A THEORY OF ARCHITECTURE

(Architecture and Structures of Consciousness)

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THE NATURE OF REALITY

We live in a world which we never know. What we know is the reality of our experience created by the encounter of our perception with the world. The creation of reality by the interaction of perception and the world will be termed the "dialogue." The dialogue generally operates without our awareness, concealing the way in which it works and giving the illusion that the reality which we know is actually the world.[1] Perception is subject to learning and therefore creates a reality subject to cultural change.[2]

Experience is perception of the world and/or awareness of perception. Perception cannot be understood as isolated sensory activities such as vision. Perception is all of the interrelated activities of the body. Any conceptual subdivision of perceptual activities, such as sensory, motor, thought, or awareness of any of these three, is permissible for pragmatic purposes only

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[1] This concept of the nature of reality is used here as a working basis on which to develop these papers. The metaphysical standing of "reality" or the "world" is not specified in this work as it is not within its scope. The "world" is taken as unknowable because of historical facts and because of the subjective nature of any "knower." The concept of the world is used as that which mediates the experience of different subjects. If Leonardo da Vinci had been frozen, and later thawed during the life of Cezanne, and if they had both painted the same fruit, then the "Reality" of each can be explored by looking at their paintings, which presumably represent their experience. The "world" is that quality which mediates their experience, but to determine whether or not that world is the "thing in itself" is something with which I will have to concern myself at a later date.

While I have some familiarity with the philosophical problems implied by this paper, it is not extensive enough to be able to describe which philosophical systems I do or do not agree with. The readings done in philosophy specifically for this paper are in: Sense and Non-Sense and The Primacy of Perception by Maurice Merleau-Ponty, and The Phenomenological Philosophy of Merleau-Ponty by Remy C. Kwant. Other reading which contributed to the ideas in these papers is listed in other foot notes and in the bibliography.

[2] a) The idea of different realities for different cultures is put forward in Spengler's Decline of the West, though he does not develop a theory of the mechanics of the creation of reality.
 b) In The Beginnings of Art, Giedion refers to the work of the biologist J.J. von Uexküll at the beginning of the twentieth century.
        "Reality is not a unique and homogenous thing. It is immensely diversified, and has as many
        different patterns as there are organisms." (p. 83)
c) The concept of learned realities is implicit in the works of Marshall McLuhan, who puts forward a theory for the mechanics of changes in the creation of reality.

and is done at the risk of distorting the understanding of perception.[3] The body is a unity. There is no duality, no soul separate from perception, and no consciousness (pure awareness) apart from perception. In the absence of any other activity, awareness is of breathing and the sounds of the circulatory and nervous systems.[4]

There are no ideal forms or objects which we can know. One has only to attempt to name an "object," a particle, a law of physics, or a concept of the world to know its unreality.[5] This is not to say, however, that reality is

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d) In The Shape of Medieval History, William J. Brandt applies the concept that models of perception, unconscious though learned, determine how men understand their place in the world to his study of medieval history.

e) Reality can vary with individuals as well as with cultures. Mental illness is an extreme case of this, but not the most important. The learning of reality will be dealt with in these papers.

[3] The concept of the primacy of perception is put forward by Merleau-Ponty. (see f.n.1)

[4] The problems with the concept of a duality of the body and an immortal soul cannot be solved by substituting a mortal but no less magic "consciousness" for the soul. In agreement with William James, "Does 'Consciousness' Exist," p. 207 in Philosophy in the Twentieth Century, vol. I, I reject the concept of "pure consciousness." All awareness is of something. To avoid confusion I do not use the term consciousness, though I recognize the usefulness of Freud's concept of the unconscious, of the distinction between conscious and unconscious, and Merleau-Ponty's concept that the dialogue is "pre-conscious." All of these concepts could, however, be refined by a clarification of the term. For Merleau-Ponty consciousness is not necessary to subjectivity. (Kwant, p.6)

[5] a) Due to problems of concepts and vocabulary the term "object" will not be used in these papers except in quotes.

b) In his essay, "Eye and Mind" in The Primacy of Perception (p. 159), Merleau-Ponty writes:
    "Science manipulates things and gives up living in them. It makes its own limited models of
    things; operating upon these indices of variables to effect whatever transformations are permitted
    by their definition, it comes face to face with the real world only at rare intervals."
(Merleau-Ponty uses the term "real world" where I use the term "reality".)

c) To test the unreality of presumably universal concepts or law, all one need do is name one, wait five years, and find that not only has the "scientific truth" vanished but its entire conceptual framework has probably also vanished.

d) All scientists are not, of course, unaware of the fact that they are dealing with symbols, models, and representations, and not with the world. In an appendix titled "Symbol and Reality" (1964) to his book Natural Philosophy of Cause and Chance, Max Born deals with this. He sees the problem as "not to distinguish the subjective from the objective, but to understand how to free oneself from the subjective and arrive at objective statements." (p. 218) He is dissatisfied with Kant's position that we can know only what we experience, because he does not adequately deal with the concept of what we are experiencing, the "thing in itself." Husserl taught that "one could obtain knowledge by a process of mind called 'intuition of essence.'" (Born, p. 220) Logical positivism in its most radical form denies the existence of an external world, or at least its knowability. These theories rely "on the assumption that the world of sensual

created in ourselves alone. This is contrary to our experience, for we perceive the green of a tree as being in or of the tree, and not in ourselves.[6] Reality is the encounter of our perception with the world and is neither of them alone.

Theories of stimulus and response are not adequate to describe the relation to the world. The division of the two is artificial and misleading. Not only must they be understood as a unity, but this unity must be conceptually expanded to include a dialogue. The two parties to the dialogue are the human body and the world. In this relationship, the body is the subject, the world is the object. The body is understood to be a subject in the sense that it has a dialectic relationship to the world around it, "changing it into its own 'environment' and giving it a meaning for itself."[7] The dialectic relationship

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perception is 'the same' for all individuals." (Born, p. 221) Communist materialist philosophy maintains the existence of a reality independent of the subject. Born finds none of these theories adequate to answer: "…how objective knowledge arises from the sense perceptions of the individual and what this knowledge means…" (Born, p. 218) To determine an answer he analyzes the methods of thinking in physics: decidability, comparability, correspondence, structures, and probability. He concludes that these methods can identify the "thing in itself."

> "The assumption that the coincidence of structures revealed by using different sense organs and communicable from one individual to another is accidental, is improbable to the highest degree.
> "This is the normal way of scientific reasoning and, apart from science, of all research. An archeologist, for example, who discovers in two different countries remains of pottery of similar design will conclude that this cannot be accidental but indicates a common origin.
> "I am not afraid of identifying such well-defined structures with Kant's 'thing in itself.'" (Born, p. 231)

I cannot agree with Max Born that he has found the "thing in itself." The fact is that different individuals do not perceive the same structure and cannot always communicate them. Leonardo da Vinci was the most competent observer of his time. He represented what he saw on canvas and paper. Cézanne was the most competent observer of his time. He represented what he saw on canvas and paper. Today we can look at their work and see that it is different. Their perception was different. This difference is not always communicable. Many people in Cézanne's time (and our own) who still perceived in the same manner as Leonardo had no idea what Cézanne was doing. What I have just described is equally true for the same reasons for science. The comparison could easily be made between Aristotle and Newton or between Newton and Einstein of between Einstein and Heisenberg.

[6] Kwant, p. 25.

[7] Kwant, p. 18. "The purpose of his [Merleau-Ponty's] book, La structure du comportement, is precisely to show this point."

is not one of simple causes and effects, but is one of a continuous circular causality, in which each party affects the other's causality. The body as well as being a party in the circle, also occupies the center as the initiator of the dialogue and as the source of meaning.[8]

The presence of the dialogue is not usually evident, and many disciplines attempt to ignore it. Most writing in the sciences describes situations as though they had some reality of their own, independent of our experience of them. The presence of the dialogue can be deduced from meanings which we do not choose to make, but which would not exist if we were not present. For example, relationships such as up, down, near, and far are meanings which are not subject to choice, but which require our presence. Similarly, sexuality can be understood as a meaning created by the dialogue. A thing

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[8] a) Kwant, p. 19.
    "Food, for instance, influences the organism, and this organism actively assimilates the food. But it is the organism itself which by virtue of its structure makes it possible to call the food 'food,' so that its nutritive value cannot be understood independently of the organism. Reversely, food stirs up the forces of the organism. Accordingly, the total process cannot be dissolved into two independent actions, for the one cause does not merely act on the other but also affects the other's causality which it itself undergoes." (Kwant, p. 19)
b) Heisenberg's findings in physics have lead to the fall of causality. In other fields concepts and vocabulary have not been rethought in keeping with these findings. Not having thought the problem through for myself, I am still using the term "causality" in these papers, though I deal with Heisenberg's findings in the section on dynamized spatiality in the paper on the contemporary architectural experience. In his Natural Philosophy of Cause and Chance, Max Born replaces "causality" with "coordination":
        "The measurement of the intensity of heat (temperature) with a thermometer is the coordination of the perception of heat with a geometrical quantity (the length of a mercury column, the position of a galvanometer needle) and thus again with a number (scale value)." (Born, p. 227)
c) This concept of meaning will be developed in these papers. When developed, this concept will present an alternative to the position often attributed to existentialism that our relation to reality is "absurd." Contrary to being absurd, the relation can only be meaningful, as it is with a reality which we ourselves create.
d) The dialogue is not a thing which exists, but is a process. If one rides a bicycle, one exists and the bicycle exists, but the riding is a process.

or situation has sexual meaning regardless of our choice in the matter, but the sexual meaning is not there in our absence.[9]

Perception is not a passive receptor of information from an outside world, but is the active creator of reality and of human meaning. While the division of perception into categories can be useful, it is a unity and it is primary.[10] The term "symbol" is often used in descriptions of human experience. In An Essay on Man, Ernst Cassirer writes that the whole of human life is qualitatively different from that of higher animals. "No longer in a merely physical universe, man lives in a symbolic universe."[11] In The Philosophy of Symbolic Forms, Cassirer shows the symbolic nature of all human experience, including language, myth, art, science, and knowledge.

Cassirer conceives of symbolization as intervening between us and the world. "No longer can man confront reality immediately; he cannot see it,

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[9] Kwant, pp. 21-26. In this sense it is possible to substitute the concept of subjectivity for that of the unconscious. Freud used the expression "sexual instinct," but that implies a ready-made pattern of behavior which operates in certain situations. Freud's concept of sexuality is quite different from this. Freud understands sexuality as changing, evolving, and expressed by numerous patterns of behavior. The problem of terminology can be solved if it is aid that the body (perception) gives, by process of the dialogue, sexual meaning in the creation of reality. (Kwant, pp. 28-29)

[10] a) "The world which is given in perception according to Merleau-Ponty is the concrete, intersubjectively constituted life-world of immediate experience. It is a world of familiar natural and cultural objects, of other people, the world in which I act. Perception itself is defined in terms of a sensory-motor behavior through which the world is constituted for man as the world of human consciousness prior to any explicit or reflexive thought about it." (James M. Edie, p. xvi, introduction to The Primacy of Perception)
b) James M. Edie writes that man not only lives in a world of perception, but also in "realms of imaginary, of ideality, of language, culture, and history." (p. xvi, introduction to The Primacy of Perception) I feel that there can be no danger of losing the gains of phenomenology in using it to approach classically defined academic fields. Each field must be reconstructed out of perception and the nature of reality. This is what I try to do for art and for architecture.

I see this problem in the work of Ernst Cassirer also, who applies his theory of symbols to the classic disciplines, language, art, myth and science, in his books An Essay on Man and The Philosophy of Symbolic Forms.)

[11] Cassirer, An Essay on Man, p.25.

as it were, face to face."[12] The symbolic process can also be understood as one in which perceived material is transformed into symbols, to be retained, recalled, and associated with other symbols in the process of thought. The concept of the symbol used in these ways is a different approach to the process referred to in these papers as the dialogue.

Sigfried Giedion, in The Beginning of Art, uses the concept of the symbol to deal with creations of man.

> "Before art man created the symbol."[13]

> "Symbolization arose from the need to give perceptible form to the imperceptible."[14]

This type of process will also be understood in terms of the dialogue, when the function of art in experience is dealt with. For the sake of clarity and consistency, the term "symbol" will not be used in these papers.[15]

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[12] Cassirer, ibid, p. 25.

[13] Giedion, The Beginnings of Art, p. 78.

[14] Giedion, ibid, p. 79.

[15] I have not found, nor have I been able to invent a satisfactory definition of the term "symbol." Cassirer writes that symbolization distinguishes us from animals. It could be said that animals work with "signs," direct situations which elicit direct responses, while men work with "symbols", abstractions, received, retained, used, associated, and manipulated apart from the objects referred to. This distinction does not hold up. Both animals and men relate to the world in terms of their subjectivity, all differences between them are of degree. Susanne Langer proposes a concept of the symbol in Philosophy in a New Key, and develops a theory of art based on that concept in Feeling and Form and Problems of Art. The lack of clarity of her concept is pointed out by Charles I. Stevenson in Language, Thought and Culture, edited by Paul Henle. This lack of clarity, combined with a lack of specific examples make her work unintelligible. Morse Peckham, in Man's Rage for Chaos, is extremely careful and consistent in his terminology. He finds "symbol" so disputed a term that he does not use it.

Though we are not generally aware of the dialogue, it is learned and not inherited. Perception develops only in a context of learning and experimentation.[16] Since man is a social animal, learning and experimentation take place in a social context, and a given society molds the individual's reality into its own.[17] The process whereby individuals mutually learn perception is a social process, and culture is the mutually created reality of a society.[18]

The most apparent features of cultures are that they have distinguishing characteristics and that they change, seemingly in patterns. In European history cultural dynamics remained confused with theology until 1725 and the publication of Giambattista Vico's New Science. Vico's ideals of the structure of the social world, of the nature of historical knowledge, and of the cyclical nature of history remain with us today.

Of the modern theories of culture and history, Oswald Spengler's as put forth in his book, Decline of the West remains the most rewarding to the student of architecture. Architecture plays a prominent role in Spengler's

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[16] Psychologists sometimes refer to the effects of emotions and upbringing on perception. Tests have shown that poor boys see a half dollar piece as being larger than rich boys see it. Certain optical illusions are experienced by people in some cultures but not by people in other cultures. (R. L. Gregory, Eye and Brain, p. 161) These distinctions tend to miss the point that our learned perception creates not only minor variations in reality, but all of reality. R. L. Gregory in Eye and Brain describes an experimental apparatus designed by Held and Hein. In it two kittens grow up with identical visual experiences. One is passive and unable to respond with its limbs to the visual situation. The other is free to use its limbs and to react to the visual situation. "Held found that only the active kitten developed perception, the passive animal remaining effectively blind." (pp. 209-210) It would probably be more accurate to say that different learning processes have resulted in different realities for the two kittens.

[17] I find the philosophical, anthropological and biological arguments for man as a social being convincing.

[18] Since perception creates reality in the dialogue, mutually created reality is a result of mutually learned perception.

disciplines of mankind develop through these same "seasons," and they are as many in form as there are cultures.

> "There is not <u>one</u> sculpture, <u>one</u> painting, <u>one</u> mathematics, <u>one</u> physics, but many, each in its deepest essence different from the others, each limited in duration and self-contained, just as each species of plant has its peculiar blossom or fruit, its special type of growth and decline."[23]

All of the activities of a culture, the arts, sciences, etc., are manifestations of its one central organizing principle, its "soul" or "prime symbol."

> "A deep identity unites the awakening of the <u>soul</u>, its birth into clear existence in the name of a Culture, with the sudden realization of distance and time, the <u>birth of its outer world</u> through the symbol of extension; and thenceforth this symbol is and remains the <u>prime symbol</u> of that life, imparting to it its specific style and the historical form in which it progressively actualizes its inward possibilities."[24]

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[23] Spengler, <u>ibid</u>, p. 17.
Not being able to arrive at Spengler's distinction between cultures by "soul." I do not count the number of "physics" or "painting" the same way that he does. Different modes of perception create different realities. The major categories of realities in Western history as they affect architecture are summarized in my paper on the contemporary architectural experience. In this summary the experiences of ancient Egypt and Greece are described together. There are of course differences, and perhaps I would come to the basis of those differences if I investigated them. At that point I would know whether or not I agreed with the usefulness of the concept of "soul" or "prime symbol" as Spengler uses it.

[24] Spengler, <u>ibid</u>, p. 93.
My position on this is explained in foot note 23 above.

Spengler's philosophy and his use of analogy provide great insight into history. The place of science, economics, art, etc. are profoundly analyzed. His concept of "intercultural contemporaneity" provides a significant means for understanding our place in history.[25] The explanations which Spengler gives for the phenomena he describes so well remain totally inadequate. Although studies have been made since Spengler's work, none of them has been successful in explaining cultural dynamics.[26]

While an attempted explanation of cultural dynamics is not within the scope of these papers, some of the factors which might be considered in such an explanation will be listed, and one of them, the extensions of perception, will be analyzed.

Any exploration of culture should start with an understanding of its nature. A culture is the mutually created reality of a group. Cultures are different because realities are different. Cultures change because realities change. Reality is created by the dialogue between perception and the world. A

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[25] Spengler comments on the fact of human cultures and then writes:
> "But the fact that we have before us eight such Cultures, all of the same build, the same development and the same duration, justifies us in looking at them comparatively, and therefore justifies our treating them as comparable, studying them comparatively and obtaining from our study a knowledge which we can extend backwards over lost periods and forwards over the future…" (Spengler, ibid, p. 234)

Such an insight provides useful meaning to the statement: "history repeats itself." In Spengler's concept, since the structures of all Cultures are similar, we can understand the events and personalities of a given period (such as our own) by studying the situations and personalities occupying a similar place in the structure of other cultures. The concept cannot be used in my work as it is used in his as I do not follow him on defining cultures. However, the "realities" which I describe are not fixed in the past and can reoccur. If our reality is becoming more like that of primitive or "non-literate" people, then we can gain insight in our art and science by studying theirs.

[26] Pitirim A. Sorokin has done extensive work in cultural dynamics. His book, Modern Historical and Social Philosophies summaries and analyzes the theories of numerous people, including Oswald Spengler, Arnold J. Toynbee, and Albert Schweitzer. His own theories are presented in four volumes, Social and Cultural Dynamics. What I have read of this material seems to be filled with insights in historical observation. It also seems to be totally lacking in any insight into what is really occurring.

science of this relationship might be called the ecology of perception, and
could adopt by analogy relevant biological principles.[27] The changing
nature of the world (as we can know it) could be explored, as could the
changing nature of perception. The current advance in the study of human
heredity and the ways in which inherited characteristics change may have
great relevance to an understanding of cultural dynamics.[28] The changing

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[27] a) The use of biological analogies is regarded by some (myself included) with great suspicion. An
excellent example of its misuse is "Social Darwinism," a social philosophy based on Darwin's theories
which justified success and breeding by the successful elements of a society as the expense of the
unsuccessful elements on the premise that this was nature's way of maintaining and improving the species.
The problem with this theory is not that Darwinism is not applicable to social relations, but that those who
formulated "Social Darwinism" did not understand Darwin's theories. Darwin does not say that the
strongest or most fit will survive, but rather that those who do survive we will call more fit. Other
unsuccessful biological analogies result from similar misunderstandings. (Another point to keep in mind is
that biological theory says "will," or "does" but never "should.") I will now describe two situations in
ecology which can lead to conclusions which I feel are applicable to cultural dynamics. In the first
situation a pail of water with straw soaking in it is left standing. After a period it is occupied by protozoa
of species A. We can conclude (actually by definition) that species A is most fit to occupy this
environment. After a period the bucket contains not only soaking straw, but also chemical X, the waste
material of species A. As chemical X builds up, we find that species A is replaced by species B. We can
conclude that species B is more fit to survive in an environment of soaking straw plus chemical X than
species A. The waste material of species B is chemical Y, and species B is eventually replaced by species
C, etc. In the second situation a forest is completely cleared. The first species of trees to reappear is that
with the most mobile and therefore lightest seeds. After the first species grows up and provides shade, its
light seeds must compete in the shade with heavier seeds which have by now moved to the area. The
heavier seeds win in the competition in the shade because they have a greater supply of stored food. The
second generation of trees will be of the species with the heavier seed, the third generation will be of a
species with a still heavier seed, etc. The last group of trees to finally occupy the area is called a climax
forest. In a desert, where a shortage of water and an abundance of light prevent any plants from growing in
the shade of other plants, since the root spread is greater than the leaf spread, the first generation is the
climax forest. In a tropical jungle a climax is never reached. Both of these situations show how the
presence of a species in an environment can change the environment so that some other species is more fit
to survive in that environment. It is probable that this can be the case with cultural expressions, and in the
next paper I will describe a process in which changes in art are the result of the previous art form.
b) Lewis Mumford, in Technics and Civilization and in The City in History analyzes technology as a part
of the environment, but does not develop a theory for the process of our relationship to the environment,
nor does he deal with technology as extensions.

[28] The study of human genetics has, until recently been avoided for ideological reasons, that is, we would
like to believe that all people are born the same except for some slight differences in physique and
intelligence. It has also been an iron clad rule of Western (as opposed to Communist) biology that acquired
characteristics cannot be inherited. Current studies, now being reported in much of the popular press, are
exploring our common hereditary and instinctual make-up (books on territory and aggression), our
differences (particularly racial, which used to be very unpopular among "scientific" people) and the
possibilities for change (particularly in terms of the relationship of DNA to learning). The future holds
possibilities of extensive human knowledge and control about and over man. The important point to
remember is that none of this information or ability has any built in value (or morality) and that we are free
to do or not to do as we please with it.

nature of abstraction in human experience should be explored, and its causes

and consequences determined.[29]   A psychoanalytical interpretation of history

has yet to be written.[30]   The most important variable in the body-world

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[29] The term "abstraction" is often used, but seldom defined. It is usually meant to imply "higher" mental functions, but E.H. Gombrich, in Meditations on a Hobby Horse points out that the drunk who mistakes a lamp post for a person because of their common abstract quality of certicality is not engaging in "higher" mental functions. I will attempt a definition of "abstraction" here which may at first seem very limited, but which, will, I feel, be most useful in the long run. Abstraction is a means of orientation towards the world in which vision is favored over the other senses. An abstract concept of time is one which can be represented by a line, with infinite extension and divisibility into an infinite number of points. There are other possible conceptual representations of time, such as an auditory model described in the section of dynamized spatiality in the paper on the contemporary architectural experience. Western culture, between the beginning of the fifteenth century and the end of the nineteenth century, can be said to have had an abstract orientation. The significance of this label is explored in the section on dynamized spatiality in these papers.

[30] Freud's interests were as culturally diverse as they were individually specific. Among his books on cultural problems is Leonardo Da Vinci, A Study in Psychosexuality, which deals with art; Totem and Taboo, which deals with religion, and Civilization and its Discontents, which deals with history. I personally feel that Freud's books are among the finest ever written, but that does not mean that they are not dated. While the book on Leonardo Da Vinci explains much of his style in terms of the dynamic structure of his personality, it does not treat the problem of why Leonardo's art was similar to that of other artists of his period and different from the work of artists before and after his period. Freud's book on religion deals with the cultural memory of a crime against the father, but does not resolve a means whereby this memory is passed from generation to generation. The defect in Civilization and its Discontents is more serious than that in the other works. Freud maintains that through the repression of the sexual instinct, a civilized man gains, through sublimation, the energy to produce civilization. Thus the desires to acquire and hold property, to accumulate wealth, to build a physical and social organization, and to be responsible for a family are the result of sublimated sexual drives. These conclusions were reached at a time when the behavior of animals out of captivity was not studied. Since then, such studies have shown that animals acquire and hold property, build physical and social organizations, and take responsibilities for families and groups, usually with no related sexual gratification. It is also to be assumed that animals do not suffer sexual repression. To assume that animals do instinctually what we do as a result of the sublimation of sexual energy is too awkward an explanation. Walt Disney's film, Seal Island, and Robert Ardery's book, African Genesis, and George B. Schaller's The Year of the Gorilla form the basis for my decision that some of Freud's conclusions must be reconsidered. I find that I agree with Erich Fromm in his books such as Escape from Freedom, but those of his books which I have read deal with specific problems and not with a general psychoanalytical interpretation of history. Norman O. Brown's Life Against Death, The Psychoanalytical Meaning of History, is an attempt at a broad interpretation. However, his whole book is based on the assumption that there exists in nature, and therefore in man also, two opposing forces, life and death. This idea comes from Freud's book, Beyond the Pleasure Principle. I find the assumption of the existence of these two opposing forces absurd. Most psychoanalytic theory since Freud, and to the best of my knowledge, Freud himself, later rejected the concept of the death wish as a force, and use specific neuroses involving guilt to explain its manifestation. For this reason I find Norman O. Brown's work questionable. There are numerous psychoanalytic studies of culture. I like Robert Lindner's Prescription for Rebellion, and The Collective Dream in Art, by Walter Abell. As pointed out by Aldous Huxley in "The Oddest Science," in his Collected Essays, they all suffer one great lack. They ignore the body. In so doing they give little recognition to perception, and never realize that it changes. When psychoanalysis gets over this lack, it should be able to produce a significant contribution to cultural dynamics. (Except for The Undiscovered Self which deals with a specific problem. I have not read Carl Jung's books.)

dialogue is the change brought about in the body by changes in the extensions of perception.

In his book, <u>Understanding Media: The Extensions of Man</u>, Marshall McLuhan develops the idea that technology changes reality not only by altering the environment, but also by altering man.[31] Although a unity, man's body can be understood in terms of motor and sensory systems. Both of these are subject to extensions. A hammer can be understood as an extension of the hand, giving it more mass, protecting it from impact, and adding to its leverage.[32] Photography can be understood as an extension of vision, modifying, preserving, and sometimes obtaining otherwise unobtainable images.

All of man's extensions (including all media and much other technology), whether of sensory or motor systems, affect his participation in the dialogue. When they change, the dialogue changes and reality changes. Speech can be understood as an extension of thought, and as such profoundly influences it.

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[31] McLuhan attributes this concept to Harold Innis. I looked at several of Innis's books but did not find them relevant to this work. Though his style is often more provoking than concise, to my knowledge Marshall McLuhan is the first person to put forward a comprehensive theory of extensions. Among his publications I have read <u>Understanding Media</u> which deals with the broad range of media, and with the change from a literate visual culture to a tribal auditory tactile culture to a literate visual culture which reached a climax in the sixteenth century.

[32] Any piece of machinery can be understood as an extension in this sense. The point is not just to realize that hammer or an axe can hit or chop, but that it affects every level of a culture. This can be demonstrated by giving a primitive culture which uses stone axes a supply of steel axes. The entire culture will often be entirely destroyed, not by the increase in number of trees that can be cut, but by changing the people themselves by changing one of their extensions. A similar observation can be made in the South in this country. The wide spread of private automobiles has played a large part in the change in the Negro's position. A Negro in a private vehicle, independent of its use (it can be a small truck for business or a car to go to work in or shopping in or to a social event in) is equal to any other driver, and superior to any pedestrian. This upsets the Negro's traditional place, who, having been elevated while in the automobile, retains the new psychological orientation while out of it. It is important to remember that this is a result of the form of the automobile, independent of its content (the specific use to which it is put). McLuhan's term for this is that "the media is the message."

(Most thought is "verbal.") Writing is an extension of speech and the fact and form of writing changes speech. (One of the effects is increased uniformity.) Printing is an extension of writing, and has an extensive influence not only on writing, but also on speech, thought, perception, and the entire form of Western culture.[33]

That one of the sense has been extended can be realized when millions of people can simultaneously witness the assassination of the President's accused assassin, even though most of them are several thousand miles from the event and from each other. The importance of this change in vision can be understood if it is remembered that vision is an integral part of perception, and that perception is a party in the creation of reality.

The exploration of the influence of extensions on cultural forms is only beginning, but it is already evident that this concept holds the key to many of Spengler's "mysteries."[34] The mathematics, physics, art, economics, etc. of a given culture all express the same "prime symbol" because they are all created and experienced by people with the same extensions, and therefore the same reality.

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[33] The influence of printing on Western culture is the subject of The Gutenberg Galaxy by McLuhan. He identifies the basic underlying change as a change in the proportion of importance of the senses. In this period vision became more important and the experiences of the members of the culture became more abstract.

[34] This approach does not, however, produce results identical to Spengler's. Spengler maintains that cultures are independent of each other, communicating only the most superficial ideas to each other. In understanding the importance of extensions, we realize that the West received something of great importance from the Greeks, the phonetic alphabet. In the chapter "The Written Word: An Eye for an Ear" in Understanding Media, McLuhan describes the power of the phonetic alphabet to organize a specialized visually oriented culture. Through this alphabet we have more in common with the Greeks than Spengler admits.

Every reality (total aggregate of all experience) is limited in depth and extent. These "limits of experience" are mutually determined by the members of a culture. There are, therefore, two types of realities and two types of limits to experience, that of any given individual and that of a culture.[35] The experience of a culture is determined by the current extensions of the perception of its constituents. The experience of an individual lags behind that of the culture because of the interval necessary to reconstruct his reality in terms of the new extensions. Some individuals, by adopting an attitude open to the flux of reality, can keep the limits of their own experience abreast with those of their culture.

At any given moment an individual is engaged in only a part of all the experiences possible to him. These experiences are an "activity." The limit to several specific experiences, an activity, is the limit of that activity.

Architecture is a part of our reality. The understanding of architecture begins in the understanding of reality. The understanding of architecture, which is an art, continues with an understanding of the nature of the art experience.

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[35] The idea of differences in the limits of experience of the members of different cultures is common. It is the basis of Spengler's theory, and of theories similar to his. It is a part of McLuhan's theories. It is a common idea in anthropology, and is the subject of two books by Edward T. Hall, The Silent Language and The Hidden Dimension. These ideas are often expressed in terms of different concepts of space or concepts of time among different people. This approach has problems. If one writes: "There are two concepts of space, Newtonian space and Einsteinian space," one uses the term space three times with three different meanings. The first time it is meant as a general term, inclusive of the other two. The next two uses are also questionable, because Newton's and Einstein's concepts are not two related approaches. They are totally different and have no relationship to each other at all, except that they explain similar phenomena. In my paper on the contemporary architectural experience I attempt to resolve this problem.

THE ART EXPERIENCE

Architecture cannot be understood as art until art has been understood in such a way as to demonstrate common characteristics among the arts. The qualities of architecture must be somehow related to the qualities of music or they cannot both be "art."[1]

Existing theories of art which describe the work of art as having certain ideal or absolute characteristics do not answer the problem of what qualities relate the arts. Not do theories which describe the work of art as expressing something. These and similar theories, which treat art as a class of "objects," have several other deficiencies. They do not recognize the nature of reality, and they cannot explain "non functional stylistic dynamism."[2]

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[1] This paper is based primarily on the theories of Morse Peckham as developed in his book Man's Rage for Chaos. I have done extensive reading in the attempt to identify the nature of art, and was able to understand Peckham's book only on the second reading, after arriving at some of his conclusions for myself. While I do not use his theory in its entirety, and while I feel that I expand on it, the fact remains that I am greatly indebted to Man's Rage for Chaos and consider it not just the finest book I have read on the nature of art, but the only one which is consistent and makes sense.

[2] a) Any theory which defines art as having certain characteristics (such as proportions, composition, harmony, unity, complexity, etc.) or as expressing certain things (thoughts, emotions, will, etc.) can be shown to be deficient by testing it with questions like the following. If art expresses some ideal, why has that ideal not been perfectly expressed long ago? Why do art styles change or evolve? Why do people resist or reject the new in art? Why does the art of one culture often seem unintelligible to members of another culture? If one uses a concept such as composition or proportion to define art, and one finds an ax to be well composed and well proportioned, is an ax a work of art?
b) Faced with the continuing changes in art forms today, many critics define art in terms of the artist. An example of this is in the article "Performing Art" in the July-August 1966 issue of Art in America by Eugenia S. Robbins. She refers to Allan Kaprow's book, Assemblage, Environments and Happenings. Unable to categorize happenings in terms of conventional aesthetics, Allan Kaprow, and Eugenia S. Robbins, in turn, classify as art anything the artist does.
> "The fact that anything the artist says, does, notices or thinks is art (Kaprow once made this point explicit by signing himself on the sole of his shoe) 'makes the identification of oneself as an artist an ironic one, attesting not to talent for a specialized skill, but to a philosophical stance before elusive alternatives of not-quite-art, or not-quite-life.'" (p. 107. The interior quote is taken by Mrs. Robbins from Kaprow's book.)
While it is possible to define a role which can be filled by an "artist." The use of the concept of an "artist" to define "art" is not going to lead to clear results.

A major problem in aesthetics has been the supposedly necessary relationships between the work of art and the experience of art.[3] In the solution of this problem is the key to understanding art. It is the nature of reality that there is no "ideal world" in which a class of "art objects" can exist. There is only our perception and an unknown world which create a reality for us. A work of art is "a perceptual field in front of which one has the art experience."[4] The "art experience" remains to be described.

The art experience shares the character of experience in general in that it is a creation of reality out of the encounter of perception with the world. As with other experiences, the art experience is culturally defined through the learned nature of perception, and subject to cultural limits of experience.[5]

The dialogue usually remains hidden. Thus we tend to respond to reality as though it were an absolute world. We speak of and sit on a char as though such a thing "really existed." In our daily activities we do not stop to think that the automobiles which appear to be "solid objects" in a "real world" are

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[3] Peckham, in Man's Rage for Chaos, establishes and resolves this problem.

[4] a) Peckham, ibid, develops his definition of art throughout his book. At one point it is:
> "A work of art is any perceptual field which an individual uses as an occasion for performing the role of art perceiver." (p. 67.)

Peckham's work is developed with a base in behavioral theory, role playing, and game theory. It was not in the scope of this work to study contemporary behavioral theory. Therefore my theory does not completely follow Peckham's.
b) This does not mean that anything can be art. The same case exists with food. Nothing can be fooed except in that we eat it, but we cannot eat everything. The art experience is learned and is culturally limited, though the experience of different individuals can vary within limits.

[5] Thus the art of a different culture is different because it is part of different realities. We sometimes tend to think of great art as being "universal." However, when Western Baroque painters painted for the Chinese Imperial Court, the response of the Chinese showed that they did not experience the same reality as did their guest painters. The Chinese were able to accept perspective as exotic, but chiaroscuro was seen by them as mottling of the skin, and therefore repulsive. (Psychoanalysis of Artistic Vision and Hearing, Anton Ehrenzweig, pp. 179-80.)

actually created by our perception in a dialogue with an unknown world. In such a situation it is well that we maintain this fiction, since concentration of our attention on the complexity of the creation of the automobile might put us in danger from it. In a laboratory, however, where there is no such danger, many scientists still regard their observations as being of a "real world." Even the encounter with Planck's constant, an actual measure of our role in the creation of reality, is not sufficient to dissuade believers in an absolute who prefer to regard the constant as a measure of limits of observational techniques, rather than a statement on the nature of reality.

While it might seem that mankind could get along believing that its own reality is actually an absolute and universal world, there are several reasons why it cannot. To periodically be subject to an experience in which the dialogue is revealed can keep us aware that there is in fact such a dialogue. With this awareness we can be better prepared to change our attitudes toward reality when it itself has been changed by alterations in our perception or in the world.[6]

An awareness that a particular situation is in actuality a creation of the dialogue can lead to a more profound understanding of the meaning of the situation. An awareness that reality in general is a product of the dialogue will lead to an existence which avoids the distortions and impasses resulting

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[6] "Man desires above all a predictable and ordered world, a world to which he is oriented, and this is the motivation behind the role of the scientist. But because man desires such a world so passionately, he is very much inclined to ignore anything that intimates that he does not have it." (Peckham, ibid, p. 313)

The case in which one's response is not adequate because one is responding to a situation which has ceased to exist is common to human experience on all levels.

from a belief that there is an absolute reality. With this awareness experience is freed to be a source of meaning.[7]

In the art experience, one is aware of the dialogue. It is this awareness which describes the special quality of the art experience and which differentiates it from other experiences. In the process of creating reality, perception does a lot of work on its own, independently of the world. It fills in voids, completes images, cuts out contradictions, and generally "anticipates" reality.[8] This is done to construct a reality which is in keeping with our personal limits of experience.

Our experience of a work of art is one in which we are aware of the dialogue because the experience is inconsistent with the anticipations which are at first aroused. This inconsistency will be termed a "discontinuity."[9] While an inconsistency encountered in general experience would be rectified by perception, we are able to open ourselves to discontinuities because of the special circumstances in which we view art. Museums, galleries, libraries, theaters, concert halls, etc. provide situations insulated from the everyday

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[7] The presence of our body in the world, by the nature of its subjectivity, creates a reality which can only be meaningful for it. To be able to benefit from this meaning and to be able to develop it as a part of life, we must be aware of the dialogue.

[8] This has been demonstrated by numerous well known experiments with optical illusions. Famous among these is the distorted room of Adelbert Ames. The room is distorted to give the impression that the two rear corners are equally distant from the person (they appear to be an equal distance from the viewers.) However, "wives do not see their husbands distorted by the Room – they see their husbands as normal, and the room its true queer shape." (R.L. Gregory, Eye and Brain, p. 170-180, quote p. 180) It is important to remember that such activities of perception occur not only in "optical illusion" situations, but in the entire process of perception. "Optical illusion" occurs when one of the activities of vision is made apparent.

[9] Peckham, ibid, pp. 217-220.

circumstances of our lives in which perception has learned to "lower its guard" and allow us to glimpse the creation of reality.

If artifacts from an archeological site are gathered together by type and then are ranged in chronological order, there will appear to be two kinds of products in terms of chronological change. One type of product will change very slowly over long periods, or not change at all. The changes which do occur will be related to the function of the product. The other group will change much more rapidly, and the changes will have no relation to the function o the product. This type of change is termed "non functional stylistic dynamism."[10] And is a means of identifying which products of a culture were experienced as art. Art changes rapidly within a style as the perceiver becomes accustomed to a particular work, and it no longer gives him an experience of discontinuity. Changes temporarily reintroduce the discontinuity, leading to an appearance of "evolution" within a style. Changing the style altogether is another means of introducing discontinuity into experience.[11]

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[10] a)   "Any object (or perceptual field) from any culture may, then, be properly categorized as having
            been the occasion for artistic perception if a chronologically arranged sequence of such objects
            shows both functional identity and non-functional stylistic dynamism." (Peckham, ibid, p. 71.)
b) This distinction, as developed by Peckham seems to me to be the most useful method to identify art.
George Kubler's distinction is based on usefulness:
            "In short, a work of art is as useless as a tool is useful. Works of art are as unique and
            irreplaceable as tools are common and expendable." (Kubler, The Shape of Time, p. 16.)
It is expanded to distinguish "prime objects" from "replications." This distinction leaves many of the
characteristics of art unexplained. His contention that the possible forms of art is finite (pp. 125-126) is
most disturbing, and totally incompatible with my position that extensions change reality.
c) Conventional aesthetics is often incapable of dealing with art at all. "The Ontological Status of Art
Objects" by Eddy M. Zemach that "(a) all material things are art objects, and that (b) all art objects are
material things." (p. 145)

[11] a) Morse Peckham (ibid) identifies four types of discontinuity. Quoted out of context in which he
defines his terms, the descriptions will not be as clear as they would be in his book.
            "Implicit discontinuity is the violation of any perceptual form implied by the perceiver's
            recognition of a perceptual field which, in his culture, is an art situation, or by his application of
            those rules to any perceptual field not hitherto, in his culture, so conventionalized. This is why the

An artistic style can be understood as a framework within which discontinuity is possible. Discontinuity can be experienced if the style is known, for then what has changed (or what the discontinuity is discontinuous from) is easily recognized. There are, however, two limits to the experience of art within the framework of a style. The first is that the discontinuity will not be had if the perceiver is unfamiliar with the particular style. The second is that there are types of human experience in which an awareness of the dialogue would be enriching, but which have not been or cannot be treated in a style.

Chinese connoisseur can see a naturally formed rock as a work of art, and equally why a contemporary sculptor can see a mashed automobile as a work of art.

"Internal discontinuity is the violation of perceptual form established for that particular work of art. It, too, can be experienced in the perception of fields not hitherto defined as works of art.

"Modal discontinuity is the violation of those perceptual forms which are the sources of implicit and internal discontinuity in a given work of art. It is also the violation of an expectancy that a particular mode of sign structure or package already established in a work of art, should be continued in that work of art. It is changing horses in mid-stream, and it too can be experienced before culturally novel perceptual fields.

"External discontinuity refers to the discontinuous relation between a work of art and its predecessors in the same category. The explanation for external discontinuity lies in the fact that when particular devices for achieving implicit, internal, and modal discontinuity have been used for any period of time the perceiver can come to anticipate them, or predict them; the artist's role, therefore, requires him to innovate new devices. To a person at the cultural apex, works of art which employ devices of discontinuity to which he is pretty well adapted appear old-fashioned. Obviously they will not look out of date to someone who is just entering the artistic world of high-level culture. An external discontinuity, then is the historical consequence of the stabilization of an innovative device for implicit, internal, and modal discontinuity. It explains why art has non-functional stylistic historical dynamism, why one dimension of artistic behavior must be historical." (pp. 221-222.)

b) The concept of discontinuity is applied to literature with a specific analysis of each of seven types of ambiguity in English verse by William Empson in his book, Seven Types of Ambiguity.

c) The concept of discontinuity is applied to architecture by Robert Venturi. Complexity and Contradiction in Architecture, selections of which appear in Perspecta 9, 10: The Yale Architectural Journal.

d) The point that I try to make in these papers is that discontinuity can be experienced in situations other than those "officially" recognized as "art."

The art experience outside of a style is not subject to the same limitations. The art experience is one in which the perceiver opens himself to accept discontinuities, and thereby be aware of the dialogue. While this is traditionally done in "art situations" (galleries, a concert halls, etc.) there is no reason why it must be limited in this way. A person of intelligence and sensitivity who is never in the art situation (whether by choice or otherwise) should be and very likely is able to have this experience in other situations. For example, an engineer can perceive a structure with which he was not previously familiar. In the experience there might be a gap between what he anticipated could be done structurally in a humanly meaningful way and what he actually perceives in this structure. This gap is a discontinuity and he has had an art experience.[12]

When we encounter a particular perceptual field we bring to it the anticipations of our perception. These anticipations will have been formed in the past, partially during previous encounters with similar perceptual fields. The person or persons responsible for arranging a particular perceptual field may decide that changes in the limits of cultural experience have made a new and more contemporary experience of the perceptual field possible. He arranges it in such a way as to extend the limits of an

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[12] Some people, including some architects, can experience architecture as art, though most people do not. (Remembering that architecture was once called the mother of the arts, most art critics attempt to at least pay lip service to architecture, though they seldom understand it. That Louis Kahn has been given two shows in the Museum of Modern Art and has dedicated admirers does not mean that architecture in general or that his work in particular is understood as art.) Some forms are denounced during their beginning (and sometimes best periods) and later recognized as art. This is true of rock and roll music. The Village Voice (New York) now has two regular columns devoted to discussions of rock and roll as an art form, and the New York World Journal Tribune has at least one. A form may be recognized as art, rejected, and then recognized again. This was the case with Art Nouveua. If someone does not experience something as art, which is generally accepted as art, it may be because he is ignorant or it may be because he knows something which others do not know, but the fact remains that for him it is not art.

individual's experience of it to the limits of the experience of the culture.[13] We approach this product with outmoded perceptual anticipations and find that these anticipations are not fulfilled. We experience a discontinuity. We then must alter our anticipations and reconstruct reality.[14] In so doing we are aware of the dialogue, and we advance our experience of that particular perceptual field towards the limits of cultural experience. When we have this experience, the perceptual field in front of which we have it is a work of art. The person who arranges it is an artist.[15] The more inclusive of our experience in general a particular perceptual field is, the "higher" the art form. If the change made in the perceptual field does not succeed in advancing the limits of our experience to the limits of the experience of our culture, then the change is an "arbitrary stylistic device" and it and its arranger are unsuccessful as art and as artist.[16]

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[13] Leonardo da Vinci discovered reality and presented it in his art. He trained himself (his perception) to extend to the limits of the reality of his culture, then put his findings in his art to extend the experience of others to the same limits. Cezanne did the same. His paintings are different from Leonardo's because his reality was different.

[14] This is done with great difficulty. The reality of most people at the time of Cezanne was not much different from Leonardo's reality. Cezanne's paintings threatened their long held view of reality, and were therefore received with hostility or not received at all.

[15] The functions of the artist:
    a) The artist is one whose products have a high probability of evoking the art experience.
    b) The relation of the artist to the work of art: the work of art reflects the nature of the artist's perception and his reality.
    c) The motivations of the artist are no different from that of a doctor, a politician, etc. These include money; a desire for recognition; a need to fill a gap, to do what he sees as necessary or as possible, but which no one else is doing; the desire to make things, whether for instinctual or neurotic reasons; etc.
    d) One might or might not be one's own artist, just as one might or might not be one's own lawyer or doctor. One might not be one's own artist for the same reasons one might not be one's own doctor or lawyer.
    e) The artist is useful but not necessary to the art experience. One can experience things in nature as art.

[16] a) Norberg-Schulz, in Intentions in Architecture, attempts to distinguish "higher" art forms, but is not very clear. I make the distinction in terms of inclusiveness. If rock and roll music is an art, it is a lower art when it refers to the experience of fourteen year old romance and drag racing. However, much rock and roll is very inclusive and therefore "high" art. (As the inclusiveness of rock and roll is recognized, so is its threat to reality. Because of this threat, much rock and roll, despite its popularity, is banned from

The background and education of each of us is different. There is no reason to assume that we should all have the art experience in front of situations "officially" recognized as "art." We might not have the experience because we are not familiar with the context of discontinuity (the medium or the style) and therefore cannot recognize it. We might not have the experience because we are already familiar with and adjusted to (in terms of anticipation) the work.[17] We might not have the art experience in the "art situation" because our special training leads us to have it in other situations.

Modern technology is continuously modifying perception and extending the frontier of reality. While it is presumably a function of the academic establishment to explore these frontiers, it does not always do so.[18] By allowing our experience to be transformed by applying the qualities of the art experience to experience in general, we can explore new realities, free from the stifling limitations of categorization by discipline, medium, style, etc. By opening ourselves to the reality of today, we confound our perception which anticipates yesterday, and seems to predict tomorrow.

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commercial radio.) The judgment as to how high an art experience is depends not only on the quantity of experiences included, but also on the personal judgment as to the importance of the experiences.
b) Higher and lower art is distinguished above. Better and poorer art is distinguished by our ultimate judgments about reality.

[17] We generally accept the work of the painter Paul Gauguin as art. However, Cezanne did not accept Gauguin's work as art because it appeared to him that Gauguin had taken the reality that Cezanne had discovered and made arbitrary stylistic use of it. Cezanne, therefore, did not experience a discontinuity in perceiving Gauguin's work. Architects are having a similar problem with some "primary structure" sculpture, which to the architect does nothing more than borrow old architectural forms.

[18] The academic establishment is prepared, in the humanities, to give degrees only in classically recognized fields: philosophy, psychology, comparative literature, etc. This arrangement can take little credit for the interdisciplinary (in the classic concept of discipline) advances in human knowledge such as psychoanalysis, cybernetics, and the study of media and extensions. "Official art" is hampered by the same type of categorizations. The young artists who work in mixed media have rejected these categories.

The art experience is a creator of reality, extending us into the future. The art of yesterday, art artifacts, is a document of the experience of the past, what it was and how it changed.[19] Together they form a literature of human experience as we continually encounter the world and create our reality.[20]

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[19] An art artifact is a perceptual field which was or is an occasion for the art experience in a culture other than our own. It can be identified by the literature of the culture, or in the context of several similar artifacts, by non functional stylistic dynamism. There are four types of responses that we can have to an art artifact: 1) If our reality is similar to that of its makers, we may experience a discontinuity and therefore accept it as art. 2) If the reality presented by the artifact is common to our experience, we will not experience a discontinuity, and accept it as a document of the reality of some other culture. 3) We may find discontinuities not intended by the artist, and accept it as art. 4) If the reality of the culture of the makers is very different from our own, we may recognize nothing at all in the artifact.

[20] Art is as valid a document of reality as science, philosophy, theology, etc. IT is different in that it reveals the dialogue, but the same in that it is a reflection of experience. Art changes just as science, etc. changes, and for similar if not the same reasons.

ARCHITECTURE AS ART

Art can be more clearly understood as a kind of experience than as a class of perceptual fields. If necessary, art should be classified in terms of experiences, and not in terms of perceptual fields.

A work of architecture is a perceptual field in front of which one has the architectural experience. Any perceptual field, whether it is a solid, void, sound, color, etc., which contributes to the architectural experience is architecture. Any perceptual field which does not contribute to the architectural experience is not architecture (even if it is a "building"). To define architecture, it remains to describe the architectural experience, which as experience is the reality created by the encounter of perception with the world in a dialogue, and as an art experience is one in which the dialogue is revealed by discontinuities. Architecture is differentiated from other arts by the particular kinds of experience in which it induces discontinuity.[1]

The architectural experience is the experience of the "context of an activity."[2] The context of an activity is the perceptual representation of the

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[1] This approach to a definition or architecture is made to avoid defining architecture as that which is traditionally accepted as architecture.

[2] a) It has become apparent that architecture is not just an art of "space" as Susanne Langer in Problems of Art and Bruno Zevi in Architecture as Space describe it. It was suggested by Romaldo Giurgola (in his theory course at the University of Pennsylvania) and by Nathan Silver (in his review of Norberg-Schulz's Intentions in Architecture, Progressive Architecture, August 1966) that architecture is not a visual art, that it is different from painting and sculpture in more ways than just that one moves through it.
> "It is now worth considering the idea that the primary apparition of architecture is use, and the given dimensions of this essence are measured in terms of human adaptability." (Silver, Ibid, p. 218.)
I tried using the term "use", but could not make it work. "Context" seemed more suited to my concept of architecture. While it is true that one "uses" a building, one also "uses" a toothbrush or a frying pan.
b) Architecture is the art of the context of activities, an activity being those experiences out of all possible experience being had at a given moment. Other arts deal with various experiences. Architecture is the mother of the arts in the sense that it deals with the context of any group of experiences (depending on the choice of culture), while other arts deal with specific experiences.
c) Different activities are considered appropriate for architectural consideration at different times. The ancient Greeks considered the activities of inhabiting the countryside appropriate for architectural concern,

limits of activity. Architecture as an art reveals the dialogue which creates the context of activities. An activity is those parts of experience, out of the full range of possible experiences, which are engaged in at a given interval. Some examples of activities are eating, sleeping, traveling, or watching a play. Each activity in a culture is different in that it involves different properties of perception and different aspects of the world. All of them are similar, however, in that some parts of experience are common to all activities, and in that the limits of activities (parts of experience) cannot exceed the limits of experience as a whole.

Works of architecture of a given culture are different from each other in that they are contexts for different activities, but are similar in as much as the activities are similar. Thus architecture, as a context for activities limited by the limits of experience, is an expression of the limits of experience of a culture. It is this aspect of architecture which will be dealt with in these papers.[3]

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and developed the temple in its setting in the countryside as architecture. (Vincent Scully, Jr., The Earth, The Temple, and The Gods.) They were less interested in private residences as architecture. We, on the other hand, have a great interest in the private residence as architecture (at least some of us have this interest) but we ignore the countryside and the cityscape as architecture, leaving its architectural form to chance. (The countryscape and the cityscape may be very rigidly determined economically, geologically, or even sociologically, but not architecturally.)

[3] a) It might at first seem simpler to define architecture as spaces for activities, which spaces recognize the nature of the activities and the attitudes toward space and time of those engaging in the activities. The problem with such a definition is the complete lack of clarity in the terms "space" and "time," which should not be used without specific definitions.

b) A problem with the use of the definition of "context of activity" to define architecture is the definition of the term "context." It is most undesirable to develop a definition which is restrictive, since a definition which describes the architecture of yesterday and excludes the architecture of tomorrow may result. The meaning of "context" will be developed in a analyses of specific realities in the paper on the contemporary architectural experience.

The architectural experience is one in which we approach a context of an activity (or activities) with anticipations of perception. These anticipations will have been formed in the past, partially during previous encounters with similar contexts. The person or persons responsible for arranging the context, may decide that changes in perception have extended activities, and that new contexts are possible for these extended activities. He arranges it to give us a contemporary experience. We approach it with our outmoded anticipations and find that these anticipations are not fulfilled. We experience a discontinuity. We then must alter our anticipations and reconstruct reality. In so doing we are aware of the dialogue, and we advance our experience of that context of activity. When we have this experience, the context of activity in which we have it is architecture. Architecture is a higher art form to the extent that the context is inclusive of experience in general.[4]

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[4] a) Our perception has become accustomed to accepting a large domed interior as the context for "city hall activities." Such a context, we believe is proper for these activities. Romaldo Giurgola as an architect (an artist of contexts of activities) explored the nature of the city hall activity (a type of experience and therefore perception) and found that a large domed interior was not appropriate. He found that a counter at the edge of the building under an overhang was an appropriate context for city hall activities. (The engagement in this research, and the implementation of the results of such research define the activities of an architect.) If Giurgola's building had been built, we would have entered it anticipating a large domed interior, but would have found a counter at the edge of the building under an overhang. We would have said: "This is not right, this is not what I expected to be the proper context for city hall activities," and we would have experienced a discontinuity. Eventually (if Giurgola were right) we would reconstruct reality and in so doing appreciate the presence of the dialogue (that reality is something which we construct out of the encounter with perception with the world) and bring our experience of city hall activities up to date. If Giurgola had been wrong, and his building was not a good context for what city hall activity today really is, then his change of the context would be seen as an arbitrary stylistic device, and he and his building would be judged to be unsuccessful as architect and architecture.
b) In this sense the architect is one who studies the nature of contemporary reality (perception and its extensions) and then makes or designs contexts for activities (which are a form of perception.) Which activities he designs for are the choice of himself and his client.
c) Context of activity must be taken in a fully expanded sense, to include the actual activity, memory of activity, awareness of activity, anticipation of activity, and watching or perceiving activity.
d) Architecture is a higher art form to the extent that the context is inclusive of experience in general. If a work of architecture were a context for a specific activity, such as cooking, and if that context did not recognize the full range of experience involved in cooking, but only certain necessary actions, then that work of architecture is a lower art form.

The study of past works of architecture (architectural art artifacts) can reveal the nature of the specific activities for which the architecture was a context. It can also reveal the limits of the experience of the culture for which it was a context, and therefore something about the process of the presence in the world of its builders. Whether or not we are able to identify the way in which discontinuity was introduced into the context of activity depends on our relationship to the people who originally experienced it. If we can identify non-functional stylistic dynamism, we have an important clue.

The effort to understand architecture, the context of activity, can lead to an understanding of the limits and meaning of our experience as a whole.

THE DEVELOPMENT OF EXPERIENCE

The changing world and our changing perception lead to changes in culture (mutually created reality) and therefore in experience and its limits.[1] We have come to accept the instability of our reality, but to do so does not necessarily condemn us to absurdity or disorientation. Despite the fact of the changing nature of reality, we can still know its present nature, plot its possible future course, and build experiential foundations in the unchanging fact of reality.[2]

After a brief survey of several possible types of reality, these papers will describe the nature of reality today and its possible future nature.[3] The architecture of other cultures or our own can be understood only if the

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[1] These changes do not necessarily imply "human progress." In fact, among the realities described, on of them repeats itself in modified form. Since Picasso painted "Les Demoiselles d'Avignon" extensive references to similarities between contemporary and primitive or "Negro" art have been made in criticism. Much art since the turn of the century has been very directly influenced by primitive forms, as are the masks on some of the figures in "Les Demoiselles." There are also apparent influences of primitive sculpture on some of Jacques Lipschitz's work, and on that of several other sculptors.

The similarity between modern and primitive art is, however, more profound than the borrowing of some images, or the sharing of "strong," "brutal," or "primitive" qualities. There are basic anthropological and therefore cultural similarities between our and "pre-literate" cultures. The oral traditions, (the supremacy of the spoken word in cultures without phonetic alphabets), tactile as opposed to visual orientation, and the overall "tribal" nature of preliterate cultures are characteristics rapidly becoming more and more prominent in our own time.

I have not found a satisfactory definition of human progress, and though it is out of the scope of this work to develop one, such a development would probably be based on the statistical concepts Norbert Wiener presents in Cybernetics and in The Human Use of Human Beings.

[2] The search for meaning is one with the search for the nature of constancy and change. This work is an attempt in that search. Nothing, including architecture can be understood without understanding what remains, what changes, and why. A constant in reality is our subjectivity. Though the meanings we give in the creation of reality change, the fact that we give meaning and make reality remains.

[3] a) While the realities dealt with appear to follow history, in actuality they do not necessarily do so and all of those listed could and probably do exist somewhere today.
b) My analysis does not fall into major cultures such as Spengler's, since, though I admire his work, I have not come to his conclusions.
c) The "temporal" element of experience is not as thoroughly treated in these papers as it might be. A study of literature and mythology, necessary for such a treatment, was not within the scope of this work.
d) Some of the terminology in these papers is awkward. I found the problem of vocabulary as difficult as the problem of concepts.

activities for which it was a context are understood. This applies not only to the specific aspects of an activity, but also to limits of the total experience of that culture. Similarly, the architecture of the future can be anticipated by an anticipation of the limits of the experiences of the future.

2.1.1. THE UNBOUNDED EXPERIENCE

There are two types of beings whose experience can be unbounded. One is a non-living being whose perception has no activity, and therefore no bounds. The other is a being with universally extended perception. The awareness of a being with universally extended perception is not limited by intervals, since all activities are universally and totally present. Causality, sequence, and process are unknown to this being. All is a present oneness of infinite extension and infinite depth. In some theologies these attributes are considered possible and are given to God.

The experience of "non-living" things is seldom properly explored. When people gave up the belief that an immortal "soul" distinguished man from all other creatures and things, they quickly substituted a mortal but no less magic "consciousness" for it. There is no consciousness. We exist in only two ways. The first is in our subjectivity, the second is in the awareness of others. Both of these criteria for existence may be claimed just as legitimately by rocks as by ourselves.[4] Universal and complete extensions and interconnections of human perception make finite but unbounded

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[4] This is not to deny the possibility of qualitative differences between men and things or other animals. However, if there is such a difference, I have not found it.

experience of depth a possibility to a collective human community of the future.

2.1.2. FUNCTIONAL EXPERIENCE

Our experience is created and limited by our perception, which is in many ways similar to that of higher animals. The perception of lower animals and plants is qualitatively different from our own, totally lacking extensions and abstraction. In this type of experience there is interval, causality, sequence and process. However there is no "synopsis," necessary to compose locally separate factors into the unity of a simultaneous view. Relational experience is created merely by correspondence, in which certain movements are accorded with others.[5] In the experience of a root there is no place other than the place it creates by its occupancy.

The architecture of functional experience is nothing more nor less than the actual presence of the organism. In a reality solely of correspondence, the context of activity is the context of the organism.[6]

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[5] Ernst Cassirer, The Philosophy of Symbolic Forms, vol. 3, p. 153.

[6] The specific structure of each organism determines its perception and therefore its reality. While general differences can be shown between the realities of "lower" and "higher" organisms, there are as many realities as there are organisms. There is a quantitative difference, however, between those organisms which react to light and those which do not. The importance of light is that it carries messages "instantaneously" (as fast as is possible). (McLuhan refers to the electric light as message without content.) The importance of the structure of the organism in determining reality is shown by the Copliia, a micro organism. In the female the "eye" consists of two lenses, one large and placed forward, one small, placed and connected to nerve endings. The large lens receives an image. The small lens then scans the image, perceiving only one "point" or dot. This dot changes in darkness or lightness as the small lens passes over darker and lighter parts of the image. A reality which would be a static composition to us in a changing intensity to a Copilia (R.L. Gregory, Eye and Brain, pp. 28-33)

2.1.3. SPATIALITY AND TEMPORALITY, EARLY

Spatiality and temporality are terms for the limits of the experience of men before the age of Newton, and of higher animals. A field of both actual and potential experience, it includes intervals, causality, sequence, and process as do the limits of functional experience, but also the ability to relate separate factors beyond correspondence into a simultaneous view. The perception of light, giving "instantaneous" awareness of a surrounding beyond that corresponding to the organism is of primary importance to the experience of spatiality and temporality.

In the spatiality of contemporary primitive cultures and of mankind before the first great cultures, there is freedom in all directions, with no special significance attached to the vertical, the horizontal, or to right angles. There is a lack of abstract organization of experience. Different directions, such as north and south and up and down are special and are not seen as part of one uniform or interconnected whole.[7] Separate spatial experiences are not abstractedly related and cannot be isomorphically analyzed.[8]

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[7] What we call "magic" is precisely this lack of uniformity. Magic is the absence of qualities which apply uniformly.

[8] Cassirer gives an eample of this:
> "A native of these tribes has an eye for all the nicest details of his environment. He is extremely sensitive to every change in the position of the common objects of his surroundings. Even under very difficult circumstances he will be able to find his way. When rowing or sailing he follows with the greatest accuracy all the turns of the river that he goes up and down. But under closer examination we discover to our surprise that in spite of this faculty there seems to be a strange lack in his apprehension of space. If you ask him to give you a general description of the course of the river he is not able to do so. If you wish him to draw a map of the river and its various turns he seems not even to understand your question." (Ernst Cassirer, An Essay on Man, pp. 45-46.)

This does more to describe what the experience of spatiality and temporality is not than what it is. It is difficult to comprehend that there are other realities which exist in their own terms and not just as inferior in some way to ours. This is being done in anthropology by Claude Lévi-Strauss and is outlined in art by S. Giedion in The Beginnings of Art.

Spatiality and temporality are created by a perceptual orientation which does not favor the eye. Tactile and acoustical orientation create a reality of freely interconnected flux, with no overall uniformity or continuity. Temporality is discontinuous. An aura of "present" surrounds the subject, but does not extend uniformly into the past or the future. Past and future events are not in the same uniform orientation with each other or with the present, but make their own "places."[9]

Architecture, as context for this type of experience is not organized by horizontals, verticals, or right angles. The reality which surrounds the body-subject is not uniformly extended as it is for those who favor vision, but due to the importance of acoustical and tactile orientations, remains subject to the perceiver's presence and functions.

2.1.4. SPATIALITY AND TEMPORALITY, LITERACY AND UNIFORMITY

With the development of literacy and the accompanying ability to abstract, spatiality becomes more uniform.[10] The special nature of "down" (gravity)

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[9] The "magic" qualities which apply to spatiality apply to temporality also. In much mythology the past is not of the same character as the present, but is a "golden age," "silver age," or an "age of monsters." Present causality, etc. does not apply to these past ages.

[10] Many historians (including S. Giedion in The Beginnings of Architecture) describe this as first occurring in Babylonian culture. Cassirer summarizes Otto Neugebauer's explanation for this:

"This civilization [Babylonian] evolved under special conditions. It was the product of a meeting and collision between two different races – the Sumerians and the Akkadians. The two races are of different origin and speak languages which bear no relation to one another. The language of the akkadians belongs to the Semitic type; that of the Sumerians to another group which is neither Semetic nor Indo-European. When these two peoples met, when they came to share in a common political, social and cultural life, they had new problems to solve, problems for which they found it necessary to develop new intellectual powers. The original language of the Sumerians could not be understood; their written texts would not be deciphered by the Akkadians without great

is discovered, and such relations as vertical, horizontal and right angles become important. Individual events are ordered in a general system, both spatially and temporally, though this system retains special qualities and is not uniform. Present, near past, and near future temporality become uniform and divisible, but the divisibility is not consistent.[11] The uniformity does not extend indefinitely into the past or the future as it is dependent on the current structure of reality which did not always exist.

In architecture forms are highly developed and are related to each other in visual orientation, beyond the immediate presence of the subject.[12]

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difficulty and constant mental effort. It was by this effort that the Babylonians first learned to understand the meaning and uses of an abstract symbolism. 'Every algebraic operation.' Says Neugebauer, 'presupposes that one possesses certain fixed symbols both for the mathematical operation and for the quantities to which these operations are applied. Without such a conceptual symbolism it would not be possible to combine quantities that are not numerically determined and designated and it would not be possible to derive new combinations from them. But such a symbolism presented itself immediately and necessarily in the writing of Akkadian texts… From the very beginning the Babylonians could, therefore, dispose of the most important groundwork of an algebraic development – of an appropriate and adequate symbolism.'" (Ernst Cassirer, An Essay on Man, pp. 47-48; interior quote from Otto Neugebauer, "Vorgriechische Mathematik, in Vorlesugen über die Geschichte der antiken Mathematischen Wissenschaften; Berlin, J. Springer, 1934; I.)

This is an example of language as an extension influencing the entire form of the culture.

[11] These inconsistencies are shown in Zeno's paradoxes.

[12] S. Giedion refers to the architecture of the first great cultures in Egypt and Mesopotamia:
"The first architectural space conception was concerned with the emanating power of volumes, their relations with one another, and their interaction." (The Beginnings of Architecture, p. 522)

The difference between the experience of the ancients and of ourselves can most clearly be seen in the Greeks, who are the closest to us. With their Geometry the Greeks could not trisect an angle. Western mathematics has been able to do this for several hundred years. The Greeks were not able to make a leap in abstraction which would permit them to trisect the angle. The inability to make this leap is characteristic of all of their experience – in literature (in early literature, as in Homer, a god must actually appear and stay the arm of a warrior to stop him from throwing a spear, the god cannot do it by some "abstract" force.) in art, and in architecture (the enclosure is never developed in Greek architecture). The leap that the Greeks are not able to make which was made by later Western Europeans, was the complete separation of the visual from the tactile and auditory. Though the separation – for the Greeks – was far greater than it had been among earlier people, it was not complete. This is true in all of their perception and experience, but can most easily be shown in Greek geometry. Euclidean geometry can be defined as the geometry which can be devised by using (tactically) a flat surface, a string, a straight edge, and a marking instrument. This brings about a geometry which can handle the powers x and x^2, but cannot handle the powers x^3 and higher.

In Roman experience spatiality is sufficiently free of immediate presence and sufficiently supported by a high degree of visual abstraction that the context of activities performed in interiors are considered worthy of architectural treatment, and great interiors are built. Experience is not sufficiently abstract, however, to appreciate a relation of contexts of interior and exterior experiences, and this relation is not developed in Roman architecture.[13]

This relation is appreciated by the builders of Gothic cathedrals. The experience of these people was sufficiently abstracted to allow them to be aware of the context of interior activities of a building while on the outside,

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[13] The Pantheon, 118-25 A.D. and the Baths of Caracalla, 212-23 A.D. both in Rome, are often used as early examples in the history of architecture of interiors. This is a correct observation, but the reason given for their occurrence, namely the engineering ability of the Romans, is not satisfactory. While it is true that the Romans could not have built these buildings without the ability to do so, the explanation can be challenged with the fact that others had the ability and did not use it for "architecture." One has only to look at the fantastic engineering feats at Stonehenge, the Pyramids, and the Acropolas to doubt that the builders were limited by lack of engineering skills.

I remember being taught that the ancients, before the Romans, could not build vaults, or if they could only crude "semi-vaults." However, in The Beginnings of Architecture by S. Giedion, one finds:
> "Domes and barrel vaults might easily go unmentioned here, since they played no part in the monumental architecture of the first high civilizations. Nor did they play any in Greece. The intersecting opposition of verticles and horizontals was common to all these civilizations that laid little value on interior space.

> "At the same time, vaults and domes were employed from the very beginning of architecture, and the oldest pointed arch, found in Eridu, goes back to the fourth millennium." (p. 512)

Giedion lists and illustrates numerous examples of vaults among the ancients. The point is that most of these vaults were not "architecture." Architecture is the artistic treatment of the context of activities. Vaults among the ancients were often for grain storage. Vaults appear, therefore, among the Romans as architecture, not as a function of engineering ability, but as a function of the nature of their activities (and therefore their experience and their reality) and the choice of which activities should be dealt with architecturally.

b) The lack of visual relation of interiors and exteriors of buildings in ancient Rome can be seen in photographs of reconstructed models of the city. (Imperial Forums 1st to 3rd centuries A.D., p. 91, and Pantheon, Rome, c. 118-25 A.D., p. 104, in Key Monuments of the History of Architecture, Henry A. Millon and Alfred Frazer.) While the "aeriel" views of the models gives enough of an impression of the form of the building to guess the nature of the interior, the necessary information would not be gotten from street level. From the street all is columned porticos and most forms are hidden.

and vice versa. The window, communicating the surroundings of the building to the interior, and the flying buttresses, communicating the thrusts of the interior to the exterior, were the primary devices used in developing a context for this experience.[14]

2.1.5. SPACE AND TIME

Starting with the end of the fourteenth century the orientation of Western experience began to change. Increasing commerce and an increased traffic in ideas raised the level of abstraction. Spatiality and temporality as expressed in all aspects of life become more uniform and continuous. This increased uniformity of experience is expressed in the art and politics of Renaissance Italy. In the middle of the fourteenth century, Gutenberg developed an important extension of perception for the increase of uniformity in experience.[15] When Galileo announced his laws of inertia, he was engaged at a level of abstraction far beyond any which man had previously experienced.[16] This development reached its climax with the work of Newton.

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[14] a) To be aware of the relationship of the interior to the exterior and vice versa, one needs a high degree of abstraction, a sense of relation, and an ability to conceptualize isomorphically. All of this comes from a very high degree of emphasis on the visual in perception.
b) To the Romans a window was a means of letting in light through a hole in the wall or in the ceiling (The Baths of Caracella, and the Pantheon.) To the Byzantines the window is a hole in the wall to admit light, or a means of floating a dome. (Hagia Sophia, Istanbul, 532-37 A.D.)
      "The window as architecture, on the other hand, is peculiar to the Faustian [Western European] soul and the most significant symbol of its depth experience. In it can be felt the will to emerge from the interior into the boundless." (Spengler, Decline of the West, p. 106.)

[15] The effect of abstraction on the organization of culture and the importance of the technology of print is the subject of the Gutenberg Galaxy by Marshall McLuhan.

[16] "When Galileo founded his new science of dynamics he had to begin with the conception of an entirely isolated body, a body which moves without the influence of any external force. Such a body has never been observed and could never be observed. It was not an actual but a possible body – and in a sense it was not even possible, for the condition upon which Galileo based his conclusion, the absence of all external

Newton's laws stated in specific terms what had been the tendency of the limits of experience for the preceding several hundred years. Space was finite, uniform, infinitely divisible, instantaneously juxtaposable, and the static container of all objects. Time, an entity independent of space, was infinite, uniform, infinitely divisible, continuously flowing through the present from the past to the future, and the container of all events. The Newtonian concept of space and time provide the orientation of experience to a greater or lesser degree in painting, literature, science, cosmology, and architecture from the end of the fourteenth century to the end of the nineteenth century in Western Europe. The architecture of this time continues the concept of a spatial interior related to the exterior, and develops this spatiality into space as the streets, squares, and building interiors become related in the same context of experience.

The space of the building, as the space of physics, exists independently of experience of it or things occupying it. Symmetrical plans and visual axis assure the user of the building of the existence of the parts which he is not currently experiencing. In the eighteenth and nineteenth centuries this uniformity of space is physically and politically spread from the cities across the countryside in the forms of railroads and nation states.

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forces, Is never realized in nature. It has been rightly emphasized that all the conceptions which led to the discovery of the principle of inertia are by no means evident or natural; that to the Greeks, as well as to men of the Middle Ages, these conceptions would have appeared as evidently false, and even absurd. (Ernst Cassirer, An Essay on Man, p. 59.)

2.1.6. DYNAMIZED SPATIALITY, TOPOLOGY, UNBOUNDED DEPTH EXPERIENCED

By the end of the nineteenth century several artists and philosophers had found Newton's concepts of space and time inadequate as descriptions of the limits of their experience. The first of the extensions of perception which were to characterize the electronic age was orienting experience in ways which were less visually abstract than those of the Newtonian age. At this time writers and philosophers were finding the Newtonian concept of time inadequate as descriptions of their own awareness. In the 1880's Michelson and Morley found space and time inadequate as a description of the universe. The experience of dynamized spatiality of the beginning of the electronic age, the topological experience of our own age, and the possibilities for unbounded depth experiences in the future will be discussed below.

THE DYNAMIZED SPATIALITY

OF THE ELECTRONIC AGE

2.2.1. INTRODUCTION

In the late 1800's a change in the extensions of man brought about a change in the reality of Western man. The electronic age was beginning, and a wire net was being spun across the globe, extending one of man's perceptual systems, the nervous system, into a global subjectivity.[1]

This change brought the beginning of the end of the fragmentation, specialization, and visual or single point of view of the Renaissance. Experience, and therefore reality, became "inclusive" and "deep" destroying the properties of time and space, and creating a new non-time, non-space, or dynamized spatiality.

The term "dynamized spatiality" will be defined in a paper on physis and used in papers on painting and architecture. This new reality became apparent to many artists just before the turn of the century, and was incorporated into physics just after the turn of the century.

While our own reality remains in a line of development begun with the introduction of electronic extensions, the vast quantitative increase in their predominance has lead to a qualitative change in our reality. The reality described in these papers can be considered to apply until about the second

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[1] A change in the orientation of the nervous system was brought about in the late 1800's. This change came with a change in the extensions of man, which previously had been mechanical extensions of the body. In the late 1800's these extensions were electric, and of the nervous system. The introduction of the telegraph, in use in 1845, and of the other electronic media (electric power, 1800's; electric lights, 1870-1907; the telephone, 1876; radio, 1895-1901) becomes a moving force in changing reality and therefore art.

World War. The situation since then will be dealt with under the sections on Topology.[2]

2.2.2. THE PHYSICAL IMAGE OF REALITY

The phenomena at the turn of the century which mark the beginning of the electronic age, and which brought about a reorientation of the sensory systems to a less visual persuasion, were accompanied by, and in part caused by, the changes in the concept of reality brought about by modern physics and philosophy.

It is necessary to realize the direct participation of philosophy in the work of physicists. F.S.C. Northrop, in his introduction to Heisenberg's <u>Physics and Philosophy</u>, points out that the impression Newton left, that there were no assumptions in his physics that were not necessitated by his experimental data, is not correct. This is most directly demonstrated by the fact that his physics no longer stands. Northrop states:

> "Expressed positively, this means that the theory of physics is neither
> a mere description of experimental facts nor something deducible
> from such a description; instead, as Einstein has emphasized, the
> physical scientist only arrives at his theory by speculative means. The
> deduction in his method runs not from facts to the assumptions of the

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[2] The modern age is generally described as beginning in the middle of the eighteenth century. This work distinguishes between the mid-eighteenth century and the mid-nineteenth century which may be described as the Machine Age, and the arts from the end of the nineteenth century until today, which is the Electronic Age. The Machine Age, dominated by mass production, assembly lines, production of identical parts, and the division of labour and knowledge, is not a change from the attitudes of the Renaissance and the Baroque, but rather a continuation of an orientation which begins with Gutenberg and perspective painting.

theory but from the assumed theory to the facts of experimental data… In short, any theory of physics makes more physical and philosophical assumptions than the facts alone give or imply."[3]

Modern physics has arrived at theories or reality which cannot be described by "visual" images. This does not mean that they cannot be presented concretely (that is other than in purely mathematical terms) but rather that a "non-visual" means will be needed for their adequate presentation. Auditory forms have been suggested for this. However, it is a thesis of this work that qualities of the sensory system other than visual can be perceived by the eye because of the unitary nature of perception. This subject will be dealt with further, when the methods of Cézanne are explored for their effectiveness in avoiding "distortions" and "prejudices" of the Renaissance in purging the eye of much of its dynamic and temporal ability.

The structure of the perception of the physicist of a given culture is similar to that of other members of that culture. The reality created by their subjectivity has the same character as the reality of the painters and architects of the same culture. Because of the clarity of the terminology of physics, the physics of the electronic age will be explored to aid in the understanding of the arts of the age.

Because of the Newtonian prejudice in our vocabulary, and because the physics of the electronic age developed from Newtonian physics, the physics

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[3] Northrop, F.S.C., in his introduction to Physics and Philosophy by Werner Hiesenberg, p.4.

of "dynamized spatiality" will be developed from and compared to Newton's physics of space and time.

The "classical" model of the universe, for which Newton was primarily responsible, is made up of four fundamental entities: space, time, matter, and motion. These are distinct from each other. Other concepts, such as energy and momentum are derived from them. Among these concepts matter is sometimes more important than void, and the two of them are often more important than motion. The void is given visual and geometrical properties. Time is considered less important than the other concepts and is often excluded from the visual world.[4]

Motion is thought of in a manner which spatializes time, namely "displacement." Time becomes a fourth dimension of space, which means that "future" events actually pre-exist and only limitations of human knowledge prevent us from perceiving them as coexisting with the present moment. Being is mere unfolding of eternal identity, or energy changes with causal determinants, so that every present state of the world is contained in any past state and is itself contained in all future states.

Spinoza and Malebranch drop time from ultimate reality and the direction of time becomes meaningless. The ultimate consequence for the classical view with its determinism is that the all merges into one single timeless pattern.

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[4] This section on physics is primarily based on The Philosophical Impact of Contemporary Physics by Milic Capek. Also used was Lincoln Barnett's The Universe and Dr. Einstein, Henri Bergson's Time and Free Will, Einstein and Infeld's The Evolution of Physics, and Werner Heisenberg's Physics and Philosophy.

The classical view requires as its foundation the concept of instantaneous space, that is if a "slice' were taken through all of reality at a given instant, then all positions and velocities could be described at that instant. This concept began to fall when the search for "absolute motion" failed.

A body at rest in Newtonian space is absolutely at rest relative to the static space. A body in motion is absolutely in motion. But since all inertial systems are "dynamically equivalent," (that is not internally affected by velocity) there is no way to determine one's absolute motion within one's own inertial system. However, if the principle of addition of velocities holds, then the velocity of light must be different for observers of different inertial systems, since light was taken to be propagated by the static ether. This was the basis of the experiments in the 1880's by Michelson to determine the absolute motion of the earth.

The experiment showed, contrary to expectations, that the velocity of the earth did not affect the relative velocity of light, but rather that the velocity of light remained constant. At first an attempt was made in the form of the Lorentz transformations to save the concept of static space. This concept sacrificed the three classical features of time: unity, uniformity, and independence from physical events. In this view there is a plurality of local times, each being dependent on the velocity of its own inertial system.

It was Einstein, who took Lorentz's equations and, accepting the constant of the velocity of light as a primary principle, completely reconstructed the foundations of dynamics and kinematics. This acceptance of the constant velocity of light rejects any absolute frame of reference for identifying the

difference between "apparent" and "real" motion. This is a rejection of the absolute motionless space of Newton.

It also challenges another Newtonian notion, that of the instantaneous cut of space at a given moment. The problem arises when we realize that as the velocity of light is not instantaneous, the stars we see are not with us "now", and though we could calculate the "true" date of observed astronomical events, this date would not be "true" for inertial systems other than our own. Therefore, classical space, which is the simultaneous juxtaposition of events over space at a given instant, disappears with the special theory of relativity.

The fusing of space and time, implied by Lorentz and Einstein, was clearly formulated in 1908 by H. Minkowski. This is the first explicit statement of the concept of the relativistic space-time continuum. This continuum was at first mistakenly seen as the spatialization of time. In this view time is absorbed as the fourth dimension of space, and therefore does not truly exist, since the past and future live together in this continuum.

Actually, in special relativity, time retains several absolute qualities independent of systems of reference. Events occurring in the same place maintain their order (i.e. do not appear reversed for any observer). Events in different places in inertial systems at rest with respect to one another maintain their order. Causally related events maintain their order, since the causal connection cannot exceed the speed of light. A careful interpretation of the special theory of relativity would actually suggest a fusion of space and time which might best be characterized as the "dynamization of space." The less correct tendency to think in terms of spatializing time is due to the

influence of highly abstracted visual perception in the absence of the other senses.

The general theory of relativity extends the principles of the special theory to acceleration, thereby removing the distinction between space and matter. Rather than Newtonian space, there is a non-Euclidian continuum with curvature (or rate of change) varying from place to place and from time to time. If gravity (acceleration) is reduced to a local deformation in the continuum, then matter itself is also by its gravitational field, from which it cannot be separated.

There is now nothing left of the classical space as "simultaneous juxtaposition of points." A moving point is now a series of positions in space-time and a later moving point cannot pursue the "same" course, as its time coordinate would be different, which means that its space coordinates would also be different. Thus it is incorrect to confuse a situation that we perceive as our goal with the situation at which we arrive, since they are two distinct events in time and therefore space. It is only our language and our Newtonian prejudices which fuse them into one timeless identity.

Concepts of time are modified by both the special and the general theory of relativity. In the special theory the concept of the succession of causally unrelated events becomes meaningless. Observed times between different inertial systems is affected by being lengthened, though it is never suspended, and it never shrinks to merge cause and effect. The observed lengthening of time, measured by the Lorentz transformation, is not absolute. It is reciprocal, that is each observer in two inertially different

systems will see the other's time equally lengthened. This is due, however, to a "perspective of velocity" and the privileged character of duration can be established by realizing that an observer is always at rest with respect to himself.

This reciprocity does not apply to the effects on time of the general theory. It is here that the twin paradox arises. That is, if one of two twins undertakes a long space voyage at very high velocities (approaching the speed of light) and returns after what seems to him several years, he will find that his brother is long dead and that many centuries have passed on earth. Thus in this case reciprocity does not hold, since the effect is not the consequence of the earth and the space ship moving apart from each other (which is a relative matter – who is to say which moved) but is rather a consequence of the tremendous acceleration (gravity) of the space ship, which the earth does not experience.

In discussing what are the absolute qualities of time, it becomes significant to realize that there are real parallels between stream of consciousness time and "real time." Just as stream of consciousness time is created by the consciousness, so real time is created and measured by events, usually mechanical. This is a consequence of the merging of space, time and matter, which forbids the concept of time as a universal freely flowing container of events. This merging destroys the homogeneity and uniformity of time, and ties it to the pulsating events of gravitational fields.

Though the concept of simultaneity is no longer useful, there are relations between discordant temporal events which are metrically diverse, such as the

twins who are aging at different rates during the space voyage. This is the topological relation of contemporaneity. For, though they are apart for the trip, they are together at the beginning and at the end of the journey. This topological contemporaneousness replaces the concept of simultaneity.

With the fusion of the concepts of space and time there arise problems with the concept of distance. As Whitehad said, "spatial relations must be stretched across time." A distance is no longer the relation between "here now" and "there now," but between "here now" and "there then." To distance in space must be added the interval of causal independence. For the physicist the distance from here to the sun includes the time of a two way light trip. (The classical view of distance holds here if the causally related objects are close together.) For the artist there are other causal factors affecting distance. (Such as in the time-space of stream of consciousness, and the intervals in organizing perception.)

Just as it is necessary to talk of the sun in terms of the time it takes its light to reach me, it is also necessary to introduce the spatial factor into the measurements of time, so that a factor of spatial distance is implied when I talk of what happened to me "several hours ago." Time is seen to be "thick," without instants, but with transversal extent. Time admits relations of co-presence or simultaneous fluxes, and thereby denies instants.

There is also a general attempt to eliminate those concepts from time which imply geometrical qualities and therefore obscure its essential incompleteness. The factors of relativity which apply to large distance also apply to sub-atomic events due to the high velocities involved. To overcome

the problems involved there is a tendency to eliminate points from mathematics. (Heisenberg's indeterminacy principle denies the possibility of the sharp definition of events even within the same inertial system.) Karl Menger has attempted to replace points with a topology of "lumps" without well defined boundaries.

The general theory of relativity, which extends the principles of the special theory from inertial systems to accelerating systems, absorbs matter into time and space. Matter, which is now equivalent to energy, is a structural complication in the spatiotemporal medium.

The changes in space, time, and matter lead to the necessity for a change in the concept of motion. Events in the continuum have replaced particles, and motion ceases to be displacement and becomes "changes," "modifications" or "transformations" of the continuum.

The Laplacian view of the world is one of complete determinism. This view, still held by many today, requires the continuity of the space time continuum. This is held by Einstein and deBroglie who maintain that matter is a part of the field. However, Herman Weyl sees the electron as a gap in the field. This view, together with Heisenberg's uncertainty principle, provides the discontinuity which is the cause of the true meaning of time. Heisenberg's uncertainty is not just a problem of human observation, but actually allows for "uncaused" events within certain limits.

A philosophical image of physics will therefore have to be neither visual nor determined. The reality of time implies the emergence of genuine novelty,

that is the actual occurrence in the future of events which are only statistical possibilities or potentialities in the present. This emergence of the novel denies the recurrence and the reversibility of time. It also defies abstracted visual imagination.

Time can be better understood by investigating its manifestation in human experiences, all of which it pervades. It is especially evident in the stream of consciousness, where the "events" in the world. Time is less conspicuous in the realm of the visual sense, particularly in literate Western culture. (It will be shown in a later paper that time and sequence is a very important part of the physiology of vision, but that the artificial perspective space developed since the Renaissance is an attempt to deny that reality and to replace it with an idealized distortion.)

Auditory data, though conventionally excluded from investigations of reality, provides a closer representation of the actual world. With auditory data the nature of becoming, which is the true meaning of time, can be demonstrated. The relation of units in music to the whole is analogous to the relation of the parts to the whole in space. "The compatibility of the emergence of novelty with the causal influence of the past is clearly exhibited in the perception of musical phrases and, by an attentive analysis, can be detected in the perception of <u>any</u> temporal whole. Introspectively, the (provisionally) last tone of a melody is an emergent present, while its musical antecedent context, which is joined to it by the dynamic link of immediate memory, represents the causal or 'mnemic' impact of the past."[5]

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[5] Capek, <u>The Philosophical Impact of Contemporary Physics</u>, p. 376.

This type of musical model, used to explain time, can similarly be used to explain the new "dynamized spatiality." In the case of two or more simultaneous melodies (polyphony) the sense in which they unfold "besides" each other is the sense in which two objects are "beside" each other in space. The musical situation parallels the "co-becoming" or "co-fluidity" of "world tubes" (inertial systems as they exist through time) in relativistic time-space. "In this search [for models] the observed isomorphism of psychological duration and physical becoming will constitute one of the most significant clues."[6]

2.2.3. PAINTING

From the middle of the fourteenth century to the end of the nineteenth century, Western painting has dealt with an illusionistic space. The primary means of creating this illusion of space have been linear (one, two or three point) vanishing perspective, atmospheric perspective, and Chiaroscuro (to define volumes in space). Of these linear perspective is by far the most important. It becomes the one device continuously present in Western painting during this time.

This perspective was not only a technical invention; it expressed a particular view of existence. It presupposed space as an independent, static, uniform, continuous reality in which objects are located to be known from the single point of view of a privileged spectator. Leonardo Da Vinci had written that "the air is filled with an infinite number of lines, straight and radiating, inter-crossing and weaving together without ever coinciding, and they represent

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[6] Ibid, p. 377.

for every object the true for of its reason."[7] That perspective to the early
Renaissance was seen as the true representation of reality is indicated by
Alberti's statement: "At last perspective permits me to see the world as God
saw it."[8]

To represent things in perspective and to see them that way is a very special
condition, not true of any other culture or any other time. The condition that
leads to the favoring of this type of vision has many other consequences.
The condition is that of literacy. The culture which developed perspective
was the only culture to have a supply of paper, a phonetic alphabet and a
printing press with movable type. The combination of these things produced
the condition of literacy, which is a condition of prejudice for vision over the
other senses, an ability for a high degree of abstraction, and a prejudice for
the privileged point of view that is developed by the reader of books. In The
Gutenberg Galaxy, McLuhan writes:

> "Only the phonetic alphabet makes a break between eye and
> ear, between semantic meaning and visual code; and thus only
> phonetic writing has the power to translate man from the tribal
> to the civilized sphere, to give him an eye for an ear… "[9]

> "The invention of typography confirmed and extended the new
> visual stress of applied knowledge, providing the first

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[7] Dorner, Alexander, Way Beyond Art, p.111.

[8]

[9] McLuhan, Gutenberg Galaxy, p. 27.

uniformly repeatable commodity, the first assembly-line, and the first mass-production…"[10]

"A fixed point of view becomes possible with print and ends the image as a plastic organism."[11]

The foundations and implications of the perspective view of reality are very close to if not in many instances identical with the Newtonian theories of the same age. The Newtonian attitude towards space and time presupposes the infinite extension of a uniform, continuous space which maintains its characteristics regardless of occupancy by objects, and is independent of time. (The objects in space move over periods of time, but can return to some previous position to repeat the past.) Time is a fourth dimension of space, and uniformly and continuously measures the occurrence of events in space. (time would also exist without the events.)

A very important characteristic of Newtonian space is its simultaneity of juxtaposition. That is to say, if one were to take a "slice" of time, one instant, then one could describe the position and velocity of every particle in space (the universe) at that instant. This is precisely a description of a perspective painting. A perspective painting is a description of the position and instantaneous movement at a given instant juxtaposed through a continuous, uniform and infinite space.

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[10] Ibid, p. 124.

[11] Ibid, p. 126.

It is precisely these assumptions of instantaneous juxtaposition, characteristic of both Newtonian physics and perspective painting, which are no longer held by physics.

Modern physics further holds that the concept of a privileged viewer is invalid, and that the nature of the universe is such that no perspective visual image can represent it.

While an image or model of modern reality (with things that are simultaneously particles and waves; tie durations without instants to bound them; lack of continuity; a non-Euclidian spatial configuration; unity of space, time, matter, and energy and continuous becoming without causality) is impossible in Baroque visual terms, that does not mean that it is impossible. One would not expect to be able to represent Baroque scientific concepts of infinity, depth, motion, analytic geometry and calculus, and Newtonian space and time with the techniques of Greek art. Nor would one expect a Greek, transported to the time of the Baroque, to be able to understand the science of the time from the Baroque paintings shown to him, for the paintings would use techniques completely foreign to him. (That is to say, that he would see distant figures as midgets, foreshortened limbs as defects, and Chiaroscuro as diseases of the skin.) Similarly, we cannot expect to understand our reality with the vision of Renaissance and Baroque painters.

The problems of modern physics and of four and more coordinate analytical geometries are usually represented mathematically and left at that. It is, however, possible to demonstrate a variety of ways in which these things can

be conceived. The paper on the physical image of the world described how a piece of music can represent the world as becoming and the emergence of novelty with limited causal relations to the past. It also described how polyphony can describe the sense in which two objects can "co-exist" or "co-become" besides each other in dynamized spatiality." The human mind is capable of perception far more complex than the "single vision of Newton", which still pervades our surface perception, would indicate. Repressed below the surface perception of chronological time which remains with most of us is an ability to conceive and perceive in an ambit of durations created by consciousness and partaking of the durational quality of other events in reality. An example of this is demonstrated in Arnold Schoenberg's music:

> "[In Style and Idea he] reports that he was worried about the apparent absence of relationship between the two main themes of his Chamber Symphony and thought of deleting the second theme. But twenty years later he discovered that the second theme was a 'crab' reversion of the first; it was 'of such a complicated nature' that he doubted whether ' any composer would have cared deliberately to construct a theme in this way; but our subconscious does it involuntarily… a musical creator's mind can operate subconsciously with a row of tones regardless of their direction.'"[12]

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[12] Ehrenzweig, Anton, Psychoanalysis of Artistic Vision and Hearing, p. 109. (Interior quote from Style and Idea by Arnold Schoenberg, 1951, p. 113.)

This power of perception, of which we are not often aware, can best be seen in the processes of dreaming. It is possible to dream an image which, when reported, must be described as ambiguous. In reporting a dream one might say: "It was a leaf and at the same time it was my grandfather." While in verbal and antique visual terms we cannot comprehend something being both a leaf and a man, in the dream there is complete clarity and absolutely no question of ambiguity. Thus it can be demonstrated that characteristics of the world which are usually described only by mathematics are within the powers of human comprehension.

It is not inherent in the physiology of vision to be able to perceive only the static image of the Renaissance painter. In actuality the eye, if held in a fixed position, can perceive only a small area in sharp focus. The far larger surrounding are (termed peripheral vision) is not in sharp focus. It is blurred, vague, in flux (motion) and it shows distortions which are far closer to the ways of the unconscious mind than is the sharply focused center of vision.

In Renaissance or Baroque vision (the kind still most widely used today) a large object (or relationship of objects) is perceived by a certain pattern or oscillations of the eye which scan the object, forming many retinal images of it. These retinal images (including the sharp center and the pulsating peripheries) are reported to the subconscious mind where they are assembled in a dynamic image reflective of the pulsating contemporary becomingness of the world and of the human stream of consciousness. This unconscious image, by a process of the prejudice of a time and culture, is unscrambled, relieved of its dynamic peripheries, and reassembled into a "memory

image." When we think that we see something in perspective, what we are actually seeing is a particular memory image, determined by the structure of our culture, and both a cause of and a result of our reality. To see a picture the Westerner focuses a little in front of it, to take it all in at a glance, and then moves his gaze out from some psychological center of the composition. In his paper, "Film Literacy in Africa"[7] Professor John Wilson describes a different method of approaching an image, that of the illiterate African, who scans the image segment by segment, not making our connection of instantaneous juxtaposition to bring the segments into a unified perspective. Thus an African audience can watch a film showing sanitation procedures and see nothing but a chicken dash across a corner of the screen (which the Western film makers had not observed).

By learning new ways to move the eye, and by bringing themselves closer to the subconscious construction of the visual image, painters like Cezanne, Picasso and Braque are able to avoid a static visual image, and are able to see and represent a world of flux and becoming, of energies continuously in motion, of potentialities become realities, and of contemporaneous and overlapping relationships or things creating their own spaces, rather than images of things juxtaposed in space.

These modern painters, by processes of different kinds of eye oscillations, a closer awareness of dynamic influence on the structure of an image exerted by the forms it contains, and a respect for the truth of the flux and "distortions" of the peripheral image, see and represent a reality just as true for today as the perspective image was for Alberti.

While it is very simple to be able actually to see distortions of the kind Cezanne painted, those of Picasso, in his paintings in the style of Guernica, seem less likely. This is because they are more a matter of reordering all of perception than just that of the eye. However, it must be remembered that there was a time when critics said that the Impressionists were mad men suffering hallucinations who painted with brooms. It was not too many years later when Oscar Wilde, in his essay "The Influence of Impressionism upon the Climate" (1889) reported that:

> "Where, if not from the Impressionists, do we get those wonderful brown fogs that come creeping down our streets… [since] Things are because we see them, and what we see, and how we see it, depends on the arts that have influenced us."

He adds that,

> "Nature, upon the other hand, forgetting that imitation can be made the sincerest form of insult, keeps on repeating this effect until we all become absolutely wearied of it."[13]

Ruskin, starting in 1843, worked on a series of essays which were compiled in a series of volumes, Modern Painters. In this and other works he proposed and defended the Gothic style. In these essays Ruskin is proposing the Gothic not as a superior revival style by arbitrary choice, but as a reaction to the single vision of Newton and its expression in Renaissance art.

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[13] Wilde, Oscar, "The Influence of Impressionism Upon the Climate," in Paths to the Present, Eugene Weber, ed., pp 187,188.

Ruskin calls for forms which will reintegrate the senses, and provide a texture of environment in harmony with the potentialities of human perception. Bernard Berenson, similarly calling for an integration of the sensory systems, wrote in 1897:

> "The painter can accomplish his task only by giving tactile value to retinal impressions."[14]

The end of the nineteenth century brought revolutionary changes in the human animal.

> "Whereas all previous technology (save speech itself) had in effect, extended some part of our bodies, electricity may be said to have outered the central nervous system itself, including the brain.[15]
> "Electricity offers a means of getting in touch with every facet of being at once, like the brain itself. Electricity is one incidentally visual and auditory; it is primarily tactile."[16]

This new sensory system allowed the artist to see past the static visual space. He could "feel" among objects, to know the inner significance of their forms and their interrelations in a "dynamized spatiality." In the 1880's Henri Bergson published his Essai sur les donées immediates de la conscience,

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[15] McLuhan, Understanding Media, p. 247.

[16] Ibid, p. 249.

challenging the traditional concept of space and time and proposing the reality of the durations apparent in human consciousness. In Four Steps Toward Modern Art, Venturi points out the similar attitude that Cézanne had at that time:

> "The juxtaposition of the objects in space painted by Cézanne and those theorized by Bergson shows a truly impressive unity of sensibility, imagination, and thinking. IT was one of the earliest portents of the revolutions which took place in our century, in the field of art as well as in that of science."[17]

Cézanne's paintings are not abstractions, but rather show reality as he saw it. However, the "space" of Cézanne is completely different from the perspective picture space which had previously dominated Western painting including Impressionism. Cézanne's "space" is completely different and can better be termed a dynamized spatiality because it recognizes time and motion, and because it denies unity, continuity, and simultaneous juxtaposition; the three prime characteristics of space.

In many of his landscapes Cézanne brings the distant forms forward, and tilts the forward plane, to give a unity of the canvas which would dominate the depth of the image, and to free the image from any indication of the viewpoint of the painter. His most successful works combine a variety of devices to give an overall importance to the canvas, and avoid any points of psychological interest. Fry says:

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[17] Venturi, Four Steps to Modern Art, p. 66. (Venturi does not use the term "juxtaposition" in the same way that I do.)

"At the end of his life Cézanne developed the strangest method in order to express his profound sense of a continuous plastic rhythm penetrating throughout a whole composition. By some mysterious power he was able to give to the mountains, the houses, the tress, their solid integrity, to articulate them in a clearly felt space and yet to sustain a rhythm of plastic movement almost unbroken from one end of the canvas to another."[18]

This overall texture, without points of central organization or psychological interest, I characteristic of much of the work of Frank Lloyd Wright, which avoids a centrality of organization and is characteristic of the Proustian novel of which Germaine Brée says:

"There is not one detail in the book which does not derive significance from its relation to some aspect of the whole work, an aspect of the whole work, an aspect which in turn is tied up with Proust's poetic vision. Composition and style are simply the means whereby Proust constructs a novel organically bound to the general vision from which it originated."[19]

The devices used by Cézanne to achieve his effects of continuity through the composition and discontinuities in spatiality are not distortions, but characteristic of reality perceivable by the eye. In the case of color,

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[18] Fry, <u>Cezanne</u>, introduction.

[19] Brée, <u>Marcel Proust and Deliverance From Time</u>, pp. 221-22.

"Red apples in front of a grey wall will induce the complementary colour of green in the wall. But after 'prolonged fixation,' the colours red and grey return with a vengeance. The induced green of the wall will shrink into a sharply defined rim round the apples. When this happens the spatial distance between the apples and the wall seems to vanish and the colour surface appears in a single plane. The local colours grey and red thus reintegrated appear more simple, finally even the blue of the sky assumes solidity, just as Cézanne would have painted it."[20]

The "distortions" of Cézanne's forms and perspective are not arbitrary. In fact, it is possible to demonstrate that they are not distortions at all, but rather what one can actually see. While a Renaissance painting offers an abstract static image, equivalent to the memory image, Cézanne's explores and describes the impressions on the subconscious of the retinal image with its periphery of flux and "distortion." Cézanne studied his models for long periods of time before starting to paint. Typical of his distortions is a table, broken or discontinuous on two sides of some object as a bottle or cloth which covers part of the edge. If a model were set up, and the cloth were taken as a fixation point, it would be seen that the table actually does appear not to continue in a straight line through the cloth, but appears as Cézanne

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[20] Ehrenzweig, Ibid, p. 202.

paints it. The table appears continuously only if the eye is allowed to oscillate back and forth across the cloth.[21]

Another apparent distortion of Cézanne's is to ignore the effect of perspective on the image of a table, and to make the farther edge as large as or larger than the near edge. It can be shown that this phenomenon is also visually correct. If one stares at the near edge of a table, the far edge, in the blurred field of peripheral vision, will appear larger. If one stares at the far edge of a table, the near edge appears larger. The distortion chosen is an indication of the choice of fixation point.[22] This is one of several methods he uses to lead the viewer through the painting in a pattern that is not Renaissance, but is the pattern of human potentiality in the modern age.

The instantaneously juxtaposed view from a fixed vantage point that was the organizing principle of Renaissance painting and Renaissance reality no longer holds here. In Renaissance terms Cézanne's picture is as distorted and irrational as is modern physics in Newtonian terms. But modern physics and painting have their own terms, and these exclude the privileged eye. Just as a discussion in modern physics must be in terms of specific inertial and gravitational systems, so a Cézanne painting imposes definite fixation points and definite directions to eye movement. The distortions in the composition produce stresses which move along certain trails within the picture. Once abandoned to this guidance, and free of the Renaissance attempt to see shapes statically in a simultaneous memory image, the distortions, seen in a new state of becoming, will seem correct. (This is

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[21] Ibid, p. 199.

[22] Ibid, p. 201.

analogous to the dynamized spatial experience of becoming in the movement through a Frank Lloyd Wright building, which does not make sense in classical terms of symmetry where knowledge of the entire scheme is simultaneous.)

Thus Cézanne's paintings describe a reality of dynamized spatiality using long neglected processes of vision to see the structure of spatial relations whose reality is based in the temporal process of their interrelation. The truth of these temporal processes of perception as models of the processes of the real world has been demonstrated in physics, architecture, literature, and the entire reality of the beginning of the electronic age.

2.2.4. ARCHITECTURE

At the turn of the century, architects were designing contexts for activities of a new reality. The Newtonian experience of the Renaissance, the Baroque, and the machine age still provided the framework for the experience of most people, but it no longer formed the limits of the experience of the culture or of its artists.[23]

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[23] In referring to "modern" architecture it is necessary to distinguish between two periods usually taken together. The first of these periods is that between the mid-1700's and the late 1800's, and can be referred to as the Machine Age. The second is from the late 1800's to today, and will be referred to here as the Electronic Age.

When Pevsner writes in An Outline of European Architecture;
> "Bruchsal [worked on by Neumann in 1730 and Johann Michael Feichtmayr in 1752] with its perfect unity of space and decoration was the high-water mark of the Baroque style…" (p.286)

and that
> "… No church designed anywhere after 1760 is amongst the historically leading examples of architecture." (p.286)

it does not necessarily follow that the buildings designed thereafter are the beginning of the architecture of our own age.

The original inhabitants of Victor Horta's house at 12 Rue de Turin, 1893, experienced a discontinuity between the traditional context of residential activities and that of Horta's work. Giedion writes:

> "In the typical Brussels house, Horta tells me the whole extent of the ground floor is visible from the entry. Horta avoided this by breaking the floor up into different elevels. Thus the drawing room is half a story higher than the entrance hall which leads into it. Differences in level represent only one of the devices which Horta employed to give new flexibility to the ground plan. He hollowed out the massive body of the house,

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The industrial revolutions o the late 1700's and early 1800's can be seen as a continuation of a tradition which developed with the Renaissance. The mechanical principles which are employed in those revolutions are directly in the line of development starting with Galileo and Copernicus and continuing through Newton. There is no contradiction to any of Newton's principles in the developments of the Mechanical Age, as there are in developments since the Michelson-Morley experiment in the 1880's. The principles of the assembly line and of mass production are not eighteenth century innovations, but had been introduced in the fifteenth century with the printing press. It is the machine which is important at this time, and not electricity.

In painting, though David, Delacroix, and Ingres are referred to as modern painters, their spatial concepts and their concept of point of view are no different from those of Renaissance and Baroque painters. Even the Impressionist painters preserved the concept of the instantaneous juxtaposition of elements in space as implied by perspective. It is not until Cézanne and later the Cubists that the reality of our age is seen in painting.

Architectural space in the second half of the eighteenth century is the Newtonian space of the Baroque. That is completed, enclosed space, usually with architecturally developed windows connecting the building with the space beyond, with a complete stylistic unity between the inside and the outside of the building, and an extension of the space of the building into the space of the city.

Architectural spaces of the Machine Age are no longer necessarily symmetrical as they were in the Baroque. Railroad stations, exhibition spaces, and bridges were built in new materials and often without revival details, but they were still spaces in the Renaissance and Baroque tradition.

The introduction of electronic media of communications, the use of electricity in transportation and industry, the growth of the big business, the introduction of a new physics, and the beginnings of modern painting, all mark the latter part of the nineteenth century and the beginning of the twentieth as the beginnings of our age.

introducing light-wells that provided new and unusual sources of illumination in so narrow an exterior. The photographs do not reveal the surprising interrelations into which these rooms at their different levels are brought."[24]

According to Scully, rather than a static Newtonian juxtaposition of instantaneous space,

"… Horta's interiors create an environment of flux and becoming, a Bergeonian world which embodies the endless continuities that moves through all things, including man, and in which all separateness drowns."[25]

In America the possibilities for providing a context to the experience of dynamized spatiality were first explored by Richardson. Scully writes:

"From among the architects of the 70's one pathfinding artistic personality emerged, to whose influence the other architects of the period were all in one way or another subjected. This was Henry Hobson Richardson. As early as 1869-71, Richardson began to experiment with a new kind of open interior space, based upon a concept of the living hall, which was closely related to the so-called "Queen Anne" planning being

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[24] Giedion, <u>Space, Time, and Architecture</u>, p. 297.

[25] Scully, <u>Modern Architecture</u>, p. 22.

developed at the same time in England by Richard Norman Shaw."[26]

Richardson's innovations brought a sense of open interior space and a method of using surfaces for expressing and enclosing that space. Frank Lloyd Wright uses this kind of space and exterior expression in his Husser House, built in Chicago in 1899, which is similar in appearance and organization to Richardson's work.

Richardson's organization provides the freedom from a previous conception which makes possible Wright's statement of a context for activities in the new reality in the Ward Willitts House of 1902; "the first great masterpieces among Prairie Houses."[27] In describing this house, Scully compares it to Palladio's Villa Rotunda, in which

"… the human being can occupy the center…"

from which

"… doors upon all four sides allow long axial vistas for views. But there can be little sense of compulsion to move toward those views, because the central void rises high above the side openings and creates a stable, vertical volume of space which

[26] Scully, The Shingle Style, pp. 3-4.
[27] Scully, Frank Lloyd Wright, p. 7.

> dramatizes the upright human being at its center and keeps him
> fixed where he is."[28]

In this way the space of the building is experienced from one point simultaneously. What cannot be seen at a given instant can be inferred from the building's symmetry. All parts of the building are always present and juxtaposed in a continuous instant of time, as are the parts of a Renaissance painting; organized from one or more psychological centers, and always instantaneously present.

In the Ward Willitt's House, however, the human being "is in flow around an already occupied center."[29] The spaces surrounding the core are not organized to be simultaneously comprehended from any one point, but are continuously becoming as they are revealed to the observer in a pattern determined by his own movement (which is itself influenced by the building).

In the Robie House, 1908-1909, the voids and the defining planes are overlapping in changing relationships perceived differently with the motion of the observer. As in Cubist paintings, psychologically dominant features do not exist. The unfailing start from and return to the same eye-catching features in Renaissance painting or Palladio's villa do not occur here. The forms are overlapped and superimposed, creating a general ambiguity and doubt if the composition is viewed with Newtonian eyes. But here we are to let the eye and the inhabitant roam in patterns suggested by the arrangement

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[28] Ibid, pp. 17-18.

[29] Ibid, p. 17.

of the building, which will direct them into a new kind of comprehension in a world of "dynamized spatiality" where becoming and ambiguity are the rule and where overlapping of meanings is the method of knowledge of a new reality. No longer encountering the world with Newton's perception, a new subjectivity developed from new uses of extended senses creates the context for and defines the limits of a new reality.

THE CONTEMPORARY ARCHITECTURAL EXPERIENCE

2.3.1. INTRODUCTION

A work of architecture is the context of an activity. As an art, architecture draws the individual's experience of that context towards the potential of the culture for that context. Activities, and therefore their contexts, are limited by the limits of the culture's experience or the nature of the culture's reality. Therefore, in order to determine which of the perceptual fields which surround us are valid works of architecture, we must first determine the current limits of experience, or the current structure of reality.

In the following papers reality will be explored in three ways. First, the nature of the body which, by its subjectivity creates reality, will be described. This involves an attempt to understand the effect on the body of the current extensions of perception. Second, the findings of people who professionally explore the effects of changes in perception. These people are artists, and the arts briefly considered are painting, film, and the novel. Last, abstract physics will be considered as an indication of the problems of a statement on the nature of reality.

Having explored contemporary experience, it is then possible to decide what architecture should be, and to identify examples which are successful in these terms.

2.3.2. EXTENSIONS

While the extensions of the future may be very directly of motor systems, the extensions of the present continue to be electrical and of the nervous

system. The media of today continue the process of integrating the sense and overcoming the abstraction of experience characteristic of the Newtonian age.

Although it may seem that we sit in and experience a room with the same organs of perception as did our ancestors, the extensions which we have become accustomed to using have restructured our perception.[1] As we attempt to understand the organization of our reality, we no longer find the forms of the past adequate representations. The novel as exemplified by Balzac is not a model of the form of our reality. Far closer is the novel of James Joyce, and perhaps closer still, the novel of Alain Robbe-Grillet. The structure of the city, the paths of actual and potential movement through it, the temporal organization of human interrelations, and patterns of awareness are recreated in Joyce's novel and again in Robbe-Grillet's. The meanings of new realities can be found in art. Their sources are found in media.

It is difficult to know what the effects of the various media are. They can be studied in terms of their nature, in terms of cultural changes during their use, and in clinical laboratory experiments. In any case it is never certain whether cultural changes are due primarily to any given cause. However, the difficulty of identifying the direct cause in no way brings the supposition that media does effect cultural forms into question.

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[1] Granting the effect of a technological device as an extension, (that the telephone is an extension of the human voice) one might argue that it is effective as an extension only when being used, and is not effective when not used. This can be seen not to be the case when one understands that speech is an extension of thought, and as such it influences the form of thought (to the extent that some people must move their vocal chords when thinking). This influence of speech on thought does not cease when one stops talking.

One of the media most obviously shaping our culture today is television. Apart from the subject matter of specific programs, the fact and form of TV is responsible for vast changes in reality. One could not expect that three hundred million people throughout the world could watch the same show every week (Bonanza) and not be somehow altered. If one defines the statement; "the place in which one is" to mean what it has always meant, it cannot, of course, be expanded. But if one cares to define it in terms of being, then it must be in terms of our subjectivity and others' awareness of us. Thus we will define the place in which we are by what we see, hear, can effect, etc., and the corresponding experience of us by others. With this concept we find that "the place in which one is" can be expanded by TV, the telephone, and similar electrical devices, as with the example of the assassination of the President's accused assassin previously referred to. It is changes such as this in place and in movement which brought about the new realities reported in the novels of Joyce and Robbe-Grillet.

In Understanding Media, McLuhan distinguishes between "cool" and "hot" media.[2] Cool media give a minimum of information due to their low resolution and therefore elicit high audience participation, as the perceiver must complete the ill defined presentation. Hot media give a large amount of highly resolved information and elicit less audience participation. TV, due to the nature of the cathode image, is a cool medium. From this distinction, many consequences can be understood, such as the outcome of the Kennedy-Nixon debates.[3] More important is the orientation of the TV

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[2] McLuhan, Understanding Media, p. 22.

[3] "White [in The Making of a President: 1960] considers the 'content' of the debates and the deportment of the debaters, but it never occurs to him to ask why TV would inevitably be a

audience to an involvement in "depth." Americans are today less concerned with the purely visual aspects of experience, and more concerned with the integration of all perception in experience. The American automobile provides an example of this. The traditional American automobile is designed to minimize or disguise every aspect of experience except the visual. It is striking in appearance, its interior is a visual "space," and it is designed to follow a visual path on a straight road. All other aspects of the experience are hidden or ignored. As a result of an orientation towards integrated experience, European and sports cars, in which one can hear the engine and transmission, and in which one can feel the road, are becoming popular. A similar situation exists in the attitude of Americans toward sex, food, and the arts.

Another important force extending our perception and shaping our reality is the computer. While it is important in many fields, one of the more interesting is its use in teaching reading. Devices such as "talking typewriters" have been developed. Many such devices consist of a counsel for each student, including viewing screens, earphones, and a typewriter. Using the typewriter and a pointing device, which activates the screen, the student engages in a dialogue with the teaching machine. Three of the most apparent drawbacks of the traditional student-teacher relationship are that the teacher has no way of knowing if a given student is following the progression of the course except at long intervals, that the student is only randomly rewarded if he knows the answer (if he knows the answer but another student is giving it, his knowledge is not recognized), and that the

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disaster for a sharp intense image like Nixon's, and a boon for the blurry, shaggy texture of Kennedy." (McLuhan, Ibid, p. 329.)

course of study cannot be custom made in type and pace for a given student. None of these drawbacks exist with the computerized teaching machines. If the student misses a step in the progression, the computer knows it within a millisecond. The student is rewarded for each correct answer by the presentation of the next question. Finally, not only can the pace at which the student learns determine the rate of progress through the course of study, but the computer can chose a method of instruction which suits the student best, or even develop a unique method if none of those available suit the student's needs.

Such teaching machines are in only limited use today, but some indications are that they can teach people to read in a few months whereas previously the teaching process took many years. "Talking typewriters" are also very effective with autistic children. These machines also point out the fact that there are two parts to education. One is the acquisition of factual data and of skills. In the future, this can be done by machines, freeing teachers for the second part of education, which is the development of the personality during interpersonal relationships.[4]

Computers, as described above, obviously can have a profound effect on education. This description was given not to make a point about education, but about the implications of the computer on the form of our culture in general. All of our institutions are "visually" organized. Social, legal, educational, and economic categories are constituted at a level of complexity

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[4] Suppes, "Use of Computers in Education," Scientific American, Sept., 66, vol. 215, No. 3. Also, "The Computer vs. The Teacher," Dr. Norton Kristy, president of Technonics, Inc., interviewed by Frank Millspaugh on radio station WBAI in New York, N.Y., on Dec. 28, 1966 at 9:00 p.m. and Dec. 29, 1966 at 1:30 p.m.

not greater than that which our visually dominated perception can comprehend. This will not be the case in the near future, as those responsible for universities and for churches are beginning to realize. In the university of the future the "school building," the "course of study," and the "teacher" as they are known today will not exist. A similar future is in store for the church. The current institutional organization prescribes a certain role to a husband and another to a wife. This relationship is legally prescribed in an implied marriage contract which is similar if not identical in all states in this country and throughout many parts of the world. In a visually oriented culture where one has to be able to place anyone one encounters in the categories of "man," "woman;" "married," "single;" or "husband," "wife;" the uniform marriage contract is necessary. Individuals, governments, universities, and churches react to the category "married" or "single."

However, in a computerized culture, as in computerized education, categories can be individually created just as methods of teaching can be individually tailored for the student's needs. Thus there is no reason why there cannot be as many different kinds of marriage contracts as there are marriages. The problem of fitting innumerable types of "marriages" into the structure of the culture is not possible for visually oriented minds, but is no problem for the computer.

It has been pointed out for some time that the important commodity of Western culture is no longer material goods, but is information. If the skills and facts possessed by Europeans and North America do not have a greater

dollar value than all of the combined physical resources of the two continents, then it will in a few years.

In our personal, social, and cultural lives we are everyday dealing more with the complex depth experience of information and less with material goods. Marshall McLuhan writes that our universe is imploding. Spatiality and temporality have become remnants of a past way of life. The complex geometry which will describe our experiences in the future will be topological.

2.3.3. FILM

This essay is concerned with the nature of contemporary reality as portrayed in the film "Last Year at Marienbad," directed by Alain Resnais from a screen play by Alain Robbe-Grillet. This film uses the device of the flashback, and to understand the significance of its use several films which show the development of the flashback will also be described. These other films are "Citizen Kane," directed by Orson Welles, "Wild Strawberries," directed by Igmar Bergman, and "Hiroshima Mon Amour," directed by Alain Resnais from a screen play by Miss Duras.

"Citizen Kane" is the story of a man. It follows his life chronologically. IT is a biography. But Welles understands that the time of our life is not the simplicity of a temporal sequence of state of unrelated stages of developmental growth. We are not simply the infant, child, adolescent, adult, etc. One of the characteristics of Western man is a high degree of range in temporal movement or inclusiveness. What Darwin does for the

understanding of species, and indeed for all of life, Freud does for the understanding of the personality of man. The basic tenet of Freudian theory is summed in one sentence: "The child lives in the man." The rest of psychoanalytical theory and Freudian social philosophy is a description of the dynamics of this fact.

Orson Welles chooses, for the exploration of the secret of Kane, the device of the flashback. By telling the story after the man's death he has the advantage of the full range of his life to lay down its events and search for its secret. This secret, though never discovered by the reporter gathering the story, is revealed to the viewer, at the end of the film, as a rosebud on the sleigh which Kane loses at an early age when he is taken from his parents. While it is not the intent of the movie to explore personality theory, it is presented with a conscious theory of personality structure reminiscent of Freud's masterful <u>Leonardo Da Vinci, A Study in Psychosexuality.</u>

What precisely is the form used by Welles? After showing a new reel summarizing the career of Kane, the movie is several days in the work of a reporter who is researching the death of Citizen Kane, looking for the secret in his life in his last uttered word, "Rosebud." In this research, the reporter speaks to a nuber of people and reads several documents. Each person or document reveals in chronological sequence an incident or a period in Kane's life. Thus, the first documents the reporter reads tell him of Kane's childhood; the next tells him of Kane at school, etc. In fact, the movie could be edited to show a chronological story of Kane without the reporter's work being shown. All of the flashbacks taken together could have been an independent, complete movie. The flashback is used in chronological order

to tell a story with a simple approach to the dynamics of the structure of a man's life.

The next film to be considered, "Wild Strawberries," shows an expanded freedom in the use of the flashback, and portrays a more complex field of movement for the human personality. This movie is an exploration of the causes and dynamics of a stifled, dead, killing, cold heart at the center of a man. He is old and has led a life of death. He is at a point now where he is destroying the life of his son and daughter-in-law. The movie describes his realization of this and his change.

The movie is of one day. The beginning of the movie is a dream which the old man, a physician who will be honored that afternoon at the Swedish college of physicians in Stockholm, has just before awakening. In the dream he sees a decaying corpse, which announces his state of psychic death, and he sees a clock and a watch without hands, which announce the freedom he will have during that day to explore his past and the reasons for his condition.

His trip to Stockholm is by car which is being driven by his daughter-in-law, who has announced that she has refused to abort her current pregnancy and is going to leave her husband, who, she says, has inherited his father's coldness and death.

In the course of the day the old man has conversations with his daughter-in-law, with a middle-aged couple whom they pick up, with three young people whom they pick up, with two gas station attendants, and with his mother whom they visit. Each of the meetings and conversations recalls to the old

man an event in his life which he then dreams about, either as they might have happened, or with some of the surrealistic distortions of the dream world. These dreams are flashbacks, but unlike incidents recalled by acquaintances as in Citizen Kane, they are incidents recalled by the character himself both to reveal the dynamics of his present state, and ultimately to be the means for its change. By the end of the film the old man's efforts become not only the instrument of his own change, but a saving force for his sons marriage. The flashback here is, to Bergman, the instrument of the revelation of the actual state of the present personality both to the audience and the character. It is also the dynamic for the change in state-exemplifying Western man's ability to range over time, to master his past as a living part of his personality in the present.

The integration of the past into the present personality is shown with a still greater directness in the Alain Resnais film, "Hiroshima Mon Amour." Though occasionally using long passages of past material for a description of his character, Resnais uses also the flashback as a device for portraying the existence of past events in the form of memory, as an integral part of the contemporary experience of his character. The film is about a French woman who is having an affair with a Japanese while she is making a film in postwar Hiroshima. Twenty years earlier she had had an affair with a German soldier during the occupation of France. He had been shot by resistance fighters and died after several agonizing hours in her arms. The horror of this experience becomes a part of her and her life, and a part of the love affair portrayed in the film. There are several scenes where, for instance, she will be looking at the arm of her sleeping Japanese lover. While she is looking, it changes and is the arm of her dying German lover.

This is not shown as comparison, as contrast, or as memory. The German lover becomes for her experience, as present as the Japanese lover and his time. The times for these events are not separated by twenty years, but are simultaneous. Among the devices used by Resnais for this effect is the brief flash of a past image, and the very close degree of brightness and in composition of the two scenes.

"Hiroshima Mon Amour" is the parable of two people who are of and are two places. The woman is Nevers; the man is Hiroshima. The truth of the nature of this woman is in her existences in Nevers during the war, and this lives contemporaneously in her. Resnais uses the flashback to show the contemporary vitality of this past.

Resnais' next film was made with the modern French novelist Alain Robbe-Grillet. The aesthetic implications of this film, "Last Year at Marienbad," are extensive. At a chateua where people are staying to attend a film festival, a man approaches a married woman, tells her that they had had an affair at a festival the previous year, and that she had promised to leave her husband at the end of one year's time to go with him. She denies that the previous meeting had occurred. The film depicts the Rococo chateau and its inhabitants. The film is structured, self-conscious and affected. The man argues with the woman that the previous event had occurred and presents evidence. The richness of the chateau architecture, the final style and death of "European architecture" contrasts and reflects the dry and refined lives of its inhabitants. During the argument as to whether a previous meeting had taken place, scenes of its possible nature are shown.

The scenes of "last year" which are shown in Marienbad, are not, however, flashbacks of past events. For in truth the existence of last year is questioned, even denied. And when it is affirmed, the place is not certain, and neither rare its events, nor even its characters, as the woman insists that there must have been another woman.

"Marienbad" is not a movie about one day in this year which refers to events last year, nor a movie about both years. The point is that "Marienbad" is not "about," it is, and it refers to nothing beyond what it presents. Robbe-Grillet writes about his own film:

> "Thus the duration of the modern work is in no way a summary, a condensed version, of a more extended and more "real" duration which would be that of the anecdote, of the narrated story. There is, on the contrary, an absolute identity between the two durations. The entire story of <u>Marienbad</u> happens neither in two years nor in three days, but exactly in one hour and a half. And when at the end of the film the hero and heroine meet in order to leave together, it is as if the young woman were admitting that there has indeed been something between them last year at Marienbad, but we understand that it was precisely last year during the entire projection, and that we were at Marienbad. This love story we were being told as a thing of the past was in fact actually happening before our eyes, here and now. For of course an <u>elsewhere</u> is no more possible than a <u>formerly</u>.

"But, it will be asked, what do the scenes we have watched represent, under these conditions? What, in particular, is signified by these successions of daylight and nighttime shots or these excessive costume changes, incompatible with such a brief duration? It is at this point, of course, that matters become complicated. It can here be a question only of a subjective, mental, personal occurrence. These things must be happening in someone's mind. But whose? The narrator-hero's? Or the hypnotized heroine's? Or else, by a constant exchange of images between them, in the minds of both, together? It would be better to admit a solution of another order: just as the only time which matters is that of the film itself, the only important "character" is the spectator; in his mind unfolds the whole story, which is precisely imagined by him.

"Once again, the work is not a testimony offered in evidence concerning an external reality, but it its own reality for itself. Hence it is impossible for the author to reassure a spectator concerned about the fate of the hero after the words "The End." After the words "The End" nothing at all happens, by definition. The only future which the work can accept is a new, identical performance: by putting the reels back in the projection camera."[5]

Our reality is no longer the chronology of "Citizen Kane." The patterns of reality which we create for ourselves involve a depth configuration of the

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[5] Robbe-Grillet, For a New Novel, pp. 152-54.

present. "Last Year at Marienbad" is a representation of experiences which are topological rather than temporal or spatial.

2.3.4. THE NOVEL

As art, the novel is in a constant state of change or development. At the present the work of several French novelists is being referred to as the "new novel." While the new novel is set off against the "traditional novel" it does not represent a sharp break with tradition. Marcel Proust, James Joyce, Franz Kafka, and William Faulkner did much to change the novel many years ago.

Among the new novelists, I find Alain Robbe-Grillet the most interesting and the most instructive in understanding our reality. His novel, Jealousy, is told from the point of view of the narrator (the husband) exclusively. The narration organizes the experience of the narrator and becomes a redefinition of subjectivity. Only the experience of the narrator is known, nothing else,. The description of several scenes involving A. . . , the narrator's wife; Frank, a neighboring plantation owner; and the narrator, who is never seen, except for one occasion when eh seems himself in a mirror, is repeated again and again with slight variations.

Jealousy is a denial of the chronology and story line of the traditional novel as modern painting is a denial of the juxtaposition and story representation of perspective painting. In Jealousy reality is created by and organized by the subjective presence of the narrator (Picasso). It uses elements of

experience, the several basic scenes, in a formal program of rules, limits and restrictions to create the work of art "(Mondrian).

> ". . . it was absurd to suppose that in the novel <u>Jealousy</u>, published two years earlier, there existed a clear and unambiguous order of events, one which was not that of the sentences of the book, as if I had diverted myself by mixing up a pre-established calendar the way one shuffles a deck of cards. The narrative was on the contrary made in such a way that any attempt to reconstruct an external chronology would lead, sooner or later, to a series of contradictions, hence to an impulse. And this not with the stupid intention of disconcerting the Academy, but precisely because there existed for me no possible order outside of that of the book. The latter was not a narrative mingled with a simple anecdote external to itself, but again the very unfolding of a story which had no other reality than that of the narrative, an occurrence which functioned nowhere else except in the mind of the invisible narrator, in other words of the writer, and of the reader.[6]

Robbe-Grillet's theories for his novels are presented in a collection of his essays titled <u>For a New Novel</u>. Following is a series of quotations taken from the essays. While the statements are on the novel, they are taken to apply to experience in general. Following each quotation is a statement on contemporary architecture which follows from the quotation:

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[6] Robbe-Grillet, <u>Ibid</u>, p. 154.

"There is no question, as we have seen, of establishing a theory, a pre-existing mold into which to pour the books of the future. Each novelist, each novel must invent its own form. No recipe can replace this continual reflection. The book makes its own rules for itself, and for itself alone. Indeed the movement of its style must often lead to jeopardizing them, breaking them, even exploding them. Far from respecting certain immutable forms, each new book tends to constitute the laws of its functioning at the same time that it produces their destruction. Once the work is completed, the writer's critical reflection will serve him further to gain a perspective in regard to it, immediately nourishing new explorations, a new departure. (p. 12)

As art, architecture must be continually made anew. As a path into new realities, art, by means of the discontinuity, is a primary means of finding one's way. When changes in the world and in perception have been so extensive that a present style no longer offers the framework for needed discontinuities, then the style must be changed. As context for activity, architecture must change with the experiences of a culture.

"In this future universe of the novel, gestures and objects will be <u>there</u> before being <u>something</u>; and they will still be there afterwards, hard, unalterable, eternally present, mocking their own 'meaning,' that meaning which vainly tries to reduce them to the role of precarious tools, of a temporary and shameful fabric woven exclusively – and deliberately – by the superior

human truth expressed in it, only to cast out this awkward auxiliary into immediate oblivion and darkness." (p. 21)

In contemporary architecture there is a confusion of the "meanings" of forms. A hyperbolic paraboloid roof may cover a church or a hot dog stand. A refined glass, steel and brick box can be a chapel of a super market. The point of this is that architectural forms can no longer have this kind of "meaning." The religious experience is no longer something which takes place only in a church – there is no reason why it cannot take place in a super market. The educational experience is no longer something which takes place in a "school," it can take place in front of a TV set, or throughout one's entire life. Experience is of the city. Qualities of experience will differ, but they will no longer be divided by conventional institutions.

"Exhibit X in any detective story gives us, paradoxically, a clear image of this situation. The evidence gathered by the inspectors – an object left at the scene of the crime, a movement captured in a photograph, a sentence overheard by a witness – seem chiefly, at first, to require an explanation, to exist only in relation to their role in a context which overpowers them. And already the theories begin to take shape: the presiding magistrate attempts to establish a logical and necessary link between things; it appears that everything will be resolved in a banal bundle of causes and consequences, intentions and coincidences…

"But the story begins to proliferate in a disturbing way: the witnesses contradict one another, the defendant offers several alibis, new evidence appears that had not been taken into account… And we keep going back to the recorded evidence: the exact position of a piece of furniture, the shape and frequency of a fingerprint, the word scribbled in a message. We have the mounting sense that nothing else is true. Though they may conceal a mystery, or betray it, those elements which make a mockery of systems have only one serious, obvious quality, which is to <u>be there</u>.

"The same is true of the world around us. We had thought to control it by assigning it a meaning, and the entire art of the novel, in particular, seemed dedicated to this enterprise. But this was merely an illusory simplification; and far from becoming clearer and closer because of it, the world has only, little by little, lost all its life, Since it is chiefly in its presence that the world's reality resides, our task in now to create a literature which takes that presence into account. (pp. 22-23).

To rediscover reality, architecture, as the creator of contexts, must take a leading role in the absolute denial of the existing institutions. It is only in this way that we can begin to examine every experience and activity anew and create an environment "which takes the present into account" and denies the "illusory simplifications" of the past.

"Lastly if he [the author of the obsolete novel] wants the illusion to be complete, the novelist is always supposed to know more than he says; the notion of a 'slice of life' shows the extent of the knowledge he is supposed to have about what happened before and after. In the very interior of the duration he describes, he must give the impression of offering only the essentials, but of being able, if the reader insisted, to tell much more. The substance of the novel, in the image of reality, must appear inexhaustible." (p. 31)

In the old visual order, when time and space existed, the uniformity of the universe made it possible to know all, since "all" extended uniformly from whichever part was presently being known. This is no longer the case.

"Yet it is wrong to claim that nothing happens any longer in modern novels. Just as we must not assume man's absence on the pretext that the traditional character has disappeared, we must not identify the search for new narrative structures with an attempt to suppress any event, any passion, any adventure. The books of Proust and Faulkner are, in fact, crammed with stories; but in the former, they dissolve in order to be recomposed to the advantage of a mental architecture of time; whereas, in the latter, the development of themes and their many associations overwhelms all chronology to the point of seeming to bury again, to drown in the course of the novel what the narrative has just revealed. Even in Beckett, there is no lack of events, but these are constantly in the process of contesting themselves,

jeopardizing themselves, destroying themselves, so that the same sentence may contain an observation and its immediate negation. In short, it is not the anecdote that is lacking, it is only its character of certainty, its tranquility, its innocence." (p. 33)

The architecture of today must not only deny the former structure of institutions, it must affirm the new. In papers to follow I will attempt to describe how this is done by such works as Geddes' University of Delaware Dormitories.

"Hence it is easy to show that my [Robbe-Grillet's] novels – like those of all my friends – are more subjective in fact than Balzac's, for example. Who is describing the world in Balzac's novels? Who is that omniscient, omnipresent narrator appearing everywhere at once, simultaneously seeing the outside and the inside of things, following both the movements of a face and the impulse of conscience, knowing the present, the past, and the future of every enterprise? It can only be a God.

"It is God alone who can claim to be objective. While in our books, on the contrary, it is a man who sees, who feels, who imagines, a man located in space and time, conditioned by his passions, a man like you and me. And the book reports nothing but his experience, limited and uncertain as it is. It is a man here, now, who is his own narrator, finally." (pp. 138-139)

Our reality is no longer organized by an abstract God who can spread uniformity across a universe. The activities for which contemporary architecture serves as context are created by the immediate presence of the subject with his integrated perception. There is no abstract organization to contemporary architecture, only the organization of the presence of man.

> "The entire interest of the descriptive pages – that is, man's place in these pages – is therefore no longer in the thing described, but in the very movement of the description." (p. 148)

There is no longer an independent "space" and "time" in which man and his architecture are set, or in which man can experience his architecture. Man's very presence an movement create the topology of his reality.

> "For, far from neglecting him, the author today proclaims his absolute need of the reader's cooperation, an active, conscious, <u>creative</u> assistance. What he asks of him is no longer to receive ready-made a world completed, full, closed upon itself, but on the contrary to participate in a creation, to invent in his turn the work – and the world – and thus to learn to invent his own life." (p. 156)

By its subjectivity, every action of our body creates reality and meaning. As art, architecture, like the novel, leads the perceiver into newly possible experiences and meanings.

2.3.5. PAINTING

This essay will briefly analyze some work of Piet Mondrian, Barnett New man, Josef Albers, and Larry Poons.

For several centuries Western painting dealt with a perspective space. The terminology developed to describe this painting involved the word "space" which, since Newton, has had a very specific meaning. Modern painting does not usually deal with "space." Cezanne's work does not represent a modification of a Newtonian concept. It completely denies all of the defining attributes of "space." The organization of Cezanne's painting is analyzed in a previous paper. The dynamized spatiality which organizes Cezanne's reality is also the organizing medium of cubism.

There is another tendency in modern art which cannot be explained in terms of dynamized spatiality. This tendency is represented by the painters with whom this essay deals. This essay is arranged in an order developed not to show the development of the paintings toward some known goal, but to show the development of descriptions of the paintings toward one which expresses our experience of them in terms of the nature of our experience in general.

Following Mondrian, a description of his work uses the term "space." He makes no attempt to qualify or define the term, and we must assume that by "space" he means the instantaneously juxtaposable Newtonian container of all matter.

Mondrian felt that cubism was missing the points of its own implications. The cubists were depicting nature as organized by space seen in a new way, but Mondrian felt that the space itself could be depicted, that this space was the true reality, and that representation hindered the function of art.

> "I felt that this reality [pure reality] can only be established through <u>pure plastics</u>… form and natural color evoke subjective states of feeling, which obscure <u>pure reality</u>."[7]

Mondrian saw as the underlying reality of nature, the "pure reality," as form and space.

"… I became conscious that reality is form <u>and</u> space. Nature reveals forms in space. Actually all is space, form as well as what we see as empty space. To create unity, art has to follow not nature's aspect but what nature really is. Appearing in oppositions, nature is unity: form is limited space concrete only through its determination. Art has to <u>determine space as well as form</u> and to create <u>the equivalence of these two factors….</u> I brought the rectangles together: space became white, black or gray. Form became red, blue or yellow." [8]

It is important to Mondrian that space not be empty. Reality has a human meaning to him which requires limitation and balance.

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[7] Mondrian, <u>Plastic Art and Pure Plastic Art</u>, p. 10.

[8] Mondrian, <u>Ibid</u>, p. 13.

"Plastic art cannot be simple expression of space. Empty space has no other function than to make life possible. Plastically it does not represent life. It leaves us isolated with our thoughts and feelings. Reciprocal action between us and the environment is not possible and without this action, human development (culture) cannot exist. For our feelings empty space is unbearable.

"The action of plastic art is not space-expression but complete space-determination. Through equivalent oppositions of form and space it manifests reality as pure vitality.

"The expression of pure vitality which reality reveals through the manifestation of dynamic movement is the real content of art."[9]

Mondrian's art is a manifestation of a cultural tendency to a new kind of movement, a new environment, a process of intensification of pure possibilities.

"Both science and art are discovering and making us aware of the fact that time is a process of intensification, as evolution

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[9] Mondrian, Ibid, pp. 19-20.

from the individual towards the essence of things and of
ourselves."[10]

This is the tendency of Mondrian's art, a tendency toward a process which sets an experience freed of necessity, freed for the use of art, before the realities of space and form for the art experience.

> "Through its culture, plastic art shows a growth toward the culmination of limited form, then a <u>dissolution of this form and a determination of the freed constructive elements</u> (planes, colors, lines). If we observe this fact, we can conclude that our whole culture equally reveals the same process.

> "The question whether this process in life and in art is a progress or a decay is answered when we consider that it is the <u>liberation of life and art from all obstacles toward a clearer manifestation of their real content</u> This is not merely a reduction or elimination, but it is an intensification."[11]

> While Newtonian space can exist independent of matter to occupy it, it is matter, its presence and motion, which allows us to know and measure space. The "space" of Barnett Newman is different from that of Newton in that it can be experienced without the presence of matter. However, this is not to say that

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[10] Mondrian, <u>Ibid</u>, p. 51.

[11] Mondrian, <u>Ibid</u>, p. 39.

his "space" is a void. On the contrary, by making substance of "space", he escapes the void:

"I have always hated the void and in certain of my work of the Forties I always made it clear. In my work of that time, I notice, I had a section of the paintings as a kind of void from which and around which life emanated – as in the original Creation – for example, Gea done in 1945 and Pagan Void, 1946.

"When I started moving into my present concern or attitude in the mid-Forties, I discovered that one does not destroy the void by building patterns, or manipulating space or creating new organisms. A canvas full of rhetorical strokes may be full but the fullness may be just hollow energy, just as a scintillating wall of colors may be full of colors but have no color. My canvases are full not because they are full of colors but because color makes the fullness. The fullness thereof is what I am involved in. It is interesting to me to notice how difficult it is for people to take the intense heat and blaze of my color. If my paintings were empty they could take them with ease. I have always worked with color without regard for existing rules concerning intensity, value, or non-value. Also I have never manipulated colors, I have tried to create color.[12]

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[12] Seckler, "Frontiers of Space," (an interview with Barnett Newman) p. 86, Art in America, vol. 50, no. 2, Summer 1962.

Space is not an empty existence waiting to be filled by some matter, but is a thing in itself:

"I don't manipulate or play with space, I declare it. It is by my declaration that my paintings become full. All of my paintings have a top and a bottom. They are never divided; nor are they confined or restricted; nor do they jump out of their size. Since childhood I have always been aware of space as a space-dome. I remember years ago shocking my friends by saying I would prefer going to Churchill, Canada, to walk the tundra than go to Paris. For me space is where I can feel all four horizons, not jus the horizon in front of me and in back of me because then the experience of space exists only as volume. In architecture the concern with volume is valid. Unfortunately, painting is still involved in the notion of space as architectural volumes – intricate small volumes, medium volumes, or pulsating total volumes. I am glad that by 1945 I got out of it.

> "Is space where the orifices are in the faces of people talking to each other, or is it not between the glance of their eyes as they respond to each other? Anyone standing in front of my paintings must feel the vertical dome-like vaults encompass him to awaken an awareness of his being alive in the sensation of complete space. This is the opposite of creating an environment. The environment is separate from the painting. A painter friend, Kamrowski, said it well: he said my paintings are hostile to the environment. The room space is empty and chaotic but the sense of space created by my painting should make one feel, I hope, full and alive in a spatial-dome of 180

degrees going in all four directions. This is the only real sensation of space. At the same time I want to make it clear that I never set out to paint space-domes <u>per se</u>. I am, I hope, involved in much more."[13]

In his book, <u>Way Beyond Art</u>, Alexander Dorner explains that the term "space" cannot be used in dealing with contemporary art.

"The reason why people speak of works of Cezanne and the Abstractionists in terms of 'space construction effected by dynamic means' may be found in our traditional notion of an eternal category, space, i.e. in our traditional vision. No explanation is given of how space can exist after its fixed points and relations have been transformed into an increasing, 'uncertain' motion. This clinging to the old space may be explained by the attitude of spectators who are still unable to dispense with it."[14]

"From the beginning it [abstract art] displays not a balanced interplay of diversely curved time-spaces, but a much higher, never balanced, ever-active change. From its very beginning the Abstract picture is an open process."[15]

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[13] Seckler, <u>Ibid</u>, p. 86.
[14] Dorner, <u>Way Beyond Art</u>, p. 109.

[15] Dorner, <u>Ibid</u>, p. 110.

Dorner sees our context as the space of a new reality of the spontaneous act of autonomous change. He develops the term "supraspatial" to name this new reality, and uses it in describing the drawings of Josef Albers.

> "The constant supra-spatial self-changeability has become the new dynamic truth of reality replacing the traditional immutable truth of spatial relations and turning that truth into a crude and superficial image of secondary value."[16]

In his lithograph, "Interim," 1942, Albers uses lines which deny themselves by changing thickness. An overlapping of lines creates a self-denying perspective, simultaneously receding and advancing, and denying space.

Albers wrote in 1942:

> "These lithographs are built exclusively of horizontal and vertical lines which are the most two-dimensional and therefore the most non-spatial graphic elements.

> "These abstract compositions perform space and volume illusions of multiple images, thereby inducing several interpretations.

> "Receding directions are imaginary, appearing only through related junctions of horizontals and verticals.

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[16] Dorner, Ibid, p. 117.

"Movements are not confined to one direction only, but interchange. Thus solid volume shifts to open space and open space to volume. Masses moving at first to one side may suddenly appear to be moving to the opposite side of in another direction.

"Likewise, upward acts also as downward, forward as backward, and verticals function as horizontals. Parallels, horizontals or verticals, produce sloping planes, empty spaces become solid. Black lines produce gray tones and, for sensitive eyes, even color.

"Thus we cannot remain in a single viewpoint, we need more for the sake of free vision."[17]

The paintings of Larry Poons do not in any way deal with "space," neither to affirm it nor to deny it. They contain no perspective, no depth, no illusions or representation. These paintings deal with out experience of the organization of the dots.

A first reaction to one of the paintings can be one of a lack of orientation to it. There is no apparent order to the dots, their placement, their tilt, or their color. The painting is unframed and seems to be randomly placed on the canvas, having no special treatment at the edges. However, in abandoning one's self to the painting, one finds that the "discontinuity" can be overcome. In discovering the order which Poons has used in the painting,

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[17] Bucher, Josef Albers, Despite Straight Lines, p. 11.

the statements about the actual and the possible in the experience of the relationships of the dots, one develops an attitude which has broad application. Our experience of the world is organized not by a super system, but by the possibilities of individual experiences taken together. The topology of the organization of these experiences must be developed and learned in their living. The awareness of the depth of possibilities of this topology can be gained through the experience of Poons' paintings.

2.3.6. PHYSICS AND LANGUAGE

In theoretical physics there are the problems of the relationship of the meanings of the terms used to the meanings of those terms in previous theories, and to the meanings of those terms in "ordinary usage." In his essay, "Space, Time, and Language," Dudley Shapere deals with these problems.

In the essay Shapere quotes De Broglie:

> "…The date of our perceptions lead us to construct a framework of space and time where all our observations can be located. But the progress of quantum physics leads us to believe that our framework of space and time is not adequate to the true description of reality on a microscopic level. However, we cannot think otherwise than in terms of space and time, and all the images that we can evoke are connected with them. Furthermore, all the results of our observations, even those which bring us the reflection of realities from the microphysical

realm, are necessarily expressed in the framework of space and time. That is why we seek, for better or for worse, to represent to ourselves microphysical realities (corpuscles or systems of corpuscles) in this framework which is not adapted to them'"[18]

Shapere questions this point of view, as do I. However, while leaving open the possibility for science to develop without "space" and "time" as they have been understood, Shapere sees a problem in developing scientific concepts which are different from or even contrary to "ordinary" concepts. This problem is identified only as a result of believing that ordinary experience is Newtonian, and that the ordinary use of the terms must therefore also be Newtonian. It is one of the points of these papers that this is not the case. The Newtonian experience is culturally limited both in period and in locale. It has not been present in much of the arts of the West since the turn of the century, nor was it present in the West or anywhere else before the fifteenth century. While adequate terminology has not been developed to replace "space" and "time" ("dynamic spatiality" has been suggested in these papers for the experience of the early part of this century) there has been very adequate and complete development of concepts in many of the arts.

While this paper cannot report the attitudes of contemporary physicists, it will suggest a consequence of some current trends.

In 1854 Bernhard Riemann reasoned that space should be curved. Measurements made then did not confirm his conclusion because the

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[18] Shapere, "Space, Time and Language," p. 164, in Philosophy of Science, Baumrin, ed.

deviations of curvature are less than the accuracy of the instruments used. While Riemann's reasoning did not bring him to general relativity, it did allow him to develop the foundations of the non-Euclidian geometries used today. It was Einstein, in 1905 and in 1916 who was able to develop rules for non-Newtonian reality. John Archibald Wheeler, in his essay <u>Science and Survival</u>, writes:

> "One is most uncomfortable when he first starts to think of curved spacetime. How is one to have any firm idea of where he is or when something happens? Fortunately, one has hit on just the right question to get into the subject! The starting point of Einstein's discussion is an event – something characterized not only by a place but also by a <u>time</u> of happening. An example is the collision of two particles. In placing such an event, the first step is to <u>identify</u> it. Thus the illustrative event lies at the intersection of the world line of such and such a particle with the world line of such and such another particle. Think of a barn full of hay. Each straw can be considered to typify a world line. The intersection of two straws symbolizes and event. With a sufficiently careful system of bookkeeping, one can identify and catalog every single event.

> "In this way all the events that have happened anywhere in space and at any time are related one to another. And all this has been done without any mention of either distance or of space and time coordinates!

"Imagine the farm flooded and the water level slowly rising in the barn. The direction of rise of water may be considered to represent the direction of increasing time. The other two directions – east-west and north-south – have to make do in our barn analogy for the three space-like dimensions of spacetime!

"The barn rises on the flood and tips. The surface of the water now takes quite an altered course through the maze of straws. The new "time" coordinate has a very different meaning from the old one. But who cares? The height of the water in the old orientation of the barn might have been used previously as a help in cataloging the points of intersection of the straws. Now one may want to switch to a new way of cataloging the events, a new "time coordinate" based on a titled water surface. No matter! The cataloging system makes no difference to the identity of the points of intersection. We can point just as definitely as we always could to any given event – the intersection of two definite straws in our barn analogy – and to its near neighbors."[19]

We must discover the structure of our reality by our experience of it. Wheeler writes:

"Now forget the barn, and the water, and the straw, and remember only the identifiable events in spacetime. Reach into a hip pocket, pull out a book of dates and data, and look up that

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[19] Wheeler, "Science and Survival," p. 499-500, Baumrin, Ibid.

familiar table of the airline distances between the principal cities of the globe: so many miles from the Azores to Berlin' so many from Berlin to Cairo; so many from Cairo to the Azores. Let these cities on the curved two-dimensional surface of the earth be our <u>new analog</u> for the events in curved four-dimensional spacetime. Now past code letters such as AZ, BE, CA, and so on over the city names, tear out the table, and give it to a bright young man to interpret. After some reflection, he takes a surveyor's table and marks down on it two dots, AZ and BE. They are separated by the appropriate number of centimeters or inches, depending upon what scale he is using to represent the numbers in the table. A little more work, and he has put down a third point CA with the correct separations from <u>both</u> AZ and BE.

"Now the young man comes to a fourth point DE (Delhi) to be so located as to have specified distances from all <u>three</u> of the points already laid down. Try as he will, the student cannot make all three distances come out right. Almost in despair he is visited by a geographer. On hearing about the problem this friend asks, "Have you considered using a curved surface?" The student thinks and smiles. He tires one curved surface, then another. Eventually he finds a surface so curved that the air line separations fit together into a consistent pattern."[20]

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[20] Wheeler, <u>Ibid,</u> p. 500.

The "space" and "time" of our reality is the structure which our experience, examined with an open mind reveals. What this examination will reveal now or in the future can be "read" in the work of artists as well as in the work of physicists. No one can say what terminology will eventually be used, nor how successful any terminology will be. It is clear, though, that the Newtonian prejudices which we still have will not be with us indefinitely. When they have been cleared away, we will be free to comprehend the topology of our experience and the reality which it creates.

2.3.7. ARCHITECTURE

In both Space, Time and Architecture and The Beginnings of Architecture, Giedion identifies three main "space conceptions" in Western history. In brief, the first space conception was of forms in space, the second was of the interior, and the third, that of today, is of both forms in space and of the interior.

I feel that this description is not adequate to describe the contemporary experience. Several aspects of reality today are dealt with in other papers in this section. The consequences of intensive rather than extensive extensions in several of the arts has been described, and here I will attempt such a description of the contexts of activities – architecture. This description will be developed from the analysis made by Giedion and by Scully. The examples are not in a necessary order of development, but are used as a means of developing the analysis.

With the increasing importance of electronic media of voice transmission the "literate" qualities of our culture are losing force. Preference for sequential logic, a single or fixed point of view, and specialization are all literate qualities, and are all disappearing. Visual orientation (a prejudice of the Renaissance) has been eroded by television which, with its mosaic "light through" form, has lead us to perceive it and other things in a tactile, overall way, rather than the fixed visual way of non-mosaic or perspective forms. Finally, larger and larger units of mankind (until ultimately the entire globe) are being integrated into a single "tribal" unit by the instantaneous electronic global network which is extending and joining the nervous systems of individuals into a complex which eventually implies universal consciousness, or a new "tribal" culture.

More profoundly than in the use of primitive motifs, the work of many modern artists resembles that of primitive artists because they are working in cultures with basically similar realities. Many of the structure of perception, determined by rations among the senses, are similar in primitives and moderns. Therefore there are similarities in the nature of reality, and this is seen in the most basic characteristics of preliterate and modern art.

In describing the "space conception" of ancient cultures, Giedion writes:

> "The first architectural space conception was concerned with the emanating power of volumes, their relations with one another, and their interactions."[21]

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[21] Giedion, The Beginnings of Architectur, p. 522.

This conception became less important after literate people became involved with interiors. Today the concern with forms is one of the several profound similarities which we share with the ancients. Giedion writes:

> "Buildings, like sculpture, radiate their own spatial atmosphere, and we have again become sensitive to the emanating power of volumes in space. Today the architect has to deal with problems of relating the volumes of high and low structures. AS at its first beginnings, architecture is again approaching sculpture and sculpture is approaching architecture. They are almost ready to be integrated."[22]

This tendency appears in Alvar Aalto's housing project for Munkkiniemi, Finland, 1938. Here the building masses respond to each other and to the site. Vincent Scully writes:

> "Precisely because he sends the eye from one building to another, and past them to the landscape across irregular spatial intervals – because, that is, there is no spatial module – Aalto stresses the fact that the building solids, not the spatial voids, are the positives in the design. Space, again as in archaic and classic Greek temene, is simply what is left over between them."[23]

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[22] Giedion, Ibid, p. 525.

[23] Scully, Modern Architecture, p. 38.

Scully contrasts this to the plant at I.I.T. where the modular order gives the voids an importance equal to that of the buildings. By avoiding this, Aalto's solids "are released to act."[24]

Giedion finds the first planned relations of "volumes in space" in the modern age to be LeCorbusier's project for the City Center of Saint Die, 1945. The complex of civic buildings is arranged in a pedestrian setting, all within easy walking distance of each other. Giedion writes:

> "Here the different buildings are designed and placed in such a way that each emanates and fills its own spatial atmosphere and simultaneously each bears an intimate relationship with the whole."[25]

The buildings of different and sometimes irregular forms, are placed not to form "spaces," but to play against each other, and to receive and respond to the human movement among and between them.

Outstanding examples in the modern period of buildings as sculpture set in the landscape are LeCorbusier's Unite d'Habitation, Marseilles, 1946-1952; his High Court, Chandigarh, 1951-1956; and his Secritariat, Chandigarh, 1951-1957. The Unite d'Habitation is not treated as a hollow wrapped in a skin, but rather:

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[24] Scully, Ibid, p. 38.

[25] Giedion, Space, Time, and Architecture, p. xli.

> "The building seems to have only those voids which are
> integral to the system of its solids. Therefore it can be seen
> primarily in neither structural, spatial, nor abstractly massive
> terms – neither as a mountain, nor a cage, nor a box – but only
> as an articulated, unified, sculptural body."[26]

The orientation of the building is not to other buildings, as it is free standing, but to the mountains and the sea on either side of it.

Both the High Court and the Secretariat are also set against the landscape, related to the mountains in the distance. The brise-soleil is used in both cases to relate the activity and the scale of the facades, by process of experience and empathy, to the possibilities of human activity and potential.

Other works of architecgture to be perceived as forms include LeCorbusier's Chapel at Ronchamp, 1955, and Frank Lloyd Wright's Beth Sholom Synagogue in Elkins Park, 1959. Both of these buildings are designed to be seen as independent forms, away from other structures, on the landscape.

With the development of the importance of forms, the enclosing quality of building complexes becomes less important. Giedion writes:

> "The enclosing walls [of Baroque Squares] have disappeared.
> High towers must be related with low buildings. Squares

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[26] Scully, Ibid, p. 44.

without walls are developing. One of the first plans of this type is the triangular Plaza of the Three Powers in Brasilia, where the dominating complex of senate, congress and administration buildings enter into a free relation with lower structures – the presidential palace and high court of justice – at the corners of the triangle. There are no walls: 'le jeu savant des volumes dans l'espace.'"[27]

The Medical Towers and Biology Building by Louis Kahn could be analyzed as a form. The taller service towers, contrasted in size, proportion, and material to the served building would be described as part of an order which includes the generation of the working areas around the core area. The form would be described from the three main vantage points, Hamilton walk, the biology gardens, and the other side of the men's dormitories. But the meaning of Kahn's building lies far beyond such an analysis.

The visual context in which Renaissance man was set is illustrated by Francesco Di Giorgio's Piazza of an Ideal City. Man's relationship to the buildings and to other men is determined by the visual lines of perspective. Similarly, in Newtonian physics there is an abstract (visual) "space" and "time" in which events are ordered. By contrast, in contemporary physics, there are specific orders generated by the events themselves. Kahn's buildings is not a context for abstract of visual activities, but for more specific and more perceptually inclusive activities. The building is entered through a "hollow" bay which serves as an introduction to the areas later to be encountered. The laboratories differentiate between (ideally if not in

[27] Giedion, Ibid, p. xlii.

practice) the work of the scientist in the center of the are and his pause at the perimeter at the light. On one level the privacy necessary for work is preserved by the subdivision of the working area into three parts of each of seven floors, while on another level the configuration of the building allows the viewing of workers in other parts of the building. The treatment of air is an important part of the context of laboratory activities, and Kahn choses to treat this context architecturally. The building is a framework in which the parts and levels of the activities of the users are recognized, drawn out, and given the possibility for ordered inter- and intra-relationships.

The June, 1965 issue of <u>Progressive Architecture</u> contained an article on "The Major Space" (p. 140). One can infer from the lack of examples given that there are few if any "major spaces" being built today.

The experience one has in walking through the dormitory complex at the University of Delaware by Geddes, Brecher, Qualls and Cunningham is not "spatial." Low ceilings, low roofs, small courts, and the lack of "perspective vistas" all combine to defeat the attempt of the eye to construct "spaces." In describing his building, which fulfills the organizational implications of the Medical Towers, Geddes uses the term "topological."

The students in this complex are organized according to a hierarchy of social needs, recognizing the need for the availability of absolute privacy, most rooms are single. From the single room the student is able to closely associate with several neighbors whom he can get to know well, and with whom he can presumably deal. His encounter with larger groups is mediated by his membership in a smaller group and by proper settings.

There is a very clear definition of the hierarchy of each activity. Progressing from a quadrangle and a dining hall shared by all, down to private courts shared only by a few, each activity is arranged with proximity only to those from which it generates and to which it contributes. Each time a function is repeated, such as a public entrance or a service entrance, it always occurs with the same relationships. Topology is the mathematics of relationships. Geddes' building is a thorough exercise in the topological organization of human activity, generated from an inclusive range of human perception, overcoming the domination of the visual.

A work of art can be conceived of as being either an open or a closed circle. If closed, it is complete in itself and the audience does not add to its experience of the work of art by its experience of itself. If open, the experience of the work of art is completed by the experience of the presence of the audience. I feel that it is a limitation of Gedde's building that it is "closed." In completely defining certain social organizations, he limits the possibility for the presence of the students to create and define other human expressions of possibly equal validity.[28]

In his music, John Cage does not attempt to impose upon the listener an order which originates somewhere within himself. On the methods the composer uses to keep himself out of the composition he writes:

> "Those involved with the composition of experimental music
> find ways and means to remove themselves from the activities

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[28] The contemporary American undergraduate course of study is at best highly questionable. Gedde's building does not suggest the flexibility which will be necessary to humanize the university.

of the sounds they make. Some employ chance operations, derived from sources as ancient as the Chinese <u>Book of Changes</u>, or as modern as the tables of random numbers used also by physicist in research. Or, analogous to the Rorschach tests of psychology, the interpretation of imperfections in the paper upon which one is writing may provide a music free from one's memory and imagination. Geometrical means employing spatial superimpositions at variance with the ultimate performance in time may be used. The total field of possibilities may be roughly divided and the actual sounds within these divisions may be indicated as to number but left to the performer or to the splicer to choose. In this latter case, the composer resembles the maker of a camera who allows someone else to take the picture."[29]

In this way Cage can present a composition which is "open," which requires the audience, individually and as a group, to order and understand the sounds presented as music for themselves.

The Park Headquarters Building by Mitchell/Giurgola, Associates, is an "open" building. By placing a circular auditorium in a triangular area, Giurgola separates and relates the activities with other activities. Thus those involved in the activities become part of their own context. The auditorium serves to form the areas for the lobby, the lounge, and exhibitions. The activities of each of these areas mediates those of the others. The users of the building are, like the audience for a John Cage composition, directly

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[29] Cage, <u>Silence</u>, p. 10-11.

involved in determining the structure and context of the experience which they will have.

The residence in Orinda, California, by Charles Moore combines the activities of a house in a single area, yet defines and relates each of the activities. While on the exterior only a single roof appears, on the interior there are two "domes" set into the roof. Each of these domes, and its four supporting columns defines an area (a living area and a sunken tub) bringing a special light down onto it. These areas, once defined, also designate other areas and their activities. The walls on the four sides of the square house are each different, and define different relations between the interior and the exterior. Moore's residence is on "open" building, requiring one's presence to define and complete its architecture.

"'During the day,' Moore observes, 'patches of light move across the space, and one's sense of position around the columns and under the domes shifts in a way which continues to seem important.'"[30]

To describe his Mummer's Theater in Oklahoma City, Oklahoma, John Johansen refers to the development which separated the columns from the walls in the work of the pioneers of modern architecture, and which separated the service spaces in Kahn's Medical Towers. It is Johansen's intention not only to separate and articulate all of the structural and mechanical elements of his building (approaching the concept of an oil refinery) but to refuse to relate them in a way governed by any previous

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[30] "Houses: The Art of Combining Forms," Progressive Architecture, vol. xliv, No. 5, May 1963, p. 171.

notions of "order." Johansen's building will be governed by the structure of presence and movement of the contemporary user with all of his extensions.[31]

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[31] From Johansen's presentation at the Design Concepts Seminar, Connecticut Society of Architects, American Institute of Architects, New Haven, January 28, 1967, as described to me by Abraham Geller.

THE FUTURE ARCHITECTURAL EXPERIENCE

William Katavolis says that one should not try to predict the future. He suspects that one will always be wrong. In <u>Rockets, Missiles, and Space Travel,</u> Willy Ley gives an example of the problem of predicting the future. At one point in the development of military rockets it was apparent to any expert on rockets that conventional artillery for long range bombardment would soon be replaced. In fact it was not, because, unanticipated by rocket experts, the recoilless rifle was developed. However, some of the possibilities for the future can be speculated on, since most of them are already with us today.

The extensions of perception which are most influential today are electronic extensions of "sensory systems." A next step in the development of electric media will be the incorporation of devices into the "body." Thus a telephone or a radio could be "sewn" into the ear or into the brain. Such a step would also be one of the first important moves in the direction of the extensions of the future, extensions of the "body."

Jacques Cousteau explores the ocean with the aid of complex and ingenious machinery, much of which he invented. But just as Werner Van Braun and his fellow workers developed the V2 rocket as an immediate expedient, while their true aim was the conquest of the planets, so Cousteau uses mechanical aids only as an expedient until medical engineers can supply him with gills built into the human body (a development already partially achieved).

The possibilities for altering the body in the near future are almost unlimited. Artificial hearts, kidney, lungs, and eyes (radar units for the blind) are

commonplace today. Many of the possibilities for tampering with the process of reproduction are already being explored in both humans and animals. Thousands of babies are born each year in this country as the product of artificial insemination. Embryos are grown "under glass:"

> "Five years ago, if you had looked in on the laboratory of Dr. Daniele Petrucci at No. 3 Via del Ruini in Bologna, Italy, you would have seen him watching intently a nondescript blubberlike blob under glass. The blob was, in fact, a tiny human embryo. According to Dr. Petrucci's account, he was responsible for its conception, and it was he who had devised the artificial glass womb in which the embryo now lived and grew."[1]

The results of similar experiments with animals are even more provoking:

> "Recently Dr. E.S. Hafez, an Egyptian-born experimental biologist at Washington State University, commissioned a scientist friend from Germany to bring him a hundred head of prize sheep. The entire herd is to be delivered to Dr. Hafez in a neat package he can carry in one hand. It will be a ventilated box and inside will be a female rabbit. Inside the rabbit will be 100 incipient rams and ewes, all of them embryos only a few days old, growing as if still in their natural mother. Then, following a procedure already well established in Europe, he

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[1] Rosenfeld, Albert, "The New Magazine," <u>Life</u> Magazine, vol. LIX, October 1, 1965, p. 98.

will implant each embryo in a ewe where it will gestate and, in a few months, be born."

"Dr. Hafez, whose research support includes over $160,000 supplied by the National Institutes of Health alone, sees no reason why his method would not work just as well with people."

"He speculates that, only 10 or 15 years hence, it could be possible for a housewife to walk into a new kind of commissary, look down a row of packets not unlike flower-seed packages, and pick her baby by label. Each packet would contain a frozen one-day-old embryo, and the label would tell the shopper what color of hair and eyes to expect as well as the probable size and I.Q. of the child. It would also offer assurance of freedom from genetic defects. After making her selection, the lady could take the packet to her doctor and have the embryo implanted in herself, where it would grow for nine months, like any baby of her own."[2]

Operations on animal embryos are performed now. In the future operations on the human genetic code should be possible. Current work in genetics has many implications. One of them is asexual reproduction:

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[2] Rosenfeld, Ibid, p. 98.

"Already is is commonplace to keep alive various kinds of human cells in tissue culture for extended periods of time, growing whole colonies from single cells again and again. It has been seriously suggested that it may be possible eventually to grow an entire organ, like a kidney or a liver, in tissue culture. Some years ago the eminent French biologist Jean Rostand even predicted that a man might one day be able to have a culture of his own cells – cells from almost anywhere in his body – stashed away somewhere so that a complete new replica of himself could be grown in case he met with an untimely accident."[3]

The list of similar possibilities for the future, both "medical" and "mechanical" could be interminable. There will also be changes in technology which will effect our environment in the future. One attempt to briefly deal with these is in the December 1966 issue of Progressive Architecture. However, rather than deal with such a broad problem, I feel that it would be more instructive to isolate one possible change in the body-subject, and to speculate on some of the possible consequences.

For several years people have been discussing the prospects of freezing people, to be thawed and "brought back to life" at some time in the future. One obvious benefit of the process is illustrated in the following example. A child, otherwise perfectly healthy, has leukemia. Leukemia will most probably be curable in five or ten years, but the child will not live that long. The child's parents love the child and are wealthy enough to pay to have him

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[3] Rosenfeld, Ibid, p. 98.

frozen, maintained and thawed when leukemia is curable. Within the near future, some parent in this position will decide on freezing. Another motive for freezing is curiosity – the desire to see vast stretches of the human future by constant freezing and thawing. This technique makes possible everything in H.G. Wells' book <u>The Time Machine</u>, except the return journey.

This technology will have vast influences on culture. People will go to the "Corporation" which will undertake to freeze the body, to revive it upon request, and to administer the estate of the party involved until he is revived and retrieves power over his greatly increased financial holdings (capital even at 5% accumulates quite a bit if kept 100 or 500 years.) As more and more people do this the Corporation will be controlling larger amounts of wealth, until it is responsible for much if not most of the world's resources. With this wealth will come great political power. At first there would appear a danger that once frozen one would not be thawed – no one in the future would want the burden of caring for a someone from a different age. However, the Corporation, which now has the political power to do so, will insure the thawing of its clients, since if it fails to do so, it will lose its future business. It would also seem that the "journey" into the future would be hazardous. During the time one is frozen (say 100 years) wars, depressions, decay, and political upheaval would endanger both one's body and one's estate. It is at this point that freezing influences the form of the culture. Just as the travel and commerce of the nineteenth century unified the world, so freezing will unify the future. In order to maintain commerce, shipping and insurance companies had to establish stable governments, enforce uniform currency, develop safe ships, etc. Similarly, the Corporation which will have both the motive and the power, will insure stability throughout the

future. One result of this will be the unification or destruction of temporality as we know it today. Wars, economic fluctuations, natural disasters and vast social change will be eliminated. Structures will be developed which will be permanent (in terms of tens of thousands of years). Innovations not in keeping with the maintenance of permanence will be outlawed. Today our corporations cannot see ahead more than ten or twenty years. The development of a "modern" non-internal combustion engine car has been stopped since World War II, but Detroit's short sightedness has assured us of a new car in the next five or ten years. The Corporation will not exert such influences over ten or twenty years, but over tens of thousands of years.

The above discussion is only, of course, hypothetical. One development which would change much of the above would be the guarantee of immortality in the unfrozen state. In <u>Back to Methusela</u>, Shaw deals with possible consequences of immortality.

The architecture of the future will reflect the experience of the future, and will be equally unpredictable. However, it is apparent that the experience of the future will be completely independent of any "spatiality" or "temporality" as we know them. There will be no super structure or framework of experience as we conceive it, as there was none for the God of previous theologies. The future promises an unbounded experience of infinite depth, with no limit to intensity, variety and profundity of involvement in a context where boundaries are meaningless.

Our architecture, context to a bounded experience, is an architecture of boundaries. The architecture of the future will be an architectural of depth.

CONSTANCY AND CHANGE

It is the lesson of history that there is no reality beyond that of our experience. The only useful meaning for the term "reality" must be the particular situation which we are now experiencing. We create reality by our subjectivity, and as our subjectivity changes, reality changes. Architecture, as the context for activities of the subject also changes with the subject.

Reality is multitudinous but not therefore either meaningless or absurd. On the contrary, as it is a product of our subjectivity, reality can only be meaningful. This meaning is not, however, apparent if we maintain the fiction of an absolute reality. We must be open to the changes in reality, and satisfied with the constancy of the fact of our subjectivity.[4]

Architecture cannot be described or understood in any terms which deny the flux of reality. In understanding architecture as the context of activities, one must first understand activities and therefore experience. Architecture will always be the context of activities, but activities will always change.

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[4] a) In an essay on structuralist theory, Roland Barthes writes:

"And precisely because all thought about the historically intelligible is also a participation in that intelligibility, structural man is scarcely concerned to last; he knows that structuralism, too is a certain form of the world, which will change with the world; and just as he experiences his validity (but not his truth) in his power to speak the old languages of the world in a new way, so he knows that it will suffice that a new language rise out of history, a new language which speaks him in his turn, for his task to be done." (The Structuralist Activity," Partisan Review, winter 1947, p. 88.)

b) Maurice Merleau-Ponty writes:

"It is a matter, in the case of each civilization, of finding the Idea in the Hegelian sense, that is, not a law of the physico-mathematical type, discoverable by objective thought, but that formula which sums up some unique manner of behavior towards others, towards Nature, time and death: a certain way of patterning the world which the historian should be capable of seizing upon and making his own. These are the dimensions of history. In this context there is not a human word, not a gesture, even one which is the outcome of habit or absent-mindedness, which has not some meaning." (Phenomenology of Perception, p. xviii.)

Our situation can be known only through a never ending effort at examining constancy and change: what in our experience remains constant and why, what in our experience changes and why. This study is an effort in that examination.

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