of many removes. For example, ordinarily, we see a patch of colour which we interpret by way of symbols as a tree. In our brains "tree" may suggest picnic, grass, the company of a beautiful young lady. It may as easily represent the tragic death of a loved one killed by a tree falling in an electrical storm. But the house or office building we contemplate is an architect's interpretation of a client's needs and wants. We are then faced with the virtually insurmountable task of interpreting the symbol of the architect, which is in turn an interpretation of his own and another's way of thinking. Thus the work of art, the architectural unit, is a compound idea, the visual existence of which we are invited to enjoy, although it is generally far removed from the original source.

Can we then expect architecture to communicate meaning to us?

Basically, a drawing of a pyramid, a Greek temple, a Gothic cathedral, a contemporary space frame have little in common in shape, use or method of construction. But if asked to indicate the unifying similarity, one would probably answer: "buildings." The term "building" in itself has nothing in common with the actual physical structure; in Hayakawa's terms, the map is not the territory. However, the image of the thing represented, pyramid, temple, and so on, has a basis of similarity as a type. For a primitive bushman, who has never seen any of our building types, of course no similarity would exist.

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[3]Ibid., p.88.

But even if the observer is aware of, or has experienced a particular visual symbol, if he has no idea of the conventions of preserving the body for the after-life, of an eternal dwelling place, the pyramid is a symbol which cannot be decoded.[4] For communication, the source must exist with sufficient light to make it visible and then the destination must "decode" the "encoded" signal. The inability to receive or understand the conventions employed is one source of misunderstanding of modern architecture's unornamented steel and glass cage patterns. These latter are for many people symbols without benefit of tradition or customary use; thus, the percipients have no previous mental images to guide their path of action. The ability to conceive architectural symbols in a meaningful fashion exists only when one is aware of their relatedness to a distinct period, way of life or conceptual whole.

This is instructive in the evaluation of architecture. Too often, we concentrate our attention on a small portion of the structure, a detail, and use it to infer and judge the total conception. To be objectively critical, although of human necessity biased, one must first understand the whole product. Only then is it safe, and indeed fair, to assess the detail, which has then a contextual framework. If "God is in the details," he is a highly segmented and departmentalized god. Only with a prior knowledge of the unified concept can the details serve as a key to further understanding. In The Eternal Present, Giedion discusses aspects of this situation:

> ...Psychology, which also deals with sense perceptions, has investigated the relationship between the parts of a whole. The parts are derived from the whole which alone determines their real character. The whole is more than the sum of its parts, just as the sociologists have long recognized that the city is more than the mere sum of its inhabitants.(p.14)

And the architect must realize that a street is more than the one "isolated gem" which he himself may contribute.

As we have shown, with symbolic representation of things and ideas, only

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[4]See also E. Raskin, Architecturally Speaking (New York: Reinhold Publications, 1954), pp.108-9, 128.

those abstractions which form a part of the percipient's previous experience can be meaningful. And, just as language changes and grows, is modified, disappears and dies, and can therefore be understood only in its specific context, so our visual symbols have meaning only in the flux of changing idioms and conventions. The representational meaning to perception of a work of architecture is not the underlying theme or concept any more than the work is in itself the thing it symbolizes. Thus, a pyramid, with its triangular shape may convey to us stability, poise, perfection; but none of these is sufficient to convey the image of ancient Egypt unless we understand their ideas of permanence and of preserving the body. Without the knowledge that this form was not originally pyramidal but only an extension of the mastaba,[5] which grew from the earlier pit-mounds, we may assign meanings to a form as if it were created "whole" rather than as a gradual refinement of an earlier shape.

Nor is it possible to understand the complex interplay of a civilization by reference to a single point of view. The architecture of a period must be seen in the light of religious, economic, social, philosophical traditions which preceded and accompanied its erection. By defining modern society in the materials of our new technology - steel, glass and plastic - and at the same time including a traditional pediment, we attempt naively to elevate the contemporary by using forms grounded in antiquity, as if to be ancient were synonymous with goodness or appropriateness or rightness. We hope in this way perhaps to attain the best of both worlds. In expressing a modern concept of life with traditional forms and contemporary material, the architect creates a powerful symbol - a symbol with historic precedent.

This preoccupation with the symbol has far from vanished even today. In Communication and Social Order, H.D. Duncan gives us a contemporary insight:

> Each attempts to maximize the mystery of his symbols. Even the educator, devoted to inquiry and reason and by his vocation specifically against priestly mystification, develops awesome ceremonials. Gothic

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[5]See H. Gardner, Art Through the Ages, (New York: Harcourt Brace, 1959), p.49.

> architecture infuses education with feudal mystery. Majestic ceremonial music, stately processionals, and ancient feudal academic gowns evoke images of a sublime ruling class. The voice of the commencement orator becomes solemn and prophetic. Flanked by the flag and the cross, symbols of country and God, the orator's rising periods evoke the wisdom of academia as savior of the world. As we wend our way to the Gothic throne before which the majestic Chancellor stands to offer us our diploma, ancient processional music fills the nave of the cathedral.(p.323.)

To assess the worth and value of such hybrids is a monumentally difficult task. As a contemporary of either period, we could, with some accuracy define their validity and meaning. But, limited in our knowledge of the past, how can we help but experiencing difficulty in relating to the strange overlay. As we have previously suggested, the personal bias of the artist is another key factor in our interpretation of a work of art. Failing contemporaneous biographical data for artists of the past,[6] it has been necessary for us to infer our information in the light of the tradition from which these artists grew. Where biographical data are available, it is often possible to determine the artist's personal leanings in conjunction with his executed work. But today, when our artists are often a-social and anti-tradition, their symbolism is sometimes unintelligible because of a lack of common ground on which "producer" and "consumer" can meet. Many of our architectural monuments of today are thus expressions of willfulness and egotism in a highly social art.

The architect does not build, although he may design, without a specific client whose needs and wants he must assess, balance and interpret in the work of architecture. More often than not, the painter works within the context of a personal expression of the world or life as he sees it, without assuming the role of Father Confessor, whereas the architect is faced with the task of communicating symbols with sufficient basis in "conventional thematic patterns" to be intelligible to his contemporary society, which includes the specific

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[6]For a fuller treatment of: a)biographical data, see G.W. Digby, Symbol and Image in William Blake, pp.5-7; b)historical recall, see G. Kubler, The Shape of Time, p.18 and pp.21-2; c)the borrowing of forms, see E. Hall, The Silent Language, p.159; d) the uses of history, see J.M. Fitch, Architecture and the Aesthetics of Plenty, pp.241-253.

client. In addition, it must contain sufficient symbols of private significance to make the work meaningful to the client as a unique individual in a social framework. Finally, the architect must include enough autobiographical material in the conception to make it a personally creative act, rather than a mere synthesis of a variety of influences.[7]

With this onerous creative task, from which we as spectators are so far removed, is it possible to objectify and interpret rationally the part of the artist's personal vision? We can, by careful inspection and analysis, ascertain those aspects of a work of architecture which lead to stylistic interpretations. We are able, on the basis of these descriptive data, to group structures in periods, epochs, styles, in such a way as to make comparisons with other groupings having sufficiently similar characteristics to qualify as a style. In this sense, we say that the Greeks used a modular form (to express their concept of temple and universe) while the Romans used volumetric forms. We may describe the Gothic as concerned with man the craftsman, while contemporary architecture is concerned with machine precision, and more recently electronic simultaneity. But why the architects chose to interpret the spirit of their age in this or that particular space metaphor and not another can never be known factually, as there is a large element of emotion in the artist's creation. (The fathoming of motives and causes can be a most rewarding pursuit.) In any case, if the expressive quality of a work of art could be paraphrased discursively, there would be little reason for the existence of art forms as such.

Yet the attempts to communicate the expressive content of a work are unceasing. It seems that where there are imitative or representational aspects in a work of art, it is possible for many people to give a fairly objective interpretation. Historical conventions have been sufficiently codified to make it possible for large numbers of people to differentiate between, let us say,

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[7]Here is yet another aspect of architectural "communication": the personal message of the designer.

Egyptian, Greek and Gothic architecture. To be able further to define the theme of a particular era requires at least some specialized knowledge of influences over a wide range of topics to see the structure in its proper context. ("Style" is a term which we apply only in historical retrospect.) The most difficult task occurs when we attempt to superimpose the particular bias of the artist on the cultural tradition of which he is a part. Once we leave the field of descriptive analysis for the interpretive, we enter the area of value judgments which we cannot test scientifically.

As our expressive symbols become progressively less verifiable, the discursive, communicative process by which we attempt to reveal the inner theme or meaning becomes more subject to misinterpretation. The meaning the architect wishes to convey in his work can only be achieved through his means of expression. The architect can conceive of a representation of an expressive idea, but unless the "idea" is materialized in structure, we have no way of determining, not how, but what the artist wanted to express. Conversely, while the building form may be realized, it may prove incommunicative. That is to say, modern architects often conceive of forms which attempt to establish space relationships based on a system of technological logic. The result is similar to the answer "invisible idiot" which the electronic computer offered as a solution to the data "out of sight, out of mind." Modern architecture often becomes abstract, in the sense that it has no equivalent or emotional basis in normal experience. As it is beyond the experience range of the people for whom it is fashioned, it does not communicate. In her famous law suit against the architect Dr. Farnsworth did not deny the ravishing grace and elegance of her house; she merely claimed that it was uninhabitable.[8] This rationalist approach to architecture is the shortest route to emotional sterility. Fortunately, the overbearingly logical, rational approach to architecture is capable of eliciting emotional response - often, but not sufficiently often, utter disgust.

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[8]Fitch, op. cit., p.163.

Our emotional response to architecture is the result of prior training, influences, customs, dogmas, ad infinitum. We are of the opinion that by our dismissal of God and religion we have become emancipated from emotional bias and can now approach art with scientific detachment. In reality, we have only exchanged an old ideal for a new. These new conventions, tastes and fashions now determine our emotional responses. The purveyors of mass taste now set the stage for "proper" emotional reactions. All art is viewed discursively through the eyes of others. Our visual images are incomplete without verbal analysis.[9] How many of us will venture into a concert hall without prior referral to the critical appraisal and guides of others, both "enlightened" and otherwise? Pure music has been left in the wake of programme music; some painters have verbal explanations in the catalogues which are almost a part of the work proper; various architects speak habitually of "male and female" in justification of their symbolic forms. In short, we all require and feel the necessity to provide "a priori" synopses or interpretations, not merely to set the stage or to fix a mental or emotional "set" with which to receive our works of art, but to do our thinking for us.

The professional interpreter or critic of art approaches his task with biases not unlike those of the public he addresses. A competent critic realizes and appreciates these limitations and places little value on his "intuitive" interpretations. Generations of critics have lived and preached this "call of the wild", but they have offered little insight into the intended meaning of expressive symbols. With this in mind, it is still unproductive to deny that architecture, or any art for that matter, becomes significant only by virtue of the emotion it evokes.

The symbols of architecture which generate this emotional response must

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[9]This situation is, of course, not unique to our age, nor is it all bad; but in common with everything else today, it is "more so" than ever before.

be investigated. No period in history is without its symbolic metaphors, some merely old symbols adopted as being applicable, others newly invented to express new concepts, others modified to suit new generations. Of those that are carried over, many survive in form only. The contexts have changed. In Egyptian architecture, the hypostyle hall belonged to the temple, designating the building as a place for the initiate only. In early 20th century architecture, the high ceiling, multi-columned hall was the home of another "initiate" in the Exchange with a new god. The symbol is made potent because of its sacred origin and has been retranslated to convey this sacredness even when the object it ennobles has undergone significant transmutations.

In the context of symbols changing meaning, we could consider many of the artifacts which fill our museums and galleries as misrepresentations. What was for an earlier or different society a drinking bowl, has for us become a work of art.

The tacit acceptance, by generation after generation, of distinctive architectural images, very often paralyzes the brain. The Parthenon serves as an excellent example. Almost universally (with some notable exceptions which I will mention) we accept the Parthenon as an example of all that is desirable, the beautiful, the precise, the rational in architecture. It was, in its context, a unique and admirable culmination in stone and marble of what was originally wooden construction. As the culminating point of an architectural movement, it had every device the human mind could formulate to make it a perfect expression of human capability. But to be true to the so-called "spirit" of our age, we should prefer to assess it as a farm house with a roof, as did Picasso, or a small marble quarry, as did Paul Valéry.[10] In an architectural generation vitally concerned with structural honesty, the optical refinements of the Parthenon might be considered as an out-and-out "lie." The stretching

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[10]See C. Zervos, "Conversation with Picasso" and P. Valéry, "The Course in Poetics: First Lesson", both in B. Ghiselin, ed., The Creative Process, (New York: New American Library of American Lit., 1955) pp.55 and 92 respectively.

of stone lintels to the breaking point, the fine, almost feather-edged flutings on the columns, are more suited to wooden construction and the machine precision of steel than to the granular quality of marble. In effect, this structure, lifted from its context, has become a symbol of perfection in an age whose values are often antithetic.[11] It may be noted here, that our visual symbols are, through propensity to word magic, eternally fused with the word. If we were to rename the Parthenon: "Conscience Paliative Arising from the Horrors of the Peloponesian War", or even "Marble Quarry", the culturally transmitted image would presumably be shattered.

Violations of convention are not easily supported by the public. When the city of Tel-el-Amarna was designed in Egypt several millenia ago, it caused great rumblings because of the "advanced" symbols it used. Eventually, it became so unbearable that it was sacked and attempts were made to remove the architect's name from existing records. Nor is this a unique example in history. We are not quite so physically violent today, at least with regard to architecture. Unfortunately few people consider architecture sufficiently important to fight about. But we have more powerful weapons at our disposal: social ostracization, and the most dreaded fate of all - indifference. Some of those in control of our mass media consider architecture as something which can not justify the space it would occupy and so they ignore it. Architecture does not sell newspapers:

> As to the popularization of architecture, it seems to me that this is apt to fall in the field of telling readers how to design rose trellises or build carports (and) barbecues.
>
> How many readers can you talk to, considering always that any space you take must be at the expense of space given some more popular and more readily understandable subject: ten per cent? five per cent? two per cent?...
>
> It is, I think, posing to you a fair question: what claim can you lay upon the space of a mass-circulation newspaper?[12]

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[11]"...unless we forever question the basic imaginative constructs of our predecessors, we condemn ourselves to working at progressively more detailed and trivial levels..." R.W. Gerard, "The Biological Basis of Imagination" in B. Ghiselin, ed., The Creative Process, p.226.

[12]Letter to the author from Paul St. Pierre, Associate Editor, The Vancouver Sun, November 27, 1962.

Does this mean that we no longer recognize the importance of visual symbols? Fortunately this is not so. Frank Lloyd Wright has made an architectural trademark of the Johnson's Wax complex, Skidmore, Owings and Merrill in Lever House, Corbusier in his modulor symbol.

When we treat individual works of art, we come up against what might appear to be a strange phenomenon. We find that the purpose of art is not necessarily communication. Many of the images placed in the Egyptian temples to accompany expired royalty communicated only with the dead, if at all. Certainly in architecture, communication is involved in the creative process only in so far as the client and architect are able to fathom, each the intent of the other. The role of communication which architecture plays, has always been assessed in retrospect. Historically, we can view the various architectural symbols and deduce the image which man was trying to project at a given period in history. Thus, future generations may ask: what was man in 1963 trying to say - what were his values?

We have a comparable situation to the Egyptian, in the Mauryan period in India (321-184).[13] In the Baratar Hills, we find the Lomas Rishi cave, a sanctuary carved out of the "living rock" of stone cliffs. Here we have a symbol created to convey a particular religious tradition. But the symbol, except for a very restricted group of the initiate, had no more physical existence than an opening in the side of a hill.

We have in modern architecture, a counterpart to this symbol which is not a symbol. These are the SAGE(semi-automatic ground environment) installations, an example of which is buried beneath five hundred and seventy feet of rock at North Bay, Ontario. If visible, it could convey to the Western world a symbol of defence and protection, to the Russian, a symbol of agression. However, since no symbol is apparent, (except to the six hundred people manning

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[13]Gardner, op. cit., p.516-7.

it) there is no communication.[14]

On the other hand, the great majority of architectural works are created to communicate an idea or concept which has significance for its generation.

The cathedrals of the Middle Ages had a decided role in communicating concepts and ideas. In a civilization fraught with the mysteries of the universe, awed by the vast celestial regions, the vaulted nave had a significant meaning. Today we are in the peculiar position of designing what Paul Rudolph has called background architecture, "something" which will more or less remain in the background and not intrude. These structures, Rudolph has stated, are to be our office and commercial buildings, while our "more important" edifices - churches, community centres, and so on - are to be given the real architectural treatment.[15] This shows a seemingly naive understanding of what our 20th century architectural symbols are. What we may wish them to be, and what they actually happen to be, are vastly different things. To try and confuse future generations by pretending that ours is not a materialistic era is not the architect's function.

Yet the problem of use is difficult to assess. When the function is distinctly monumental or explicitly utilitarian, the problem of architectural communication may be approached with more confidence. The vast area between these extremes requires that much thought be given to the representative symbols. What Rudolph has called "background architecture" may be another facet of the sereneaarchitectural background which Yamasaki insists is necessary for man to preserve his sanity in today's world:

> The state of architecture, like the state of the world, is uneasy and chaotic. The evidence is the explosion of architectural ideas that gush forth to fill the streets of our cities.
>
> This flood of experiments is producing almost every conceivable shape and form, and for the most part without reason.

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[14]Once we know or surmise that it is there, it does communicate, although our assumptions concerning the premises may be erroneous.

[15]See Peter Collins, "Whither Paul Rudolph" in Progressive Architecture, August, 1961, pp.130-33.

> All these shapes, each trying to outdo the other, when placed together - as at Miami Beach - can only result in complete confusion.
>
> With political turmoil, traffic problems, vast increases in population and the tremendous impact of the machine, we must have serenity.
>
> Man needs a serene architectural background to save his sanity in today's world.[16]

Is our architecture to communicate serenity or materialism - or both? Whatever the answer, before our architecture can accomplish the communication it may seek, we must think seriously of some social relevance for structure and design in our buildings. Here is the dilemma. Can our office buildings convey a suggestion of our materialistic age while at the same time providing the serenity so necessary to our peace of mind? Viewed in this magical "chameleon" light, the aesthetic of background architecture takes on a new significance. In a world unfettered by the fixed spatial point of view, these "ambiguities" are admissible. They are potentially capable of bringing all aspects of our way of life into relation with one another. Thus, what is the symbol of magical serenity required by the world may exist simultaneously with the paradoxical process of background architecture. All vital and powerfully-felt symbols contain within themselves their own opposites. This is what makes symbols so puzzling and opaque to intellectual study, while the imagination works within them freely, for they are unique instruments of communication.

As Wittkower has stated, with regard to Church ikons:[17]

> The Church was always aware of the intrinsic ambiguity of function, and in practice never interfered with it: the same figure of the Virgin will be an ideal to the many and a symbol to the few.

The inherent dangers in assessing the communication process of the visual symbols of architecture has been the theme of Chapter IV of this thesis. I have attempted to indicate that description and classification of our architectural monuments is now pertinent only as the source of "data" and "fact" as

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[16]Architect M. Yamasaki, quoted in The Vancouver Sun, Wednesday, December 12, 1962.

[17]R. Wittkower, "Visual Symbols in Art", in Studies in Communication, p.123

background for more pressing concerns. Today our problem is the new space concept which our structures must communicate to be meaningful.

V. THE GREAT HANDWRITING

In the long run, whether art and architecture can be assessed as language or symbolism is of secondary importance. Coulton quotes Victor Hugo on the great historical function of architecture:[1]

> From the beginning of the world, down to the end of the fifteenth century, architecture is the great book of the human race... It fixed, under an eternal, visible, palpable form, all the floating symbolism (of the past)...Thus, during the first six thousand years of the world's history, from the most immemorial pagoda of Hindustan down to the cathedral of Cologne, architecture is the great written document of mankind.

What matters in this study is not the semantic differentiation, but the effectiveness of architecture as communication. All art is essentially a non-verbal form of communication.

> Only by means of drawings, paintings, sculpture and photography are we able to get an inkling of how people who lived at a given period attempted to symbolize - or inadvertently succeeded in symbolizing - thoughts, feelings or even the entire pattern of their lives. Symbolic representation in art is therefore more than merely a code; it always contains a comment, an interpretation, and a suggestion of how to understand its symbols. The embodiment of an idea into a work of art contains both communicative and metacommunicative messages.[2]

If we are willing to envision that architecture has been the great handwriting of the human race, and that this function was, at least partially, destroyed by the invention of movable type, we are left with a two-fold problem. One is to decipher the "handwriting" which existed prior to Gutenberg's invention in the 15th century; the other is to place accurately the communication function of architecture after it had become one of many great handwritings (if indeed it did retain this function). The former problem has been handled by innumerable historians. To add conjecture to conjecture is of little value. Suffice it to say, at this point, that two distinctive features are at once apparent in assessing the vast continuum of history. The architecture of a

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[1]G.G. Coulton, Mediaeval Faith and Symbolism, (New York: Harper, Torchbook, 1958)

[2]Ruesch and Kees, op. cit., p.30.

predominantly oral tradition is not historically eclectic, going back in point of time only as far as man's memory can record. That is, although it may be based upon traditional models, it knows little of the glories of civilizations divorced from its own. Once print becomes available on a relatively mass scale - we must, of course, realize that the majority of the world's population is today still illiterate - man has immediately a huge transpersonal memory. He is able to read of the great civilizations of the past and only then does a return to former glories become a significant event.

The role of buildings, structures, as messages of archetypal forms of human concern as influenced by oral, written, print, telegraphic, photographic and electronic systems of communication has yet to be undertaken. Each of these mass media has a distinctive bias and may indicate to us as yet unexplored paths concerning the conception and treatment of space in a given period.[3] On this basis, it behooves us, in an electronic era to reassess, and discard if necessary, concepts of architecture based on the printed page.

It may be instructive at this point to turn for a moment to the example of Gothic architecture, an outgrowth of the last great oral tradition of the Western world. Here we may find a clue to perception more valid for our presently extending system of senses that can be found in Renaissance culture. Riesman has called print the "isolating medium par excellence."[4] In the manuscript culture of the Gothic world, even those who could read, did so aloud and with difficulty.

It is therefore not difficult to understand the disposition to carve the saints' lives on the cathedral walls, for all to "read" who could see and touch. But it could only have meaning for the populace because they were all familiar with the stories of the gospels, through countless oral recitations from child-

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[3]See Innis, The Bias of Communication, p.64.

[4]D. Riesman, "The Oral and Written Traditions," in Carpenter and McLuhan eds., Explorations in Communication, p.114.

hood on. The presentation is visual without benefit of linear perspective, yet to be formulated. (As pointed out elsewhere perspective and print have evolved more or less contemporaneously. Both deal with a preferred point of view and a form of linear progression.) The carvings give us a simultaneous grasp of the woes and ecstasies of saints and sinners. Heaven and hell did in fact exist and they existed in the same way for all men. Their reality could be seen and felt. If the cries of the sinners could not actually be heard, it needed little imagination for them to be heard in men's minds. It was a visual-auditory-tactile world. The vision of damnation backed up by "The Word" ringing forth from the pulpit made heaven and hell so real that the people could reach out and touch them - if they dared. But what man saw was only real and true to him by virtue of what he had been told or what had been passed down by word of mouth from generation to generation. The eye abetted the ear. It had little significance without it. The range of available stories was limited because of the expense and time consumed in hand-copying, as well as the extremely high rate of illiteracy. Thus, only the most important works - the Bible, the Gospels, and some secular works like the Chansons de Geste - were perpetuated on any scale in written form. But when Gutenberg introduced to the Western world the system of casting metal type a new era began.[5] Innis, in the Bias of Communication, notes that print spread most rapidly in those regions of Europe in which the cathedral was not dominant. Within a decade, advances in the system of producing prints through an early form of wood-block, made available on a larger scale the exactly repeatable image. Relative ease of reproduction made possible the widespread production of ancient literature, prints and, in general, more secular material. For the first time, architecture was confronted by a historic past, not merely in its own tradition, but of the great empires of the

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[5]Movable and cast-metal type were invented in China around 800 A.D., but society and conditions there were not ready for the growth of the new device and with it mass communication. The cumbersome number of ideograms posed the greatest difficulty.

world. That which became enscribed in print took a new hold on the growing body of literate men. With the great civilizations of the past so readily available, it was an almost inevitable result that the symbolic forms of Greece and Rome should prevail.

Let us now examine a contemporary civilization to see how a primarily oral tradition affects the Eskimo's concept of space.

> The familiar Western notion of enclosed space is foreign to the Aivilik. Both winter snow igloos and summer sealskin tents are dome-shaped. Both lack vertical walls and horizontal ceilings; no planes parallel each other and none intersect at 90 degrees. There are no straight lines, at least none of any length...
>
> Visually and acoustically the igloo is "open", a labyrinth alive with the movements of crowded people. No flat static walls arrest the ear or eye, but voices and laughter come from several directions and the eye can glance through here, past there, catching glimpses of the activities of nearly everyone. The same is true of the sealskin tent.[6]

Acoustic space is non-directional in that sitting, standing or lying down man can experience sound.[7] It creates its own dimensions as a result of intensity, level and pitch of the source. The eye must have a background to fix an object in physical space, whereas we cannot shut out acoustic space merely by closing our eyes.

For an oral tradition, the concept of privacy plays a far different role than in a visually-oriented culture. Only to the former group can the Japanese expression "to see but not observe" have any significance. For vision and visual space are not the primary modes.

For the Eskimo, the "wrap-around" aspect of auditory space is shown by the manner in which he constructs his winter home. Surrounded by space in all its acoustic non-direction, he does not mould his igloo from the outside looking in, but from the inside working out. Working from the centre, he builds

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[6]Carpenter, "The Igloo," in Eskimo, identical with Explorations, vol. 9 (Toronto: University of Toronto Press, 1960).

[7]E.S. Rasmussen, Experiencing Architecture (New York: John Wiley & Sons, Inc. 1959), Chapter X, "Hearing Architecture," deals with the problem of how acoustics affect our different conceptions of space in, say, a cathedral and a panelled den. pp.234-45.

a series of concentric circles, tapering upwards conically. When the keystone at the apex has been set in place, Eskimo and structure are one.[8] Only then does he cut a small hole at the base, through which he crawls - in effect, doffing his igloo.

Perhaps here we have an answer to the dilemma expressed by Professor Ian McNairn[9] that "Man, the Measure" has not yet put in an appearance in contemporary art and architecture. I would like to suggest that he is there, but that our generation, victims of five hundred years of print culture and perspective, cannot see him. For us to experience man, he must be optically visible in the context of the picture; for the younger generation, weaned on the electronic media such as TV with its simultaneous images, man is definitely there. But instead of being in space, space surrounds man and has no meaning without him.

Of course, the younger generation is beset with problems of creating auditory and other barriers in the contemporary open planning systems. The blaring stereo installations now serve to create sound barriers with thresholds sufficient to discourage acoustic penetration of other areas which still remain visually accessible. As the solid partition system breaks down, new forms of area demarcation must be devised. Different floor levels are used to create psychological barriers, radio and music, as suggested, to create acoustic ones. Flexible dividers, odours and plants are now used to differentiate areas which previously required solid partitions. Perhaps for most of us, the non-visual space orientation becomes meaningful only at the summer cottage, where the water cascades down beneath the window.

Although the Eskimo's material is perishable and must be replaced by the skeleton construction of the tent in the summer, it has perhaps a prophetic

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[8] W.S. Baldinger, with H.B. Green, The Visual Arts (New York: Holt, Rinehart and Winston, 1960), p.80.

[9] In a lecture entitled "Man the Measure", delivered to the Humanities Association, University of British Columbia, Vancouver, Canada, February 12, 1963.

message for us, as a technologically advanced nation.[10] A self-supporting, stressed, skin-like structure, with built-in thermal capacities and easily moulded, is certainly a desirable commodity for the plastic design forms of an electronic age. Coupled with a flexible assembly method, such a system would then permit use over a wide range of climatic, regional and site differences.[11]

No less a person than De Tocqueville had understood the advantage of a relatively "backward" civilization in the application of new media.

> De Tocqueville, to study democracy, went to the New World, for he realized that colonial America had a huge advantage over Europe. It was able to develop and apply swiftly all the consequences of printing (in the book, the newspaper and, by extension, the assembly-line in industry and organization) because there was no backlog of obsolete technology to be liquidated first. Europeans had to struggle through a long, painful period in order to clear enough room to exploit the new print technology.
>
> Today America has the largest backlog of obsolete technology in the world: its educational and industrial establishments, built by print and methods derived from print, are vast and pervasive. Backward countries have a huge advantage over us: they now stand in relation to electronic technology much as we once stood in relation to print technology. What we plan to do or can do to brainwash ourselves of this obsolete inheritance has yet to be faced.[12]

However, I must point out that at this particular moment in history, the Eskimo is not all "oral tradition" any more than we are all visually oriented. Rather, each group seems, at the present, headed in the direction that was previously the extreme of the other. Thus, the Eskimo embraces literacy, while we accept, usually unconsciously, the oral forms which he rejects.

It would seem that we are faced simultaneously with the tasks of revitalizing the backlog of existing forms, while helping to formulate contemporary organic spatial concepts; that is, man concerned with acoustic space.

We are all aware that the accepted Western visual space concept relates

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[10]In applying the lesson, if not the method, of Eskimo construction, a question arises. Is it anachronistic to lay structures up, brick by brick, stone by stone, in an age when type-setting can be done by Telstar?

[11]See Baldinger and Green, op. cit., p.80.

[12]Carpenter and McLuhan, eds., Explorations in Communication, Introduction, pp.ix-x.

everything to the horizontal and vertical; but the drawings of the Egyptians, the Eskimo and many contemporary artists, indicate that there are other ways of seeing. Perhaps, in the present context of life, these are more valid interpretations for us. Our relationship with our environment may be seriously affected until we are able to find a space concept in keeping with the image man is now attempting to project.

With the new materials of architecture, and the new and reawakened awareness of space, we may find that the lines and orientation of a structure need have no relationship to the horizontal or vertical. Flat, smooth surfaces will have no more significance than textured or inclined surfaces.[13] Architecture cannot exist without a space conception and I am suggesting that our new media have a tangible role in the determination of this concept. In Anonymous (20th Century), Leonardo Ricci, one of the new school of "total" architects, speaks of the "vision" of "what our century ought to become":

> Now, instead, everything is full of fantasy and invention.
> The road has become the house, and the house, the road. The house has grown legs and has married the mountain, and the mountain, too, is house. The house has entered the sea, and the boats are moored at its doors. And the airplanes rest on the water, like big sleeping seagulls.
> And you can no longer separate one thing from another.
> Constructions follow the river beds, down to the river mouths. They go over the river like suspension bridges; they surge toward heaven like mountain peaks; they ease themselves down the slopes like a corn field or condense like giant sequoias.(p.205)

and later on:

> Means of transportation are of a different kind, and people's thoughts are of a different kind. No longer private cars, nor collective buses. But single elements, communicating among themselves freely. Roads that move by themselves, horizontally, vertically, jointing the ganglia of their own composition.(p.206)

In each age of history, man must determine what collective image he wishes to project. Within this framework, any number of individual variations may be acceptable, so long as they do not encroach upon the unifying concept.

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[13]See Giedion, "Space Conceptions in Prehistoric Art" in Carpenter and McLuhan eds., Explorations in Communication, pp.80-81.

When this occurs, symbolism becomes confused and as a result, architectural expression also becomes confused. When architecture was a direct extension of man's communication, there was no confusion (for the people of the time) in symbolic representation. It has been suggested that with the growth of literacy, the printed word began to replace architecture, until the latter became visual imagery without specific meaning; it served instead as a signalling device. Innis, in the Bias of Communication, quotes Trevelyan on the effect of print on architecture:

> The printing press became "a battering-ram to bring abbeys and castles crashing to the ground."(p.55)

In early Christianity, man devised the church in the shape of a cross, not because of its visual aspect, which could hardly be read (particularly before an era of aerial perspective), but for its symbolic value. As society loses touch with religion, the cross, symbolic of Christ becomes secondary and the visual cross as signal becomes important. That is, the church is at present not concerned with the cross-shape as representative so much of Christ, as the Cross is used to signify "church".

Here, I believe, we can find the framework of "universal space" of much contemporary architecture. In it, symbols are not only fuzzily defined, they are interchangeable. Thus, the boiler room and chapel of the Illinois Institute of Technology campus are expressed as generally similar symbols and the role of the cross is one of differentiation (as is the flue) and signification. On the basis of the current mass media and systems of communication, this "universal space" is not only inevitable, but logical and justifiable.

The role of the abstract painter of today has been to make visible the concept of "area of meaning." At the same time, he points out that interplay among our senses has been neglected. Print, with its static separation of functions, calling for a departmentalized, separatist outlook, has broken down these relationships.

Literary imitation of nature tied to a fixed point of observation

> had killed the image as a plastic organism... Non-representational art clarified the structural laws of the plastic image. It re-established the image in its original role as a dynamic experience based upon the properties of the senses and their plastic organization.[14]

We experience space from a fixed point of view which does not extend to include the space occupied by the viewer. Man is outside, external to the world he experiences. Visual perception has definite directional bias and we conceive of spaces as a progression of different vistas. Witness the design of so many of our town-planning schemes: a never-ending, pre-determined, linear sequence of views is presented. If we enter the project from the wrong end, continuity is destroyed.

One of the great problems confronting modern architecture is, then, the dominant mode of viewing in sequence, rather than comprehensively. We are unprepared for the architecture of inside-outside, outside-inside, building-landscape, landscape-building, in short, an architecture unhampered by visual barriers which prevent its existing as an integrated whole. Strangely enough, as has been suggested, it is the "menacing eye", TV, which is redefining space for man.

> Many people have drawn attention to the TV image as a mosaic mesh of luminous points comparable to a Seurat painting. And as in Seurat the effect of the TV mesh is to give strong stress to contour and sculptural quality. André Girard, the French painter who has done visual experiments for CBS and NBC, has said that it was his master Rouault, who made him interested in TV. For Rouault made his effects as if by light through rather than by light on, as occurs in stained glass. In fact, says Girard, Rouault was the painter of television before TV. And, as in mediaeval glass, or in Seurat or Rouault, the retinal image is of low density or "low definition", as broadcasters say. Yet this "low definition" elicits high empathy or participation on the part of the viewer. Perhaps it is just because of the low definition of the retinal image that there is such a high participation and interplay of all the senses in TV. In this respect the television viewer is a sort of skin-diver, for all the senses are in play, but some of them in rather diminished intensity. This would seem to be a condition of synesthesia, that no one sense be allowed high intensity.[15]

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[14] G.Kepes, The Language of Vision, p.200.

[15] McLuhan, "Inside The Five-Sense Sensorium", p.49.

The eventual result will be a concept of space as simultaneous awareness of a multiplicity of unified images in a non-linear fashion. Until this occurs, man will not be at ease in the electronic age. Although literate men themselves have all the necessary apparatus and "civilized" advantages for effective communication in the 20th century, they continue to function on partial potential.

When Frank Lloyd Wright battered down the rigid partition system of the Western dwelling, he introduced a new era in architecture. Giedion tells us:

> By 1910 Wright had achieved a flexibility of open planning unapproached hitherto. In other countries at that time the flexible ground plan and the flexibly moulded interior and exterior were almost unknown. Wright's realization of a flexible treatment of the inner space of a building is probably his greatest service to architecture. It brought life, movement, freedom into the whole rigid and benumbed body of modern architecture.[16]

In his 1934 project "Broadacres City", which Wright himself described as "everywhere and nowhere", he had assessed the distinguishing features of the new technology as "automobility" and electric communication. To which Goodman and Goodman, in Communitas, ask "Does he mean TV?"(p.90)

There is a theory that the great astronomers in history often became architects, but that the reverse never occurred. After dealing with the vast heavens, the particular problem of bounded space must have seemed elementary. The inability on the part of architects for so many centuries to conceive of space other than as the hollowed-out portion of a container is an indication of why the reverse process did not occur. Even today the interpenetration and continuity of house and garden is rarely achieved in practice. Glass can be as refractory as stone or brick. To achieve the flow of space requires a mental adjustment, not merely the substitution of transparent for opaque materials.

The new mass media, the newspaper, the photograph and the magazine have

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[16]Giedion, Space, Time and Architecture (Cambridge; Harvard University Press, 1959), p.403.

paved the way for the architects and the painters. The carefully structured format of the book, building sentence upon sentence, chapter upon chapter, culminating in a causal, almost inevitable climax had to make room for the heterogeneous mash of the newspaper. Reading by scanning, I suggest, grew out of the newspaper, with its juxtaposed stories from region, then country, continent, world and finally all of space as man knows it. Hence the headline, the bold-type became more important than the story climax. It was the climax - all the rest was detail, reminding us of the skeptic who desired to learn all the Bible while standing on one foot. "Do not do to others what you would not want them to do to you - that is the Bible; all the rest is commentary. Now go out and learn the commentary." This was the headline answer to man on the move. The format is simultaneous, not ordered, as was the book. Yet the isolating process of the book still permitted the placing side by side, or above and below, of captions, which, if not read as separate entities, could be highly humourous.[17]

CLERGYMAN BACKS PROPOSAL FOR ENLIGHTENED SEX LAWS

Ferry Runs Cancelled

But the unrelated reports of the newspaper tend to destroy the dichotomy of time and space, rendering them as relationships rather than separate, ordered and sequential. The here and now, space-time configuration of the newspaper paved the way for the architectural idea of a room which is not a room, an exterior which is also interior and building which is also garden.

It has been suggested that the nineteenth century return to eclecticism in architecture was a result of the outcry raised concerning the sensational tabloids which, it was said, were threatening to destroy the morals of society.[18] In effect, it was not its morals society was worrying about, but the idea of a

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[17]Random choice from local daily newspaper.

[18]See Carpenter, "The New Languages" in Explorations in Communication, p.175.

new space concept replacing the linear format with its four centuries of tradition. Today, airports designed on a linear system make no sense in an age in which it takes one half hour to fly from Vancouver to Seattle and twenty minutes to walk from the airport entrance to the loading platform.

The new media, together with the tinted photograph, brought the East to the world's attention in the mid-19th century. In the Japanese dwelling, we see the physical embodiment of what the newspaper-magazine format had suggested. One six-mat room serves as dining room, living room, bed room, parlour and, weather permitting, outdoor patio.

> In regard to the bed and its arrangements, the Japanese have reduced this affair to its simplest expression. The whole floor, the whole house indeed, is a bed, and one can fling himself down on the soft mats, in the draught, or out of it, upstairs or down, and find a smooth, firm and level surface upon which to sleep...[19]

This could be extended to any or every room, excluding perhaps the kitchen. I think it proper to assess this as a reflection of the continuing "oral" tradition of the Japanese as well as of their idea of nature as a benevolent god. The trend to display pieces becomes necessary only with the introduction of perspective and its need for a focus. Before print, when Western civilization was still basically "oral", it too found comfort in space itself.

> And yet there was a medieval comfort. But it must be sought in another dimension, for it cannot be measured on the material scale. The satisfaction and delight that were medieval comfort have their source in the configuration of space. Comfort is the atmosphere with which man surrounds himself and in which he lives. Like the medieval Kingdom of God, it is something that eludes the grasp of hands. Medieval comfort is the comfort of space.
>
> A medieval room seems finished even when it contains no furniture. It is never bare. Whether a cathedral, a refectory, or a burgher chamber, it lives in its proportions, its materials, its form...[20]
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> It is a living instinct in these periods that space shall be dominant, not furniture. To this everything else is unconsciously subordinated.[21]

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[19]E. Morse, Japanese Houses and Their Surroundings (New York, Dover Publications, 1961), p.210.

[20]Giedion, Mechanization Takes Command, pp.301.

[21]Ibid., p.304.

Here, it is possible to draw a parallel with dictionary definitions as areas of meaning, rather than as absolute values. The one "correct" meaning has been replaced by a contextual relationship. Architecturally our range of use, of spatial definition, is extended by the context of function.

The new dynamic aspect of architectural space is then pregnant with innumerable meanings.

In this regard it is interesting to note one facet in the design of the new Education Building at the University of British Columbia. Here is a department teaching, supposedly, the latest refinements in progressive education. All the audio, visual, tactile methods are preached in a classroom with seats firmly anchored to the floor. The immovable desk is an outgrowth of the early days of print culture, when for the first time, teacher and student alike had the same material available to them in the printed book. When teaching was oral, teaching methods were flexible, approximating the clustering of the tribe about the fire with the chieftain in the centre.

> Solitary learning and study came only with the printed page. And today when learning and study are switching more and more to the seminar, the round-table and the discussion group, we have to note these developments as due to the decline of the printed page as the dominant art form.[22]

And, adds Joseph R. Royce: "Because of the great forces of fragmentation in contemporary life we need to exert ourselves explicitly toward providing educational situations where integration, both outward and inward, can be maximally fostered..."[23]

The new media of learning suggest that such a dynamic grouping is more in keeping with contemporary tendencies than the negating example of fixed seating. Use of a given area will be determined by need. Only then will it be valid to impose a specific functional arrangement upon an area. Here is

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[22]Carpenter and McLuhan, "Culture Without Literacy" in Explorations in Communications, p.119.

[23]"Educating the Generalist" in Main Currents in Modern Thought, May-June 1961, vol.17, no.5. p.101.

further justification for the concept of "universal space" - not its Platonic overtones, nor its real-estate value, nor its apparent negation of man as an individual. In this context, universal space becomes organically logical in a world of constant flux. Segmented man, divorced from the current of life, has little place in the interplay of all the senses being reawakened by the new media of communication. The "whole" man, in every facet of his personality, is the logical outgrowth of the simultaneous and potentially unlimited architecture they call forth.

One questions the role of the proscenium theatre, which not only imposes severe limitations on performers, but binds the audience virtually to its seat. Any conventional theatre is a highly restrictive room. Canetti, in describing the panic which often seizes theatre audiences when threatened by danger, states that "...a normal theatre is arranged with the intention of pinning people down and allowing them only the use of their hands and voices; their use of their legs is restricted as far as possible."[24]

The role of the auditorium, when the function of theatre has been usurped by newspaper, radio, film and television, requires that a hall have great flexibility to be an economic as well as artistic success. A large symphony may require arena proportions, a chamber group requires that the house be drastically reduced in size, to obtain the intimacy for which the music was written. As Whittaker has stated:[25] "Never before in its history has the theatre been so conscious of its living quarters. The battle of proscenium versus platform is not new, but it is attracting new armies of defenders on either side, and a major battle seems inevitable....The platform stage, blatantly wrapping its audience around it, can keep control of a large audience with ease, and a little circling about. Its farthest customer is less than half as far away

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[24]Canetti, op. cit., p.26.

[25]Quoted by McLuhan in "Inside the Five Sense Sensorium", p.51.

because the stage projects out to meet him."

The stage seems to be perpetuating the Renaissance anachronism of the picture-box theatre. What Inigo Jones had tried successfully to do in the productions of "Florimene" and "Salmacida Polia" was to extend the perspective vista almost out of the theatre.[26] But the great innovators of the late 19th and early 20th century, Appia, Craig, Reinhardt and Jones, have tried, largely unsuccessfully, to dissolve this restricting frame in an effort to revitalize legitimate theatre. They emphasized lighting and the actor, as the basis for the "new" theatre. Craig, in an interview with John Savacool,[27] has said that despite all their efforts, all that has happened to the stage in this century, is that the external trappings have been exchanged for more contemporary dress. The present theatre merely supplies a re-edition of the old model, brought up-to-date, streamlined and improved.

Shakespeare, writing for an orally oriented people, required no designed sets and only rudimentary props. Settings and place were conveyed through verse. It was left to the audience to construct or fill in the scenic elements. This required an interplay of the senses on the part of the viewers, who were really auditors and creators as well.

Maximal audience participation is what the platform stage, like the arena theatre, offers.

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"Area of meaning", as applied to architecture, is more than a reassessment of our spatial concept as a broad contextual framework in contrast with the absolute qualities of other eras. It suggests as well that different

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[26]See MacGowan and Melnitz, The Living Stage, (Edgewood Cliffs, N.J.: Prentice-Hall, 1955), pp.183, 93 respectively.

[27]Published under the title "Stage Visionary", in Theatre Arts, June 1950, vol.34, no.6.

disciplines and competences work together across a wide field of diversified interests. These must be incorporated in an integrated design. The generally conservative American Institute of Architects has recognized the need for a smoothly functioning design team, working across many disciplines. (Whether the recognition was a matter of progress of a re-entrenchment against the onslaught of the package-dealers is, however, a moot point.)

The specialist, working in a corporate system, in which order is imposed lineally from the top downwards is no longer feasible in our electronic age.

> The relevant factor in this obsolescence is the use of electronic tapes by which information is fed from several points simultaneously and in concert; previously, with print, there had been one unit followed by another unit. With this switch from linear to cluster configuration, literacy lost its main prop in the social structure of our time, because the motivating force in the teaching of reading, and the development of a highly literate culture, was the strict relevance of that classroom discipline to every pattern and purpose in the outside world. Today the outside world is abandoning that very form and providing increasingly less motivation for the teaching of reading and the achieving of literate culture in our schools.[28]

The new formulations of electronic media suggest a field attack through "organized ignorance."

> This striking phrase seems to have arisen during the Second World War, when the Operations Research people put biologists and psychologists to work on weapons problems that would ordinarily have fallen to the lot of engineers and physicists. The former group swarmed all over each problem instead of beaming a ray of specialized knowledge at it. If you beam knowledge at a new situation, you find it is quite opaque; if you organize your ignorance, tackling the situation as an over-all project, probing all aspects at the same time, you find unexpected apertures, vistas, breakthroughs. Thus the chemist Mendeleev, to discover the missing group in the element chart, did not simply use available knowledge. Instead he asked: what must be the characteristics of the rest, if those we do know are to make sense among themselves?[29]

Dr. B.J. Muller-Thym, a business analyst at Massachusetts Institute of Technology, has taken up the challenge of the change-over from line components to interacting disciplines in the world of management and industrial organization.

The first thing to be discovered was that pyramidal organizational

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[28]Carpenter and McLuhan, eds., Explorations in Communication, Introduction, p.x.

[29]Ibid.

> structure, with many layers of supervision, and with functional division by speciality, simply did not work. The communication chain between top scientific or engineering leadership and work centers was too long for either the scientific or managerial message to be communicated. But in these research organizations where work actually got done, when one studied them, he found that whatever the organization chart prescribed, groups of researchers with different competences as required by the problem in hand were working together, cutting across organizational lines; that they were establishing most of their own design criteria for the work as well as their intended patterns of association; that the patterns of their group association at work followed the organization of their competences as human knowledges.[30]

The factionalized town-planning system, imposed from above, is an example of an outgrowth of the pyramidal organization system. On a master plan, this area is designated school; this, industry; this, park land; this, pedestrian pathway; all as though man were a fragmentary and departmentalized being. Jane Jacobs has pointed out the folly of this system.[31] For her, the diversity of use is necessary to the life blood of our cities. It no longer suffices to be external, dispassionate, objective viewers of man's environment. We must walk through our streets, breathe their air, feel their rhythm, catch their vitality before we can understand the intricacy and diversity of a great social task. To experience the living organism that is our environment from behind a sheaf of statistics is not the answer to such problems today, if it ever was.

Does this group association mean that the artist-architect is no longer desirable? On the contrary; as long as architecture remains a potential force for creative environment, the architect is highly necessary to achieve stability in this age of chess-playing machines.

Interaction at the inception of a design is necessary, rather than designing in isolation and farming out work to various engineers charged with rendering the architect's "art" habitable.

When, in a given structure, the cost of mechanical and electrical appur-

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[30]McLuhan, Gutenberg Galaxy, pp.140-1.

[31]The Death and Life of Great American Cities, Part Two, The Conditions for Diversity, Chapter 7, The Generators of Diversity, (New York: Random House, 1961), pp.143-51.

tenances rises to fifty percent of the overall cost, its treatment becomes highly significant and important. A change in any one of these disciplines often drastically affects the workings of all the others. All are mutually dependent. Patterns of association must be determined in an interlocking, simultaneous awareness of total architecture. That different branches of knowledge should have to work in mutually exclusive patterns (from which the architect must attempt the onerous task of co-ordination) is not supportable.

We have today too many outs for faulty design. The engineers make livable a building with an arbitrarily closed facade as well as the equally arbitrary totally open facade. Loudspeakers and microphones correct faulty acoustics, artificial light "beefs up" bad fenestration, and electrical fans obviate poor ventilation.[32]

An investigation of the implications of the fragmentation of the building process has been taken up by a pilot study into communications in the building industry. It is an implementation of the demand for "an urgent research programme of the whole problem of communications (in the building industry)...." Not too surprisingly, the study attempts a mosaic approach, combining the human sciences and operational research. Because of its timeliness and importance, I shall quote extensively from the review appearing in the May 1963 RIBA Journal (Royal Institute of British Architects).

> The report finds that problems of communication arise at every stage of the building process from inception to final account. Until much more detailed information is available about the timing, content, and techniques of communications, improvements will be difficult to achieve. Difficulties in communications have been aggravated by complications arising from the need to accommodate technical change.
>
> This has led to confusion in the roles and relationships of members of the building team. There is no stable definition of what the job of any individual member of the team is.
>
> The architect, the builder, the quantity surveyor, the subcontractor, will be doing quite different jobs depending upon which of the many possible contractual arrangements they are currently working in. As a result, there is an understandable defensiveness on the part

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[32]Fitch, op. cit., Chapter 15, The Engineer, Friend or Foe, pp.229-40.

of everybody, particularly when entering upon a new project or a new set of relationships. 'In the absence of generally agreed rules for the relationship game, every man wants to ensure he is not a losing party.'

The report briefly traces the historical development of the various roles in the building team over the last 300 years. It points out that many difficulties are caused by the conflicting values of professional and commercial interests which have deep roots in society, and demand respect.

The 'lack of cohesion and co-ordination' in the industry (to which Sir Harold Emmerson referred in his report) is not the result of ill will or malignancy, but the outcome of forces beyond the control of any individual or group. The report, therefore, suggests that the first step towards improvement is a better understanding of these forces.

Knowledge and techniques in operational research and the human sciences now exist which could enable the industry to assert something of its own control over the external and internal forces which impinge upon it. The report gives an account of how operational research analysis might be used to study communications in the building process. In this, the problem of establishing criteria against which to test performance, and the potential value of the critical path technique as a means of improving co-ordination, are discussed.

Building is seen as a chain of interlocked operations, in which a wide variety of resources must be co-ordinated. The central problem arises from the lack of match between the technical interdependence of the industry's resources and the organizational independence of those who control them.

The recommendation of the report is that concurrent studies are now needed into:
(a) the detailed pattern of interlocking operations involved in the building process;
(b) the roles and relationships of the members of the building team. This would involve a study of the real nature of the 'distinctive competence' of each of the existing professional and commercial members of the team; how these relate to each other and to the particular fields of expertise or resources each controls.
These studies could best be carried on as applied research on actual building sites and in design offices....(p.178)

Nor does the emphasis on integration mean that we fall into the trap which engulfed the new exponents of industrial design after 1900. They advocated the principle of "universal good design." However, this aesthetic unity had a very negative effect in the loose envelopes it proposed for the arts.

Kubler, in The Shape of Time, illustrates what may result:

This egalitarian doctrine of the arts nevertheless erases many important differences of substance. Architecture and packaging tend in the modern schools of design to gravitate together under the rubric of envelopes; sculpture absorbs the design of all sorts of small solids and containers; painting extends to include flat shapes and planes of all sorts, like those of weaving and printing. By this geometric system, all visible art can be classed as envelopes, solids and planes, regardless of any relation to use...(p.15)

Although Kubler was referring specifically to the traditional distinctions between "fine" and "minor", "useful" and "useless" arts, it is not without application to contemporary architecture. J.M. Fitch, in Architecture and the Aesthetics of Plenty, relates the contemporary tendency to the work of Mies van der Rohe.

> Mies has managed to fit into his classic envelope, with only minor adjustments in scale or structure, such varied operations as a museum, a bank, a rum manufacturer, a national theatre, an architectural school, and in such diverse climates as Houston, Des Moines, Santiago de Cuba, Western Germany and Chicago....(p.166)

It seems to boil down to the fact that architecture is today, more than ever before, a problem in orchestration. The architect is the conductor who, although he cannot play all the instruments, knows the quality and value of which each unit is capable. Like a successful symphony, any successful building today is a collective work of art, a three-dimensional symposium of electronic man's techniques and skills. Although the technical and mechanical sides of architecture are more and more becoming the province of modern science, both art and science are ordering activities of the human mind.

> Art attempts to discern order relations in nature, creating images of our experience of the world. Data are set out in terms of recreated sense forms; and the felt order is expressed in terms of sensible structures exhibiting properties of harmony, rhythm and proportion.[33]

We are in a situation in which Picasso is already dated, and perhaps Moore is following with the key to the technique of visual "discontinuity." The "discontinuity" is for many as yet unintelligible because it creates a new pattern of perception. New insights can be gained only by learning the language.

When a step forward in the formulation of a new spatial awareness in architecture is made, it seems to be in the direction of rehashing existing linear forms rather than a fresh approach. (The work of such individual

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[33]Kepes, "Art and Science", in Explorations, vol. 1, p.78.

creators as Gaudi, Goff and Fuller finds few adherents and is generally assessed as eccentric.)[34]

But the growing body of devotees of the architects of total design - Kahn, Soleri and Ricci - indicates that pessimism for the future of architecture is premature.

In Louis Kahn and Paul Rudolph, we see attempts at integration of the mechanical and structural elements of a building into the design, not merely as expressions of function, but as controlling design elements. Perhaps this is the form our contemporary ornament will take. And deny it as we will, ornament is retrenching itself in architecture. I do not say this in a deprecating way. The fact that man has never been able to deny ornament for any length of time (the early part of this century is an example) suggests that it has great communications significance.

Mies van der Rohe has banished ornament, in the accepted sense, to replace it with a system of structural steel ornamentation. Louis Sullivan, for all his "form follows function", never denied decoration in his actual work. Frank Lloyd Wright saw the need for it in others as well as in himself. Niemeyer has attempted to hide it by making it part of the engineering. Corbusier, though he denied it in the early part of his career, has in later years been its most eloquent proponent in a truly contemporary sense. Ronchamp is in itself an ornament - everything about it is an extension of material. Rudolph's non-denominational chapel at Tuskegee Institute, Alabama, is a reinterpretation of Ronchamp. Various other architects have used different means to incorporate ornamentation; Stone's and Yamasaki's grilles and screens have become sufficiently repetitious to be regarded as trademarks. All in all, the evidence for the return of ornament is too overwhelming to be ignored or lightly dismissed. Rather, an investigation into its communicative function

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[34]For a reassessment of Gaudi's work, see J.J. Sweeney and J.L. Sert, Antoni Gaudi (New York: Praeger, 1960).

may be in order.

The work of Eero Saarinen was, until his untimely death, a search for forms to express the contemporary idiom. Particularly in the TWA building, he attempted to render a modern plastic material, concrete, so as to realize its fluid potential. A measure of his success may be that the conventional plan, elevation and section method was inadequate to the design. Models had to be constructed initially, and only later could they be recorded in conventional projections. Perhaps, then, our very forms of representation are themselves inadequate. They are tools inappropriate to the emerging spatial idea.

If, noting these exceptions, architecture is charged with "holding that line" while science and sculpture venture onto new paths, then architecture will become the great preserver of the status quo. Unlike Hugo's assessment of the "great written document" of the human race, it now functions as a defender of the faith. If architecture is simply an anchor to what already exists, it can readily be replaced by the machine. Computers with goal drives are already within man's capabilities.

If all the "great" forms are those which have existed up until the present, it may then be possible to program these known data and come up with machine answers as different one from the other as many contemporary structures. Should this seem a trifle science-fiction, it is only because we are largely ignorant of the extent of man's capacities. Automatic systems can often successfully duplicate these human capacities without the attendant time loss.

When the machines have assumed a great part of the day-to-day repetitive tasks, man will have time on his hands. An architecture which permits only a retranslation of what has gone before will do little to alleviate this concern for time. Of prime importance in offsetting the unlimited time on our hands, will be the concern with cultural activity in the world of the future, with its need for a new structuring of "tribal" space, in a contracted "earth-city" and

an extended universe.

TV, in fact all the mass media, have been objects of much criticism. It is inevitable that media, in which advertisers wish to appeal to the largest number possible, should cater to an average mental age of twelve among viewers and listeners. Yet the vacuum created by the Industrial Revolution and extended by the Electronic Revolution, must be filled. The unwaning popularity of the cowboy with his very human, yet heroic, individualism, is certainly symptomatic of a population swamped by mechanical routine and confused by the complex machinations of a world in flux. The new dictator, unless we learn to control it, is the automaton, the "slick, anonymous machine." We all laughed at that prolific fellow A. Nony-Mous who wrote all those rousing ballads in our literature course, but the anonymous balladeer of the 20th century will have a "tape" for a blood stream and all the vitality of a spayed bitch. To people overwhelmed by "Modern Times", the industrial (and now electronic) scale which Chaplin so magnificently portrayed, the undaunted cowboy restores the human dimension.[35]

The capacity to deal with the bourgeoning world will also be long in coming.

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[35]See McLuhan, The Mechanical Bride: Folklore of Industrial Man (New York: Vanguard Press, 1951.

VI. EPILOGUE

This thesis has sought to advance the case for synesthesia, or organic interplay among our senses to increase and extend the range of our experiences and our awareness of the world about us. The role of the communications media in the reorientation and extension of our capabilities, has been emphasized as a determinant of spatial concepts.

The concentration on the visual experience, to the detriment of the other organs of perception, it has been suggested, is the result of the emphasis on perspective and book culture. Veblen underlines the process of Gestalt in behaviour, in The Instinct of Workmanship:

> In all their workings, the human instincts are... incessantly subject to mutual 'contamination' whereby the working of any one is incidentally affected by the bias and proclivities in all the rest. This must be so because the human organism is of one piece, and what it does in one department of life under the aegis of one instinct, will affect its behaviour in all other departments. Further the instincts themselves are not separate biologically.[1]

Susanne Langer extends this concept of organic structure to the arts:

> Obviously a picture or a poem (or a building) does not really have organs and vital functions....
> ...Every element in a work of art is so involved with other elements in the making of the virtual object, the work, that when it is altered...one almost always has to follow up the alteration in several directions, or simply sacrifice some desired effects.
> This many-sided involvement of every element with the total fabric of the poem is what gives it a semblance of organic structure; like living substance, a work of art is inviolable; break its elements apart and they are no longer what they were - the whole image is gone.[2]

Architectural space can be structured by ear, nose and hand as well as by eye. Our sensation of space is modified by walking, touching, texture, shade, temperature, sun, shadow, age, in fact by any number of ways through which it is possible for the human organism to construct its world. A building, to be truly appreciated must be experienced from two aspects: when you are outside it

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[1] Quoted in Explorations, vol.1, p.39.

[2] Problems in Art, (New York: Charles Scribner's Sons, 1957). pp.55-7.

and when it is outside you. As symbol, architectural space creates feelings of awe, intimacy, grandeur, delicacy, fragility, connected with our own feelings and experience along these lines.

Each age has its own space-metaphor preference. Some historians have assessed the view of architectural space at any given period in history as a function of man's conception of the world. When, for the Greeks, the sun revolved around the earth, as did the limited galaxy of planets, so the temples had a peripheral peristyle to indicate the various positions of the sun. The innermost section, the earth so to speak, housed the deity and was the centre of the universe. When the concept of the world changed so that the sun became the centre about which things revolved, then all was light and the interiors of the Renaissance cathedrals and palaces show this star-burst configuration in the expanded conception of their interior space. But at all times, this space was confined within the limits of the outermost galaxy. Today our earth is looked upon as being an infinitesmally small part of an unimaginably large world. Space is unconfined, without limit, and is expressed in our structures by the breakdown of solid walls and partitions, the mingling of interior and exterior, in short the complete plasticity of space.

The mass media and communications play an effective role in the 20th century determination of space. They substitute a dynamic concept of life for the static principles of the Renaissance. By discarding literary encumbrances, a self-sufficient plastic formulation is free to emerge. We need an architecture adapted to our world of computers, TV sets, radar screens and helicopters. With the increased strength, flexibility and lightness of the new materials - concrete, plastics, epoxies, glass - and the daring engineering solutions of the Nervis, Candelas and Fullers, the old ponderous solutions are disappearing, giving way to transparency, lightness and adaptability. The symmetry of like parts has been superseded by rhythmical asymmetrical balance as an organizing principle.

I have advanced the idea that the mass media are prime forces in the

shaping of human perception. Television as the representative "machine of our age", with the new electronic technology, will play a decisive role in determining our new spatial awareness. As has been shown, this is already apparent in the younger generation, who are able to structure space acoustically as did earlier cultures. For the older generation, schooled in book-print-linear sequential patterns, only those willing to defy the status quo will adjust adequately. In "Culture Without Literacy", Carpenter and McLuhan explain why the English and Americans were so particularly overwhelmed by print.

> ...in the 16th century they had only rudimentary defences to set up against the new printed word. The rest of Europe, richer in plastic and oral culture, was less blitzed by the printing press. And the Orient has so far had many kinds of resistance to offer.[3]

The new generation will, of course, not be entirely free of the taboos and totems to which they are heir. Yet they will be able to enjoy that simultaneous "vision" which, when properly understood, will be as much a unified mode of perception as the fragmented single vision now generally practised in the arts. The domains of science and industry indicate that the field approach is not idiosyncrasy but a necessary step in understanding our electronic age. However, the general public, and this includes scientists when not engaged in their professions, still persist in the Renaissance concern with optical fidelity of object appearance as the sole means of artistic description of reality.

In art and architecture, what we call discontinuity today will be the opportunity for creative fullfilment tomorrow. It is an opportunity for the simultaneous perception of the total diversified field of man's endeavours. This, it has been suggested, is already within man's capabilities through the media of newspaper, and the new electronic systems with their mosaic format.

> If the book page tends to perspective, the newspaper tends to cubism and surrealism.[4]

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[3] Explorations, vol.1, p.123.

[4] Ibid., p.125.

Art has become for many a system of packaging which requires verbal interpretation to be intelligible. Language itself has lost much of its communicative power through the mass media. For there is a diluting side to their nature as well as the means to new concepts of perception and space. Literature must look for new ways to set down words to convey the meanings which have been appropriated by the ad-men.

Kenneth Galbraith, in The Liberal Hour:

> ...ridicules the old commercial notion of arts as frivolity and urges the relevance of art as a navigational guide in all business today. The supremacy of design in creating and markets is one factor. The other factor is that the artist's designs provide the advance models of future development. Careful study of new artistic models gives any firm ten or twenty years breathing spell in planning and development. The old-fashioned business man who played it off the cuff and read only the current signs is now doomed by the speed of the new technology. So the artist moves from the ivory tower to the control tower in the modern industry.[5]

In our discussion of art, language and symbolism, it was determined that discursive language is often deficient in conveying emotions effectively. It is necessary to appreciate its limitations as well as its strengths. Gombrich, in Art and Illusion, states that "The corrective is to understand the nature of the tools, to learn the significance and dangers of language. If we neglect this necessary task, we fall into the dangers awaiting those who use tools they do not understand.(p.92)

Yet, so long as we continue in the "hypnotic state" in which one sense is brought to the fore and all others subordinated, there is little chance that we will adapt to our changing world. Studies of pre-literate cultures can be of great significance, for what is to them a natural state, is being reimposed upon us by the new electronic media.

Corbusier has, more than any other architect, broken with the concept of a fixed visual point of view and its separation of the senses. His concern with

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[5]McLuhan, "The Humanities in the Electronic Age", in The Humanities Association Bulletin, Fall, 1961, pp.3-4.

the tactile mode in visual forms lends great stress to contour and sculptural qualities which are also distinguishing characteristics of the TV medium. He has found comfort in the configuration of space, for electronic age comfort is once again the "comfort of space." Ronchamp is the notable embodiment of this concept among buildings today. That Corbusier is also a painter is not without influence.

Through the entire range of his works, and particularly since the "modulor" system was formulated, runs man as the measure of all things.[6] The latest developments in his prolific career show many characteristics opposite to his early ideas, yet not inconsistent with a "growing" architect in a changing world.

Today, the consumer in the arts is being asked to assume a role of active participation in the creative function. This is by no means unique to our time, but the present inter-action is on an unprecedented scale. The seemingly bizarre representations in space of the abstract expressionists are merely a continuation of the completion process which artists throughout history have reserved for their publics. The new themes in architecture were not possible so long as we adhered to a print culture bound by book format. Page margins set the limits of our visual imagination, as do picture frames.

> Consistently, the twentieth century has worked to free itself from the conditions of passivity... And this dramatic struggle of unlike modes of human insight and outlook has resulted in the greatest of all human ages, whether in the arts or in the sciences.[7]

Perspective has conditioned the architect's need for vistas, little gems of composition to be seen from ideal locations. The fact that we move through a given space in a time interval has been neglected, if understood at all. Our

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[6]The ease with which the master switched dimensions when confronted by the average size of the North American male, compared to the European, may cause a smile. Yet a module which relates to all that man can physically encompass is of great social significance.

[7]McLuhan, Gutenberg Galaxy, p.278.

perception is a panorama of stimuli being registered on the screen of our eyes. Even from a fixed point of view, the eye is never still. It is constantly adjusting and readjusting, helping us to define and clarify our data. The architect should properly be concerned with controlling the movement of the eye through varying rhythms, flows, arrests and rebeginnings rather than attempting to glue it to a single point.

That we can and do appreciate the simultaneous images presented to us has been indicated by reference to different cultures. The closest the Japanese came to perspective prior to the late 19th century was a form of isometric drawing. This depiction gave a simultaneous and integrated series of views describing interior and exterior space and the relationships of inhabitants to those areas. In sumi-e, the overlay pattern of achieving distance is used. Without benefit of vanishing points, a multi-frame representation of the world was achieved. We move easily through the scroll representation, giving us simultaneously views from above, below and head on. The Japanese use only one term for both "to write" and "to draw". Their inability to separate what to us are primarily different functions is symptomatic of an orally-oriented culture.

Our environment has been interpreted for five hundred years with our eyes at the base of a triangle. The scene diminishes from this base to the vanishing point or the apex of our triangle. From our viewing position at the base, the world assumes a diminishing aspect, viewed in its entirety as through the lens of a camera. But if we reverse the process and place our eye at our vanishing point, then our scene becomes an ever-widening, growing series of images.[8] A fixed point of view requires a central point of interest and, if not symmetrical, at least passive ingredients to prevent our being distracted from the "correct" view. A system of representation geared to the panoramic perception (our normal process of seeing) seems to me a more sympathetic and realistic basis for

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[8]See J. Tyrwhitt, "The Moving Eye", in Carpenter and McLuhan, eds., Explorations in Communication, pp.90-5.

architectural designs today.

We cannot experience architecture in the same manner in the social, uniting media of a TV culture as we can in the isolating media of the book. As we come to realize the role of the mass media in our way of life, we can more fully appreciate the new language of expression they open to us.

The advent of type, the repeatable print, the determination of perspective, all helped to bury the Gothic, with its many-faceted presentation of the world beyond; so, the motion picture and TV are helping to break down the solid partition system of the pre-20th century period. As the world becomes less and less segmented and more and more a matter of interaction, space inevitably begins to spill over its preconceived borders, so that not only does the space within the vessel become significant, but also the space without and as the container loses its solidity, the space through the container as well.

What will be the new configurations, as the older forms of perception and judgment are interpenetrated by the new electric age, is the question we must face today.

Man "has the power deliberately to seek new experience, create new patterns, and even change the shape of his world."[9]

Learning to comprehend and structure space in a new way is similar to what happens when the blind learn to see. "By keeping at it, they can change a spinning mass of lights and colors into the normal panorama of earth and sky..."[10]

The new developments, with their emphasis on space, transparency, structure and inventiveness are more in tune with the contemporary spirit than the traditional forms. In this new configuration we enjoy an unprecedented freedom of choice, for which we must assume fresh and greater measures of responsibility.

We may be sure that our civilization, which is one of majesty

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[9]Chase, op. cit., p.38.

[10]Ibid.

and great breadth, will ultimately make itself known in a new principle of architectural order. It is probable that the order will be one which will admit the widest range of functional and evolving shapes, which will acknowledge the organic nature of all buildings - being wedded to a technological grandeur surpassing all previous architectures - and which will, above all, proclaim the social nature of an art made inseparable from the collective welfare of mankind. There will be many who will find that principle beautiful.[11]

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[11]Dean Hudnut, Architecture and the Spirit of Man, (Cambridge: Harvard University Press, 1949), p.48.

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