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AESTHETICS AND THE URBAN ENVIRONMENT

By

Ronald Nils Oster

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ABSTRACT

AESTHETICS AND THE URBAN ENVIRONMENT

By

Ronald Nils Oster

The purpose of this thesis is to develop an increased understanding of the role of aesthetics in urban planning. It begins with an overview of the crucial problems that are inherent in the relationship between aesthetics and the urban environment. It includes an examination of the physiological and psycological limitations on perceptions of that relationship. It then focuses on a review of the theoretical basis for the examination by analyzing the aesthetic theories of Martin Heidegger, Lionel Trilling and P. D. Ouspensky.

Following this, the thesis concludes with a review of several key models presently in use today. The thesis then shows how these models might be applied to aesthetics. Finally, it should be noted that it does not provide a tool that planners can use in aesthetics in the urban environment, but does provide a framework for its development.

ACKNOWLEDGMENTS

My sincere gratitude to all those persons who contributed to the development of the ideas contained in this thesis. The input from many persons has aided in its development and helped to both structure and clarify those ideas.

I would also like to take this opportunity to express my gratitude to the entire faculty of the School of Urban Planning for their patience. Specifically, I am grateful to Professor Sanford Farness who served as my thesis chairperson and Dr. John Mullin who provided much needed stimulus and knowledge. Also, Professor Robert Weil from the Sculpture Department who, through his friendship, provided much information relevant to aesthetics and design.

Sharon Oster must also be thanked for her efforts in helping to stimulate ideas, as well as other innumerable efforts in reviewing the numerous rewrites. Thanks must also be expressed to John C. Charlton without whose financial assistance the completion of my degree would not have been possible. And a special thanks to Karin Oster who provided help whenever she was asked.

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INTRODUCTION

Idea

Harold Bloom, an eminent scholar at Yale, once traveled up to Hartford, Connecticut, where the poet Wallace Stevens was selling insurance and writing poetry, and asked Stevens what his poetry was "about." Stevens took Bloom on a walking tour of Hartford and as he pointed out various buildings, he indicated how much they were insured for. "That," Stevens said as they concluded their tour, "that is what my poetry is about." Stevens' remarks make clear the difficulties associated with trying to define even the content of poetry, painting, architecture, design and so on. Moreover, this ambiguity concerning content or substance leads one directly to a further problem: how does one determine the value of any aesthetic work created?

Despite this uncertainty about exactly what aesthetics are really all about, there exists a strong feeling among many that such values are nevertheless critical. Paolo Soleri, for example, advocates that the future design of our urban environments be based primarily on a consideration of aesthetic values. This he maintains would take the form of "aesthetogenesis" which would transform the physical environment into one that is more in harmony with man both on a

physical as well as psychological level.[1] According to Soleri's theories, a design technique predicated on "aesthetogenesis" would raise the level of social awareness of our cultural values to a higher plateau more in keeping with a holistic view of society that he maintains is essential for our continued survival. Although many people who are concerned about our society and its physical environment would regard Soleri's "aesthetogenesis" as a rather drastic approach, it nevertheless by its extension emphasizes the role aesthetics can play in the structure of society and in the cultural environment (see Figure 1).

Soleri is not alone in this concern for aesthetics. Alexander Tzonis has also shown that throughout the history of civilization many architectural periods have had as their dominant design criteria a concern for aesthetics.[2] As early as Plato and Aristotle there was a concern for the role of beauty in the built environment. Vitruvius, in one B.C., and later Leone Battista Alberti, both wrote on and stressed the necessity for the inclusion of venustas (delight, handsomeness or aesthetic aspects) as a requirement of architecture. Whether one takes Soleri's position or that of Tzonis, Plato, Vitruvius or Alberti, it is evident that we can find historical evidence for man's involvement with the value of aesthetics in designing the

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[1] Paolo Soleri, Arcology, the City in the Image of Man (Cambridge, Mass.: The M.I.T. Press, 1969), p. 9.

[2] For a further explanation of these design criteria see Alexander Tzonis, Towards a Non-Oppressive Environment (Boston, Mass.: The I Press, Inc., 1972).

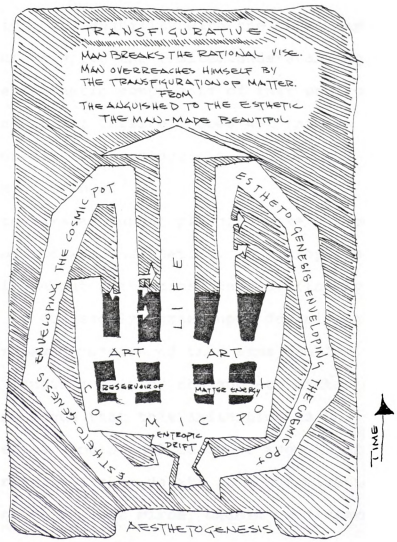

Figure 1.--Aestheotogenesis.

SOURCE: Paolo Soleri, Arcology, the City in the Image of Man (Cambridge, Mass.: The M.I.T. Press, 1969), p. 9.

urban environment.

Aesthetic values are not only historically justified, but may be pragmatic as well. Numerous studies in the field of ecological psychology have shown that the cultural environment is one of the major criteria in determining satisfication or liveability with the urbanscape. This effect occurs despite the limited understanding people may have of the aesthetic components of that environment. Art, to paraphrase Ernst Cassirer, does not inquire into the qualities or causes of things, it gives us the intuition of the form of things.[3]

Architecture and urban planning have not been the only fields concerned with aesthetics. Philosophers have argued for centuries about aesthetics, only to finally conclude that there is no readily agreed upon definition of the word. Art critics have experienced this same problem. To some, aesthetics consists only of the subject matter presented, while others argue that this definition is too limiting and that aesthetics should include other aspects of the work of art. The result of this debate is a quagmire in which the layperson often becomes mired, unable to discern either what is being discussed or even why aesthetics is important. One returns, in short, to Stevens' remarks.

While the field of philosophy argues about what constitutes an aesthetic experience, architects and planners have attempted to legislate for it. Relatively little has

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[3]Ernst Cassirer, An Essay on Man (New York, N.Y.: Bantam Books, 1970), p. 159.

been done to try to incorporate the knowledge of one academic discipline with the other. Philosophy, it appears, strives to provide a definition that is compatible for the individual, while architects and planners try to provide a definition for society as a whole. The result is that each discipline tends to ignore information contained in the other.

Problem

It appears, from the above discussion, that the first problem that needs to be addressed is to provide a theory that takes into account a broad spectrum of academic disciplines (philosophy, psychology, architecture, planning, art, biology, history, etc.) In particular, this thesis will try to merge insights associated with a variety of fields to provide a framework useful for the planner to work in. On the way to developing this framework, this thesis will first construct a theory of aesthetics which can be used by the planner; once this is done, I will try to develop some tools which can then be used to create an aesthetic urban environment.

In considering aesthetics there are a number of questions that have to be considered before a theory and solution can be developed.

What value can an analysis of cultural values have in regard to aesthetics for our contemporary society? Isn't society's interpretation of aesthetics simply the ability

of one building to fit into an already existing physical environment? Isn't the study of aesthetics merely another esoteric sub-system in the field of philosophy? Aren't cultural modes and values something best left to the anthropologists in their study of past civilizations? And finally, aren't perceptions those things that we see or hear around us? These are all questions that were pondered a great deal prior to the commencement of this study and indeed all through the research and writing; indeed these questions stimulated much of what follows in this thesis.

Obviously, the planner should be concerned with the visual environment, but some will argue that such concern is already covered through the many legal tools that have been provided by the legislatures of this country. Traditional planning constraints (Building Codes, Zoning Ordinances, Master Plans, Subdivision Regulations, etc.) and now "Aesthetic Controls" have all been relied upon by our contemporary society to shape the urban environment. In recent years, Architectural Review Boards have been introduced to try to establish a criterion "...to ensure that new development will enhance, rather than blight, the visual environment."[4] Sweden was one of the first countries that attempted to be highly progressive in the field of aesthetics and provided planners with the legal tools to control the visual environment. Indeed, controls have

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[4]Edward Ellis Smith and Durward S. Riggs, eds., Land Use, Open Space and the Government Process (New York, N.Y.: Praeger, 1974), p. 83.

become so extensive that to paint the exterior of a house permission has to first be obtained from the city.[5] In the United States, eight states (California being the most recent) have provided statewide legislation regarding aesthetics and its role in shaping the visual environment. And according to a recent study, conducted by Penn State University, there are now hundreds of communities who have established some degree of "Aesthetic Control." All of these constraints, as originally intended, were to provide a set of minimum standards; all have, however, gradually evolved into what is all too often considered a blueprint for the "ideal" environment. Planners, architects, developers, planning officials and even judges have all worked in some manner, usually subconsciously, to propagate those "ideal" standards in either the designs they create or in the laws they have enacted. Unfortunately, these same planning officials have failed to consider the basic philosophical premises that contemporary society has evolved from. The laws and constraints that have been adapted usually have been unchanging, unaltered documents with little relevance to the changing face of the urban environment. They fail to deal with the problem of massive visual boredom in an effective way that encompasses the evolutionary aspects of an urbanscape metamorphosis. This is a prime example of the difficulties caused by planners ignoring other

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[5]Thomas Julius Anton, Governing Greater Stockholm (Berkeley, Calif.: University of California Press, 1975).

disciplines in designing for aesthetics. Indeed, to follow an evolutionary approach of the sort required, implies a view of the urban environment as a cultural phenomena that is undergoing a constant metamorphosis.

Aesthetics, to the contemporary planner, generally is confined to control of outdoor signs and to setback regulations. Even the manner in which a community's Master Plan is written with regard to aesthetics concentrates on one solitary item: regulations concerning outdoor signs. Sections concerning other factors, such as setbacks, are not commonly thought of as being concerned with aesthetics. It is more usual that setbacks are treated in terms of health so that sufficient light and air will get through to the street. Clearly, the planner must raise above these limited concerns in the creation or maintenance of the urban environment. Planners should instead work toward the creation of a visually pleasing physical environment (see Figure 2).

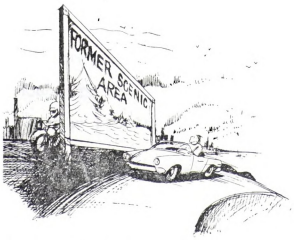

Figure 2.--Former Scenic Area.

Even the planner who acknowledges the importance of aesthetics often encounters a difficult time when called upon to provide a viable definition of the term. And the planner who attaches a lesser degree of importance to aesthetics provides no definition at all,[6] since they feel that their concerns are needed in other aspects of their jobs. Regardless of the position the planner takes, whether aesthetics is the sole criteria in the design process or simply a single component in the design process, it is necessary to develop a common philosophy regarding what is meant by the concept of aesthetics. A partial cure for the problem of not using aesthetics in planning can perhaps be found in the development of a more precise knowledge as to what constitutes aesthetic values from a philosophical standpoint and how those values are related to planning. Aesthetic criteria, in short, cannot be used if they are not understood. This is the intention of this thesis.

Purpose

The purpose of any thesis is to validate an idea and to provide a methodology that at least provides an avenue for the solution of the problem. As has been previously

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[6] A report from a leading university found that Aesthetic codes were introduced for the following reasons:

Beauty for Beauty's Sake	- 42.4%	greater than 100%
Improved Economy	- 23.7%	could indicate the
Health and Well-Being	- 49.1%	legal consciousness
Historic-Cultural	- 34.1%	of the planners re: "Beauty for Beauty's Sake"

mentioned, a number of academic and professional disciplines have pondered the question of aesthetics. The purpose of this thesis is to correlate the data that has been investigated in those fields and interpret them within a planning context. As such, it is an attempt to deal with some of the basic problems that heretofore have plagued aesthetics in the urban design process.

In doing a fairly extensive survey on contemporary architectural and urban design literature, the following conclusions can be drawn:

(1) There appears to be a lack of philosophical orientation when contemporary architecture is discussed although extensive philosophical interpretation is used when discussing antiquity. Therefore, the first purpose of this thesis is to try to explain and evaluate some contemporary architecture with a philosophical orientation.

(2) Although aesthetics are regarded as important in the design of an urban environment, contemporary design does not utilize qualitative standards other than those applied to an industrial product: efficiency, economy and visual beauty. But aesthetic theory does possess some qualitative models that can be investigated to ascertain whether they can be utilized to provide those standards. This research will attempt to show how philosophy, psychology, religion, economics and scientific-

technical cultural values are manifested in the urban environment.

(3) Because aesthetics and urban design are such broad ranging subjects, words for describing and defining aesthetic experience are often vague. This lack of a common vocabulary reflects an absence of a common design philosophy. Therefore, this thesis will attempt to provide a vocabulary that can be utilized in a theory for aesthetic in urban design.

(4) This thesis is also an attempt to show how architecture and urban design can help create an awareness that reflects higher ideals than simply immediate sensual pleasure.

(5) It will also be shown that contrary to popular opinion, models have been used by artists in creating an aesthetic experience or a work of art and the use of models does not inhibit a dynamic urban environment.

(6) Finally, several models will be examined and it will be shown that once a theory on aesthetics is developed, a model can be constructed to aid the planner in deciding whether a particular building conforms to that theory.

Organization

This thesis has been organized into three primary components: 1 - Cultural Ecological, 2 - Theory of Urban Aesthetics, and 3 - Framework for a Model.

In the first chapter on "Cultural Ecology" the following concepts will be stressed:

(1) The environment affects behavior and behavior affects the environment, therefore their relationship can be considered synomorphic.

(2) Cultural values are reflected in the environment and for this reason the man-made environment can also be considered the cultural environment; hence in deciding what is beautiful one needs to consider the cultural context.

(3) Since the two (environment and behavior) affect each other, in that behavior designs or produces the environment, their relationship to aesthetics should be considered in the design process.

(4) Aesthetic codes are possible since aesthetic values can be identified and can be codified.

The second chapter presents some theories concerning the relationship between the environment, the artist and society. These theories have been offered by a number of people who are concerned with aesthetics and will concentrate on developing the following concepts:

(1) A work of art must be considered in a cultural

context that relates to the particular society from which the art work originates.

(2) The use of aesthetic theories that were developed for other creative endeavors can be applied to the design of the urban environment.

(3) Since the cultural context can be identified, aesthetic codes should be developed that are dynamic.

Finally, the last chapter is an attempt to show how the theory developed previously can be used in the formation of a model upon which to predicate design decisions. The model will take the form of four sub-models which will be organized in the following manner.

(1) A descriptive model will be developed to show that the real urban environment can be constructed in a model form.

(2) Christopher Alexander's Model will be discussed to show how it can be used to predict future developments based on given trends as well as to explore alternative programs of action.

(3) Finally, a planning model based on the work of Lionel March will be developed to illustrate how models can help choose the best course of action and to develop new alternatives.

Theoretical Premises

If man grasps the world and thus unites himself with it by thought, he creates philosophy, theology, myth and science. If man expresses his grasp of the world by his senses, he creates art and ritual, he creates song, dance, drama, painting, and sculpture.[7]

In the course of reading about aesthetics in both philosophy and architecture, the following concepts have been shown to have at least some validity and will serve as the theoretical premises on which this thesis will be based:

(1) Aesthetics has been a component in the design process of architecture and city design since the art of building began.

(2) Aesthetics is involved in the process of design; as such it takes many forms and is dependent upon a large number of variables.

(3) Aesthetic objects can be considered as symbols and as such they are a signifier of cultural modes and their respective value in a society.

(4) Aesthetics are also dependent on perceptions and those perceptions are governed by both physiological and psychological factors.

(5) Aesthetic values can be interpreted through a comprehensive analysis of cultural values. As

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[7]Erich Fromm, The Sane Society (Greenwich, Conn.: Fawcett Publications, 1955), p. 301.

such, they can be codified for use in the establishment of architectural aesthetic controls in the design of the urban environment.

These premises will be developed in later sections of this thesis. But a few thoughts may be useful to indicate the spirit of this endeavor. The relationship between man and his environment (both natural and man-made) is derivative of the various cultural modes that are components of his societal structure. These cultural modes are given relative values, and are reflected down through that social structure and become concretized at the artifactual level of that society. In diagrammatic form this can be represented as follows (Fig. 3):

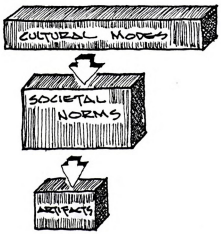

Figure 3.--Manifestation of Cultural Modes.

The dominance, in a given society, of any cultural mode or combination of modes over another is then manifest in the physical dominance of the artifact that represents those values. A model can also be constructed to show how this is manifest in the legal realm. In the example given

(Figure 4), the structures of the law offices, court houses, jails and police stations would reflect society's valuation of the legal system. In the United States, the large expenditures observed on the legal system is unique; one might conclude that other societies do not place the same degree of importance upon a legal system as complex as the one in the United States. By analyzing a society's design treatment of the environment and the environment that is created, a good perspective of where its cultural values lie can be obtained. The man-made environment thus serves as a signal. Awareness of this signalling process is essential if the planner is to work in harmony with other professions to create an environment that reflects a society's cultural value system.

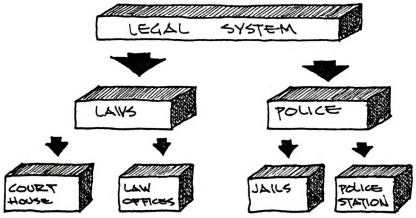

Figure 4.--Manifestation of Legal System.

Methodology and Procedures

As in any study of this kind the procedures and methodology used are important: the methodology must be

consistent with the overall purpose of the study. In order to accomplish this task, it was felt that an extensive literary review would best serve that purpose. The use of this methodology enabled me to present some theories, with a philosophical base, and orient them to the urban environment. Thus, it provides a means of investigating a large number of diverse fields and presents them so that they could be utilized by the planner in his concern for the urban environment.

Limitations

In the writing of any thesis that has involved a great deal of information and research, the time element is an important consideration. This time element places limitations on the total scope of the research. Hence, this thesis should not be seen as an end-all statement on the aesthetics of an urban environment. It is an opening investigation designed to open up further avenues of research.

In addition, in order to concentrate the volume of research materials, certain limitations were intentionally exercised:

(1) A comprehensive analysis of all the various architectural periods has not been presented. Instead, various components of architectural history have been used as examples to cite how some

of the concepts of design have materialized in the physical environment. A thorough historical study is beyond the scope of this thesis.

(2) A complete analysis of all the numerous cultural modes is not done, but instead, the cultural modes studied were limited to science, religion and economics. Here again a complete analysis of each of the cultural modes would be necessary. Instead, I have given a brief discussion of the three modes chosen and used some examples to illustrate the values for each of the cultural modes chosen.

(3) The authors used to establish a philosophical basis for aesthetics have been limited to cultural aestheticians. That is, authors who have investigated aesthetics from a cultural framework. I have limited my discussion to these authors so that a more in depth analysis could be done and so that there is some continuity of thought.

(4) Also, because I have attempted to cover a number of theoretical aspects of aesthetics I have confined myself to quoting authors who have attempted to discuss their theories in terms of a physical environment. Obviously, numerous other authors could have also been included but were not since they did not discuss the subject of

aesthetics from a cultural ecological approach.

(5) In the development of a model or design framework, I have limited myself to showing how some of the concepts developed in this thesis can be used in a system. I have chosen two models to apply these concepts to: (1) developed by Christopher Alexander, and (2) developed by Lionel March. These two models were chosen because their validity has already been tested and acknowledged as being a working model.

(6) Finally, since I have chosen to use the models already developed by Alexander and March, I will not develop the mathematics utilized by their respective models. Instead, I will limit myself to showing how they can be used in regard to aesthetics.

Definitions

Since this thesis is an attempt to bridge the gap between several different fields of study, it is necessary to use a number of terms or expressions that are not commonly used in any one particular area. This list of definitions should serve to give the reader a clearer understanding of the relationship of aesthetic values in the design process.

CULTURAL ECOLOGY - the study of the relationship between man's cultural values and the environment. It is an attempt to link the social sciences with the natural sciences.

SOCIETY - the organization of people with the same or similar cultural values grouped together in the same geographical area.

SOCIALIZATION - the process under which the social norms of a society are transmitted to each member of that society. A good example of the process of socialization is the structure of the school system.

RATIONAL - "applied to the behavior of contemporary economic man, the man who does things under conditions imposed on him by scarcity of means in relation to expanding desires."[8]

PRE-RATIONAL - the thinking or design process that uses cultural values other than economics to govern their design decisions. The Dogon tribe in Africa can be seen as a good example of this thinking.

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[8]Tzonis, op. cit., p. 58.

BURGUM - the organic lay-out of the German streets that is often contrasted with the grid-iron pattern built by the Romans.

BURGHALL - the union hall of the German cities. One of the three dominant forces that shaped the urbanscape of German towns, the other two being the church and city hall.

MYTH - "a collective belief that is built up in response to the wishes of the group rather than an analysis of the basis of those wishes."[9]

"PIETY" - used in the Heideggerian sense which is the cultural value that has the highest value in that society's cultural value system.

CONCRETIZATION - the ability of a work of art to act as an intermediary between an idea and reality. It serves as a symbol or a representation of an abstract concept.

SEMIOTIC - the use of signs to either signal a thought or to express that thought. It is a "symbol-system, a language to talk about signs."[10] "A sign-situation, or a process of semiosis, is any situation in which one thing takes

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[9] E. L. Barnhart, ed., American College Dictionary (New York: Random House, 1963), p. 805.

[10] Christian Norberg-Schulz, Intentions in Architecture (Cambridge, Mass.: The M.I.T. Press, 1965), p. 59.

account of something else, which is not directly causally efficacious, through the mediation of a third something . . ."[11]

SCIENTIFIC-TECHNIC - the combination of two cultural modes (science and technology) to form a separate cultural mode.

FOURFOLD - used in the same sense as Martin Heidegger in "Building Dwelling, Thought"; earth and sky, of divinities and mortals.

MILIEU - will be used interchangeably with the word environment and will be defined the same.

CULTURAL AESTHETICIANS - group of philosophers who consider aesthetics from the cultural context from which the art work eminates.

CULTURAL AESTHETICS - the study of the beauty of a work of art based upon a cultural interpretation that is unique for a particular society in time and space.

TRANSCENDENCY - a view of reality that goes beyond the cursory, surface analysis of that reality. The viewer is abstracted from the

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[11]Charles W. Morris, "Esthetics and the Theory of Signs," Journal of Unified Science 8 (1939):132.

surrounding environment to be able to view the underlying reality.

CASTRUM - the mathematically pure, scientific grid-iron constructed by the Romans during their conquests of much of Europe.

DESCRIPTIVE MODEL - "has the limited objective of persuading the computer to replicate the relevant features of an existing urban environment or of an already observed process of urban change.[12]

PREDICTIVE MODEL - shows that if X occurs, then Y will follow. It can also be considered a cause and effect model.

PLANNING MODEL - "a measure of optimization is introduced in terms of chosen criteria, in order to determine means of achieving stated planned goals."[13]

"EARTH" - is the existing reality of the art work--the objects that are used to construct the work of art. It is the physical components that the object being investigated is constructed from.

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[12]Bullock, Dickens, and Steadman, "The Use of Models in the Planning and the Architectural Design Process," in Urban Space and Structures, ed. Leslie Martin and Lionel March (London, England: Cambridge University Press, 1972), p. 97.

[13]Ibid., p. 98.

"WORLD" - is the interpretation of the context of higher relationships which provides the meaning of the work of art or the cultural context. It can be considered the cultural values that a society has in regard to a given phenomenon.

SENSATION - "The fundamental unit (on measurement) of our receptivity is a sensation."[14] It is the personal environment composed of both the behavioral and the experiential environment. It can also be considered the stimulus in the behavior-environment synomorphic.

PRACTICAL REASON - rests on self-satisfaction. Its methodology can be considered similar to the scientific method.

SPECULATIVE REASON - seeks with disinterested curiosity an understanding of the cultural and natural environment. It formulates hypotheses that might or might not be proveable using practical reason.

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[14] P.D. Ouspensky, Tertium Organum (New York, N.Y.: Vintage Books, 1970), p. 70.

CHAPTER I

CULTURAL ECOLOGY OF AESTHETICS

As I have indicated in the Introduction, the study of cultural ecology is the study of the relationship between man's or a society's cultural values and the environment. As such it is a good place to commence this thesis since,

> The definition of "design and "environment" of course vary through the history of architecture. They depend on the values and goals, on the methods of reasoning and on the body of facts that have been taken into consideration by a society and by the architect in the course of practising his profession.[1]

Within this chapter, an attempt will be made to deal with the influence that cultural systems have upon our view of the environment. In order to make the analysis somewhat more tractable, the first part of this chapter will be limited to a consideration of the religious, scientific and economic sub-systems of culture. As will be shown later on, these three cultural sub-systems are considered to be important not only because of their close interrelationships, but also because each

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[1]Alexander Tzonis, Towards a Non-Oppressive Environment (Boston: The i Press, Inc., 1972), p. 11.

has at some period of history exerted a dominating influence on the design process. The historic foundations of these sub-systems will also be discussed, as well as their evolution to their current status within the cultural continuum. Since "a cataloguing description of the conglomeration of casual relationships is a complete failure,"[2] I will also analyze the interrelationship that each of these sub-systems has with each other. These three cultural subsystems are then further scrutinized using the device of a "cultural value pyramid"; this devise forms a basis later on in this thesis for the discussion and application of models. The last section of this chapter is concerned with the relationship between behavior and the environment.

This chapter uses a cultural ecological perspective to try to ascertain what has remained constant throughout architectural history; physical standards have clearly not been constant. This cultural ecological perspective will focus on the influence of the human psyche on the design process of the ancient builders. For them, the design of both cities and individual buildings was a product of pre-rational thinking; hence before a discussion on the three cultural sub-systems commences

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[2]Pitiriam A. Sorokin, Society, Culture and Personality, vol. 1 (New York: Cooper Square Pubs., 1962), p. 40.

discussion of the design process utilized by pre-rational designers will be done.

Pre-Rational Thinking

The ancient builders designed and built their work using a different process of thought than does the contemporary rational society. In this thesis, I define "rational" action as the behavior of contemporary economic man, the man who does things under conditions imposed on him "by scarcity of means in relation to expanding desires"[3]; this is the definition common to economics. This differs from the more common definition of rationality as a process that follows a logical, ordered pattern of thought. The distinction is important since for the pre-rational thinkers there was, as will be shown, a logical ordered pattern of thought utilized in design decisions, although these thinkers were clearly not rational in the economic sense.[4]

As has been shown by a number of anthropologists, man has always used some sort of logic in the works he has created, whether the society was pre-rational or rational. For the pre-rational society, however,

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[3]Tzonis, op. cit., p. 18.

[4]This is the same society that other authors have termed unself-conscious cultures. For further information see Christopher Alexander, Notes on the Synthesis of Form (Cambridge, Mass.: Harvard University Press, 1964).

economic desires were not a factor with as great a significance as our contemporary society now holds for them. Pre-rationality, as a design mode, strives to exemplify the higher philosophical aspects of the society, such as the symbolism of a society's "piety." As such, many of the design elements of pre-rational society are predicated on myths and are slow to be changed. As defined in the American College Dictionary, myth means "a collective belief that is built up in response to the wishes of the group rather than an analysis of the basis of those wishes."[5]

Pre-rational thought should not be considered inferior to contemporary society's rational thought; it is simply an alternative method for the collection of information.

> It is not an inferior approach when compared with rational design and it should be called "prior" rather than "primitive." Whereas we can examine the pre-rational and rational approaches against one another, it would be a mistake to try and compare the two with a view of evaluating the one in terms of the other.[6]

Both Edward T. Hall and Christopher Alexander define the two thought processes as follows, where unself-conscious

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[5]C. L. Barnhart, ed., American College Dictionary (New York: Random House, 1963), p. 805.

[6]Claude Levi-Strauss, The Savage Mind (Chicago: University of Chicago Press, 1966), p. 16.

and self-conscious correspond to pre-rational and rational respectively.

> I shall call a culture unself-conscious if its form-making is learned informally, through imitation and correction. And I shall call a culture self-conscious if its form-making is taught academically, according to explicit rules.[7]

Pre-rational thinking also served a purpose in that, "it discloses an inner law which is fully analogous to the law prevailing in nature but of a higher mode of necessity."[8] Such thinking embodied all of the higher societal values in its process without being encumbered with the economic constraints used by today's contemporary society in the design process. Both art and architecture were shroud in a mythical fantasy which sought to present the "piety," to use Heidegger's word, of that society. The emotional impact that the work of art created was a reflection of an intuitive creative process at work. Things were not simply codified into rigid rules of physical standards such as building codes and zoning regulations, but were rather an expression of the highest psychic state of the society. To pre-rational society this expression of the highest psychic state was a greater consequence.

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[7]Alexander, op. cit., p. 36. To facilitate the readability of this thesis, I will consider an unself-conscious culture as pre-rational and self-conscious culture as rational.

[8]Ernst Cassirer, The Philosophy of Symbolic Forms, vol. 1: Mythical Thought (New Haven, Conn.: Yale University Press, 1955), p. 9.

In the design area, an example of the influence of the pre-rational mode, is found in the cosmological order or "divine model" which had to be followed by the architects of the Medieval and Renaissance periods.

> Both periods required certain buildings to be formed according to absolute rules created and determined by God. A design product is "true" or "harmonic" or "perfect" if it is "according to measure," if it complies with the sacred prototype.[9]

This expression of the highest psychic level of society, as it manifests itself in architecture and city design, will be explained in greater detail in the chapter, "Theory of Urban Aesthetics." An early summary, however, is provided by Tzonis:

> . . . during the "pre-self-conscious" or "archiac" period, design decisions were made by intuition, instinct, taste or chance, employing the same conceptual framework as the contemporary science-oriented designers do, but not by "systematic" rational thinking.[10]

The peculiar creative process used by the pre-rationals has been to some extent lost today, since its mystical, mythical qualities cannot be easily quantified in economic or scientific terms that are readily understood by planners. What has transpired is that in today's society,

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[9] Tzonis, op. cit., pp. 19-20.

[10] Ibid., p. 16.

> design is viewed less and less as a process structuring the physical environment in visual patterns through which society is organized. It is an activity which produces commodities offering utilities which can be described in terms of several dimensions.[11]

As certain concepts are developed in a systematic manner, they gradually lose their mythical connotations. That is, as society has placed a greater emphasis on analysis, science and mathematics, the mythical basis of ancient theories has often been lost. Thus, it may be necessary to try to reexamine ancient theories or in what is considered a logical or design concepts to recapture this mythical base. Both art and aesthetics have at their base a sense of this mythical consciousness or pre-rational thinking, thus a recapture of at least some of the spirit of the pre-rationals is essential.

In order to facilitate an understanding of contemporary aesthetic thinking, it is first necessary to see how pre-rational man concretized this thinking in his architecture. Concretization can be defined as meaning the ability of architecture to act as a symbol "which has to be described through a complete semiotical investigation of the objects making up its pole-system."[12]

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[11]Ibid., p. 17.

[12]Christian Norberg-Schulz, Intentions in Architecture (Cambridge, Mass.: The M.I.T. Press, 1965), p. 68. Also see p. 21.

That is, in order to fully understand the architectural work that is being constructed, its symbolic form must be clearly understood by the viewer. Charles Jencks, in his book, The Language of Post-Modern Architecture, illustrates the problem that many architects have in transmitting this to the viewer. As he puts it, this has been one of the principle difficiencies of Modern Architecture as well as modern planning techniques. The symbolic meanings of the architectural work has become cloudy and are no longer easily understood by contemporary society. Christian Norberg-Schulz declares that the arts are a force of a symbol-system and that these artistic works can be defined in terms of the objects that are being represented.

An historical analysis will be relied upon to show some of the methodology used for the locating of both major and minor buildings on the urbanscape as well as the utilization of space to enhance the architect's desired effect. Although most pre-rational societies did not have architects or urban designers per se, there was an accepted mode of design upon which design decisions were based. Since buildings were both located and built according to mythical beliefs it is necessary to delve into the mythical consciousness.

> The philosophical understanding of myth begins with the insight that it does not move in a purely invented or made-up world but it has its

> own mode of necessity and therefore, in accordance with the idealist concept of the object, its own mode of reality.[13]

Myth does then materialize itself in the physical environment which man creates. Just as many pieces of sculpture express mythological thinking so too do buildings express that thinking. Objects are located in a particular place based upon a necessity that is very real for the mythical or pre-rational society, although it might not be logically understood in the terms our rational economic society is taught through "socialization" to deal with.

An example of the non-economic thinking in design for the archaic societies may be found in the relationship between buildings, monuments and public squares that Camillo Sitte wrote about in his book, The Art of Building Cities. The placement of Michaelangelo's David in the Palazzo Vecchio was obviously not motivated by narrow economic conditions but rather by aesthetic qualities (see Figure 5). "The combre and uniform, but powerful walls of the palace provide a background on which we could not wish to improve to make all the lines of the figure stand out."[14] The statue was an

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[13]Cassirer, op. cit., p. 4.

[14]Camillo Sitte, The Art of Building Cities, trans. Stewart T. Charles (New York: Reinhold Pubs., 1945), p. 11.

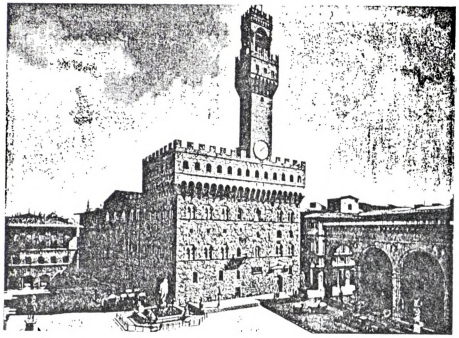

Figure 5.--Palazzo Vecchio, Florence.

SOURCE: H. W. Janson, History of Art (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973), p. 247.

important element in the aesthetic sense of the plaza on which the palace and statue was located. Today, statues are not designed in conjunction with the design of the building, but are added as an after-thought. Sculpture has in a sense become an add-on feature to decorate an empty space, rather than being used to further elucide the design intent. "The fundamental difference between the procedures of former times and those of today rests in the fact that we constantly seek the largest possible space for each little statue."[15] Where for the pre-rational builders, a fine sense for art was necessary, today we have rules governing our placement of statues. These rules most often dictate that the area allocated to the statue not impede the flow of traffic nor obstruct vision of either the building or of traffic. For the archaic designers, this was not a consideration. The placement of a statue was such that it could be viewed with the building serving as a backdrop to enhance the aesthetic impression for the viewer. Buildings were also arranged to present both major and minor sight lines, thus enhancing the aesthetic qualities of the entire area (see Figure 6). As Camillo Sitte explains, when

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[15]Ibid., pp. 11-12.

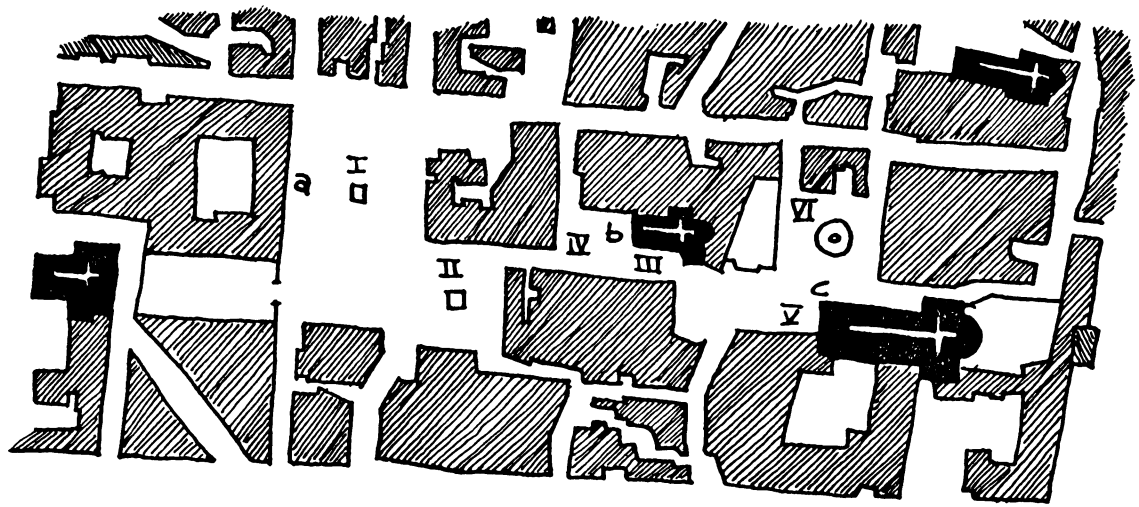

Figure 6.--Lucca. I. Piazza Grande (Napoleone). II. Piazza del Giglio. III. Via del Duomo. IV. Piazza S. Giovanni. V. Piazza S. Martino. VI. Piazza Antelminelli. a. Palazzo Della Perfetturra. b. S. Giovanni. c. Cathedral (S. Martino).

SOURCE: Camillo Sitte, The Art of Building Cities, trans. Stewart T. Charles (New York: Reinhold Pubs., 1945), p. 56.

these designers were working, according to the dictates of the time, the use of a major and minor plazas was necessary. This enabled the dominant cultural value, religion, to take its elevated position in the city's design, with the royal palaces and houses taking a lesser role. The evolution of some of the world's older cities shows this very clearly and each generation's cultural values become evident as the cities develop. Pre-rational design accepted as true facts that the circle and square were perfect, without relying upon a long elaborate proof. It was taken as self-evident truth, whereas, rational man tests his hypothesis about empirical reality to be sure that the correspondence between the model and reality is true.

Alexander Tzonis, in his book, Towards a Non-Oppressive Environment, discusses various cosmological models of both Medieval and Renaissance architecture. Churches and cathedrals were built in true harmony with the "piety" of that society based on geometrical relationships or proportions. In both the Medieval and Renaissance periods, it was only through the attainment of the "divine model" that architecture and society could transcend its temporal state and reach the stability of the cosmological whole. "The physical world is temporary, it can vanish; only its underlying

structure is 'stable, unshakable' and incorruptible."[16] Thus for those designers this design model provided a method for acquiring both a stability and permanence that transcended the normal life span of the designer. This methodology of design was consistent and the design process was organized based upon this assumption. Tzonis also uses the African tribe, the Dogons, as an example of a cosmological design order, with the layout of their villages displaying a highly sophisticated culture.

> In the African state of Dogon the cosmological model, the design methodology and the designed product, considered as the overall man-made environment, constitute a triparite compact correspondence. The divine model, according to the people of Dogon, is contained in a body of symbols and myths. Similarly to Saint Augustine, the Dogon believe that it should find its counterparts in the organization underlying every part of the man-made environment.[17]

This cosmological model is followed throughout the organization of the entire environmental milieu in which the Dogons reside. Both the social order and the physical environment follow this development. This same thing was discussed by Bernard Rudofsky when he found that "the Dogon's architecture expresses communal

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[16] Tzonis, op. cit., p. 21.

[17] Ibid., p. 23.

organization."[18] The society functioned in an harmonious relationship based on the form of the human anatomy. Both the physical structure as well as the social structure were governed by this cosmological "divine model" (see Figures 7 and 8).

> As matter has been organized by the Dogon into elements which follow relationships prescribed by the divine model, so are the members of the society of Dogon formed into groups interrelated in accordance with the structure of the divine model.[19]

Thus, both the Renaissance, Medieval and Dogon's cultures were reflected in the design methodology used to structure their physical environment.

From the above discussion it is readily seen that the pre-rational designers had a much more rigid governance than does today's designers. There was only one right solution for these societies and that solution was predicated on absolute laws not governed by the narrow confines of contemporary economic thought. For the prerationals there was also no need for "aesthetic controls" as we know them since the design problem called for a single solution. The divine model served as the "aesthetic code" for those societies and that code was a direct reflection of their cultural values. What then

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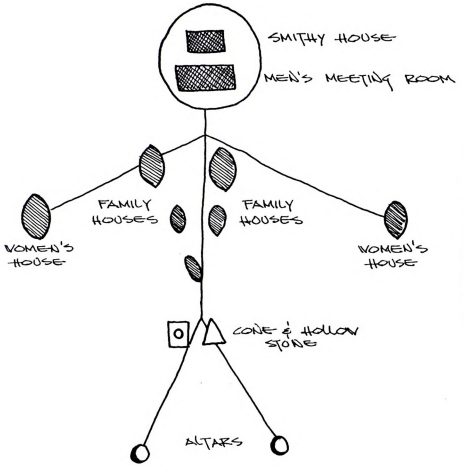
[18] Bernard Rudofsky, Architecture Without Architects (Garden City, N.Y.: Doubleday and Company, 1964), p. 41.

[19] Tzonis, op. cit., p. 27.



DESIGN OBJECT	DIVINE MODEL
VILLAGE	BODY
SMITHY	HEAD
MEN'S HOUSE	HEAD
FAMILY HOUSE	CHEST
WOMEN'S HOUSES	HANDS
CONE & HOLLOW STONES	MALE & FEMALE GENITALS
ALTARS	FEET

Figure 7.--Typical Dogon Village and Divine Model.

SOURCE: Alexander Tzonis, Towards a Non-Oppressive Environment (Boston: The i Press, Inc., 1972), p. 25.

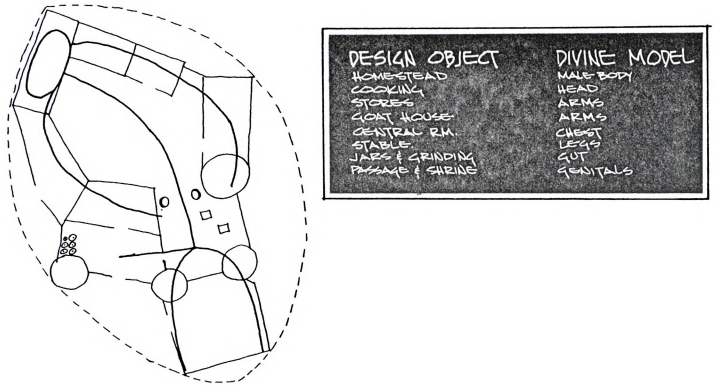


Figure 8.--Typical Dogon House with Divine Model.

SOURCE: Bernard Rudofsky, The Prodigious Builders (New York: Harcourt Brace Jovanovich, 1977), p. 227.

can be said about our contemporary society's cultural values and the manner in which they shape the physical milieu? For this an examination of three cultural perspectives will be done; science, religion and economics.

Three Cultural Perspectives

Religion

> One may add as a footnote that the main Western tradition has very firmly separated man from the rest of nature, to which it refuses to give the special status of sharing in the normal struggle. Animals in the West do not have souls.[20]

The Judeao-Christian tradition, which governs most of our society's religious attitudes, views man as the supreme living creature:

> And God said, let us make men in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth.[21]

With this quote in mind, it is not difficult to understand the contribution that religion has made to the present environmental crisis. To the society that has this tradition, the manipulation of the environment is almost a divine right.

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[20]Crane Brinton, The Shaping of Modern Thought (Englewood Cliffs, N.J.: Prentice-Hall, 1950), p. 236.

[21]The Holy Bible, King James Version, Gen. 1:26.

Ancient civilizations for the most part elevated nature to a higher level; Gods were, in fact, a personification of nature. A tree became a mode of communicating with the gods. As discussed in the pre-rationality section, ancient religions were, for the most part, contained in a body of myths, "the whole material world appeared shrouded in mythical thinking and mythical fantasy."[22] The bulk of these myths represent man in a subserviant position with respect to nature, or at the least on a par with nature. In Homer's The Iliad, for example, Achilles is pictured as fighting a river (a god),

> Achilles was a great runner, but the gods are greater than men, and time and again he was caught up by the van of the flood, like a gardner who is irrigating his plot by making a channel in among the plants for the fresh water from a spring . . . sometimes the swift and excellent Achilles tried to make a stand . . . But whenever he stopped, a mighty billow from the heaven fed river came crashing down on his shoulders.[23]

It was only with the help of two other gods that Achilles was eventually rescued. Much of the Greek philosophy also expresses the view that man is one with nature. "Neither is nature set over against man, nor is man set

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[22]Cassirer, op. cit., p. 1.

[23]Homer, The Iliad (Maryland: Penguin Books, 1961), p. 387.

over against nature."[24] This belief in the unanimity of man and nature was reflected in both the architecture and city design of the Greeks. The Greek temple and buildings in particular expressed this communal relationship. Their structures were constructed with a oneness for the fourfold; earth and sky, of divinities and mortals. The natural phenomena represented by the earth and sky, and the divinities and mortals represent the "piety" and commonness of societal man.

While the early Greeks viewed man and the natural environment as a single, whole entity, the advent of scientific thought contributed to a metamorphosis of this philosophical belief. As man began to classify and investigate natural phenomena, his conception of nature as a supreme force was radically transformed. Although the Greeks still maintained numerous gods, these gods were off on Mount Olympus, separated from both man and his immediate physical milieu.

With the advent of Jewish thought and religion, nature made a swift descent. Man was created in God's image and therefore it was his destiny to assume his natural status in God's kingdom. Even the Biblical Garden of Eden was established to serve Adam and Eve.

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[24] S. Radhakinshaman and P. Rajun, eds., Comparisons and Reflections

"But nature is subserviant to man; the world is created for man by God so that man can show his righteousness in it."[25]

Historians identify various periods of time as belonging to certain named eras, for instance, the Renaissance architecture that originated in Italy in the early 15th century was "based upon clarity and mathematical relationship of plan and design."[26] At the time, the leaders of society felt that the cosmos were a mathematically perfect form and their architecture reflected this mathematical perfection. "Many Renaissance and Medieval architects shared the belief that churches and other buildings of specialized function should be designed according to rules dictated by a 'divine model'."[27] This divine model was constructed of circles and squares because they represented the human body which was created in God's image. In the section on pre-rational thinking, this period of architecture was used to illustrate how architects designed according to this "divine model." The placement of this construct in that section is an important aspect of this thesis in that it helps show how a non-economic, non-statistical approach to design can be

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[25]Ibid., p. 315.

[26]Barnhart, op. cit., p. 1026.

[27]Tzonis, op. cit., p. 19.

implemented. To the designers of that period a strong sense of their philosophical base was an inherent aspect of the design process. These designers strove to elucidate in visual terms what was theretofore expressed by auditory means. Thus it can be considered as a transitory period from audio communication to visual communication.

Since the church was the dominant force during the Renaissance, religious beliefs were considered the highest cultural values and exerted their influence on the arts as well. "During the Renaissance, architects continued to believe in the existence of a perfect, eternal prototype and in the obligation of the designer to follow it."[28] They were seeking the highest cultural values of that society and exemplified them in both the design of their buildings and their cities. Thus, each architectural style can be seen as being dependent upon the society's cultural value system which its roots are based.

The social and cultural environment of the Europeans during the Renaissance gradually shifted from the church dominated Medieval period to the dominance of political-military factors. The sixteenth century Renaissance was an attempt "to restore erotic vitality and intellectual curiosities that had been suppressed in

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[28]Ibid., p. 22.

Christian myth and practice."[29] These myths and practices changed, but that evolution often occurred very slowly. As the dominance of the church receded, so too did its influence on the shape of the city. Political-military values rose above the religious values of the Medieval period, so that the fortress or walled city came to the forefront--the city had to have walls to serve as a protection for the people in case of attack. Here, in the U.S., the Spanish issue of the Law of the Indies decreed as law on July 3, 1573, serves as a good example of this metamorphosis.

> The regulations provided precise guides for the location of the important buildings of the town. The main church of a coastal city was to face on the plaza and set near the harbor, so constructed that it might be used as a defensive fortification in the event of attack.[30]

During the Medieval period this dual usage for the church would have been considered sacreligious and never thought to be acceptable. But, a short time later, this dual usage reflected the shifting cultural values.

In the post-Dark Ages of Germany, the rejection of the power of the Roman Catholic church saw that power being replaced by the burghall. The castrum of the Romans with its mathematically pure, scientific grid-iron layout was contrasted with the more organic burgum of the Germans.

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[29]Lewis Mumford, Interpretations and Forecasts: 1922-1972 (New York: Harcourt, Brace, Jovanovich, Inc., 1973), p. 211.

[30]John Reps, Making of Urban America (Princeton, N.J.: Princeton University Press, 1965), p. 30.

This organic burgum tended to be derived in sympathy to the natural environmental milieu of the Germans (see Figure 9). The "divine model" of the Medieval and Renaissance periods and the shift to political-military factors are but two examples of how the social and cultural environment affect both the architecture and the layout and design of cities.

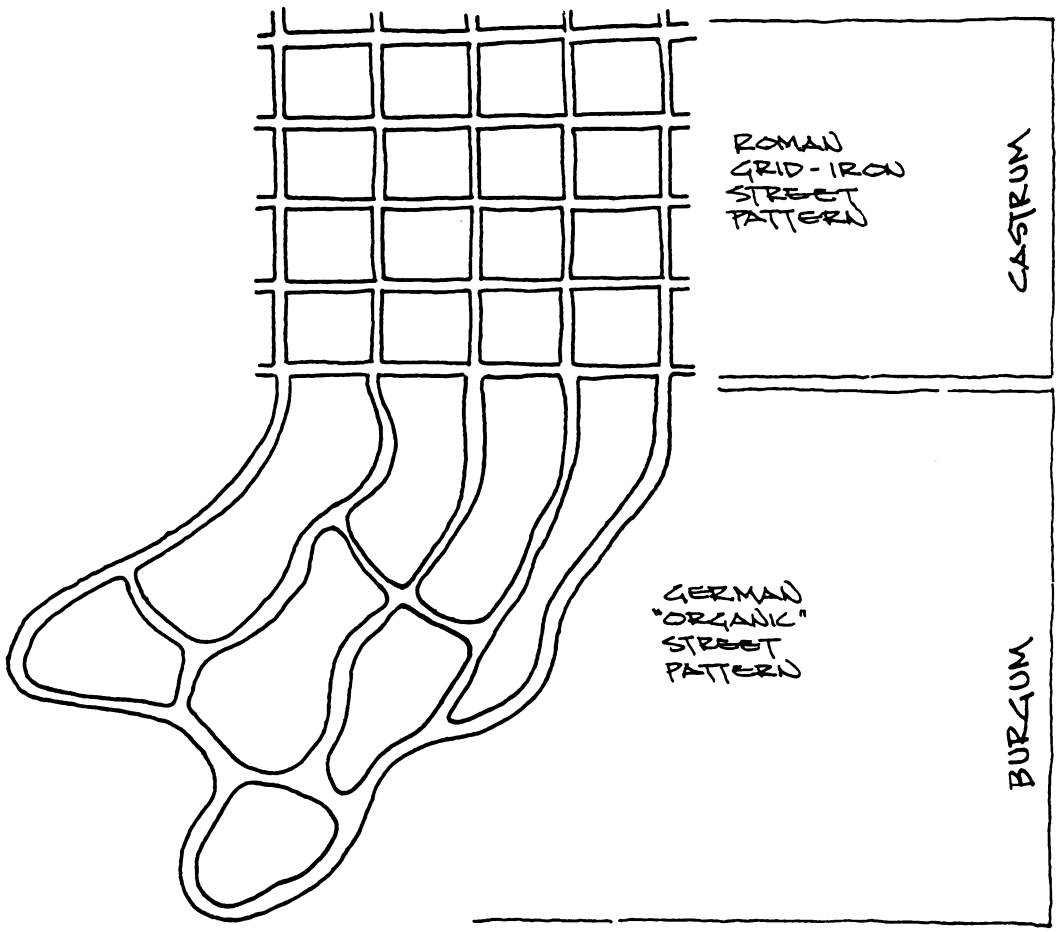

Figure 9.--Contrasting Street Patterns.

SOURCE: Moholy-Nagy, Matrix of Man (New York: Praeger Pubs., 1968).

Scientific-Technical

The sub-topic (scientific-technic) is being considered as a single cultural phenomenon; as such it is one of the cornerstones upon which our society rests.

> There is no second power in our modern world which may be compared to that of scientific thought. It is held to be the summit and consumation of all our human activities, the last chapter in the history of mankind and the most important subject of a philosophy of man.[31]

Contemporary society seems to exhibit almost a quasi-religious faith in science, both in its ability to explain natural phenomena, and in its problem-solving potential. We have used the combination of science with technology to solve the problems where long-range or single-minded planning has failed.

> If there are too many cars, we build new highways. If administration is too cumbersome, we build new levels of administration. If there is a nuclear threat, we build anti-missiles.[32]

Through the use of science we have been able to dissect the world down to particles smaller than an atom, smaller than protons, neutrons and electrons, down to its smallest possible component parts. However, in this process of dissection, we have inhibited our ability to see the environment as an integrated whole. A tree, for

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[31]Ernst Cassirer, An Essay on Man (New York: Bantam Books, 1970), p. 229.

[32]Paul Goodman, quoted in "The Sense of Crisis" editorial in the Nation, Nov. 13, 1967, p. 486.

the majority of our society, is no longer the source of aesthetic wonder, but has been relegated to the position of a purely biological system, member of a particular genus and phylum and a means to provide an end. Even in doing an analysis of man's urban environment, the planner tends to isolate various components of the urbanscape and solve problems they present. The chief planner for the city of Detroit did precisely this dissection when he broke the city into three distinct groupings: (1) "unsaveable," (2) "saveable," and (3) "no need to help." This would seem to indicate that he regards Detroit as a group of separate independent areas without significant interaction effects. The Bronx in New York City was similarly written off, by many people, as a war zone until a group of Urban Pioneers started envisioning a use for it.[33] The "war zones" and "unsaveable" areas do indeed have an effect upon other contiguous areas since they often provide much of the population and activity.[34]

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[33]See "The New Urban Pioneers" in Saturday Review, July 23, 1977, where a small group of people has started having positive results on pumping life back into the area. The process is similar to what had transpired in Soho, N.Y., in the 60's and 70's and Greenwich Village in the 50's.

[34]Much of Western Europe, as well as the Southwestern U.S. is now experiencing this problem with their legal and extra-legal immigrants. See U.S. News and World Report magazine, April 1977, p. 486.

Man's belief in the importance of the scientific realm had its genesis in the 17th Century and was reflected in his attempt to sub-divide and create specialized fields of scientific endeavor: physics, astronomy, physiology and biology all emerged at this time, as separate disciplines. Simultaneously, scientists began forming into elite groups or societies that served to isolate themselves more and more from the mainstream of society. It was not, however, until the period of the Industrial Revolution that scientific-technic values really assumed an elevated position within our social organization. Commercial capitalists and the bourgeousie were particularly concerned with technical progress and the potential of new information supplied by science. During this period of rapid industrialization, as the commercial and industrial classes gained ascendancy over both the feudal and clerical interests, the sciences and their technical application moved to the fore as well. It is not surprising, then, that physics and chemistry, the two natural sciences most directly applicable to technology, made the greatest strides forward.[35] In short, the development of science, once assumed to be a somehow "pure" phenomenon, was intimately affected by the profit motive. Science began

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[35]Oscar Lange, Political Economy, trans. A. H. Walker (New York: MacMillan Press, 1963), pp. 280-283.

its move from the realm of pre-rational thinking into that of contemporary rational economic man.

In 1620, Sir Francis Bacon admonished scientists to abandon the Aristotelian philosophy of deductive reasoning. It was suggested that inductive or sensory perception be utilized as the alternative approach to scientific problems.

> Henceforth the entire flux of sensory appearances, including color, taste, and even weight, was to be explained in terms of the size, shape, position and motion of the elementary corpuscles of base matter. The attribution of other qualities to the elementary atoms was a resort to the occult and therefore out of bounds for science.[36]

This type of scientific reasoning, however, may on occassion lead one astray. Some problems are not susceptible to inductive analyses. Moreover, the limitations our language places on us prevents us from accurately describing phenomena. Consider the conventional problem of describing a red rose. "The perceived quality, redness, is cut out of nature and made into a reaction of the mind. In so doing, we deprive nature of half her being."[37] We can, in our role as a botanist, dissect the rose into its various parts and label each one. With the

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[36]Thomas Kuhn, International Encyclopedia of Unified Science, "The Structure of Scientific Revolutions," p. 104.

[37]L. G. Birch, "Concept of Nature," American Scientist 39, p. 295.

use of the Munsell color scale, we can even define its exact color based on this three-dimensional color system. This three-dimensional color system, developed in the early 1900's, is based on the notion that colors can be uniquely described based upon hue, value and chroma. These correspond to each particular color's wave length, reflectance and purity respectively. This system allows us to even quite adequately describe the intensity and the particular hue of the red rose. However, in doing this we have not been able to convey the aesthetic majesty of the rose to someone who is blind. The red rose has attributes that project more than the sum of its individual parts. This problem of descriptive language is similar to Michael Polanyi's notion that we can know more than we can say or describe.[38] There is a form of synergy operative in our aesthetic appreciation of that flower; and it is the effect or contribution of this synergy which is increasingly absent from our interaction with the environment. The environment is composed of more than the individual physical, social and natural components which are susceptible of analysis.

Today, whenever people deal with the problems of pollution or the contamination of the environment, the

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[38]For a complete explanation of this phenomena, see Michael Polanyi, The Tacit Dimension (Garden City, N.Y.: Anchor Books, 1967), where he explains his theory in greater depth.

solution seems to lie in the ability of science through technology to unmake the chaos we are now confronted with. As John R. Silben has indicated in an article in The Centre Magazine, society today is in the grips of "instantism."[39] This implicit belief not only in the possibility of solutions, but in instantaneous (or at the very least quick) solutions in some sense relieves society of the responsibility for its own pernicious behavior. Simultaneously, it also serves to mitigate any tension or anxiety that might arise with respect to community pollution. Nature has become subserviant to science, particularly since the advent of the Industrial Revolution. It is now simply a force to be manipulated.

In order to find examples of how the role of the scientific-technic values influence design one has only to look at some recent issues of architectural magazines. The Pompidou Center in Paris owes its entire shape both internally as well as external to the machinery necessary to overcome the environment. Air-conditioning, heating, electrical equipment are all left exposed to create the aesthetics desired by the architect (see Figure 10). Obviously, with this building the scientific-technic aspects of it were a paramount concern in its design. The University of Petroleum and Minerals in Saudi Arabia

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[39]John R. Silben, "The Pollution of Time," The Centre Magazine, Sept./Oct. 1971, p. 4.

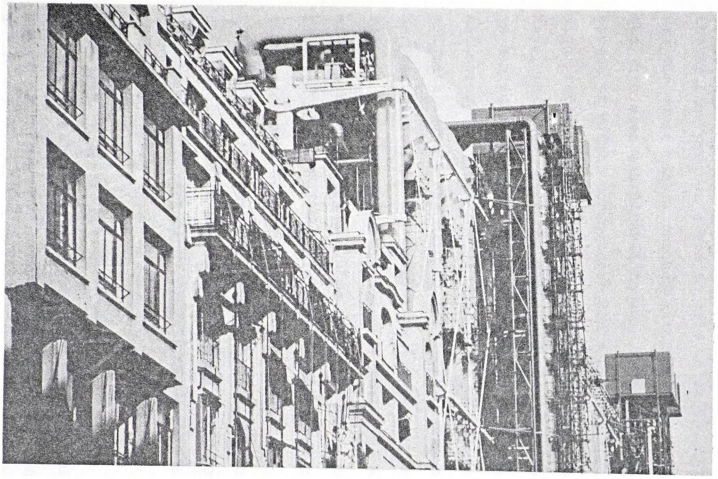

Figure 10.--Pompidou Center.

SOURCE: Charles Jencks, The Language of Post-Modern Architecture (London, England: Rizzoli International Pubs., 1977), p. 50.

can be also cited for its massive use of technology to manipulate the environment. The indigenous builders of the Arabian peninsula had to rely on their ability to use the environment, through materials, sun orientation, etc., to create a livable house. Now, these design criteria become of slight consequence since air-conditioning, insulation, reflective glass and so on can be used, and indeed have. Finally, even the design of the urban environment is manipulated through the combined work of science and technology. In the last 50 years the use of automobiles and mass transit has allowed for greater distances between work, play and home. The city of Stockholm, Sweden, uses a formula of maximum travel time of 45 minutes between work and home to design the urban region. In order to accomplish this goal new modes of transportation have to be developed since they have used that standard for the past 30 years, and the land that fills that requirement is already built upon. So, it can be seen that scientific-technology plays a major role in shaping the urbanscape.

Economics

Finally, if the economy purges itself of the burden of pollution only in order to be free to run even faster after endlessly elaborated consumer goods, then we will have profited no more from our sober interlude than

the junkie who kicks the habit in order to go on to a cheaper high.[40]

Whereas, in previous times, nature and religion occupied a central position in the cultural value system, economic considerations currently have become dominant. This emphasis on economics, and more particularly on consumption, has not always characterized Western society. David Landes suggests that in the early period of the Industrial Revolution workers had to be convinced to want more products in order to encourage them to work longer hours to satisfy the needs of industry for labor.[41] This is the same thing that Erich Fromm found in his book, The Sane Society.

> In the 19th Century, the general tendency was to save, and not to indulge in expenses which could not be paid for immediately, the contemporary system is exactly the opposite. Everybody is coaxed into buying as much as he can, and before he has saved enough to pay for his purchases.[42]

In fact, John K. Galbraith refers to the machinations of the advertising community as "need creation."[43]

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[40]Gordon Harrison, "Making Peace with the Earth," Saturday Review, November 6, 1971, p. 83.

[41]M. M. Postan and H. J. Habakkuk, eds., The Cambridge Economic History of Europe (Cambridge, England: Cambridge University Press, 1966), vol. VI: Technological Change and Development in Western Europe, chap. V, pt. 1.

[42]Fromm, op. cit., p. 301.

[43]John K. Galbraith, The Affluent Society (Boston: Houghton-Mifflin, 1958).

The Industrial Revolution also necessitated a change in the economic system to that of a market economy where both goods and services had to be considered in a monetary sense. "All transactions are turned into money transactions, and these in turn require that a medium of exchange be introduced into every articulation of industrial life."[44] This contrasts quite radically with the former system of transferring more tangible artifacts.

One very simple manifestation of the tendency to increased consumption can be seen in the amount of land society feels that a person needs to live on. The size of a residential plot of land has increased from the 20' or 25' frontage of the city of the early 1900's to today's 100' or 150' surburban plots. These standards have often led builders and developers to regard them as being the ideal size and have also created an urbanscape totally lacking in any creativity spontaneity. Often the urban planner is as guilty of creating the uniformity and monotony that they decry as the cause of the death or decline of the city as is the developer. Camillo Sitte has written quite extensively on this subject in his discussions of pre-rational architecture as well as his commentary on today's cities. Many zoning ordinances embody this urban monotony through the uniformity of those same

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[44]Karl Polanyi, The Great Transformation (Boston: Beacon Press, 1944), p. 41.

zoning regulations thus making uniformity and monotony a legal phenomenon. The distance deemed necessary between houses built in the 1930's was considered adequate if it was only two feet, but most of today's zoning ordinances insist that the side yard must be at least ten feet. Have the physiological characteristics of man changed that drastically since the 1930's or was it instead a factor related to the changing psychological make-up of society?

In making economic analysis central to the cultural value system, many analysts and designers have been guilty of short-sightedness. Thus, for example, we have lost sight of the fact that many of the products that we use to excess are in fact not replenishable. This problem has become much more acute since the end of World War II; science and technology are advancing at such a rapid rate that the natural eco-systems are not being allowed to rejuvenate themselves. We see this all too clearly in our increasing consumption of petroleum resources despite both the high price and documented data as to the diminishing supply. As of 1970, we were burning up our existing supplies at the rate of 20 million gallons per day. Petroleum is produced by nature through a slow process of fossil decay and therefore is not a readily replenishable resource. Its rapid use would be less critical if a viable alternative fuel source could be expected in the

near future, but it is not clear that this is the case. The development of fission nuclear reactors, the salvation of the 60's has been slowed considerably since they have been shown to be more of a detriment to the environment than the boon they were forecasted to be. While fusion reactors are considered to be a great deal cleaner, even they are being questioned as to their feasibility.

The effect of short-sighted applications of economics in, for example, cost-benefit analysis has been particularly pernicious in the area of aesthetics. If we can return again to Stevens' remarks which were used to open this thesis, we are reminded of the difficulty of even defining aesthetics; how much more difficult it is to quantify these values. Yet cost-benefit depends critically on one's ability to quantify factors. Given difficulties of quantification, aesthetics are often neglected entirely. But, there has been some attempt by various people to attach a quantitative value to the aesthetics of buildings. The French architect, Claude Perrault, was one of the first to attempt this when he "showed that architectural forms have no innate value, but that their value is determined in terms of the social use, like currency, in terms of their potential effects. Therefore, the function of visual forms is to attach artificial value to design products, where no value existed

before, by rendering them into a shape dictated by the power structure of society."[45]

Although numerous examples of this short-sighted economics can be cited, the most significant one is probably the award winning Pruitt-Igoe project of St. Louis. The intent, when it was erected, in the early 1950's, was to provide decent housing for the urban poor, and for this it won several design awards. But twenty years later, demolition was the order. The economics used in this project didn't allow for user dissatisfaction and was simply not calculated. Perhaps, if aesthetic concerns were calculated as well as the economic ones, a more long-lived project would have evolved, thereby maximizing the use of the funds that were spent. Umberto Eco now finds that architecture carries the values of consumption, consumption being a utility even in architecture and urban design.[46] Hence, we do see a value system in evidence in the design of the urban environment. How then do these three cultural values become placed in a hierarchical structure?

Cultural Value Pyramid

In the previous three sections of this chapter, I have shown how various cultural modes exhibit some

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[45]Tzonis, op. cit., p. 56.

[46]Ibid., p. 91.

degree of design dominance during different historical periods.

It is my intention within this section to further refine and develop my earlier discussion of the various historical periods through the use of a cultural value pyramid. The use of this pyramid allows one to be more concrete about the various cultural values in a period of design; this pyramid will be used again when a model of urban design is developed in the last chapter of this thesis. Three historical periods will be considered within this framework. Those three periods are: Greek, Medieval and Renaissance. These periods all have exhibited varying degrees of dominance of the different cultural modes; moreover, these particular values have served to shape the urbanscape of each epoch. Although these three historic periods may all be classified as pre-rational, they also obviously do not have the same cultural values at the pinnacle of their individual value pyramid. If this were the case, they would have all exhibited the same value influence upon the face of their urbanscape, thereby illustrating similar dominate physical features. Since it has already been shown that each historical period had different physical characteristics, it is reasonable to infer that each had different cultural values at their forefront.

In addition to limiting historical periods to be analyzed using the cultural value pyramid, the particular values chosen to be used in the periods were also limited. In particular, the cultural values to be used in the pyramids to be constructed were as follows: science, religion, economics, natural environment, political-military.

Greek Pyramid

For the Greeks, who demanded that their buildings reflect a sympathetic relationship with the fourfold--earth and sky, divinities and man--the construct indicated in Figure 11 can be developed.

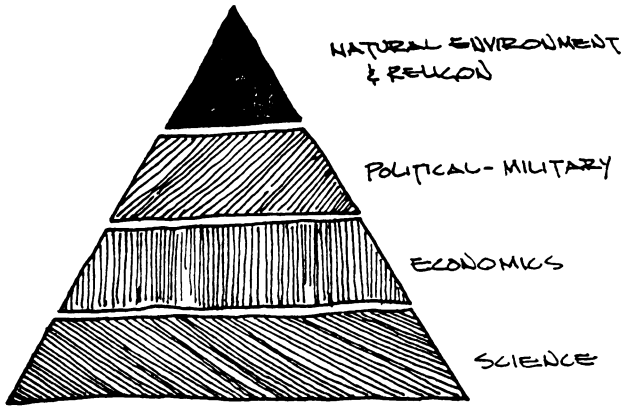

Figure 11.--Greek Cultural Value Pyramid.

In the chapter on Theory of Urban Aesthetics, a greater discussion of this will be presented in a descriptive analysis of the location of the Greek temple. But briefly it can be evidenced by using a locational analysis procedure. At the pinnacle of the physical urban environment was the temple. This paid homage to the numerous Greek gods who were often unexplained natural phenomena, i.e., Zeus, the god of thunder, or Appolo blazing his way across the sky. And, along with the buildings for the gods, the buildings for the city officials were built at the apex of the city, thus giving to both the gods and officials (political and military) their paramount importance for the Greek society. At the third level of the pyramid came the economics of the society represented by the agora (or market and commerce area). Finally, since science was not at that time a dominant force, its influence fell to the bottom of the value pyramid.

Medieval Cultural Pyramid

For the Medieval period, the dominance of the church in the physical milieu was highly evident in the urbanscape. The cultural value pyramid for this period would reflect that influence and would thus cause it to appear as indicated in Figure 12.

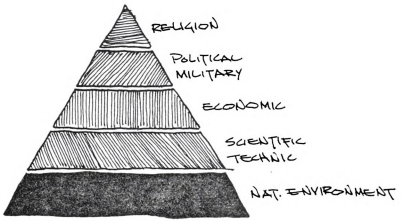

Figure 12.--Medieval Cultural Value Pyramid.

The politico-military influence evidenced itself in the form of the walled-city and provided a haven for the countrysiders in the event of attack. The grid-iron pattern of the streets helped to achieve this defined area. It was also within the walled city that the economic life of the region was protected. The merchants and commerce were housed within this area and thus placed itself at a higher level than the common peasants who tilled the land. Both the scientific and natural environment were given a relatively low position in the hierarchical cultural framework of that society. Many eminent theoreticians were assailed as heretics because of their ventures into the scientific explanation of natural phenomena. Obviously, the grid-iron pattern with

its little regard for topographical features showed a lack of concern for the natural environment.

Renaissance Cultural Pyramid

The third historical period in which I have expressed a concern was that of the Renaissance. Here we have seen the gradual shift in dominance from the religious sphere to that of political-military concerns. Therefore, the cultural value pyramid for that period will show the evidence of that change (see Figure 13).

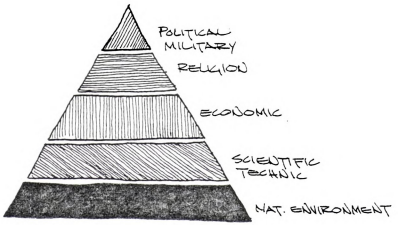

Figure 13.--Renaissance Cultural Value Pyramid.

The bottom three cultural values in the pyramid remained basically in their respective positions, economics, scientific and the natural environment taking the lowest levels. People were still assailed as heretics

while the grid-iron pattern remained as the dominant urban design pattern.

Contemporary Cultural Pyramid

The final period in which a cultural value pyramid will be developed is for our contemporary society. Here we have seen that the economic values have come to the fore and have attained a dominance over the physical environment. The most often asked question by contemporary society is that related to the economic feasibility of a project. The various other cultural values take a lesser role in the determination on the face of the urbanscape. As has already been shown these other cultural values often are used to add credence to those values' economic concerns. Here, then, is that value pyramid as I perceive it in today's society (see Figure 14). In the field of architecture, the

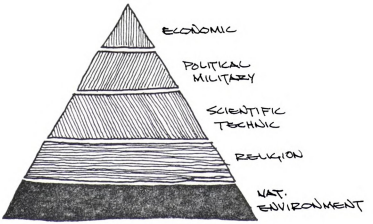

Figure 14.--Contemporary-Cultural Value Pyramid.

International Style has advocated a program to optimize the use of technology and its ability for mass-production. Much standardization of building parts has been accomplished to try to achieve a high degree of structural efficiency. But this was also tempered by a high degree of functional efficiency in keeping with some of the early dictates of Vitruvius, "firmitatis" and "utilitatis."

> Structural efficiency was only one of the directions the rationalization of architecture took. Another was functional efficiency. While structural efficiency is concerned with the fabric of the building independently of the operations and processes that take place within it, functional efficiency is related to the capacity of the building to contribute positively to the activities it contains.[47]

The Modernist Movement became increasingly concerned with economic considerations and demanded that the functional efficiency take a higher level of priority.

> In the twentieth century, especially after the second World War, when operational cost became evident in the organizations which are contained in buildings, arguments for functional efficiency took priority, and new techniques has to be called for mastering it. But the same time the need to increase consumption of products, to expand markets became equally important.[48]

Thus it is relatively easy to understand how contemporary society can be regarded as a rational one and in contradiction to the previously mentioned historical periods.

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[47] Ibid., p. 77.

[48] Ibid., p. 82.

From the development of these four cultural value pyramids, it is evident that each historical period had a dominant force in the shaping of the urban environment. It is also quite apparent that each cultural value does have some degree of established order within a society and that there is a correlation between the physical environment and the behavior of any particular society.

Behavior and Cultural Environment

Many authors have pointed to the interrelationship between behavior patterns and the environment for both rational and pre-rational societies. In fact, in anthropology there is a school of thought that has been termed environmental determinism which states that the physical or natural environment uniquely determines all myths and customs. More commonly, the relationship between behavior and the environment is considered to be synomorphic. In the earlier sections of this thesis I have concentrated on one half of this connection: how behavior or culture is translated into the environment. Now, I consider the other half of the coin: how does the environment impinge on behavior? The importance of having a knowledge of this phenomenon, for the planner, is to enable him to see that actions he affects in

physical terms have ramifications that manifest themselves in the psychological make-up of a society.

> Knowledge of the ecological content is essential because development is not a momentary phenomenon (in fact, most behavior in which we are interested is not momentary), and the course of the life-space can only be known within the ecological environment in which it is embedded.[49]

The environment comes to individuals through perceptions. Thus, some thoughts on the physiological limitations of our sensory mechanisms and their tendency to be a limiting factor in our ability to perceive things are necessary. These thoughts will also serve to provide us with at least one reason why physical design standards should not be described in totally verbal terms as is commonly done in our regulatory process. But, first, an examination of the relationship between the environment and behavior patterns will be done.

In conjunction with this explanation of the sympathetic relationship between the environment and behavioral patterns, it is necessary to explain briefly how sensations are conceptualized into perceptions.

The potent effect of environment on behavior was demonstrated in a recent study by A. H. Maslow and N. L.

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[49]Barker, op. cit., p. 9.

Mintz.[50] In this study, visual-aesthetic conditions of "beautiful," "average" and "ugly" rooms were studied to ascertain what effects they would have on an individual while that individual was located in those environments. These effects were obtained through an interviewing process whereby three groups of people in the various types of rooms were questioned with the use of photographic negatives of people's faces. All three groups were shown the same photos; results clearly indicated that there was a significant difference in the perception of those photos depending upon the room which the person questioned was in. "The subjects in our 'beautiful' room gave significantly higher ratings (more 'energy' and 'well-being') than subjects in either the 'average' or 'ugly' rooms."[51] This suggests that there is a strong correlation between the environment and a person's attitudes and perceptions.

It can be concluded from this analysis that the standing patterns of behavior and the environment have a synomorphic relationship. That is, as the environment or milieu in which a person exists changes, so will the

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[50]For a description of what constituted each category of room, see their article, "Effects of Esthetic Surroundings: Initial Effects of 3 Esthetic Conditions upon Perceiving 'Energy' and 'Well-Being' in Faces" in Journal of Psychology 41, pp. 247-253.

[51]Ibid., p. 252.

behavior patterns of that person; and the reverse can also be held true. Figure 15 summarizes the environment-behavior relationships. A given stimulus can react on either the environment or behavior and create an interaction with an accompanying reaction. It is almost a circular effect with the stimulus entering at any point. How does this interrelationship work? As shown in Figure 15, there is an interaction between the environment and behavior which causes a stimulus-response action. As one is altered it causes a reaction to occur in the other in response.

It is important to note, as Roger Barker indicates, that both the physical and and the social environment impinge on behavior. In this, Barker seems to be reinforcing some of the theories expounded by J. Douglas Porteous whose work has been previously mentioned. Barker's research, conducted over a number of years, at his Midwest Institute, has identified the attributes of the relationship between behavior and environment, as follows:

1. A pattern of behavior is uniquely defined in terms of both space and time.

2. Both the man-made and natural features of a town can affect the behavior setting.

3. The milieu encompasses behavior and can be used to describe that behavior setting.

4. The environment and behavior affect each other in an essential way.

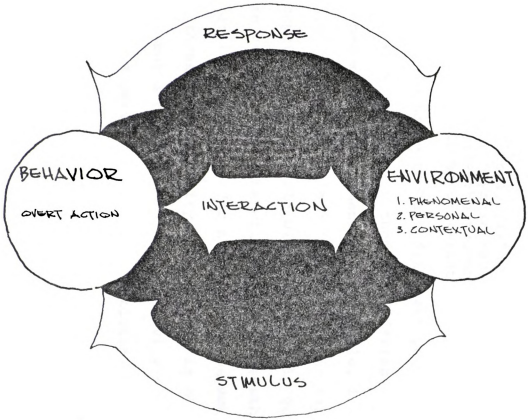

Figure 15.--Behavior-Environment Relationship.

SOURCE: J. Douglas Porteous, Environment and Behavior (Reading, Mass.: Addison-Wesley Pubs., 1977), p. 14.

5. While behavior and environment affect each other they maintain a specific degree of independence.[52]

A final wrinkle is introduced in all of this by the idiosyncratic nature of perception. It is well known that

> . . . two subjects, living side by side, posessing different psychic apparatus, will inhabit different world--the properties of extension of the world will be different for them.[53]

Thus any two subjects have different personal environments; this creates for them two different perceptions of the phenomenal environment. For example, if one's perception of the world is ruled by economic values, one's perceptions of the world will be similarly governed by those values. The same will be true if aesthetics has a higher level of value for a particular person or society. "The three-dimensionality of the world is not its property, but a property of our receptivity of the world."[54] A person's perception is thus particular to that individual. "Clearly, people react to the environment only as they perceive it and cognize it in light of previous experience."[55] This clearly makes the problem more

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[52]Barker, op. cit., p. 18.

[53]P. D. Ouspensky, Tertium Organum (New York: Vintage Books, 1970), p. 97.

[54]Ibid.

[55]J. Douglas Porteous, Environment and Behavior (Reading, Mass.: Addison-Wesley Pubs., 1977), p. 138.

difficult for the planner: the environment affects behavior in an important way. But this environment is filtered through each individual's experience. Thus, predicting the environment-behavior link is quite complex.

It is now clear that the behavior patterns of a society are interrelated with the environment or milieu in which that society exists. Different societies, however, can give rise to similar behavior patterns. The work of Norman Ashcraft and Albert Scheflen on territoriality is examplary in this regard.[56] In this research the patterns of use of home space observed in a variety of behavioral groups was analyzed. Ashcraft and Scheflen concluded that, while rooms were utilized for a number of different functions depending upon the ethnic background of the using group, strong similarities in use occur within each group. Thus, within-group differences were in general not large enough to create behavioral differences, while cross-group differences were. This research was done over a six-year period, using cinematographic methods. A problem with the study is that their interpretations are based on a limited sample without having a control group to compare with.

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[56]For a more detailed description of their work and the conclusions they reach see People Space (Garden City, N.Y.: Anchor Books, 1976).

That is, they failed to take comparative samplings of all income levels within an ethnic grouping for the living environments studied. And it is because of this that some of their conclusions can be called into question; but the raw data obtained do have much value.

According to Barker, the source of the behavior-milieu synomorphy can be attributed to the following: (1) physical forces, (2) social forces, (3) physiological forces, (4) physiognomic perception, (5) learning or the process of socialization, (6) selection by persons, (7) selection by behavior settings, and (8) influence of behavior on the milieu. This being the case, it is easy to understand that the physical environment (both man made and natural) features appear via perception to create an "atmosphere" for various life functions or what I have previously termed the contextual environment. And that the behavior patterns serve to accept or reject a particular contextual environment according to societal norms or the cultural values of a given society. This leads to the creation of acceptable modes of operation which can be determined by the respective value that each cultural phenomenon exhibits in its cultural value pyramid. These values then help to determine the direction of development that the physical environment takes, whether design decisions are based on aesthetic values or other values, such as economics. "The synomorphy of

milieu and behavior arises, too, from the explicit demand of behavior for a particular milieu."[57]

From the above information, which Barker has provided us, we can see that within the behavior-milieu synomorphy there are two basic types of environment that can effect a person's ability to perceive and cognize that environment.

> A distinction may therefore be made between the individual's psychological (experiential) environment, which programs data and provides interpretations in reference to which decisions are made, and his operational (behavioral) environment, which sets limits to his actions once the decision is made (Sprout and Sprout, 1957).[58]

It is this psychological environment which defines limitations that are unique to every individual, that places restrictions on a person's actions, while the societal values appear in that individual's operational environment. The operational environment defines limits placed on individuals through laws, codes of ethics and similar mechanisms. Examples of this phenomenon are readily seen that will serve to demonstrate this process. In the legal realm, society, through extensive use of zoning regulations, building codes, etc., has created a physical setting homogeneous throughout the suburban

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[57]Barker, op. cit., p. 10.

[58]Porteous, op. cit., p. 138.

explosion. Society has accepted this manner of housing design as being a valid process through years of litigation in our court system. Although individual statutes have been challenged, the basic concept that building codes and zoning regulations are based (since New York City first enacted their code in the early 1900's) have been accepted as valid.

Two principles have been suggested in this section which should be of concern to the planner. First, it is clear that behavior and the cultural environment have an important and natural affect on each other.

It is the first area mentioned, the individual's psychological environment, which is of concern for the planner. This psychological environment is highly dependent upon the individual's awareness of the physical milieu that affects him. Although similar sensory mechanisms are utilized, two different individuals will interpret or evaluate given data in unique ways. Indeed, that data interpretation is unique from a space/time dimension as well. The evaluation can change as a space transforms and a time progresses, since these data are interpreted at the four levels of conscious awareness. The evaluation of one's environment is based on numerous bits and fragments of historical information as well as one's ability to metamorphasize that information. I will discuss this at greater length in the following chapter.

For now, a concern for the process of data collection is necessary, for this is how many of our environments have their beginnings.

Physiological Data Processing

The environment impinges on behavior. But the manner in which this occurs depends on the perceptions of the individual. Thus, a few words on perception are in order.

In the human being, there are six principle senses concerned with the collecting of sensory data. Each of these sensory organs contributes to the memory the experiential environment serves to correlate new data received with the data which are already known. The six areas of concern in regard to the human sensory mechanisms can be identified as follows: (1) visual, (2) auditory, (3) olfactory, (4) cutaneous, (5) kinesthetic, and (6) taste. All of these mechanisms exhibit varying degrees of importance in perceiving the environment. For the purpose of this study, I will concern myself with the first two sensory mechanisms (visual and auditory) as these appear to provide the largest amount of sensory data to our experiential environment. The other four areas can be defined as follows; as seen from the definitions, none of the four exert a large influence on our ability of perception. I don't intend

to denigrate their role in aesthetics; I am merely stating that they are not the prime data collection mechanisms utilized by persons in our society.

1. Olfactory - This is the sense of smell and is closely related to the sense of taste and because of this physiologists commonly call them "chemoreceptors."[59] Although the sense of smell can be used to identify a particular physical environment, this is not a commonly done thing. As with most generalizations exceptions can be found and in this case Helen Keller would serve as a good example of this exception.

2. Cutaneous - This is the sensory facility that is commonly identified as the sense of feel, although there are in actuality four different senses of touch: (1) touch, (2) pressure, (3) temperature, and (4) pain. This sense, although used to describe a physical environment as being either "hot" or "cold" is rarely used to describe that environment. The probable reason being this word lacks precise definitions and is subject to individual interpretations. For example, someone living in a tropical climate has a different notion about a hot day than someone from a more temperate climate.

3. Kinesthetic - The ability of our mind to perceive the movements of the body. It is concerned with

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[59]Theodore D. Walker, Perception and Environmental Design (West Lafayette, Ind.: PDA Publishers, 1976), p. 23.

two basic types of movement: (1) the relationship between the body and the environment, and (2) the head in its relationship to the body. In essence, it established our mind's location in time and space.

4. Taste - The use of the mouth to discern whether an object is either sweet, sour, bitter, etc. As mentioned, a chemoreceptor when used in conjunction with olfactory senses. By itself it is rarely used in perceiving the physical environment.

The last two sensory mechanisms that contribute to the collection of data for our experiential environment are the facilities of visual and auditory organs. These two mechanisms often work in conjunction with each other, and, used as such, they are the primary source of information about our personal environment. They are also the chief methods for the cognition of our physical environment. The auditory system, or ears, can be developed to such a high degree of acuteness that it is used by the blind to orient themselves in their movements. Ears are an extremely sensitive organ, but it is this same high degree of sensitivity that can cause man many problems. Man has learned how to produce sounds that exceed the human comfort range. The normal range of hearing comfort is between 15 dB's and 75 dB's and many common human-produced sounds greatly exceed that, e.g., printing press (85 dB), punch press (110 dB), auto horn

(120 dB) and the jet plane (160 dB) all are well above the comfort range.[61] (Sound is measured to dB--decibels--a measurement of intensity in a logarithmic ratio.) The auditory system also helps establish the level of activity of a behavior setting and is quite commonly used to describe the physical environment.

The final area of sensory data collection is probably the most utilized one by our society--it is visual and collected via the eyes in the form of pictorial images. These images are projected onto the retina; they are then transmitted to the brain through the optic nerve. The brain then correlates this new information and informs our behavioral environment that the object viewed is red or green, square or circular, tall or short, etc. These all are comparative conclusions based upon previously obtained historical data from our experiential environment. This newly collected information is then added to our experiential environment from where it can later be extracted to form the basis for future considerations.

The problem is that the information gathered is defined in terms of previously experienced phenomena. That is, just as the perception of depth is not an inherited trait, so too is the information stored in the

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[61]Ibid., p. 20.

experiential environment a learned phenomenon.[62] If we can return for a moment to the image of the red rose it is easy to see an illustration of this. The rose is red only so far as our ability to perceive the color red is concerned. If that color has never been experienced before, it is impossible to describe it in terms that are adequate for its identification. We cannot even describe it (the color red) as a combination of various colors for that can be construed to mean red is stripes, polka dots, or a number of other combinations of this sort. In fact, even the color that is perceived by the eye and transmitted to the brain is physically altered from what is actually seen.

> Since the early years of the last century, there have been good reasons to assume that the retina, in informing the brain about color, does not record each of the infinitely many shades of hues by a particular kind of message but limits itself to a few fundamental colors, or ranges of colors, from which all the others are derived.[63]

Thus the photo chemical process of the eye starts the process of abstraction at the inception of a visual stimuli. This enables the brain to be able to deal with a more manageable amount of information.

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[62] Ibid., p. 14.

[63] Rudolf Arnheim, Visual Thinking (Berkeley, Calif.: University of California Press, 1969), p. 21.

There are other factors that also limit one's ability to perceive the visual environment as it actually exists. Studies have shown that the constant exposure to a particular visual environment causes a person to stop reacting to that stimulus in much the same manner that constant noise and smell will be ignored.[64] It is also a defensive mechanism that prevents boredom as well as a method the brain uses to retain a sense of place in the environment. Thus, from this it is easy to understand that although "the optical image projected upon the retina is a mechanically complete recording of its physical counterpart, the corresponding visual percept is not."[65] And it is this visual percept of the environment that is being dealt with when aesthetics becomes our concern. In this sense, it is our philosophical aesthetic base or what is commonly considered as our cultural heritage that determines our perceptions of the physical environment. In the next chapter of this thesis, the philosophical aesthetic bases of a number of different societies will be explored to try to indicate further the influence of culture on perception.

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[64] Ibid.

[65] Ibid., p. 27.

Conclusion

In the first chapter of this thesis, four principles involving the connection between cultural values and the physical environment were developed:

1. There is a need for a sense of the aesthetic in the design of our urban environments.

2. The tools that are now being used by planners and planning officials to insure a visually pleasing environment are very limited and narrow in their scope.

3. This narrow scope limits the manner in which the planner can deal with the urban environment in its creation and maintenance.

4. The urban environment is a manifestation of the cultural values of a society concretized at the artifactual level.

Finally, an attempt has been made to show that although pre-rational societies did not predicate their design decisions on the same cultural value pyramid as contemporary society, they nevertheless had a logical and ordered methodology which governed their design decisions. That is, they had a methodology by which to test speculative thought within an overall scheme. The scheme or major cultural concept remained constant throughout a given architectural period, although the individual perceptions or ideas developed deviated from each other. The major philosophical premise remained consistent, but individual philosophies existed which differed in the mechanisms used to achieve the societal ends. They all directed themselves to a common goal.

There was a logical process of thought which tried to achieve what has been termed the "art of life" by some authors.

> This art of life is first to be alive, secondly to be alive is a satisfactory way, and thirdly to acquire an increase in satisfaction.[66]

We can then say that the principle function of

> Reason is the practical embodiment of the urge to transform mere existence into the good existence, and to transform the good existence into the better existence.[67]

It is therefore necessary for the planner to be able to articulate a theory of urban aesthetics, so that his/her design criteria are readily understood by their community. It is this theory which will be taken up in the following chapter.

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[66] A. N. Whitehead, The Function of Reason (Princeton, N.J.: Princeton University Press, 1929), p. 5.

[67] Ibid., p. 33.

CHAPTER II

THEORY OF URBAN AESTHETICS

In the previous chapter, the legal tools of aesthetics in the design of our society were indicated, as well as arguments for the psychological necessity for the creation and maintenance of an aesthetically pleasing environment. But what constitutes an environment that fulfills this requirement?

In this chapter, I intend to concentrate not on the architect's concern for aesthetics but rather on the philosophical aspect of aesthetics. This philosophical discussion will be used to provide a background upon which a criterion for a community aesthetic will be developed. First, some of the concepts of philosophical aesthetics (Heidegger's in particular) will be used to analyze the evolution of cultural values in contemporary society. Subsequently, several alternative philosophical models are presented to explore the question which has been raised over and over again in this thesis: how can one evaluate aesthetics?

Architects, planners and philosophers have written and commented on city aesthetics since the time

of Plato and Aristotle. These writers all were concerned with the visual environment that was created when buildings and cities were built. Each developed his own system to reflect the relative scales of importance of the various components of aesthetics that can be summed up briefly as follows.

For Aristotle the first and foremost consideration in the selection of a site for a town was its healthfulness. "The towns facing the east wind are the most healthy ones, and next come those facing the north wind, because they have milder winters."[1] He next considered the political context existing in that particular town and finally concerned himself with the arrangement of buildings in the town. These buildings fell into three categories: "first the buildings of the gods and those of the officials, then the agora (the place for both leisure and economic activities), and finally the dwelling houses."[2] Vitruvius, writing in 1 B.C. established a criterion for architectural excellence based on "utilitas, firmitas and venustas" ("accommodation,

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[1]Gregor Paulsson, The Study of Cities (Copenhagen, Denmark: Ejnak Munsksgaard, 1959), p. 31.

[2]Ibid.

handsomeness and lastingness")[3] which is still being deferred to by many who try to formulate their own theories on architecture. Leone Battista Alberti, during the 15th Century, revived many of Vitruvius' principles and applied them to the Italian towns laid out during the Renaissance. He concerned himself with the visual patterns of buildings but tempered them with "their composition, their putting together" in an urban or city sense. Thus, even among these contemporaneous figures, aesthetic ideas of design were disparate.

Alexander Baumgarten, circa 1750, introduced the term aesthetics, to mean the science of sensuous knowledge whose aim is beauty.

> Ironically enough, Alexander Baumgarten, who gave the new discipline of aesthetics its name by asserting that perception, just as reasoning, could attain a state of perfection, continued nevertheless the tradition of describing perception as the inferior of the two cognitive powers because it supposedly lacked the distinctness that comes only from the superior faculty of reasoning.[4]

Since that time, there have been a number of philosophers who have endeavored to present theories of aesthetics

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[3]Christian Norberg-Schulz discussed this approach in his book, Intentions in Architecture, where he attributes the writings of many authors "to the traditional distinction between functional, technical and aesthetic aspects" of architecture back to Vitruvius' original concepts.

[4]Rudolf Arnheim, Visual Thinking (Berkeley, Calif.: University of California Press, 1969), p. 2.

that analyzed works of art. These aestheticians have generally been considered as either formalists or representationalists, depending upon both the techniques used for analysis and the attributes given to a particular work of art. In the case of the formalists, a work of art is analyzed strictly on its formal elements, that is, the shape and the structure of the elements in a particular work of art. In this group of aestheticians are included Roger Fry and Clive Bell who used for their "real sources" the occasional writings of painters themselves--Chirico, Kandinsky, Leger, Matisse, Malevitch, Mondrian, Tanguy and Moholy-Nagy.[5] "The formalists believe that qualities of abstract construction and design are the valuable element in the picture."[6] From an aesthetic point of view,[7] only the form of a work of art is important, and only the mediumistic values are relevant. Both the subject matter and the associative values are irrelevant to the value of a work of art. This position is best summed up by Clive Bell in his

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[5]Mary Mothersill, foreward to Aesthetics and the Theory of Criticism by Arnold Isenberg (Chicago: University of Chicago Press, 1973), p. xxix.

[6]Arnold Isenberg, op. cit., p. 29.

[7]By an aesthetic point of view, I mean the view of the work of art that is taken to try and describe the artwork to another viewer. It is the manner used to describe any piece of art.

book, Art, when he states: "to appreciate a work of art we need bring with us nothing from life, no knowledge of ideas and affairs . . . nothing but a sense of form and color and a knowledge of three-dimensional space."[8] This would seem to indicate that, to the formalists, the cultural environment is a factor that can be completely ignored in appreciating or understanding a work of art. Their aesthetic criterion would base itself on evaluating whether a particular work of art had a sense of form and color presented in a three-dimensional form. Understanding the cultural context that the work of art stemmed from was not necessary. Thus, accepting the theories of the formalists would considerably simplify the construction of a criterion for aesthetic values within any given society.

The formalists have, however, been resisted by another group of aestheticians: the representationalists. Representationalists include the content of a work of art in their analysis, as well as utilizing the criteria postulated by the formalists in their treatises. To the representationalists, art work displays a "sense of form and color and a knowledge of three-dimensional space" as well as including the content of the art work presented. This content of a work of art has also been

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[8]Clive Bell, Art (New York: Capricorn Books, 1958), pp. 25-27.

termed its "subject matter." It is argued that, "the mind in perception does not know its objects but only through the mediation of ideas which represent them."[9] Susanne K. Langer and Ernst Cassirer are two eminent philosophers who are commonly regarded as being representative of this group of aestheticians.

These two groups are not the only authors who have commented on aesthetics. They are joined by a third group which claims that there is even something further to consider in a work of art. This third category of philosophers I will call the "cultural" aestheticians. These philosophers temper their analysis with the notion that any work of art has to be viewed and considered from the cultural context from which that art work emanated. Both Lionel Trilling and Martin Heidegger are representative of this group, and have provided us with a rigid theory of good and bad (Trilling uses the terms "active" and "passive") literature and with an analysis of the essence of the Greek temple, respectively. Lionel Trilling's theory, although formulated to apply to the field of literature, will be utilized in the field of architecture and urban planning later in this study; while Heidegger's concepts are discussed first. To this group of cultural aestheticians

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[9]Dagobert D. Runes, ed., Dictionary of Philosophy (Totowa, N.J.: Littlefield Adams and Co., 1972), p. 271.

will be added some concepts presented by various other philosophers. The "form-content" question (which is constantly being argued by the formalists and representationalists) will be left to be resolved by the formalist-representationist philosophers. In the remainder of this chapter, I will concentrate on this third group of philosophers, the cultural aestheticians.

Cultural Aesthetics

The major part of the work of the cultural aestheticians centers on the societal perceptions of the inherent qualities of a work of art. It is those qualities that Baumgarten originally intended for the use of the word aesthetics since its derivation comes from the Greek word αἴσθησις, meaning perception. My interpretation of this is that, when dealing with aesthetics, it is the perceptual realm that the urbanologist should concern himself with--the raising of the level of conscious awareness of the society to create an environment that would facilitate this.

First, let us examine Heidegger's analysis of the Greek temple and then try to see what the same analysis of our current society will yield. Once we have done this we will examine the various levels of conscious awareness that P. D. Ouspensky talks about in Tertium Organum. This will be introduced to try and formulate a

better perspective on how a work of art should be viewed and understood. Heidegger states that "man must transcend reality," while Ouspensky provides a method and rationale to accomplish this through his theories on the four-dimensionality of existence. When Heidegger analyzes art as diverse as the Greek temple and Van Gogh's painting of the peasant's shoes, he uses the same method. He isn't asking what the object or "thing" was made for, but rather what is to be its use, its sensuous qualities. His analysis is dependent on a clear understanding of the context that the object was created in. In what follows, I summarize and comment on Heidegger's analysis of the Greek temple. Heidegger's analysis serves as a prototype or object lesson for the practice of cultural aesthetics. I will later apply this technique to the modern world.

Heidegger assumed a position of transcendence in presenting this interpretation of the Greek temple. To Heidegger, his position is critical. "Now, existing reality," Heidegger says, "is ever-concealing and self-withdrawn, and never reveals an absolute or essence on its own. So, to know what existing reality is, man must transcend reality--including himself--and relate to reality within--a context within a realm of being."[10] What Heidegger is expressing here is that a cursory

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[10]Robert B. Stulberg, "Heidegger and the Origins of the Work of Art," Journal of Aesthetics and Art Criticism, p. 261

surface view of the natural or cultural reality is not sufficient. In order to understand that reality one has to search for reality's hidden meaning through a semiotical analysis. To Heidegger, this can only be done when man assumes a position of transcendency over that existing reality.

Heidegger's transcendent view allowed him to go beyond a simple, physical view of the temple, to present a view of Greek society as a whole.

"The temple, in its standing there, first gives to things their look and to men their outlook on themselves."[11] Since the temple, for the Greeks, occupied the highest place of physical prominence in the "polis," its role in Grecian society transcended that of a mere place of worship. It took on a symbolic significance as well as embracing the essence of that society, holding in it the highest levels of consciousness for the people. "It is through the symbolic function of the buildings that the political character of the town is most clearly expressed."[12] It thus performed a dual purpose for that society: "for Heidegger, then, the Greek temple embodies two fundamental characteristics: it sets up what he

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[11]Martin Heidegger, Poetry, Language and Thought, trans. Albert Hofstadter (New York: Harper Colophon Books, 1975), p. 43.

[12]Paulsson, op. cit., p. 34.

calls 'a world' and also sets forth 'the earth'."[13] This "earth" is the existing reality of the art work--the items that are used to construct or concretize the work of art, while the "world" consists of the cultural context which gives the work of art its meaning. Since the "earth" deals with the materials utilized in the work of art it is fixed, a closed realm. The cultural context, or "world," on the other hand, is a constantly evolving process, an open realm. Through the "world" or open realm, the highest ideals of the society can be given to a work of art. Moreover, because the "world" is constantly open and receptive to new ideas, artists, architects, planners and other creative people can, through their efforts, push the societal level of conscious awareness to a higher state. Finally, since the "world" is the area in which social objectives and goals reside, it is essential that planners concern themselves with this realm. Artists, architects, planners, etc., should be responsible for combining the two realms ("earth" and "world") into a physical manifestation that projects the highest cultural values of the society in which they work.

"Art works," Heidegger says, "project truth in the struggle of world and earth."[14] In his analysis,

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[13]Stulberg, op. cit., p. 260. See definitions in the introduction for further definitions, pp. 23-24.

[14]Ibid., p. 262.

Heidegger tries to provide an interpretation of the Greek temple in a cultural frame, and he describes the "piety" of that society. I have placed the term "piety" into quotes to distinguish his usage of the term from the commonly held notion of piety meaning God. What he intends by this, is the thing's essence or nature at its highest level of awareness or perception, going beyond the external appearance of the object. Architecture, in the built sense, not only provides a pragmatic structure for the society but also serves as a reflection of man's view of societal values. But even this is not the full purpose of architecture. It also must push societal values, elevate them to a higher plane. Therefore, in establishing a criterion for aesthetic values of an urban environment, it is not sufficient to embody present society's values; these criteria must allow, at least to some extent, for the transformation of these values.

The derivation of the word acropolis is useful in probing the "piety" of the Greek culture. Heidegger regards language as the concretization of concepts in our society, just as does P. D. Ouspensky; both argue that one can use language to trace the evolution of the philosophy behind the act of building. In doing this, one can evolve statements regarding the act of building as it should relate to the demands society places on it.

The Greek word "akros" can be translated to mean highest, while "polis" has been accepted as meaning city. When those two are combined, they denote the highest place in the city. This has a symbolic meaning and is susceptible of a twofold interpretation; first, that the temple is located at the physical pinnacle of the city, and, second, that it exhibits the highest cultural values in a philosophical sense. Here again is the "earth-world" relationship coming into play. The "earth" being the physical location of the temple, while the "world" represents the higher philosophical level on which the temple was built. Although the temple was the monumental architecture of the Greek society, the values exemplified by it were reflected down through to the more conventional components of the city scene. The street pattern was established to reflect the dynamic emotional impact that the temple had on the Greek citizens, to appeal to the "piety" of the society.

> The buildings in ancient Greek towns were never set out in line and the perspective view of these free-standing structures created a townscape that was unmistakenly stamped by the plasticity of static space and the latest dynamism of human movement.[15]

The location of the Greek temple, on the summit of the hill, also plays a significant role in Heidegger's

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[15]Alexander Parageorgiou, Continuity and Change (London, England: Pall Mall Press, 1971), p. 59.

analysis of the aesthetic considerations that had to be taken into account in the design of Greek cities. The design considerations were an exemplification of the Greek cultural values. The chief example of this can still be seen in the city of Athens when one views the Acropolis (see Figures 16 and 17). The Acropolis still dominates the Athenian skyline and represents for the entire world the glory that was Greek and the ideals that are attributed to that society. It is interesting to note that when Christianity came to the Greek peninsula, their churches were built on many of the old temple foundations. The early Christians knew of the reverence with which the location of the temple was held by the Greeks and were quick to try to capitalize on that reverence. Further evidence of this phenomenon can be seen in Öland, off the coast of Sweden, where recent archaeological excavation has revealed two distinct buildings with one built directly on top of the other. The lower building, a church, while the more recent one was a castle used by the aristocracy. The Spanish also displayed this same pattern in their conquests of the Aztecs in the New World. Their churches were often erected on the same site as the Aztecs' ceremonial buildings. They tried to replace the Aztecs' gods with the Catholic Church (see Figure 18).

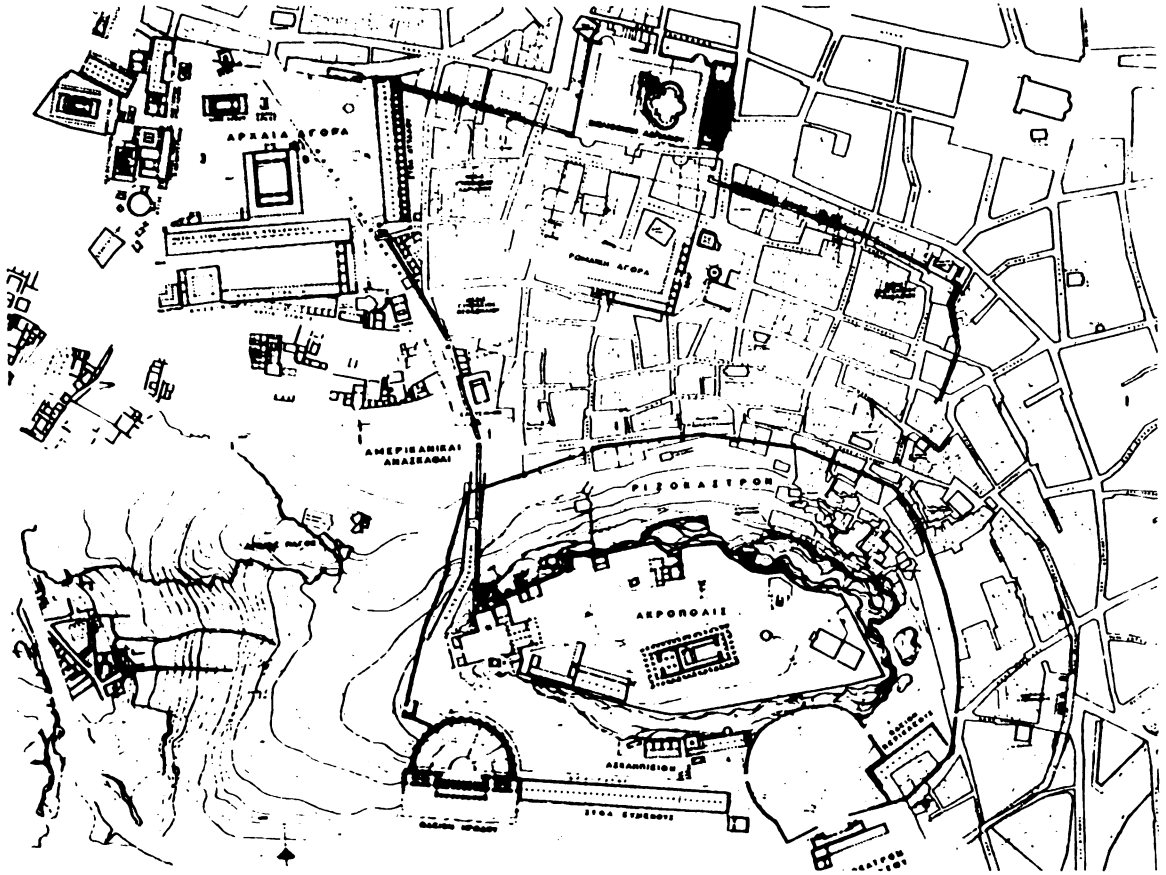

Figure 16.--Plan of the Acropolis, the Plaka and the archaeological sites. The classical agora is on the left, the Roman agora and the Library of Hadrian are in the top center.

SOURCE: Alexander Papageorgiou, Continuity and Change (London: Pall Mall Press, 1971), p. 103.

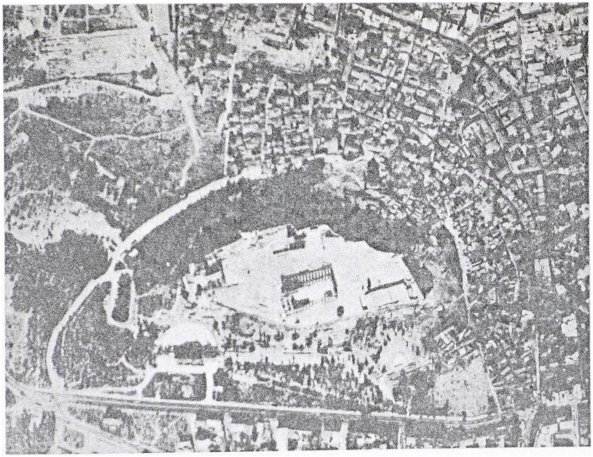

Figure 17.--Aerial photograph of the same area. Whereas the classical agora, the Temple of Zeus and the monuments on the Acropolis do not disrupt the unity of the townscape of the Plaka in any way, the Roman agora and the Library of Hadrian have left undesirable gaps in the center of this urban cluster.

SOURCE: Alexander Papageorgiou, Continuity and Change (London: Pall Mall Press, 1971), p. 103.

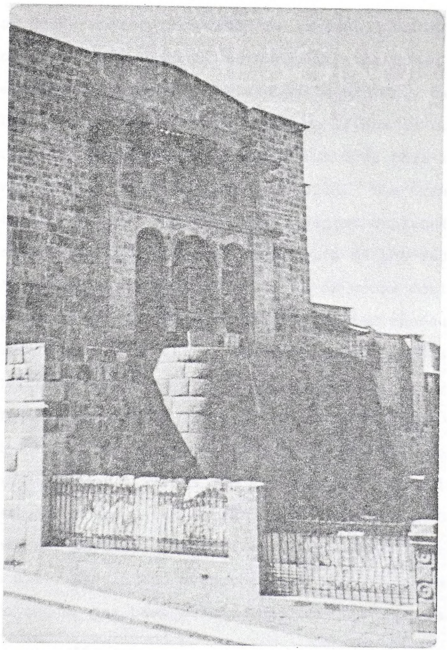

Figure 18.--Catholic Church Built Over Aztec Temple, Peru.

Now, one might argue that the temple was the monumental building of the Greek society and therefore designed, constructed and located according to the desires of only a select few. The Aristotles and Platos of Greek society provided the rationale behind the Greek theory of town design, to exemplify the ideas of that society. The select few did quite probably decide these issues, just as the monumental buildings in our own society are built by a select few but does this really violate our cultural interpretation? The Greek city designers had a "universally accepted explanation of reality throbbing in the daily life of the people."[16] To the Greeks there was no right or wrong design, there was only one solution which exemplified the cultural ideals of the society. The designers were aware of this cultural value and it was their responsibility to concretize the higher level of consciousness into the city and buildings they constructed. This brief analysis of Heidegger's allows one to ascertain the cultural values of the Greek society. By focusing on the central physical place of the temple, its site upon a hill, and indeed even the etymology of its name, Heidegger has been able to explore the cultural values

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[16]Sitte, op. cit., p. 72.

of the Greeks. The physical environment, in this case, indicates spiritual values or the society's cultural values.

How can Heidegger's method be applied to our contemporary society to understand its cultural values as well as understanding the symbolic perceptions of society towards the structure of our cities? In the discussion which follows, I use Heidegger's technique to explore changes which have occurred over time in the values of modern Western civilization. This technique proves quite useful.

Our cities, as originally designed and built, had at their most distinctive and prominent locations, the church. In this sense, Heidegger's analysis of Greece with its temples is paralleled.

> The great American cathedrals and temples are all to be found in urban areas. It is hard to remind ourselves of the role of religion in creating American cities since the church steeple has been dwarfed by taller buildings. A visit to Charleston, where until quite recently the skyline was still punctured by religious towers alone, is salutory.[17]

Cities were laid out according to the dictates of European kings; the Spanish had to have a church at the center of the town, while in New England the church and meeting hall were of paramount importance.

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[17]Christopher Tunnard, The City of Man (New York: Charles Scribner's Son, 1970), p. 13.

The laws of the Indies proclaimed by Philip II of Spain as the rules for the establishment of a town in the New World set out more than three dozen specifications. These ranged from the direction streets should take, to the actual size and location of the main plaza. The city of St. Augustine, Florida, was originally laid out according to these principles. As can be clearly seen in Figure 19, one of the tenets of these laws was the location of the church in the central plaza area which faced onto the harbor. The direction that the street pattern took was even dictated, and a case can be made that the writings of Vitruvius were utilized. But even Plato specified this in his utopian cities for the ancient Greeks. It has been advanced by Laurence C. Gerckens that New Orleans was based on a new town in the South of France, designed in the 13th Century, and that the layout of Savanagha, Georgia, exhibited a definite military influence.[18]

For the English settlements in New England, the establishment of a new town was even predicated on the idea that "X" number of households had to agree to worship together, thus the size of the church determined the town's stature. As late as the mid-19th Century, cities

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[18]Laurence C. Gerckens, "Shaping the American City," an audio-visual program at the 1977 meeting of the American Institute of Planners.

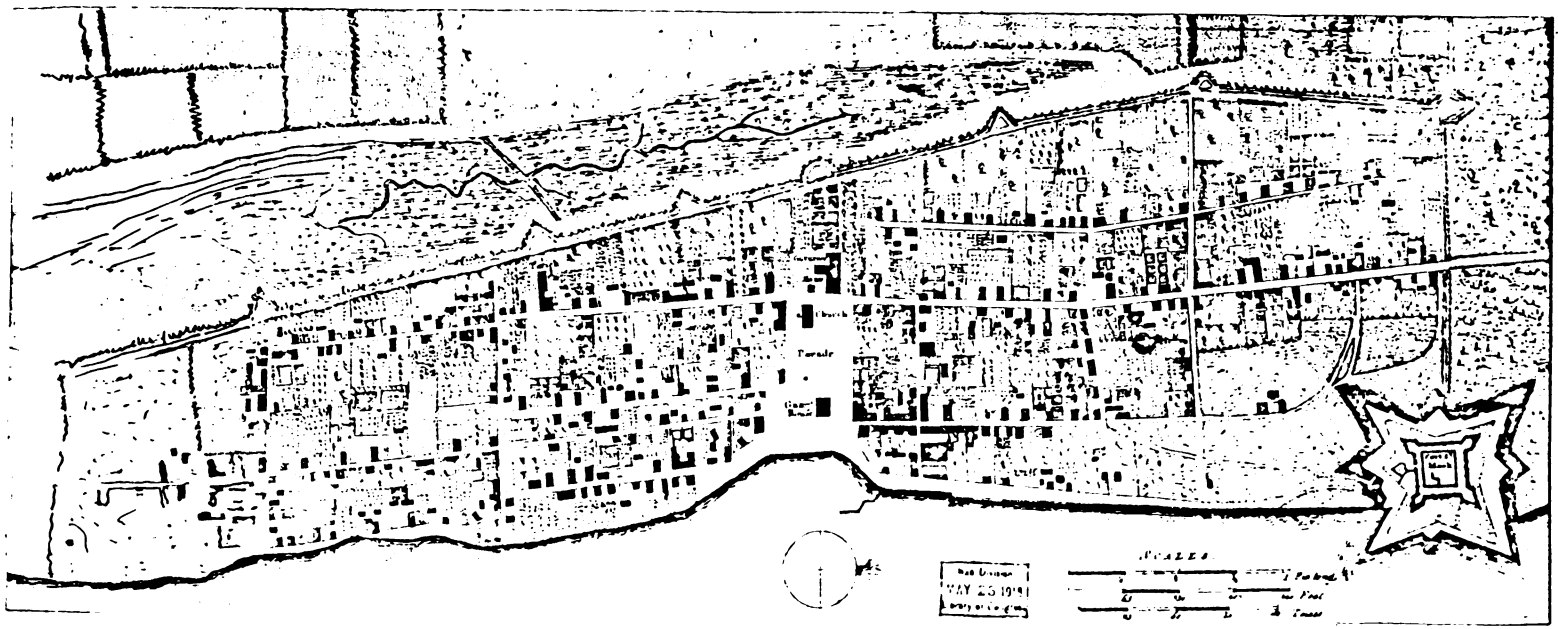

Figure 19.--St. Augustine, Florida: ca. 1770.

SOURCE: John Reps, The Making of Urban America (Princeton, N.J.: Princeton University Press, 1965), p. 35.

like Salt Lake City were established according to where the church would be located. "Young selected the site for the temple between the forks of City Creek. After that, plans for the city were drawn . . ."[19] The church was usually located at the head of the town square and tended to be the tallest structure in the town. The church was the focal point for the town's societal activity and for that reason was given this prominent location. This was also found to be true when a structural analysis of a medieval European town was done. "The monument--the church, the monastery, the castle, etc.--is either surrounded by the town or it is the terminal point of the principle streets, converging towards it."[20]

> On almost every plan of a medieval town it is easy to find a town center, consisting of a square surrounded by public buildings, a church, a town hall, a weighing office or something similar. This core of the city evidently played the same role as the "upper agora' of the Greek city. In some ways it was a uniting force, and not only a concrete milieu for assembly but also a symbolic milieu. It was the symbol of the power that kept the town together to form a functioning unit.[21]

Sunday church worship, church socials, etc., all played a very dominant role in the human activity of the

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[19]Tunnard, op. cit., p. 149.

[20]Paulsson, op. cit., p. 62.

[21]Ibid., pp. 40-41.

town. Gradually, both this skyline and the role of the church evolved, "Monumantal buildings (churches) which were the apex of architecture are now buried between commercial buildings. In the past, a convex skyline and now a concave one"[22] (see Figure 20).

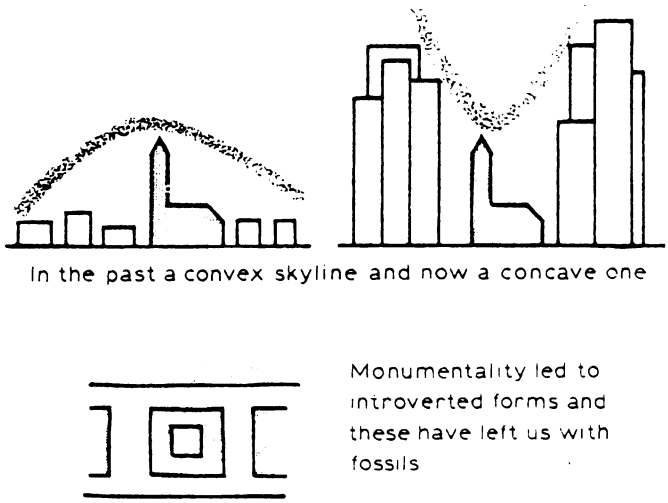

Figure 20.--Monumental buildings which were the apex of architecture and are now buried between commercial buildings.

SOURCE: Constantinos A. Doxiadis, Architecture in Transition (New York: Oxford University Press, 1963), p. 55.

The preceding analysis suggests that in Medieval Europe, and indeed in colonial America, the church dominated the town. An application of Heidegger's principles would thus suggest that in this early period religious or spiritual values were paramount. If we continue to use the framework provided by Heidegger in

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[22]Doxiadis, op. cit., p. 55

terms of locational analysis, what can be said of our contemporary society and its societal values?

A good place to begin in evaluating modern architecture is the work of the Bauhaus. The Bauhaus were the acknowledged forerunner of modern architecture. Their stated goals were: the efficiency of technology, combined with standardization, economy and the provision of utilities for the people.[23] This they strove to combine with a strong social orientation that attempted to instill this spirit into both the school's work and into their students.[24] With these goals, the Bauhaus philosophy, for the architectural students as well as for the faculty, was to obtain a firm knowledge of the arts (the emphasis being placed on painting and sculpture) and craftsmanship (working with brick, wood, concrete, etc.).

A good illustration of the Bauhaus philosophy in action is the work of Laszlo Moholy-Nagy who ranged far and wide with his artistic talents.

> His history makes him the outstanding exemplar of a particular kind of artistic career--

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[23] Tzonis, op. cit., p. 89.

[24] See the chart provided in Meaning in Architecture by Charles Jencks and George Beard, p. 249, where they give the following attributes to Walter Gropius, and the Bauhaus: rationalism, social utopianism and purism.

> horizontal across the arts, rather than vertical into only one; and as a prophetic precursor of so much that is present, he seems in retrospect one of the most seminal minds of twentieth-century art, in his own way the equal of Picasso, Duchamp, Mondrian and Klee.[25]

All of these acknowledged artists ventured far with their art and continually pushed into new realms of experience.

> Moholy was the great adventurer of modern art, heroically risking not only steps across boundaries but also lateral movement along several frontiers, and the territories through which he passed include a number of traditional arts, in addition to a few domains partly of his own creation.[26]

To Moholy art had no bounds and it was to be pushed in creating a new awareness for the viewer. This same spirit of inventiveness was attempted to be instilled in the students of the Bauhaus; the objective was to give these students a sense of the aesthetic as well as a knowledge of the material with which they would be working in building design and construction. They were to be the designers of the industrial age, constantly inventing new uses to challenge industry and technology. Many of the prime movers in modern architecture came from the Bauhaus: Walter Gropius, Mies van der Rohe, Laszlo Moholy-Nagy and Marcel Breuer, all of whom fled Germany

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[25]Richard Kostelanetz, "Moholy-Nagy: The Risk and Necessity of Artistic Adventurism," in Moholy-Nagy (New York: Praeger Pubs., 1970), p. 3.

[26]Ibid.

for America with the rise of Hitler and the Nazi party. Le Corbusier had his initial links to this group through his brief association with Walter Gropius in the office of Peter Behrens, as well as through their later association in the C.I.A.M.[27] These architects brought with them the ideas and concepts that lead to the international style, which predominates in the architectural profession today. The concept of standardization and the mass production of various building elements was the prime concern for this style.

> . . . rational architecture was to be dominated by a single objective: the mechanical stability and physical efficiency of a building's fabric reflecting the laws of Nature.[28]

Sibyl Moholy-Nagy, herself a product of the Bauhaus, probably best summed up the goals of this school of architecture:

> To the diaspora (the European architects who came to America after Hitler took over in Germany) functionalism meant pure ideology visualizing self-evident truths of ethical, esthetic, and Social Weltanschaung.[29]

The Bauhaus were also noted for their isolation from the contemporary political, social, scientific and

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[27]The Congrès Internationaux d'Architecture Moderne was established by a group of architects to promote their views concerning a number of subjects; everything from aesthetics to how man should live in cities.

[28]Tzonis, op. cit., p. 66.

[29]Ibid., p. 88.

artistic reality of German society. "After the teaching styles in the academies came the Bauhaus, and a complete break with all historicism . . . a free experimenting with materials and forms was introduced: everything should be invented anew."[30] This concept blended with two other architectural philosophies; the organic architecture of Louis Sullivan and Frank Lloyd Wright, and Le Corbusier, "Decoration is . . . suited to simple races, peasants and savages," to yield the philosophical basis for today's architecture. The Bauhaus' techniques and buildings clearly reveal a move away from religion as the central cultural value, and a movement towards science and technology. Industry and technology are both the instrument and the objective of the new design--its servant and its god. For Heidegger's Greeks, the temple was central both philosophically and physically. For the Bauhaus, industry has this dual place.

In Heidegger's analysis, we have seen that verbal language is an important indicator of cultural values. Consider the language of building in its current form, as a signifier for our present values. The origins of the two words "building" and "dwelling" are derived from the Germanic word bauen, meaning in its literal translation to dwell. In old German, there was no separation

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[30]Norberg-Schulz, op. cit., pp. 18-19.

between the two words or even between the activities we normally attribute to them. To that German society, in order to accomplish one act, the other had to be fulfilled at the same time; there was no separation or distinction between the two. To accomplish the act of building, one must also dwell within the thing being constructed. Today, society has separated these two endeavors into separate activities totally divorced one from the other: "The later, building, has the former, dwelling, as its goal."[31] Society has thus, at least in its language, driven a wedge between the two activities. One might argue, along with Heidegger, that this linguistic divorce mirrors a functional divorce. No longer do we build buildings to dwell in, but rather to be used to perform various separate functional tasks. Let's look at a simple illustration of this phenomenon as it relates to the changing land use patterns in the U.S.

Before the introduction of the concept of separate land use categories, most of our cities' land patterns were of a mixed use pattern. Shops, offices, light industry and homes were all located in the same area, in fact they were often within the same structure.[32]

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[31] Ibid., p. 145.

[32] For a further description of this process, see the work of J. Tricant in social geography reviewed by G. Paulsson in The Study of Cities, where an analysis of European city evolution is done.

The owners of the street level shops had their offices either behind the shop or on the second level and the living quarters above them. The occupants of that building dwelt within that structure in the truest sense of the word. Space within the structure was allocated to take care of all the life functions as well as the entire life cycle. Heidegger uses the illustration of a farmhouse in the Black Forest to show how the peasants arranged and ordered the house to accomplish this task of dwelling.

> It (the fourfold of design process) placed the farm on the wind-sheltered mountain slope looking south, among the meadows close to the spring. It gave it the wide over hanging shingle roof whose proper slope bears up under the burden of snow, and which, reaching deep down, shields the chambers against the storms of the long winter nights. It did not forget the altar corner behind the community table, it made room in its chambers for the hallowed places of childbed and the "tree of the dead"--and in this way it designed for the different generations under one roof the character of the journey through time. A craft which, itself sprung from dwelling, still uses its tool and frames as things, built the farmhouse.[33]

This was the same concept from which a number of our original cities evolved. In Heidegger's farmhouse, the fourfold--"earth and sky, divinities and mortals"--worked together to create an environment that provided for the occupants. When one views the early town plans

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[33]Heidegger, op. cit., p. 160.

drawn up by the European kings, it is evident that they were trying to provide an harmonic relationship with the fourfold. The same can be said for the religious towns established in the New England area by the puritans. Also many of the mid-19th Century utopian communities had this in mind when they were established. As has been illustrated above, the building allowed the family to dwell in it in an harmonic relationship with the three other elements in the fourfold--earth and sky and divinities. Our society, on the other hand, has separated the task of building from the activity of dwelling. Buildings are instead isolated into separate use functions--work (office), entertainment (theatres), religion (churches), etc.--in accordance with the postulates given from the C.I.A.M. We no longer dwell in these places, but simply function in them. Society lost its ability to dwell; mechanization brought about a separation of working and dwelling. Thus, the divorce observed in our earlier linguistic analysis has indeed mirrored a functional separation (see Figure 21).

Two conclusions are clear from this brief analysis of the techniques of the Bauhaus, and the language of building. First, the economic-technologic goal has become paramount. Indeed, the social orientation that was advocated by the Bauhaus was lost to the design profession; all that remained was a portion of their

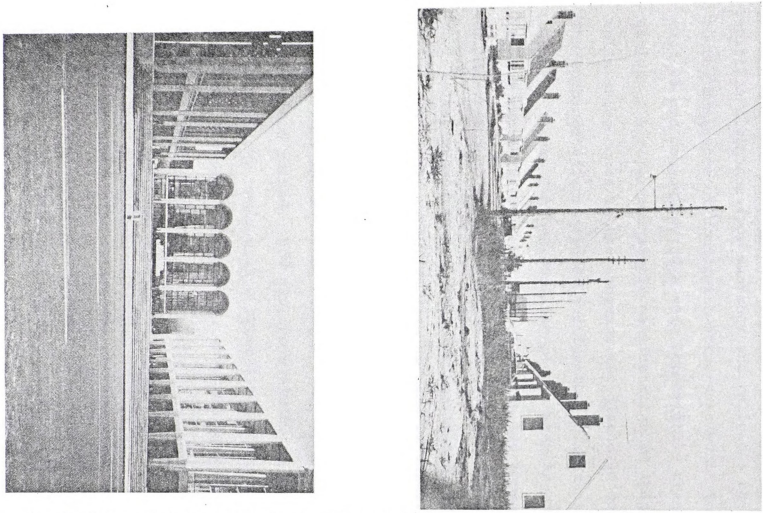

Figure 21.--Residential Zone in New Jersey and Cultural Zone in Manhattan.

SOURCE: Peter Blake, Form Follows Fiasco (Boston: Little, Brown and Company, 1977), p. 117.

philosophy--the emphasis on technology. Indeed, even the shift in dominance from churches and religious buildings to the dominance of commercial structures would indicate that we are moving toward a more economically oriented society. A clear but simple manifestation of this splintering comes in the language use discussed earlier. The combined effect created a situation in which the employee became without dwelling-place, when he came to the new factories from his garret in the big household of the trader or artisan or from the rural cottage.[34]

The preceding discussion indicates the way in which Heidegger's techniques may be used to identify dominant cultural values in a society. This identification is clearly important if one is to give cultural values a role in aesthetic design. We turn now to the second issue raised: how can one evaluate an aesthetic experience? We begin with a brief discussion of Heidegger's aesthetic criteria, and then move on to Ouspensky and Trilling.

Heidegger's Aesthetic Criteria

To satisfy the different psychological needs created by the new cultural environment described by Heidegger, an entirely different set of criteria are placed before the designer.

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[34]Paulsson, op. cit., p. 67.

> The old word, bauen, which says that man is insofar as he dwells, this word bauen, however, also means at the same time to cherish and protect, to preserve and care for, specifically to till the soil, to cultivate the vine.[35]

This is almost exactly the point that Teilhard de Chardin advocated when he stated that it was the highest morality to conserve the earth's riches. Both Heidegger and de Chardin would appear to agree that an important criterion of building is that we should have a sense of efficient use of our planet's resources as a measure of aesthetic values. This is not very different than the economic concerns if they are treated on a higher philosophical level currently done. But in order to accomplish this task of maximization of the planet's resources, it is necessary to transcend the conventional thinking of three-dimensional space to become aware of the four-fold dimensionality of existence. To Heidegger this four-fold existence--"earth and sky, divinities and mortals--belong together in one."[36] Each gives existence and credence to the other in an harmonic relationship for it is impossible to achieve one without the other three. "When we say sky, we are already thinking of the other three along with it . . ."[37] Heidegger views a work of art as being something more than a reflection of values--but as a creator of a new conscious awareness.

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[35]Heidegger, op. cit., p. 147.

[36]Ibid., p. 149.

[37]Ibid.

> . . . every true work of art fills us with wonder about the mere fact that it exists, that it was and could be created. The miracle of creation is inherent in every true work of art and emanates from it, because a true work of art is something hitherto unimagined, unique, extraordinary.[38]

To achieve this state of four-dimensionality,

> Mortals are in the four-fold by dwelling. But the basic character of dwelling is to spare, to preserve. Mortals dwell in the way they preserve the four-fold in its essential being, its presencing. Accordingly, the preserving that dwells is fourfold.[39]

Combining this concept with the one discussed above--that of "efficient use of our planet's resources"--would indicate that rather than continually exploiting our planet's resources, it should also be necessary to preserve the state of the "earth and sky, divinities and mortals." Through this preservation, an appreciation for the aesthetic is increased.

Conscious Awareness: Ouspensky's Criteria

The discussion of Heidegger's four-fold system leads us directly into the work of the second philosopher to be discussed: P. D. Ouspensky. Indeed, the concept of a higher level of societal awareness which I've used

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[38]Hans Jaeger, "Heidegger and the Work of Art," Aesthetics Today, ed. Morris Philipson (New York: The World Publishing Co., 1961), p. 424.

[39]Heidegger, op. cit., p. 150.

in describing Heidegger finds deeper meaning in Ouspensky's scheme.

Ouspensky, in his book Tertium Organum, provides a description of social awareness that tries to understand man's role in creation and the creative process. To Ouspensky, the mind and our receptivity to ideas comes from sensations, and it is through sensations that man draws his perceptions and concepts. These perceptions and ideas then evolve into a commonly understood language which is used to communicate those ideas to other people. The movement is from the senses to the mind through to language; thus language is nothing more than a concretization of a set of concepts, based on the precepts that have formulated themselves in the mind of the respondent to an outside stimulus or a sensation. But, the first thing that is necessary so that man can function is for a sensation to occur.

> The fundamental unit (or measurement) of our receptivity is a sensation. This sensation is an elementary change in the state of our psyche, produced, as it seems to us, either by some change in the state of the external world in relation to our consciousness, or by a change in the state of our psyche in relation to the external world.[40]

Hence, the process is to have a continual feed cycle that can go in either direction. As the external world evolves

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[40]P. D. Ouspensky, Tertium Organum (New York: Vintage Books, 1970), p. 70.

and becomes transformed, new levels of awareness occur, or as our cultural environment transcends itself our external or material environment also evolves. Notice how at odds this theory is with the formalist view of Fry and Bell discussed at the beginning of this chapter. As this artifactual or material environmental level of society evolves into increasingly more complex patterns, then society's collective psychological state also evolves; and conversely as the psychological level upon which society dwells is elevated to a higher level, the artifactual or material environment level in which a person's physical body dwells will also be raised.

> Parmenides declared that we cannot separate being and thought, for they are one and the same . . . If we analyze man's nature we find the same combination of elements as occurs everywhere in the physical world.[41]

One's psychological level is directly related to the artifactual environment or the physical world in which he dwells. Moreover, this interaction is bidirectional. Artists, for example, are initially affected on a higher psychological or thought process level, which they try to then translate into the visual or artifact level. Thought or sensation is concretized for this segment of society into an art form--painting, sculpture,

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[41]Cassirer, op. cit., p. 123.

building, etc., while others move from the visual realm or artifactual level into the psychological level. Thus, we can see that, at least on this point, both Heidegger and Ouspensky appear to be in agreement in that the raising of the level of conscious awareness is a criteria for evaluating an aesthetic piece of work.

Ouspensky uses a simple illustration to show how this raising of awareness is accomplished when he takes his concepts of a four-dimensional reality and breaks it down into its component dimensions (1, 2, 3, and 4). Ouspensky then explains how the world is viewed from each of these dimensions and the awareness that can be possible when one dwells in each of these dimensions. The single-dimension being is aware only of a single line that stretches endlessly in one direction. Such people exist as an individual point on that line with no awareness of anything that exists on either side of it.

> If we suppose the line upon which the one-dimensional being lives to be passing through the different objects of our world, then of all these objects the one-dimensional being will perceive one point only; if different bodies intersect his line, the one-dimensional being will sense them only as the appearance, the more or less prolonged existence, and the disappearance of a point.[43]

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[43]Ouspensky, op. cit., p. 51.

To this one-dimensionality, the element of time is added, since everything must come from something and recede into something for even a single-dimensional being would have a memory.

> All of our space except one line will be in the category of time, i.e., something wherefrom phenomena come and into which they disappear.[44]

This memory would connect the points together into a single line not wavering in direction since everything outside that line would not exist. Basically, the one-dimensional being has only the facility to experience a sensation. To translate that sensation into a perception or concept is beyond its capabilities. To try to explain anything outside the one-dimensional being's realm of perceptions would be an extremely difficult task since a new dimension would have to be introduced. This could only be accomplished when the one-dimensional being has experienced an added dimension. Obviously, man is not a one-dimensional being since he can sense, perceive and describe much more than that. But this phenomenon (the appearance, existence, and disappearance of a point) will provide a base for that being's awareness to evolve into a

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[44] Ibid., p. 52.

two-dimensional understanding or knowledge of the world.

This two-dimensional awareness is the next dimension which is to be investigated--it is one in which everything is perceived as having a length and a depth. In order to become cognizant of this plane, geometrical figures will have to be drawn so that the two-dimensional being can sense the line and perceive that the line is drawn in a particular direction which is different from the one in which he is moving. But here again it is impossible for the two-dimensional being to understand anything not in that being's sphere of perception.

> He will not be in a position to imagine anything outside of this ether (the plane on which that being exists), that is, out of his plane. If anything, proceeding out of his plane, comes in contact with his consciousness, then he will either deny it, or regard it as something subjective, the creation of his own imagination; or else he will believe that it is proceeding right on the plane, in the ether, as are all other phenomena.[45]

Although man is not a two-dimensional being, he is often caught thinking in this realm of two-dimensionality. For the two-dimensional being, the appearance of sensation and developed perceptions exist; the

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[45]Ibid., p. 53.

two-dimensional being is, however, still unable to express those perceptions through anything other than cries, sounds or motions. Since there are no concepts in this dimension, there isn't the ability to formulate words to express those perceptions. As has been explained earlier in this paper, in order to be able to communicate through language, both perceptions and conceptions are necessary; but although in two-dimensionality perceptions are in evidence, there are no concepts formed from them. How often do designers, architects and planners refer to the two-dimensional plan; usually this is the first item that is solved in the design process. "The plan works." Elevations, sections, perspectives and the surrounding environs are usually considered as an afterthought until the plan is finalized. Obviously, man is not a two-dimensional being since he can sense, perceive and conceptualize much more than that. But, as with the one-dimensional being, man can utilize the two-dimensions as a building block to obtaining a better understanding of higher levels of awareness.

The addition of another level of awareness gives us the notion of a three-dimensional being, with his ability to comprehend length, depth and

height. This is the realm in which man currently exists. The three-dimensional being, or man, views the universe in this manner and is cognizant of all that exists on this plane. But, "the three-dimensionality of the world is not its property, but a property of our receptivity of the world."[46] So, in order to perceive the world in three-dimensionality, it is necessary that the psyche be open and receptive to receive a sensation. For, although we are not able to actually see a solid in its entirety, that is, from all sides and angles at once, our psyche has correlated the concepts of height, breadth and length to assume that the nature of the thing observed is a solid. Here we have relied upon our perceptions of those measurable dimensions to understand something that we are not totally able to see. For the design professions this understanding of three-dimensionality comes in the form of models, elevations, sections, perspectives, etc., in relation to the surrounding environment. In P. D. Ouspensky's chart (Appendix) the following are attributed to the three-dimensional realm: concepts, words, judgments, syllogisms, reasoning, simple emotions, and so on. Three-dimensionality

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[46]Ibid., p. 97.

is the ability to view the world as an infinite sphere in a constantly changing and evolving universe. This sphere is conceived of as space while everything else is considered as time. With a three-dimensional being, the sensations that are developed in the first-dimension translate into perceptions in the second-dimension and are formulated in the third-dimension as concepts that can be verbally transmitted to other beings as words, language, emotions, etc. As can be seen from this each level of awareness is built upon the preceding one. In order to comprehend a higher level of awareness, it is necessary to build upon a comprehensive understanding of the preceding one. But the main thing, about the third-dimension, is that the concepts developed and understood are transmittable through the use of language to other beings which cannot be done in the first two-dimensions.

Now, as developed, the aspect of time is translated into a sense of space with each raising of the dimensional level, that is, the sensation of length in the first-dimension is regarded as time. This then would seem to be the method of translation for unexplainable concepts for each succeeding level. In the fourth-dimension the aspect of time now becomes a sense-space, so that all four components of the

four-dimensional being's senses now have an actual space relationship.

> We have seen that time and space are sensed by each (dimensional being) in a different manner: that what for the lower being is time, for the being standing one degree higher becomes space to a being standing higher--man.[47]

Although not contained in this statement, the same can be assumed true with the next raising of the awareness level, the four-dimensions being understood in a space relationship. For the psychic aspect of being, the concepts understood by the being on the three-dimensional level become concretized into intuition. (Intuition is taken to mean the formulation of new concepts from previously known concepts.) Within this intuitive being is created a higher level of consciousness that attends itself to "self-consciousness, new sensations, higher emotions, expansion of concepts, symbolism, and cosmic consciousness."[48] It is in this realm that great art is produced and that great artists evolve too. "Both the artist and scientist work with great intuition."[49] Now, if this is the case, if artists and scientists are existing on a different level of conscious awareness than the mass of society, it would

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[47] Ibid., p. 99.

[48] Ibid., p. 307.

[49] Noel Frackman, "Buckminster Fuller," Arts Magazine, April 1977, p. 18.

seem quite impossible for that society to place guidelines on them. For to do so would be quite absurd, just as it would be absurd for a one-dimensional being to place restriction on the being existing in the second-dimension. To Ouspensky, language and the written word is the means of communication for the three-dimensional world while visual arts are the form of communication for the four-dimensional world.

> The content of emotional feelings, even the simplest--to say nothing of the complex--can never be wholly confined to concepts or ideas, and therefore can never be correctly or exactly expressed in words. Words can only allude to it, point to it. The interpretation of emotional feelings and emotional understanding is the problem of art. In combination of words, in their meaning, their rhythm, their music--the combination of meaning, rhythm and music; in sounds, color, lines, forms--men are creating a new world, and are attempting therein to express and transmit that which they feel, but which they are unable to express and transmit simply in words, i.e., in concepts. The emotional tones of life, i.e., of "feelings," are best transmitted by music, but it cannot express contents, i.e., thought. Poetry endeavors to express both music and thought together. The combination of feeling and thought of high tension leads to a higher form of psychic life. Thus in art we have already the first experiments in a language of the future. Art anticipates a psychic evolution and divines its future forms.
>
> At the present time an average man, taken as a norm, has attained to three units of psychic life: sensation, perception and conception. Furthermore, observation reveals that some people at certain times acquire a new, fourth unit of psychic life, which different authors and different schools name

> differently, but in which an element of knowledge or ideas is always united with an emotional element.[50]

From this we can see that our interpretation of the three-dimensional universe is dependent upon a synthesis of our three levels of psychic life. That is, "if space with its characteristics is a property of our consciousness, and not of the external world, then the three-dimensionalities of our world must in this or some other manner depend upon the constitution of our psychic apparatus."[51] If one of our perceptions of the universe is altered, then so too will our synthesis that is dependent upon it. In a three-dimensional being that acquires a knowledge of another dimension, that dimension will have an emotional element within it. One of the components of the fourth dimension has to be emotion. Ouspensky has labeled these the higher emotions (see Appendix). These higher emotions (that Ouspensky delineates) have for Lionel Trilling, who we now turn to, the greatest affective power in terms of the aesthetic.

Aesthetics and Emotion: Trilling

In judging the quality of literature, Trilling emphasizes the emotional impact or affective power of

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[50] Ouspensky, op. cit., p. 73.

[51] Ibid.

the work. Art, to be considered good, must present itself with a high degree of intensity to induce an emotional reaction from the viewer. The subject matter of the art work has only a slight significance, unless the intensity of its presentation extracts a higher emotional reaction. "It is not so much what an artist says, but with what degree of intensity he says it."[52] This emphasis on intensity as an aesthetic criterion persists.

> I cannot evolve any concrete theory about painting. But I am able to speak of certain things that have occurred up to now in the course of my painting.
>
> Today it's possible to paint one canvas with the calmness of an ancient Greek, and the next with the anxiety of a van Gogh. Either of these emotions and any in between is valid to me.
>
> There is no particular system I follow when I begin painting. Each painting has its own way of evolving. One may start with a few color areas on a canvas; another with a myriad of lines; and perhaps another with a profusion of colors.
>
> Each beginning suggests something. Once I sense the suggestion, I begin to paint intuitively. The suggestion then becomes a phantom that must be caught and made real. As I work, or when the painting is finished, the subject reveals itself.
>
> As for the subject matter in my painting, when I am observing something that may be the theme for a painting, it is very often an incidental thing in the background, elusive and unclear, that really stirred me, rather than the thing before me.[53]

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[52]William Baziotes, "Untitled," Arts Magazine, April 1977, p. 131.

[53]Barbara Cavaliere, "An Introduction to the Method of William Baziotes," Arts Magazine, April 1977, p. 124.

Now, with this basis established let us examine Lionel Trilling's treatise on defining a work of art as either good or bad.

Trilling developed his aesthetic criteria to judge literature. Can we find any basis for extrapolating Trilling's criteria to architecture? Are, for example, literature and architecture compatible? John Ruskin in Seven Lamps of Architecture helps to establish the relationship between the two art forms with the following quote:

> The ambition of the old Babel builders was well directed for this world: there are but two strong conquerors of the forgetfulness of men, Poetry and Architecture; and the latter in some sort includes the former, and is mightier in its reality: it is well to have, not only what men have thought and felt, but what their hands have handled and their strength wrought, and their eyes beheld, all the days of their life.[54]

Moreover, literature and architecture are connected in that both have as their foundations the transmittal of ideas, as well as appealing to the emotions.

> The most elementary thing to observe is that literature is of its nature involved with ideas because it deals with man in society, which is to say that it deals with formulations, valuations, and decisions, some of them implicit, others explicit. Every sentient organism acts on the principle that pleasure is to be

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[54]John Ruskin, Seven Lamps of Architecture (New York: E. P. Dutton & Co., 1906), p. 182.

> preferred to pain, but man is the sole creature who formulates or exemplifies this as an idea and causes it to lead to other ideas.[55]

The process by which literature deals with both ideas and emotions is also quite similar to the process used in architecture. An author makes formulations, valuations and decisions based on empirical knowledge and translates them into a new form that is evolved as an idea. Both architecture and city planning are supposed to provide society with buildings in an organized environment. In order to accomplish this task, the architect or planner has to deal with formulations, valuations, and decisions, just as the author did. The planner takes an inventory of a community and formulates a program of development for that community. This inventory is only as valid as the interpretation of the data collected. The data obtained are then interpreted to form the goals and objectives of that social organization. But, as has already been shown in the previous chapter, these goals and objectives are often given different degrees of relative importance based upon the designers' decisions. That is, the cost of the building has the greatest importance and the aesthetic facade is forgotten or vice versa. Society places restrictions on the planner and

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[55]Lionel Trilling, "The Meaning of a Literary Idea," Aesthetic Today, p. 211.

architect while still demanding them to fulfill a social obligation.

The connection between literature and architecture has been previously noted by Gaston Bachelard. Bachelard in his The Poetics of Space treats the house and its rooms as a poetic image. Indeed, all creative acts (including design) according to Bachelard, "must be systematically associated with the most fleeting product of that consciousness, the poetic image."[56] To be good, design must be intertwined with literature.

Thus, there exists connections between literature and architecture in their intentions, the process of creation within each art, and, finally, in the bases on which these two arts are evaluated. Having established this connection, we can now consider Trilling's aesthetic criteria.

Active and Passive as Design Criteria

Trilling's aesthetic criteria are based on the emotional content or intensity of a work of art. More specifically, Trilling argues that literature must be "active" and in order to be considered good, while "passive" literature is bad. Definitions of active and passive literature include:

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[56]Gaston Bachelard, The Poetics of Space (Boston: Beacon Press, 1964), p. xv.

Passive (Bad) Literature	Active (Good) Literature
1. Product of the conditions of the culture that produced the writer.	1. Refuses to be understood as a "symptom" of its society.
2. Not so much a "subject" as an "object" of study.	2. Comprehensive (takes into account the historical, as well as striving to push the conscious further).
3. Lacks a higher emotional power.	3. Blends a rational system of thought with the artistic.

Trilling argues that although active literature does not give us knowledge in the sense of propounding propositions, it nevertheless develops an "idea" and through this broadens our awareness beyond the already known. This is very similar to Heidegger's notion that art creates an openness, promotes what he calls "truth." It is also similar to Ouspensky's view that, "Art anticipates a psychic evolution and divines its future forms."[57] Art takes "ideas" and puts them into new interpretations that are designed to expand our awareness of the universe.

In "The Meaning of a Literary Idea," Lionel Trilling attempts to provide a cultural perspective for evaluating an aesthetically pleasing work of art just as did Heidegger. But Trilling diverges from Heidegger in that he addresses himself to the field of literature

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[57]Ouspensky, op. cit., p. 73.

rather than painting or architecture. As it turns out, his analysis is easily extended to the fields of planning or architecture. Trilling provides a relatively simple criterion for determining whether a work of art is good (active) or bad (passive). Into these two categories he has placed American (passive) and European (active) literature. He is only, in this case, referring to prose. "The situation in verse is different."[58] Unfortunately, at least for this analysis, these national groupings cannot be used when discussing either urban design or architecture, since architects and designers move back and forth across the Atlantic with no regard for national borders. With them come their philosophy of design. Gropius, Breuer, van der Rohr and Moholy-Nagy (the leading Internationalists) all became part of the American architectural academia upon their arrival in the United States. "Though Moholy had fewer students distinguish themselves in the fine arts than, say, Hans Hofmann or Josef Albers, both of whom lived and taught much longer, his ideas shaped generations of design teachers, who espouse his Chicago curriculum to this day."[59]

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[58]Trilling, op. cit., p. 222.

[59]Kostelanetz, op. cit., p. 15.

Although the strict national categories Trilling used are thus not applicable here, his active/passive distinction may be. To Trilling the objective of art should be to teach the reader something new. Trilling believed this could only be achieved through the emotions. Literature, to apply Heidegger's terms to Trilling, should be transcendent--should contain the "world" and not simply the "earth." "But the extreme rationalist ignores the simple fact that the life of reason, at least in its most extensive part, begins in the emotions."[60] A recent newspaper article illustrates the effect art can have on the emotions and through emotions on thought:

> Sculptor Michael Heizer was sitting near a model of his proposed abstract sculpture for the State Capitol grounds, Tuesday, when a state building painter came by for a look. He quipped, as the artist listened in silence, that the arrangement of concrete discs and portions of discs looked like "an Alka-Seltzer display." The painter said the state would be better off with a sculpture of something people in Lansing could relate to, like automobiles. "I can't believe they're going to spend money on that," he said, disdainfully, indicating Heizer's work. When he left, Heizer said quietly: "The responsibility of the artist is to make people think."[61]

Here the sculptor's work elicited an emotion and encouraged thought. Emotions and thought worked together and created a momentary higher level of awareness for the

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[60]Trilling, op. cit., p. 225.

[61]"The Sculpture's Headache," Detroit Free Press, 11 May 1977.

painter whether he was aware of it or not. Susanne K. Langer also finds this expressive emotional content necessary in all the plastic arts, not only in literature.

> The purpose of all plastic art is to articulate visual form, and to present that form--so immediately expressive of human feeling that it seems to be charged with feeling--as the sole or at least paramount, object of perception.[62]

For both of these aestheticians, Langer and Trilling, a good work of art must extract an emotion from the observer. In an address to the citizens of Edinburgh, John Ruskin expressed this same sentiment in his lecture:

> The proof of a thing's being right is, that it has power over the heart; that it excites us . . . and there is no goodness in art which is independent of the power of pleasing.[63]

By affecting our emotions, the artist is also affecting our insight into the universe and our perception of it. "Intellectual power and emotional power go together."[64] But this should not be taken to mean that the literary idea or work of art will be able to convey an absolute truth. It simply means that the work of art is conveying to us information in a new way; the objective is provocation rather than consensus. Just as the painter above did not agree with the subject matter of Heizer.

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[62]Susan Langer, Feeling and Form (New York: Charles Scribner's Sons, 1953), p. 71.

[63]John Ruskin, Lectures on Architecture and Painting (New York: J. Wiley & Sons, 1891), p. 7.

[64]Trilling, op. cit., p. 225.

> Intellectual assent in literature is not quite the same thing as agreement. We can take pleasure in literature, where we do not agree, responding to the power or grace of a mind without admitting the rightness of its intention or conclusion . . .[65]

Thus it appears as though Trilling is in agreement with Martin Heidegger: a work of art is something more than a reflector of societal values; it has a responsibility to create a new conscious awareness. Art in this case should become an educator for society.

We turn now to consider the lessons conveyed by these three philosophers--Heidegger, Ouspensky and Trilling--for architecture and design. In particular, how then can we utilize the concept of a higher conscious awareness alluded to by all three philosophers discussed here to look at architecture and planning to gain a further insight into our societal values?

Emotional Power in Architecture and Design

Consider first the issue of emotional power. According to my interpretation of Trilling, if a work of architecture is to be considered great it must elicit an emotion from the viewer. This emotional power must transcend itself to convey something more than just the

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[65]Ibid., p. 220.

simple emotion; it must convey some higher symbolic nature in order to rise to this level.

To Trilling the value of a statement, be it architectural or literary, lies in its ability to communicate an attitude or an emotion. This emotion is obtained, according to Susanne Langer, through a work's ability to act as a symbol for some cultural aspect of society. Isn't this exactly what Heidegger was referring to in his interpretation of the Greek temple: the temple embodies or serves as a symbol for the essence of the Greek society. By affecting our perceptions as a symbolic entity, it extracts an emotional response from our psyche. If we refer back to Ouspensky's chart of characteristics of a fourth-dimension, we find that both the symbol and the higher emotions are part of his criterion (see Appendix). Therefore, at least here they (Trilling, Heidegger, Ouspensky and Langer) are in agreement regarding the value of emotions and symbols as a determinant feature of a great work of art.

If we are to be able to understand the symbolic nature of a work of art to explore its emotional content, it is necessary to go beyond what the external view holds for us. It is here that the intuitive process of the artist becomes an important component in the creation of a work of art. For a being that has attained a level of four-dimensionality, "a knowledge of the hidden substance

of things by their outer signs,"[66] is revealed. Intuition is the fourth step in a four-dimensional psyche. It is based on an ability to formulate new ideas based upon sensations, conceptions and perceptions and presented in the form of new ideas. To Susanne Langer if this intuitive ability becomes obscured then any knowledge of the symbol also becomes obscured. In a great work such as the Greek temple, the symbolic meaning of it is clear; the intent of Greek builders is evident and because of this its emotional impact is seen thousands of years after it was built.

> When I see something beautiful, I know in my guts that it's beautiful . . . Most people are afraid to say "I trust my eyes, I trust my nose, I trust all my senses."[67]

Notice how the speaker said she trusts her guts, by which our society commonly means its emotions, rather than a clear, logical thought process.

Product of the Culture

The second criteria Trilling uses is the cultural context of art: is the architecture in question a product of the conditions of the culture that "produced" it? If it is, then, according to Trilling, it could not be

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[66]Langer, op. cit., p. 309.

[67]"Artfully Offbeat," Newsday (Long Island), June 5, 1977.

considered a great work of art. Art must refuse to be understood as a "symptom" of its society; it must instead present an idea in a new way. A work of art should not be a direct outgrowth of the accepted conventions of the profession at a given time. Since it cannot be explained in a logical, rational chain of thought, . . . "we become aware that it happily exists beyond our powers of explanation."[68] An analysis of Ouspensky too suggests that contemporary planners should take their intuition and develop new ideas out of the accepted.

We can look at the work of two acknowledged great architects, Paolo Soleri and Frank Lloyd Wright, and evaluate them along this aesthetic dimension. Does their architecture refuse to be understood as a "symptom" of their society? If we look at both Soleri and Wright we can see that the former, relegated by society to building his visions in the desert, and the latter, confined in his early years to building isolated houses, cannot be explained as direct descendants of their predecessors. They are both considered organic architects, their structures seemingly growing out of the environment that surrounds them. Soleri's Arcologys have been described as mushrooms growing up from the earth, while Wright's structures fit into the environment

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[68]Trilling, op. cit., p. 221.

in such a manner that they seem to grow out of the hillside. This was a complete break with the monumentalism that existed before them.

Indeed both Wright and Soleri can be viewed as operating within Ouspensky's four-dimensional space. In Soleri's case, if we view his buildings it is easy to see that he has developed a spatial sense to the fourth-dimension or time. I feel we can safely state that he is clearly not a symptom of our society. Regarding Frank Lloyd Wright, "It is clear that no explanation was possible in words, that what he meant by organic architecture could be revealed only in his work."[69] He continued to produce his architecture despite the criticism piled on him by his contemporaries that he was out of step with society. But "later on it was the country, and not Wright, which had to change."[70] Here again we see someone who is operating in a fourth-dimensional realm. His work cannot be revealed through the use of words. He is speaking in the language of the fourth-dimension--art. Wright's work also clearly shows that he was consciously trying to push societal awareness to a higher level. On the level then, it is clear that this criteria is quite

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[69]Sigfried Giedion, Space, Time and Architecture (Cambridge, Mass.: Harvard University Press, 1967), p. 337.

[70]Ibid., p. 347.

useful in assessing the aesthetic value of a work of architecture.

Comprehensive Aspects of Design

Both Frank Lloyd Wright and Paolo Soleri have transcended "the conditions of their culture" and have taken a view from a larger, more open conscious state of awareness. The art critic for the New York Times, Hilton Kramer, used this same type of criteria when he reviewed the work of Richard Diebenkorn.

> An artist as conscious as Diebenkorn of the traditions in which he works is bound to absorb a great many influences, and a good many of these--among them, Hooper's, Motherwell's, de Kooning's, Bonnard's and Matisse's, as well as that of the California milieu in which he matured as an artist . . . There is enough of Matisse in it (Diebenkorn's own work) to do justice to the artist who is being honored, and there is more than enough of Diebenkorn in it to establish the basis--the independence--of his own vision.[71]

Initially, upon reading this quote, one would say that his work is merely a product of his culture, but the last part of the sentence totally changes that interpretation. It is his own vision, more than simply a restatement of what had already been said by Matisse in his paintings. In talking further about Diebenkorn and his work, Kramer describes the generation of painters from which Diebenkorn

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[71]"Diebenkorn's Mastery," New York Times, 12 June 1977, sec. D.

came, "the generation that took its cues from the Abstract Expressionist movement and then attempted to go beyond it . . ."[72] This also helps us to see whether the comprehensiveness of Trilling's formula holds validity in analyzing a work of art's aesthetic qualities. "Active" architecture is comprehensive in that it combines the historical as well as pushes awareness further in a concerted effort by the practitioner. If we look once again at Paolo Soleri we can see how this is possible. As Sibyl Moholy-Nagy states, Soleri is putting forth a conscious effort to expand our awareness to a higher level. He demonstrates a sense of the historical in that his visionary proposals for existing cities can be utilized within the existing legal system's definition of an "urban renewal" project. He stresses that there would be a minimum of population relocation which is a common problem now with any renewal project. Indeed, Figure 22 shows the relationship of population densities between his ancologies and the contemporary city.

Billie Jean King, the noted radical of women's tennis said when talking about the importance of tradition in the Wimbledon championships, "I think it was Beethoven who once said that within the highly traditional person is the biggest rebel possible. To be able

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[72] Ibid.

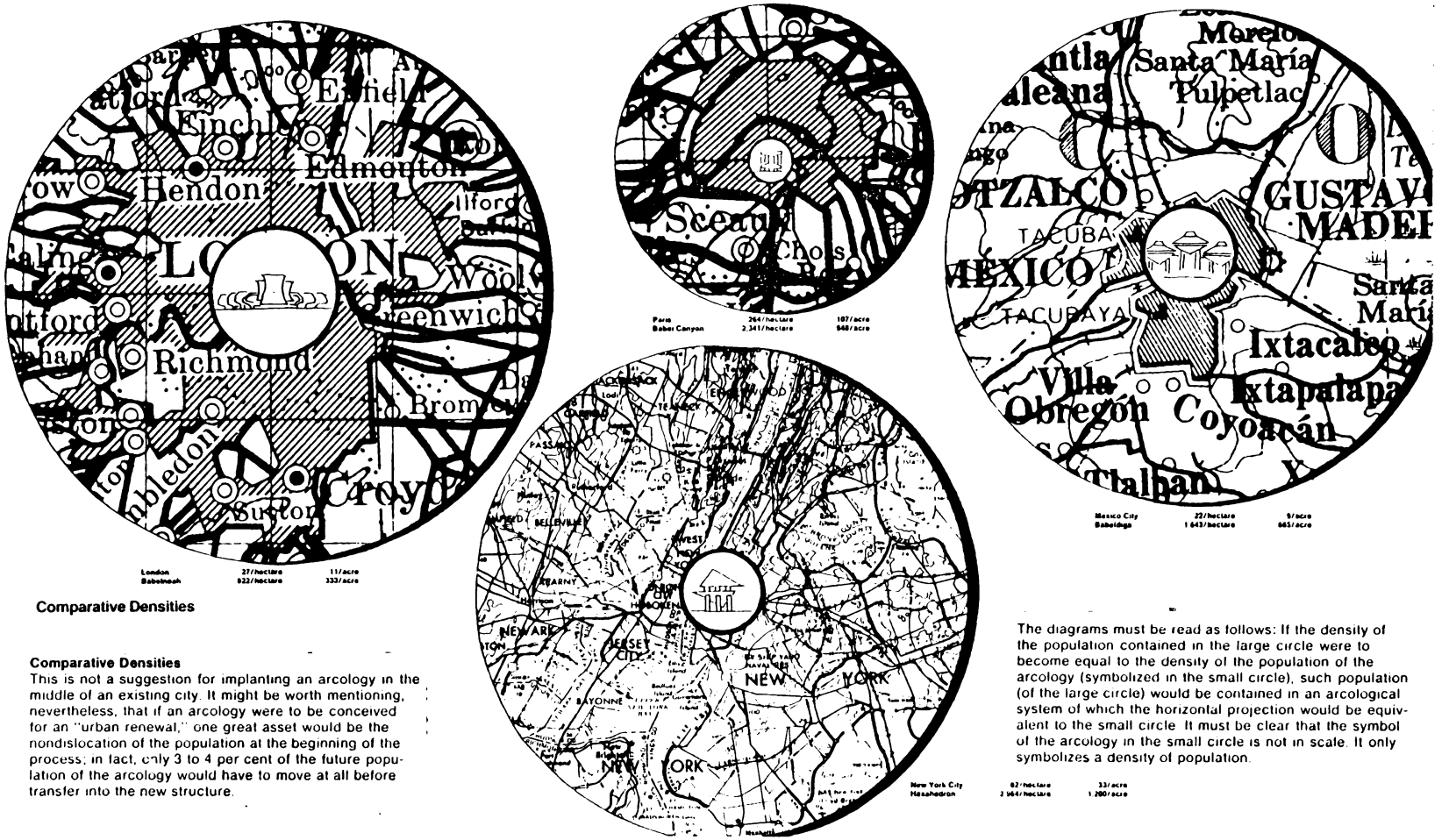

Figure 22.--Comparative Densities.

SOURCE: Paolo Soleri, Arcology, The City in the Image of Man (Cambridge, Mass.: The M.I.T. Press, 1969), p. 33.

to envision the future, you have to know the past."[73] In both of the examples cited above we can see the importance of a sense of the historic in evaluating a work of art and the aesthetic qualities that it has. Also, as has been discussed previously, when the intuitive creative process is affectively at work, its creations are formulated based on stimuli that appear as sensations, conceptions and perceptions. The perceptions of an environment are derived from a person's vision of that milieu and that vision is predicated upon the sensory data that has preceded the present moment's experiences. As Jean Piaget has stated in talking about the ability of the mind to place viewed objects into a proper size perspective,

> . . . the entire development of mental activity, from perception and habit to representation and memory, as well as to the higher operations of reasoning and formal thinking is a function of the balance between the assimilation of more and more remote realities to pertinent action and an accommodation of this action to those realities.[74]

From this, as well as from the discussion on the behavioral environment in the previous chapter, it is easy to understand how the historic enters into a criteria for the formulation of an aesthetic theory related to architecture. Because of the limitations our avenues of

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[73]"The Traditionalist," New York Times, 12 June 1977.

[74]Arnheim, op. cit., p. 17.

perception are, we rely to a great extent upon our past experiences to correlate the data obtained through our sense organs. As we have seen, these past experiences are built upon to formulate new visions of our universe.

We have shown earlier in this chapter that each level of awareness is built upon to formulate knowledge about the next higher level of conscious awareness. Just as Ouspensky has sensations, conceptions and perceptions developing into the fourth-dimensional attribute of intuition, so too then, does an art work display this feature in order to be considered a great work of art. It has to take into account the art and work that has preceded it to formulate new visions of the future and what is possible when a person takes this knowledge of preceding cultures to present new possibilities.

Since Frank Lloyd Wright has previously been used as an example of Trilling's framework being utilized, I will stay with him to illustrate further a sense of the historical. Sigfried Gideion gives us a good perspective on Wright and his work.

> He ranges the wide expanse of historical interrelations, drawing particularly upon the architecture of the Far East--not, however, in the manner of the last century, as a substitute for creative impulse . . . out of an inner sympathetic relationship . . . he has introduced the beginnings of a new conception.[75]

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[75]Giedion, op. cit., p. 319.

His organic architecture was a means for him to search for reality. In using the word search, we can see that he was, indeed, striving quite consciously to raise societal awareness. He combined a knowledge of Far Eastern culture with the technology of America to present ideas in buildings that had not heretofore been attempted. From these illustrations it is quite readily seen that Lionel Trilling's criteria of being comprehensive is a valid one and can also have a method of exhibiting itself in both the design of cities and in architecture.

Rational-Artistic Thought

Finally, in order to see if Trilling's passive-active framework is applicable on all points the question, does the artist "blend a rational system of thought with the artistic," has to be addressed. By this I have taken Trilling to mean, does the artist have a justifiable, systematic method to reach his conclusions and present even further conclusions. Perhaps an illustration will better clarify this. We can refer once again to Mr. Gideion. "The foundation bearing Wright's work is a strong tripod: The American tradition, his urge toward the organic, and his power to find an artistic language for his own period."[76] His approach to architecture was evolved

[76]Ibid., p. 347.

through a logical, rational process of thought. This he combined with a new artistic form blended with his ability to create an enviro-sympathetic structure. The architectural style that was in vogue at the time was certainly not that of Wright. The prevalent style being "classical" in imitation of the Greeks and Romans, without having the same meaning for the society. Or as Heidegger might put it, the work of art lacked a sense of "piety," the symbolic meaning was lost on the contemporary culture or at least it did not hold the same sense of "piety" for the two cultures.

Paolo Soleri also approaches architecture and the design of environments in the same manner. In his book, Arcology, he carefully presents the rationale that led to his designs; each step of the process is carefully explained and then built upon to provide a logical solution to the housing question. But rather than providing him with a sterile answer, he combines a sympathy for the artistic into his designs, to create a new aesthetic.

> Architecture is in the process of becoming the physical definition of a multilevel, human ecology. It will be arc-ology. Arcology, instrumented by science and technology, will be an aesthetocompassionate phenomenon. Its advent will be the implosion of the flat megalopolis of today into an urban solid of superdense and human vitality.[77]

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[77]Paolo Soleri, Arcology, City in the Shape of Man (Cambridge, Mass.: The M.I.T. Press, 1969), p. 31.

If we refer back to some of the theories of Ouspensky, that art is the language of the fourth-dimension, it is easy to understand how the artistic blends with a rational thought system. In order to produce great works of art, the intuition of the artist is based upon the three dimensions that preceded it: sensation (1st), conception (2nd), and perceptions (3rd). Thus the work of those artists has a rational thought process which it goes through to finally produce a new idea in a creative way.

Conclusion

While Chapter I demonstrated the role of cultural values, Chapter II presented some theories of aesthetics. Theories which emphasized the cultural basis of aesthetics were stressed, following the arguments given in Chapter I. The concensus which emerges from these aesthetic theories suggests the following are important in determining whether a particular object creates an aesthetic experience:

1. Aesthetics, because it is culturally specific to a given time and place, must be viewed only at a precise moment in the time-space continuum.

2. Aesthetics should appeal to the higher emotions which are part of a particular society's conscious awareness.

3. Because aesthetic values can be identified, they can also be codified and expressed in physical terms.

Principles of aesthetics are commonly considered intuitive, and as such are utilized in the design process of the urban environment, painting, sculpture, architecture and so on. It is this intuitive aspect of the design process that has been shown to be a needed ingredient for planners and architects in the design of future urban environments. This intuition would be used to create new and higher levels of perceptions which would also create new sensations. How can this intuitive aspect of design be used by planners in trying to create a new aesthetic environment? How can models be incorporated into the process to aid planners in the use of intuition?

CHAPTER III

TOWARD A MODEL OF AESTHETIC PLANNING

Within this chapter a determination as to whether several modeling techniques that have already been developed can be extended and used in the formation of a model concerned with community aesthetics. The large number of factors which influence the shape of the urban environment means that there is a large amount of data which must be evaluated prior to the design of that environment. Christopher Alexander has shown that even the design of a simple teapot requires at least twenty-one different criteria to be considered.[1] In his analysis of the requirements of an Indian village he has also identified 141 criteria for which the planner must provide a solution. The use of modeling has also been applied to the design of buildings and "Eastman, et al. (1974) calculated that a typical ten-story office building of about 120,000 square feet consists of about 150,000 separate parts which need to be described."[2]

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[1]Christopher Alexander, Notes on the Synthesis of Form (Cambridge, Mass.: Harvard University Press, 1964), p. 60.

[2]William S. Mitchell, Computer-Aided Architectural Design.

What is required is some method for the planner to be able to synthesize the data needed and have it available. The recognition of the number and variety of factors which impinge on the design process leads one naturally to the computer with its storage and data manipulation capacity. But, isn't the use of computers and modern technology alien to the creative aesthetic aspect of design?

> Practical reason is the means by which methods are developed for dealing with different kinds of facts. Speculative reason is an extension of this theoretical activity. Progress depends on a lively interest in speculative reason. Through the interaction of these two forms of thought factual assessment can take its place within an overall scheme of things: speculative reason is robbed of its anarchic character, without destroying its function of reaching out beyond set limits.[3]

The problem that this chapter addresses is the blending of two thought processes into a design model that can be used by the planner in the creation or maintenance of an aesthetic urban environment. This chapter will concentrate on identifying the overlap between design solutions which emerge from the intuitive sphere characteristic of the pre-rationals and the rational, logical sphere of the moderns.

> That, translated into architectural terms, is equivalent to saying that the rational understanding of a problem and the extension of this rational into speculative (intuitive) thought

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[3]A. N. Whitehead quoted by Sir Leslie Martin, "Architect's Approach to Architecture," R.I.B.A. Journal, May 1967, p. 3.

> is one single process: that is, that thought and intuition are not opposed but complementary.[4]

As previously shown in the chapter on the theory of urban aesthetics, intuition is a form of thought along with sensation, conception and perception. Indeed, intuition is a form of thought complementary with the other forms of thought. In particular, consideration will be given as to whether a formal model can be used to incorporate these two reasoning processes (practical and speculative) in evaluating aesthetics in the urban design process. Several models which have already been developed to study other components of the urban environment will be used. The study is also limited in that only the cultural values discussed earlier have been chosen to be included here.

Three models will be considered in some depth in this chapter: a descriptive model developed in the 1960's; a somewhat more elaborate model developed by Christopher Alexander; and finally a planning model developed by Lionel March. There is an evolutionary relationship among the three; March builds on Alexander, who in turn owes much to earlier descriptive modelers. Clearly the three models have limitations, as do all models of this sort which, of necessity, abstract from

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[4]Martin, op. cit., p. 193.

the complexities of the real urban environment. Nevertheless, I believe models of this sort are a useful tool for planners, and, in particular, that such models may provide a viable way to incorporate considerations as diverse as economic efficiency and aesthetic values in the design process.

But, before commencing development of a framework upon which to attempt to construct a model, it is necessary to first see how speculative reason (intuition) and practical reason can be used as complementary design components.

Practical and Speculative Reason

In present society, the value of an aesthetic environment is often sacrificed to the exigencies of short run, narrow economics. In theory, there is no contradiction between economics and aesthetics: economic theory suggests simply that the difference between benefits (including aesthetic benefits, if one desires) and costs be maximized. In practice, however, in making choices, a narrow profit criteria is often applied which ignores benefits as tenuous as aesthetics might be. The city of New York has attempted to do this through the use of "special zoning districts" with varying degrees of success. Peter Blake points out that these districts are often well after the fact. As suggested earlier,

economic values are paramount on current society's cultural value pyramid.

> The hard-headed realists may argue that aesthetic considerations are a frill. Viewed in the perspective of sanitation, cost or net square footage per capita, beauty or ugliness hardly matter. The important thing is to keep out of the rain and the cold and to do so at a cost we can afford.[5]

But, this same hard-headed realist is usually limiting his perspective to a practical thought process; speculative reasoning is rarely applied and the results are consequently often marred. As A. N. Whitehead has pointed out in The Function of Reason, there is a definite difference between practical and speculative reason and the results obtained from each is unique. Each system or method has its respective strengths and weaknesses. Practical reason rests on self-satisfaction, "it not only elaborates the methodology, but also lifts into conscious experience the detailed operations possible within the limits of that method."[6] This is in contrast to speculative reason which is not concerned with its continued existence and rests above the practical tasks of the world. It has accepted a position of transcendence about the world and strives out of curiosity

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[5]William R. Polk, Foreward to Architecture for the Poor by Hassan Fathy (Chicago: The University of Chicago Press, 1973), p. xi.

[6]Whitehead, op. cit., p. 29.

to understand that world. While these two types of reasoning are distinct, they nevertheless have a syno-morphic relationship. This suggests that in considering the aesthetics of the urban environment, which has been shown previously to be highly subjective, one should take speculation regarding future development and analyze them from a practical methodology. Whitehead has suggested that the recent massive advance of technology is due to the fact that these two forms of thought have again made contact after a separation of 150 years; practical or the rational understanding of the problem and speculative or intuitive thinking providing solutions to the problem.

Whitehead's sentiments are an echo of the concept of the "earth"-"world" that was developed by Martin Heidegger. That is, although it is possible for practical and speculative reason to exist independently, in order for an aesthetic experience to occur there must be a combination of the two modes of reasoning. What also can be seen is that practical reason or speculative reason can be applied to both the "earth" and/or the "world" as conceived by Heidegger. That is, since the "earth" is the existing reality from which the art work is constructed, either speculative or practical reason can be applied to problems that are presented in this realm in order to obtain a solution, but this does not of necessity create an aesthetic environment.

If we establish that the cultural value of aesthetics is composed of a duality of the "earth" and "world" as in Figure 23, the application of practical or speculative

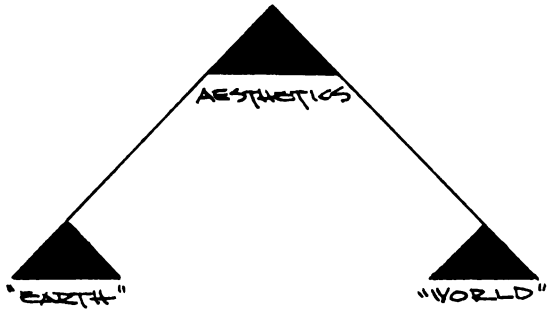

Figure 23.--"Earth-World" Model.

reason can be exerted on either independently or to any specific component in the tree. (This is taken from Alexander's hierarchical tree which places certain components of a design problem in a hierarchical pattern of interaction). By constructing a tree of this nature it is easier to isolate and correct independent variables. This is similar to what has previously presented when the construction of the cultural value pyramid was made. Earlier, it was shown, that within any given design problem there is a hierarchical pattern of importance of the variables to be considered. Some variables can be attributed to a particular cultural mode or sub-mode, that are independent of other variables. That is, under the sub-mode of "earth" are considered those items involved in the actual construction of the art work, the

physical artifacts. An example of this would be using two criteria that have been previously advanced by the Bauhaus and later the "Internationalists," structural and functional efficiency. Figure 24 is a further

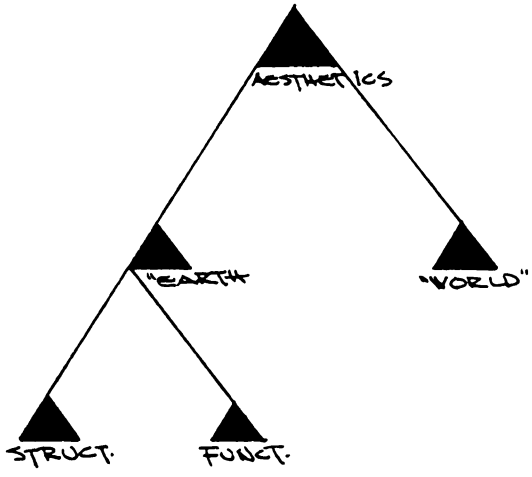

Figure 24.--Hierarchical Tree Number One.

diagram of how this hierarchical tree would be constructed. This construct appears to be the easiest method for planners when dealing with design. Through this construct, one can use a practical framework to describe the physical phenomena that are components to be considered in the design of an urban environment. Practical reason cannot be used to make changes since it is self-satisfying. It (practical reason) does not allow for changes because this method only allows for solutions to be obtained based on results obtained in the past. One can easily understand how this can occur when a from a design perspective prior solutions are easily codified

and just as easily quantified. That is, it is relatively easy to describe the components of the hierarchical tree that should be included under this variable. From the hierarchical tree that has been developed so far, when dealing with the "earth" it is relatively easy to test the various components from a practical reason framework. (This will be developed further when the Predictive and Explorative Model is discussed.)

The concept "world" can be considered as encompassing those aspects of the art work that deal with the cultural values of a society. These are a bit more complicated than the "earth" but it nonetheless can be determined as was done earlier in this thesis. This (the "world") might also be considered the ideology that a society operates from, thus it can be seen to structure the behavioral environment.

When speculative reason is applied to the above framework, the components considered under the "earth" are still relatively easy to ascertain. That is, once the variables have all been identified and the concepts that they are predicated on identified, it is easy to see how they will effect the proposed solution. Thus, this reasoning process allows for a single variable to be modified and the influence of that particular variable can be seen. If that variable does not exert any influence on the design product it can be considered as

an independent variable, but if it does change the product it can be considered as an interdependent variable. This coincides quite nicely with the concepts of Christopher Alexander on being able to isolate individual components in the fit-misfit relationship. It also correlates well with the pre-rational method of correcting a misfit relationship.

> Reaction to single failures, complemented by resistance to all other change, which allows the process to make a series of minor adjustments instead of spasmodic global ones: it is able to adjust subsystem by subsystem, so that the process of adjustment is faster than the rate at which the culture changes: equilibrium is certain to be re-established whenever a light disturbance occurs; and the forms are not simply well fitted to their cultures, but in active equilibrium with them.[7]

Combine this concept with the concepts of the cultural aestheticians and we can see that they are similar--great art should be out in front and serve as an educator. It now appears that this would qualify the concept of speculative-practical reasoning process as a valid approach to create an aesthetic code. And since this appears to be a valid approach to aesthetic, let's elaborate on types of models that might be useful.

Models and the Artist

Before delving into how models can be used by planners in the creation of an aesthetic environment, a

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[7]Alexander, op. cit., p. 52.

brief explanation in regard to how models have been used by artists is presented.

> A model is defined here as a set of individual representations which have been interconnected in order to depict in some determined way a more complex structure. Thus a model is used as a symbolic set of relationships that pares down the infinite variety of the world into a simplified form, exposing its essence.[8]

That is, a model is a representation of the artist's perception of the world in simplified form. The artist can make his representation as precise as a photo-realist painting or as abstract as the Cubist composition that Michael Graves translates into his houses (see Figure 25).[9]

Models are thus a means of looking to try and present the reality of the world in a simplified form so that isolated components of that structure can be analyzed in regard to the overall scheme that has been developed. This is the same thing that the cultural aestheticians, whom I have previously discussed, attempt to do when they analyze an art work. They (the cultural aestheticians and modelers) search for the underlying motives that a particular physical phenomena is based upon. The artist presents a work as a representation of the reality of the world has, as he, an individual

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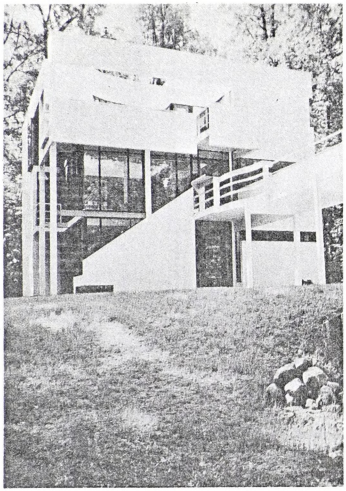
[8]Steve Williats, "Art Work as Social Model," Studio International, March/April 1976, p. 102.

[9]Charles Jencks, The Language of Post-Modern Architecture (London, England: Rizzoli International Pubs., 1977), p. 119.



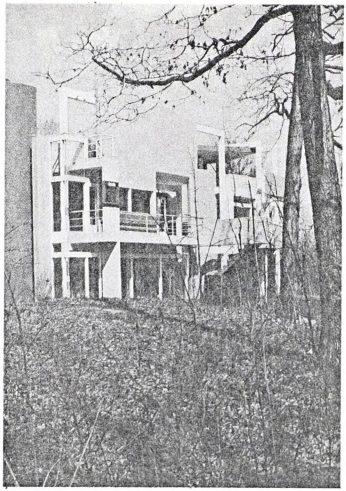


Figure 25.--Peter Graves' Mondrian House.

SOURCE: Charles Jencks, The Language of Post-Modern Architecture (London: England: Rizzoli International Pubs., 1977), p. 119.

perceives it. The result or interaction with the audience would appear in Figure 26.

Just as the artist has called upon his individual experiential environment to create a representation of his perception of reality so, too, does the modeler. The manner in which that representation is presented can vary and indeed often does, as the distinction between realist and surrealist painters might indicate. But, both are a form of representation of the artist's perceptions. The end product might take the form of a pictorial representation (painting, film) on a more solid representation (sculpture, architecture). The artist indicates the manner he feels will best illustrate his statement. The modeler can choose the manner he feels is the best way to represent his vision or perception of the urban environment, i.e., alogrithm, mathematical, visual. Obviously, if the modeler is desirous of community input that representation should take the form that will best describe his perceptions to that audience. Complex mathematical equations might adequately describe the environment, but can they be understood by the majority of the community?

For the artist, the method is most often internalized and nonverbal, while the modeler also presents a pictorial representation of the method. Now, just as an artist might paint a picture that represents the past,

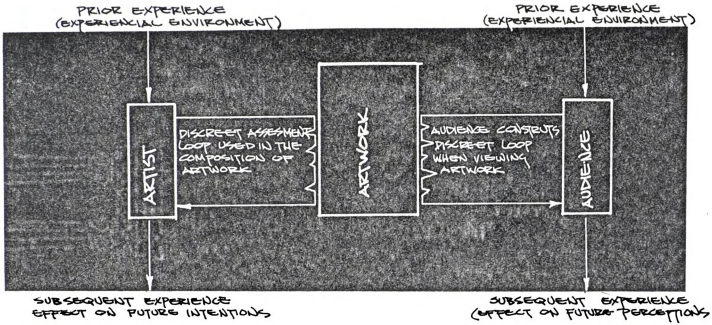


Figure 26.--The Traditional Relationship of an Art Work Between Artist and Audience.

SOURCE: Steve Willats, "Art Work as Social Model," Studio International, March/April 1976, p. 102.

present or future, so too can the modeler. A model that would include information about the past and construct the present would be considered as a descriptive model (see Figure 27). A descriptive model can be used "to

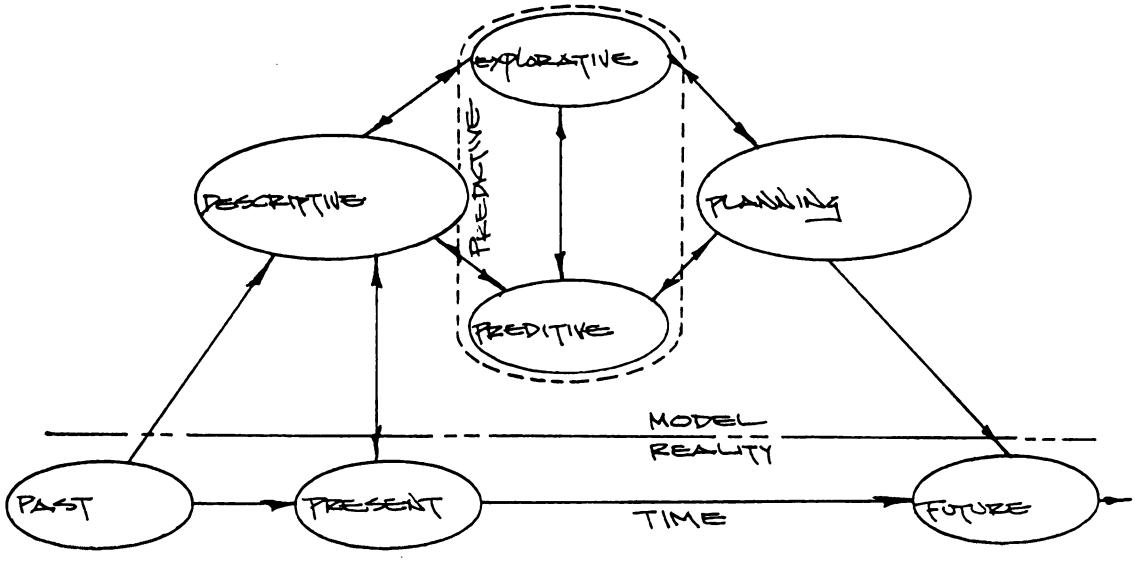


Figure 27.--Relationship of Four Models.

SOURCE: Steve Willats, "Art Work as Social Model," Studio International, March/April 1976, p. 102.

represent the present state of a structure, a predictive model which represents the probable state of a structure, and planning models (prescriptive) which represents the possible state of a structure."[10] Each model serves as a building block for the next higher model similar to the manner in which P. D. Ouspensky conceived of the human

[10]Willats, op. cit., p. 102.

thought process. As can be seen in Figures 26 and 27, the models must be constructed in such a manner as to be dynamic since the experiential environment is in a constant state of forward movement along the time continum. Thus, it can be seen that artists have used models in the construction of their art work, but how can the planner use them in aesthetic codes?

Descriptive Model

The first model to be considered is a descriptive one which has been used by the architectural profession since the middle 1960's. Indeed, this model caused a major controversy in the architectural profession upon its introduction. Many architects viewed the use of both models and computers as a threat to their function as designers rather than as tools that could aid them in the design process. One of the things that they failed to consider was that the model or computer does not determine the criteria or their values. The model simply allows one to analyze data. The value attributed to any variable is determined by the input data that are gathered by the designer. But if a descriptive model is used correctly, it can be a useful tool. The basic output of the model is a map of the entire physical urban environment with a three-dimensional representation of its physical attributes. Transportation planners have used this

technique for several years. The model simultaneously can produce a drawing of the existing urban structure as well as being able to show how a new project would be located within that structure. Indeed, the tremendous advances of computer graphics now allows for a film to be made of the existing urban structure as though one was walking down a typical street. This was done by Donald Greenberg in 1974 "which used a General Electric computer animation system to simulate movement through the Cornell University campus."[11]

> The builder of a descriptive model has the limited objective of persuading the computer to replicate the relevant features of an existing urban environment or an already observed process of urban change.[12]

The descriptive model begins simply by specifying the various parameters of the urban environment that the model is interested in describing. The designation "model" comes into play here: it is a model precisely because only some dimensions of the environment are described; thus it is an abstracted or simplified version of the world. Here, just as the artist has the choice as to the manner of representation, so too does the modeler.

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[11]Mitchell, op. cit., p. 366.

[12]Bullock, Dickens and Steadman, "The Use of Models in Planning and the Architectural Design Process," in Urban Space and Structure (Cambridge, England: Cambridge University Press, 1972), p. 97.

But, in the planner's case the representation has to be based on a collective norm or community desires. Thus, the planner might decide he is interested in demographic information, current building configuration data, weather patterns and so on. Particular bits of data within each of these sub-areas must be specified and then collected. Computer facilities can be used to store and organize the data; to display trends over time, for example, in mean values of critical variables and so on. What one has then is a description of the urban environment in data form. The model remains descriptive, however, because it does not specify either the complex of connections among the relevant variables (as a predictive model does); nor does it specify any optimizing rules (as a planning model will).

The insertion of aesthetic values in a descriptive model is relatively straightforward. Aesthetics becomes a new sub-section, equivalent to other cultural values. One difficulty one might encounter in specifying and collecting aesthetic data is that it is "softer" than the data most planners are accustomed to dealing with: opinion data, for example.

As has already been illustrated, when the aspect of the "earth" is considered from a practical framework, it is easily broken down to its various components which can be codified and quantified. Once components have

been identified, the relevant data can be collected and stored for later use in a memory bank or data file. The relationship shown in Figure 28 can be used to illustrate this process. The descriptive model has a feedback link between itself and the Predictive and Explorative Models.

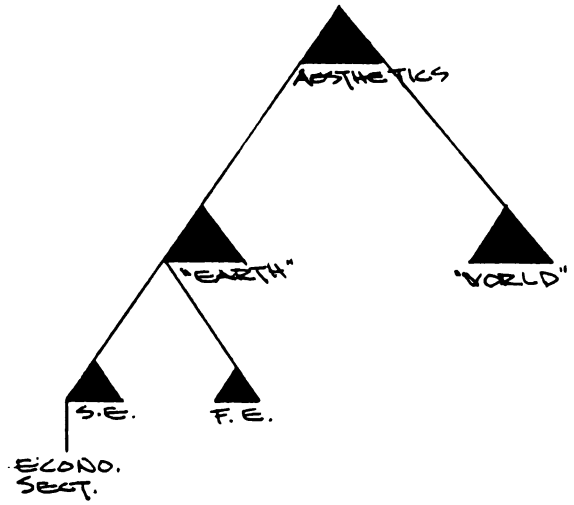

Figure 28.--Hierarchical Tree Number Two.

If an hierarchical tree is now constructed based on the preceding discussion, that tree would appear as in Figure 28. The model is the same as has been previously presented in Figure 24, except for the addition of the steel design criteria of an economic section being included (economic section being taken to mean the cross-section of a steel beam that is the cheapest to accomplish the task, not necessarily the more efficient use of steel). It is the next step in attempting to reduce the problem into its smallest aspects. Obviously, the number of subsets for each cultural value can become immense.

The manner in which these can be tested will be discussed in the Planning Model. The important thing is that the next yield of the model is an accurate representation of the existing urban environment and is in a form readily understood by the members of the community. Economists have for some years built models that show how costs are calculated for a particular product. Structural engineers have also been doing similar work when they design a building's structure. They have established certain design criteria to optimize the use of a particular material based on maximum and minimum stresses, economical sections, moments of inertia, etc. Indeed, a recent issue of the American Society of Civil Engineers Journal states that a large number of engineering firms is already using computers and models for this purpose. The Spanish architect, Antoni Gaudi, used a type of analogue model in the design of the church of the Sagrada Familia which aided him in designing the building as well as the structural system needed. His use of weighted strings enabled him to describe loading and forces that would have to be designed and built for. Doubtlessly, a much better way of representing the problem than through a drawing, but unacceptable to American Building Departments. The methodology for solving a problem has remained consistent although the solutions have changed radically. In the design of steel structures, the

"plastic" range has provided a good example of this process. When examining both conventional and "plastic" design in steel, the methodology stayed the same although the criteria that went into the model differed. In the case of the above example, those differences could be seen to be the allowable design strength of steel used by the designer (24 KSI vs. 32 KSI) and the loading forces (both live and dead loads). Speculative reason was applied to the original steel design criteria and changed some of the assumptions in the cause-effect relationship. The results obtained were found to yield a greater degree of accuracy and the new design criteria were incorporated into the general use of the profession.

How then can a descriptive model be used in aesthetics and what advantages can it possibly have for the planner? As stated earlier, the primary purpose of a model is to show how complex systems work and to deal with the vast amount of data necessary to make accurate predictions. Thus, they are a simple representation of the real world. But, although a model does complex calculations and predictions, the criteria upon which they are formulated must be kept simple.

Once the necessary criteria are formulated, the statistical technique--either equation systems, simulation or computer algorithms--can be determined as to the best method of representing the reality to be studied. An

equation system can be defined as "the interrelationship of various parts of the model can sometimes be expressed as a simultaneous equation system, that implies that the relations between variables are known."[13] Since all the variables and their relationships to be considered in aesthetics are not already known, the use of an equation system probably would not prove to be satisfactory in an aesthetic model. This does not imply that it is not possible, it simply means that another technique might prove more beneficial. The simulation technique which has been utilized in relation to central place theory might provide an avenue to pursue. But, what exactly is involved in this technique?

> Not all the relations between variables are known; for these "free" variables, a range is defined and there is one complete run of the model for each value of each variable in the range. In this case it is essential to use a computer.[14]

But, as Richard L. Morrill points out, "Several tasks remain, to find the most realistic set of rules and to generate many possible central place patterns; to consider the relation of all this existing theory; and to apply the theory to a real historical situation of the

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[13] Marcial Echenique, "Models: A Discussion," op. cit., p. 173.

[14] Ibid.

spread of settlement and the growth of cities."[15] The third statistical technique that can be utilized in models is computer alogrithms:

> Rules for the computer not expressed as equation systems. A hypothesis like all the trips go by a route which has the shortest time is of this kind.[16]

This statistical technique might prove to be the most viable one for aesthetics, but before a final choice of technique is rendered, what is necessary to provide a description of our tree?

1. In order to obtain a representation of the "earth," a replica of the existing physical environment as it in reality exists is necessary. A description of the various artifacts that comprise the urban environment is necessary. That is, data relevant to building configuration, transportation systems, demographics, etc., are gathered and presents the urban environment in data form.

2. In constructing a description of the "world" a representation of the society's cultural value system is necessary. That is, what are the underlying cultural

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[15]Richard L. Morrill, "Simulation of Central Place Patterns Over Time," Proceedings of the IGA Symposium in Urban Geography (Lund, Sweden: Lund Press, 1960), p. 117.

[16]Echenique, op. cit., p. 173.

values and their hierarchical structure. That is the cultural value pyramid that has been previously constructed.

In the first case, that of the "earth," a verbal description can be given as has already been accomplished a number of times: Heidegger's description of the house in the Black Forest, The Law of the Indies, Aristotle's location of various buildings in the Greek city-state or as Alberti has done in his Ten Books of Architecture. This can be considered the theory upon which the designer predicates his solutions. Computer mapping that is currently being used by geographers already accomplishes this task in such diverse activities as transportation systems, land uses, etc. The comprehensiveness advocated by Lionel Trilling can even be included as part of the descriptive model. That is, we can trace the historic evolution of a particular city from its initial settlement by analyzing the physical evolution of the urban environment with the historical evolution in terms of governmental policies, economic indicators, etc.; a correlation can be identified between those phenomena and their effects on the physical form of the urban environment. But, basically, this model would limit itself to being a physical description of the present urban environment.

As previously shown in Chapter I, a cultural value pyramid can be constructed for a particular society that would describe the "world" in which the urban environment exists. This model can be developed at the macro-level or at the micro-level dependent upon the environment that is wished to be studied. That is, whether the cultural values are determined at the macro-level or micro-level, their influences are manifested at the artifactual level or in the physical environment. The study done by Sidney Cohn and Carol Whiting (see Chapter I) indicates that planners are cognizant of cultural values of their community when an aesthetic code is introduced.

Currently, there are several computer models whose programs are geared to handling a comprehensive building description system which could be expanded to be used to describe the urban environment. In this regard, the IDAS (Integrated Designers Activity Support System) might prove very useful since it incorporates the ability "to preserve a historical record of the sequence of design decisions as they are made, and of alternative schemes which are considered."[17] Thus, this system can fulfill at least one of the components that has been found necessary to create an aesthetic environment--

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[17]Mitchell, op. cit., p. 84.

comprehensiveness, a sense of the historic. This will serve to aid in the presentation of a time element that the urban environment has undergone. This type of output would also serve to provide possible trends that could be explored further with the Predictive or Explorative Model. But prior to delving into these two models it should be noted that the descriptive type of model does have some limitations that the designer should be aware of before it is used. It merely serves to describe the attributes of the urban environment that have already been identified.

> The descriptive model provides the planner with an insight into the workings of city structure, but it does not directly allow him to predict future trends or to determine the effects of particular planning policies.[18]

These two endeavors must be left to other models. The Predictive and Explorative Models can be used to make predictions based on data which are governed by cause-and-effect variables similar to what Christopher Alexander's model does.

Explorative and Predictive Models

Once a descriptive model has been successfully constructed that resembles the reality of the "earth" and the "world" both an Explorative and a Predictive Model can be constructed. In the development of these

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[18]Bullock, et al., op. cit., p. 97.

two models, the work of Christopher Alexander is exemplary and, if his model is used correctly, it can make predictions based on cause and effect quite accurately. The basic requirement in this type of model is an "x-y" statement, that is, "if 'x' occurs, then 'y' will follow." One must go beyond simple statistical correlations (i.e., "x" and "y" occur together) and infer causality. Here again we see that the cause and effect variables are individually determined by the designer. As Alexander himself points out, this type of relationship necessitates that universals be established, that is whenever "x" occurs, "y" must occur. Alexander bases his model on a "tree" concept; the branches are formed depending on the fit or misfit of a phenomena when evaluating a design product. Lionel March has used this model to ascertain what shape should a building be to reduce heat losses?[19] If a building is more than "z" feet high, "x" and "y" must be a specific size to optimize the solution. Another example was used by Alexander in the teapot mentioned earlier, for the twenty-one design variables identified, Alexander's model will indicate whether, when one misfit is changed to a fit, any other variables are affected. It takes into account

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[19]Lionel March, "Elementary Models of Built Forms," in Urban Space and Structures, op. cit., pp. 57-67.

the probable development if a particular phenomena occurs, but it also presents limitations and because of those limitations Alexander's model must be used in conjunction with a planning model. "It is nevertheless impossible to treat all external (exogenous) variables conditionally, since not all will operate independently of each other."[20]

The predictive model, as the name implies, is designed to forecast what the future development of the urban environment will be like. There are two methodologies that can be used in a predictive model:

> Extrapolative, where only the continuation of present trends that were already in the descriptive model is stated; and conditional, where the mechanisms of cause and effect governing the variables are specified, i.e. "if 'x' occurs, then 'y' must follow."[21]

With both of these models it is necessary to become much more precise as to exactly what the trends are. In the case of the former, all the conditions which will influence a particular phenomena must be identified. With the conditional approach, it is necessary to establish universal concepts so that whenever "x" occurs, its yield is always "y." Thus, the Predictive Model must, of necessity, represent the manner in which the urban environment is changing. That is, the basic

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[20]Echenique, op. cit., p. 98.

[21]Ibid., p. 170.

assumption for this type of model is that it represents the way in which reality is changing or the trends that are developing. Once all the variables are determined, the theory does not allow for an unaccountable occurrence or an exogenous variable to happen. Using practical reasoning, the evolution of that urban environment will be represented as understood using the contemporary rational thought process.

In the study of aesthetics, the planner must be cautious when he considers the use of this type of model. On the one hand, it can be argued that all cities undergo the same experiences throughout the course of their evolution, or on the other hand, every city is unique unto itself. Whichever view the planner takes, the predictive model does present limitations since it is not designed to consider alternatives, "either because they have not been discovered, or because they do not fit the theory that describes the phenomena."[22] The only changes that can occur are for those variables that have previously been identified. As such, it is a model that can be considered as a direct extension or application of Whitehead's practical reason. It simply provides a means for the planner to demonstrate what development will occur if no other variables are considered and the

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[22]Ibid.

variables not changing. It is designed to describe the evolution of the urban environment based on existing conditions and the theory that is being applied to that environment's metamorphasis. If a change in the variables is desired, an Explorative Model is necessary. Alexander has linked these two models so that he can change not only the variables but also show what will occur over time without change.

> The main intention with the Explorative Model is to discover by speculation other realities that may be logically possible by systematically varying the basic parameters used in the descriptive model.[23]

It is here that the variables can be changed or you could say that speculative or intuitive reasoning is applied to models. Through the use of this type of model, it is easy to isolate a single variable. A particular project or policy can be shown and what its net affects will be at which point the solution offered can then be either accepted or rejected. It is easy in this manner to see what action a particular phenomena will have on the urban environment. Its success can be judged on whether its "implications are rich enough to suggest novel hypothesis and speculations in the primary field of investigations."[24] This is exactly what Whitehead has attributed to the rapid

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[23] Ibid.

[24] M. Black, Models and Metaphors (Ithaca, N.Y.: Cornell University Press, 1962).

advance of technology: the merging of practical and speculative reason. So far, it appears as though the use of models still has some validity in aesthetics. How has Christopher Alexander developed his model and does it adapt itself readily for use in aesthetics?

Alexander treats the construction of his model as a designer would normally approach any typical design problem. That is, he develops a basic list of criteria that must be considered and satisfied in order to arrive at a solution for that problem. Once he has determined all the criteria that are involved in a particular design problem, he attempts to establish their degree of independence. Are they independent variables, or are they interdependent with other variables. Ideally, his approach is to reduce a particular design problem to totally independent sets in which any misfit can be isolated and solved without exerting an influence on the other variables. He also attempted this same approach in the design of an Indian village where he applies his theories to town design. Just as for the unself-conscious society where each misfit is solved independently of any other variable, so too can Alexander's model deal with those variables for a self-conscious society in an orderly fashion. He next approaches the design problem from the aspect of those variables that are interdependent with other variables. And since those

variables have been identified their interrelationship with other variables becomes obvious. In order to utilize his model, physical situations must be described in concrete terms as well as their interrelationship.

In Alexander's Model, the variables or criterion that are involved in the design problem he labels as "M" while the interrelated linkages he terms "L." The "M" for an urban environment are considered to represent three different kinds of needs which are not necessarily the needs felt at the micro-level but also those needs that are imposed on the micro-level from the macro organization.

1. All those needs which are explicitly felt by villagers themselves as needs,
2. All those which are called for by national and regional economy and social purpose, and
3. All those already satisfied implicitly in the present village (which are required, though not felt as needs by anybody).[25]

Alexander has illustrated how this system worked in a small rural Indian village and if an analysis of the approach used by Hassan Fathy in New Gourna is done, the methodology of design attempted was without the complex modeling formulae. Needs were isolated at both the micro level and the macro level, and the new towns that Alexander and Fathy designed were to conform to those criteria.

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[25]Alexander, op. cit., p. 136.

The "L" variables are the linkages that actually occur between the "M" variables and must be identified and determined by the designer in advance. Although the "M" variables might be universally accepted for all urban environments, the "L" might differ from one urban environment to another. Obviously, if every urban environment underwent the same influences in their development, a universal model could be applied. But this would necessitate building a model and testing it against a fairly large number of cities to see whether those universals are valid. Now, although universals might be proven correct, that does not mean that every urban environment would appear the same, it simply means that concepts regarding land use, for example, have been applied to all urban environments. The exact program or percept that was applied was related in some manner to the concept of land use. Every urban environment has felt the influence of different "M" and "L" variables. Therefore, it appears that for each urban environment a possible universal might be applied, but the influence of each variable would have to be determined.

If the urban environment is viewed as a total entity, that is comprised of the "earth" and the "world," the hierarchical tree would appear similar to the one we constructed earlier (see Figure 23) except that "urban environment" would be substituted for "aesthetics."

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Thus, it can be said that the urban environment is comprised of the physical reality of the world and the underlying concepts that it adheres to. If the "earth" set is comprised of a number of cultural subset, each individual subset can be isolated into its component variables. This is what has been previously established in the descriptive model. In diagramatic form that would appear as in Figure 29 for each of the cultural modes previously discussed. A (aesthetics), B (economics), C (scientific-technic), D (political-military), etc. can be considered the cultural components that have exerted an influence on the physical form of the urgan environment and A_1, B_1, C_1, and D_1 can be considered the philosophical percepts of the cultural components that make up the "world." It has already been shown, in the chapter on cultural ecology that the subsets A, B, C, D, A_1, B_1, C_1 and D_1 are valid components for all urban environments. They can be considered as our universal percepts, but each subset can be

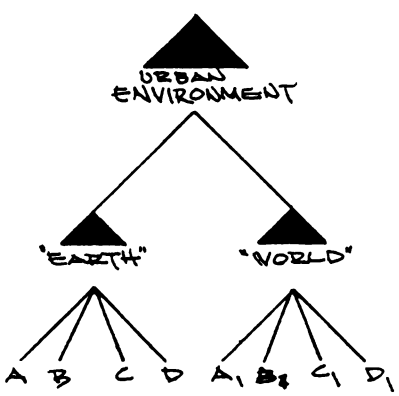

Figure 29.-- Urban Environment Tree.

considered as unique for each urban environment, since we have already shown that each urban environment has undergone different forces that have shaped its form. This serves to enable us to isolate each variable within a particular subset so that any "misfit" can be solved without interfering with existing "fits." From this set-up both an Explorative and Predictive Model can be derived for a particular urban environment. If these models are constructed accurately, any new programs, policies or influences can be examined to determine what their overall effects will be on the entire urban environment before those forces are unleashed on the real world. Thus, with a Predictive Model, we can tell what is happening if conditions are allowed to remain unchanged, while the Explorative Model will allow us to test possible new policies and their effect.

As the various influences are felt upon the actual urban environment under study, the data can be used to update the information in the Descriptive Model. But, since every urban environment has undergone different variables that have shaped it, a more complex strategy is necessary. The "M" variables and their "L" variables are then grouped according to the interactions that occur and, from the sets, a subset is established. Within the subset isolated phenomena can be solved without interfering with the fit already established. From this set-up both Explorative and Predictive Models can be utilized on the design of the urban

environment. As these influences are felt on the real urban environment, the data can be input into the Descriptive Model. This would give the planner or designer an accurate representation of what the urban environment currently looks like and what the trends and policies will yield.

Planning Model

The constant revision of the previous three models (descriptive, predictive and explorative) to represent the evolution of the urban environment is necessary in order to make use of a planning model. Ray C. Fair does this same thing in his econometric model; the variables are constantly being revised to reflect the changes that the real world is undergoing. Thus, Fair does not have to manipulate his results as is necessary with other econometric models.[26] This constant revision of the variables in a planning model is necessary to reflect the changes that are occuring in the real world.

As I have previously stated, the three models described earlier are used as the building blocks for the planning model. But, where the planning model differs from the other three is that in this model rules of optimization must be applied so that "ideal" situations can be forecasted. That is, the planning model allows us

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[26]Ray C. Fair, A Short-Run Forecasting Model of the United States Economy (Lexington, Mass.: Heath Lexington Books, 1971), pp. 7-9.

to make choices that maximize the particular components of the design problem that are being considered. It is this optimization of values that often prove the stumbling block for the planner, since they often do not take into consideration all the major cultural values that are inherent in a given community. Architects also appear to have the same problem: they become identified with a particular style of building.[27]

The second aspect in which the planning model differs from the previous models is that the planning model calls for "a very precise description of the value to be optimized."[28] An example of the application of a planning model can be found when one of the clients' design criteria to the architect is to minimize the cost of construction of a building. Another example might be the transportation planner designing a road system that is the cheapest possible in terms of capital outlay by the community (social costs not to be considered). Here the modeler (in the above cases, the architect and the planner) is dealing with actual costs that can be readily quantified, e.g. materials, labor, land costs, etc. But, even in this context, planning models have not been totally adequate as evidenced by the massive cost over-runs

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[27]Jencks, op. cit., pp. 84-85.

[28]Echenique, op. cit., p. 171.

that are currently plaguing the construction industry, e.g. Yankee Stadium in New York, Seattle's domed stadium or the 1976 Montreal Olympics. Aesthetic concerns have been even more difficult to quantify, since they necessitate attaching a quantitative value to the possible criteria. The City of New York has made an attempt to consider aesthetics in planning through the use of special zoning districts, e.g. the Theatre District, Greenwich Street Development District, Financial District and so on. The City has established a list of desired amenities for each special district and will make other concessions to the developer if they are included in the design. This allows the planners to make trade-offs such as granting larger floor area to developers who include these desired elements; the use of plazas and arcades resulted in an increase in the allowable floor area by 20 percent in the Greenwich Street Development District.[29] How, then, can a planning model be used when one is concerned with aesthetics?

The Planning Model that has been selected for investigation, in this thesis, is the one developed by Lionel March, more commonly referred to as the Cambridge Model. In this model, there are four steps necessary:

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[29]Marvin Maricus, "Urban Design Through Zoning," A.I.P. Planners Notebook, October 1972, p. 7.

> one, specification of alternative programs or actions that might be chosen by the planner; two, prediction of choosing each alternative; three, scoring these consequences according to a matrix of goal-achievement; and four, choosing the alternative which yields the highest score.[30]

The first two steps necessary for the Planning Model are similar to what Explorative and Predictive Models will do respectively. The Explorative Model is used to generate new alternative schemes, while the Predictive Model can be used to describe what will transpire when a particular alternative is chosen, thus fulfilling the first two steps of the Planning Model. Combined with the Descriptive Model, they will give a representation of the reality that will most probably occur based on the given data and alternative chosen.

The use of the descriptive model can now aid in providing the matrix of goal-achievement that is necessary in step three of the Planning Model. This matrix can be set up as in Figure 30, with the cultural value sets being put on the "x-axis" and the alternative actions being listed along the "y-axis." Each of the cultural value sets would then list the criteria to which each alternative will be tested to ascertain whether there is a fit or misfit relation. These cultural value

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[30]Bullock, Dickens, and Steadman, op. cit., p. 98.

Figure 30.--Matrix of Goal-Achievement.

sets would correspond to the components of our cultural value pyramid.

The cultural value sets would form the major divisions with individual criteria being listed under each set that those criteria might apply to. These criteria can also be taken directly from the Descriptive Model. That is, under aesthetics the following have been found as having an important role: form, content, emotional power, cultural context, and the various other components discussed in the previous chapter. These differ from the economic concerns such as: obtaining of new markets, structural efficiency, and the like. Obviously, there will be some overlap where a criteria is listed under both aesthetics and economics, but these can be dealt with in a similar manner as Alexander has done with his Indian village. The cultural value sets and their various subsets then serve as a constant test for the model to illustrate how the various components of the urban environment fit together and to determine whether they will yield a better environment than has previously existed. As Alexander states,

> For most requirements it is important to satisfy them at a level which suffices to prevent misfit between the form and the context, and to do this in the least arbitrary manner possible.[31]

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[31]Alexander, op. cit., p. 99.

This is similar to what has been discussed earlier by A. N. Whitehead and the "art of life." The desire to constantly strive for a better life. Now, how does this model score the respective alternative actions? This is where the rules of optimization are applied since the planner is usually interested in obtaining the action which yields the highest score (the fourth component of the Planning Model).

In establishing rules for optimization, for this component of the model, it is probable that a computer alogrithm statistical technique would best serve our purpose. This technique would allow for us to put our criteria of goal-achievement into verbal terms. But, a method of scoring is still necessary for "choosing the alternative with the highest score." First, how are the rules of optimization obtained so that they are indeed the optimum values that the community desires?

In the Descriptive Model, a cultural value pyramid was developed to illustrate the hierarchical system that is desired by the community. Each of the individual cultural components have an ideal that should be attained. For example, the economic concern might be the following:

1. The use of land must increase the community tax base to the highest possible value.

2. Proposed use must minimize the tax funds necessary to provide city services to that area.

3. Increase the number of jobs available in the community.

These three criteria can be expressed using an equation technique that would be seen as follows. Where T (total taxes) equals tax rate on land (t) times the land in use t tax rate on jobs (j) times jobs in the area.

$$(1)\quad T = tL + jJ$$

Land in use (L) depends on (is a function of) the tax rate (t), number of jobs (J) plus city expenditures (E).

$$(2)\quad L = f_2\ (t, J, E)$$

An "identity" is the formal name for this equation. Here it says taxes equals expenditures.

$$(3)\quad T = E$$

And finally, to accomplish point 3 above, the equation (4) jobs (J) depend on tax rates, city services (E) plus other factors (O).

$$(4)\quad J = f_3\ (t, E, O)$$

If we are the city, we have one decision available--the tax rate. We choose t to maximize L+J according to some objective function that embodies our relative concern for land versus jobs subject to equations (1) and (3).

Finally, in order to incorporate some concern for aesthetics into the equation, constraints can be introduced. For example, in addition to the above (4) equations in this system would add

(5) $L \leq \bar{L}$

or land uses (L) must be less than or equal to some $\bar{L}$ which represents a society's tolerance for density (i.e. if there are 100 acres in an area, $\bar{L}$ might equal 80). This would say that, for cultural or aesthetic reasons, the society demands 20 acres of open space).

The criteria used in the Descriptive Model are analyzed to determine which alternative will yield the best results. This can be done through the use of a binary variable system where each alternative is examined and where the planner determines whether a fit or misfit relationship exists. If the alternative fits the "ideal" criteria, it can be given the value of 1, while a misfit would yield a 0. This would have to be done for both the "earth" and the "world" components as presented earlier. Since there is also a hierarchical value system in effect regarding a particular society's cultural values (see the section on "Cultural Value Pyramid"), the results of the matrix can also be weighted to reflect those values. This relative scale of importance can be reflected in the design decisions, thus yielding an

environment that reflects the cultural values of a particular society. Therefore, it is of extreme import for the planner to make an accurate assessment of a society's cultural values in order to make equally accurate design decisions.

Application of Models

From the preceding three sections, on models, the feasibility of constructing models to provide a representation of an existing urban environment was demonstrated in theoretical form. But, does that theory translate into practical application? What is attempted in this section is to show how that theory might be applied to a real world situation. Obviously, what is attempted here is a simplified example; a total development would entail a great deal more study of the example area. Therefore, this section will attempt to illustrate how the four models discussed (Descriptive, Predictive, Explorative and Planning), all interrelate and build upon each other to aid the planner in the design of the City of East Lansing and surrounding environs.

Currently, there is a major controversy in the City of East Lansing over the use of land in the northeast section of the City. Dayton-Hudson Corporation has proposed the building of a large mall in this area which had been previously zoned as agriculture. The land is

also used as part of the catchment area for the City as well as the agriculture areas north of the City. A necessary zoning change was applied for and, after numerous public hearings, granted. But, there are numerous persons still fighting the proposed construction. At the moment, action is being taken to try and overturn the zoning change through a referendum. There are two areas of major controversy in this issue:

1. The implication of local versus regional zoning when obvious regional concerns are involved, and
2. the change of zoning for ecological concerns.

The first of these is a controversy which will not be addressed since it involves a major philosophical discussion. It is assumed that the local agencies will make the final decision, although the area modeled will be the Tri-County Area. The reason for this assumption is that is the way the system now exists in this locale. How would a model aid the City in making the correct decision in regard to the proposed use of this land?

The first item necessary, as has been previously indicated, is a Descriptive Model for the Tri-County Area. This model would have to perform two tasks: one, a description of the "earth" or the real physical environment, and two, a description of the "world" or the real cultural environment as determined by the community's value system. (This would take the form of the cultural

value pyramid developed earlier.) The "earth" segment of the descriptive model would present an accurate representation of the physical elements that comprise the Tri-County Area and would be organized according to the cultural sub-sets described earlier. These components would be grouped with their respective cultural sub-sets of the descriptive model: that is, economic, aesthetic, religious, military, etc. These would also form the basis of the goal-achievement matrix which is needed in the Planning Model. The sub-sets that are necessary here should be described using the simplest manner possible, similar to the 141 components that Alexander developed for an Indian town.[32] The "earth" would then be described in terms of land use, building configurations, economic concerns (i.e., income sources, shopping patterns, tax base, and so on), transportation systems, sanitation systems, etc. The information gathered requires only a practical reasoning process since the intention of this model is to formulate a visual representation of the total urban environment that is being studied.

The second item that the descriptive model calls for is a representation of the "world" or the cultural values of the community. The cultural value pyramid developed earlier can now be introduced to show the

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[32]Alexander, op. cit., pp. 136-173.

hierarchical system of concerns at a micro-level for the East Lansing and Tri-County Areas. This would be organized in the same fashion as the "earth" model, through the use of the cultural sub-sets. It is this model that the planner must begin to use some degree of speculative reason or his intuition because he must try and determine this cultural value pyramid. These values would form the basis for the goals and objectives that the planner is commonly concerned with, but must be made more explicit than the "general health, education and welfare" that is frequently used. The net yield from these two sub-models ("earth" and "world") is a visual image of the existing environment. This can be drawn to illustrate how the cultural values have manifested themselves in the physical environment. Obviously, the use of a computer is necessary since a large amount of data would have to be collected to accurately portray the existing urban environment (see Figure 31).

The use of a computer can also be utilized to test the model's accuracy through the use of a CRT terminal (cathode ray tube, similar to a television set). The program for Computer Graphics developed at Cornell University provides an animated pictorial image which is designed to simulate movement through a given space. In the example that is being discussed here, a visual image of the Tri-County Area is presented. Since the

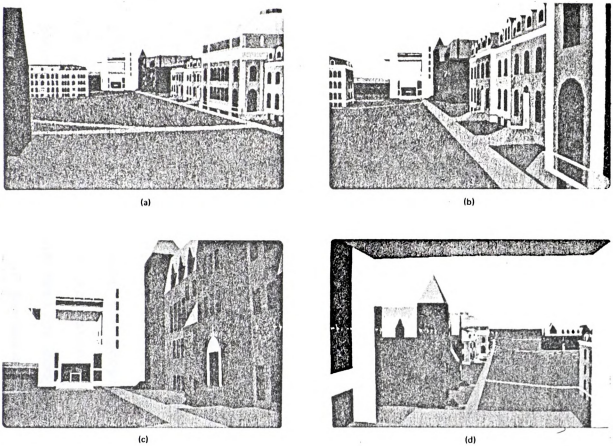

Figure 31.--Computer Graphics from Cornell University.

SOURCE: William J. Mitchell, Computer-Aided Architectural Design (New York: Petrocelli/Charter, 1977), p. 366.

representation is visual, both the planner as well as lay persons in the community can assess the model's accuracy in terms that are readily understood.

Community participation can be obtained quite easily with this system if the use of cable television is introduced--the family television set replaces the CRT terminal. This would enable the planner to obtain the community's input as to whether the model is an accurate representation of the existing environment or whether further changes are necessary. If changes are necessary, they can be incorporated into the descriptive model to produce a more accurate representation of the community.

The Predictive Model can now be introduced into the total system with East Lansing's Dayton-Hudson Mall project. Data based on the same criteria as obtained for the Descriptive Model is now collected. These data would then be feed into the system to show how the Tri-County Area and, more specifically, how the City of East Lansing would change in accordance with the proposed development from a physical standpoint or the aspect of the "earth." The model would show how the various components would change with the development of Dayton-Hudson in the area in terms of the criteria previously established in the Descriptive Model. Time can also be incorporated into the simulation to show building deterioration as well as other variables that are influenced along a known time

continuum. This type of system is currently being used by the automotive industry in the testing of automobiles. Since part of the Descriptive Model also is to present trends, they would be included as the time continuum is represented. Thus, an "accurate" prediction can be made that will show the city as it will evolve if no other influences are exerted other than those that have been indicated as possibly occurring in the future. Here again, the image produced can be projected over the cable television to give the community a chance to evaluate the project without the necessity of actual erecting the mall.

The necessity for the planner to use speculative reason or his intuition is now starting to become more important since the model's development necessitates assumptions. That is, before the model can make predictions, it must be told what components will change and what individual changes will yield. This is the "x-y" statement that is the basic requirement of this type of model.

The second aspect of the Predictive Model that is necessary is to project a representation of the "world" and to see what will be changed or remain static once the project is built. Here, the planner makes use of an intuitive process of thinking since he must anticipate what the cultural values will be in a future time

period. Again, the necessity for an "x-y" statement. For instance, if the mall is built, then economic concerns will decrease or if it is not built then economic concerns in the form of the property tax would remain high and so on. This information can also be considered as the goals and objectives that the community has for future development as well as the goals that the potential developer must strive for. These data can then be used by the planner to project their effects on the "world" as well as the "earth" since these two components should always reflect the values current for the community. If the model has been constructed correctly, the two sub-models should always be consistent with each other if an aesthetic environment is to be achieved. That is, if the projected mall development indicates a shift in the population base to occur, the cultural values of that area will also have to be revised to show this metamorphosis. Here again, this model can also be used at a later time in the Planning Model to study the effects of projected alternative developments. This would enable the planner to make predictions as to what each alternative will yield.

Since the Predictive Model is limited to being able to project changes based upon the trends that have already been indicated in the Descriptive Model, an Explorative Model must be developed. This Explorative

Model would generate alternative actions or uses that might yield other results for the development area. These alternative actions can be exerted on either the "earth" or "world" sub-model.

The "earth" aspect of the Explorative Model would state what are the alternative uses that the land might be put to. In the City of East Lansing, those uses could be agricultural or natural area (as already exists), low-density housing, high-density housing, a developed park, commercial or even a mixed use pattern. Since there are relatively few alternatives, or at least a known number, to which the land can be used, this model would be relatively simple and would necessitate a practical thinking process. This model could even be incorporated into the Predictive Model so that when a run is made on the computer only a single pass is necessary to generate the alternative actions and each alternative yield. This would probably give a lower cost as well as being able to generate a number of alternative schemes at an early stage of the design process.

The alternative schemes that are developed can be related once again to the "earth-"world" format. For instance, instead of producing alternative uses for the land, alternative actions can be generated relating to the cultural values. An example might be, instead of economic values being paramount (assumption based on

macro-level cultural value pyramid developed in Chapter I), what would occur if environmental concerns became more important? Thus, a model can be produced that generates alternative actions in regard to either the "earth" or the "world" and the results of those alternatives can be seen through the use of a Predictive Model.

Now, the problem arises to say and choose which alternative action or program will yield the best results for the area being studied. It is for this problem that the Planning Model becomes a viable means of stating what action should be taken for a particular design problem. In developing the total system in the manner that has been attempted here, the Planning Model becomes a relatively simple procedure with the choices also being relatively simple. How does the Planning Model work in regard to the example being developed here?

As indicated earlier, there are four components necessary in a Planning Model. The first step is that it must be able to generate alternatives that can be chosen by the planner. This is the same thing that the Explorative Model does and, therefore, does not necessitate the development of a new model. The necessity is to develop a program which can develop new alternative actions that might be taken. The second step that is a requirement for a Planning Model is to be able to predict the probable consequences from each of the new alternatives.

This is precisely what the Predictive Model did; therefore no further work needs to be done on it.

It is the remaining two components of the Planning Model that require further work by the planner in developing a system to be used in consideration of urban design. The first action, of these two components, is to provide a system for scoring the consequences of each alternative according to the desired goals or criteria that have been selected by the planner. In order to accomplish this, it has been suggested that a matrix be developed. For the example we are currently developing, the matrix can be developed as in Figure 32.

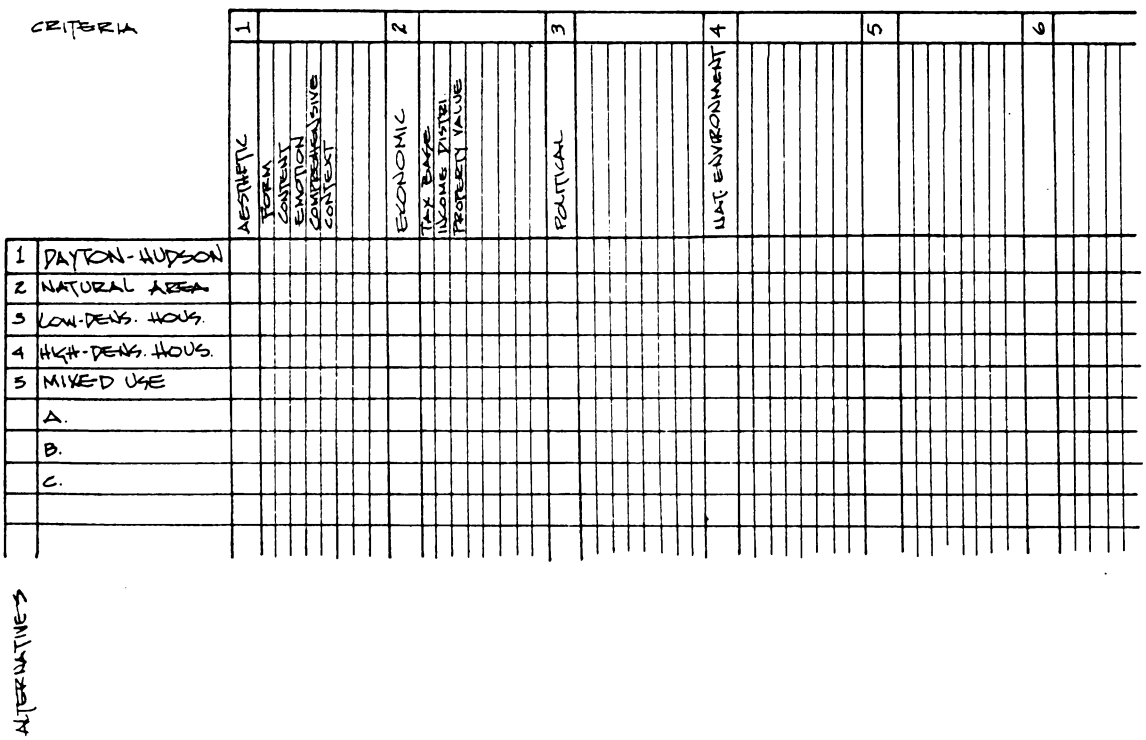

Figure 32.--Matrix of Goal-Achievement for East Lansing (1).

Along the "x-axis" or criteria, a listing of some of the cultural sets has been done, e.g., aesthetics, economics, political, natural environment, and so on. As has been done previously, the cultural value sets would form the major division with the individual criteria being listed under each set that those criteria might apply to. These criteria can be taken directly from the previously constructed Descriptive Model or the criteria studied in the cultural value pyramid. In the above example, four cultural components are used to show how this format would work. The individual sub-set for each cultural value can then be inserted under those major divisions as done in Figure 32 for aesthetic and economic cultural value sets.

The "y-axis" or the possible alternatives that might be chosen by the planner. In the example, possibilities that might be chosen range from the Dayton-Hudson Mall, mixed use, residential and so on. The exact criteria of each of these possible land uses can be described as is currently done in the community's zoning regulations. That is, land used for residential purposes must fulfill the following criteria: A, B, C, D, etc. People like Ian McHarg have proposed systems that concern themselves with the natural ecosystem as a determinant for the use of land. Economists have done the same thing for the economic use of land, and people like Camillo Sitte

have done the same for the city as an art form. All of these people have isolated their particular system as being the method for making design decisions to the exclusion of other disciplines. The system being developed here can use their systems in combination with other systems. This is where the rules for optimization are applied since the planner is usually interested in obtaining the action which will yield the highest score.

In the simple matrix previously developed in Figure 32 under the aesthetic criteria are the following: form, content, emotion, comprehensiveness, context, and so on. To apply rules of optimization to these criteria, a computer alogrithm statistical technique, as previously suggested, will be done; that is a definition to which the computer can compare. These definitions are explained in greater depth in the second chapter, but two brief examples might be:

1. Emotion - Does the proposed development extract an emotional response from the viewer (see Appendix for emotion criteria)?

2. Comprehensiveness - Does the proposed development display a knowledge of the architecture of the surrounding area as well as the historic?

Obviously, the list can go on at great length in order to encompass the various aspects of the urban environment that are necessary to accurately create a representation of that environment. But, the above two definitions do

provide an example of how the information can be sorted. Now, how is the scoring of these established?

As previously suggested, a binary variable system can be used to provide a preliminary score regarding fit or misfit. That is, if the alternative fits the criteria and its particular definition, it can be given a value of 1 while a misfit would yield a 0 for each criteria. Figure 32 illustrates how the system might respond to the matrix previously developed. As can be seen, each

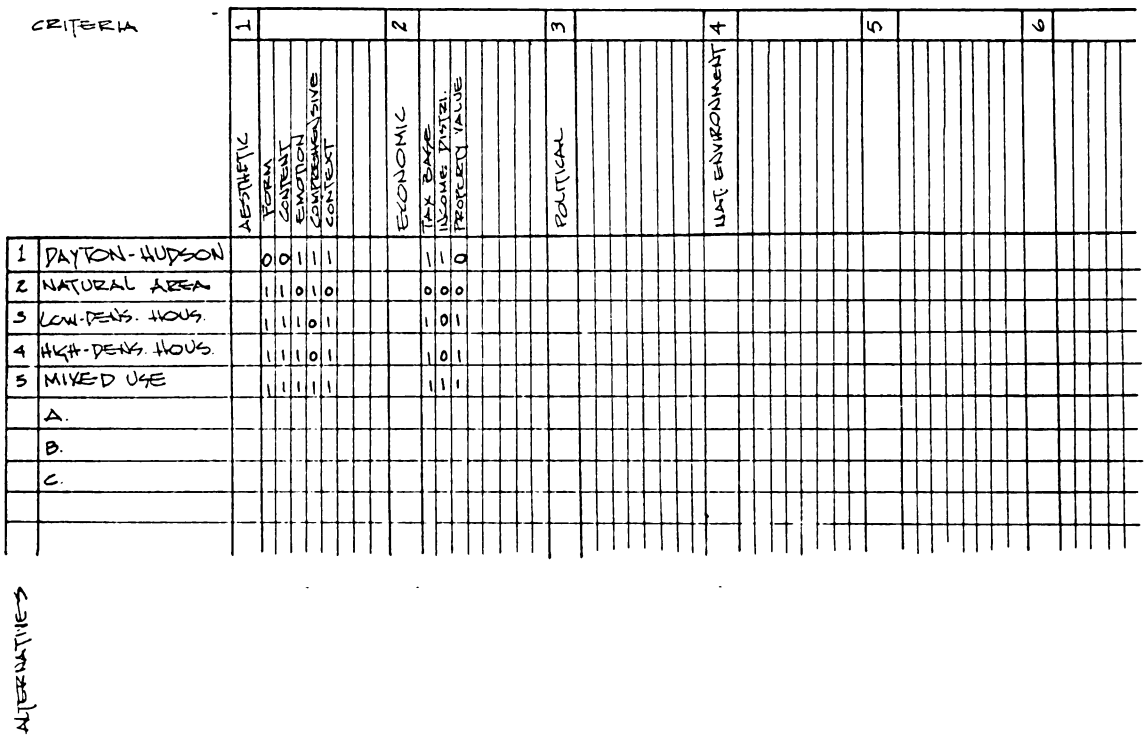

Figure 32.--Matrix of Goal-Achievement for East Lansing (2).

alternative action is tested for each particular cultural set. Obviously, Figure 32 has been shortened considerably to simplify the example. But, the above

results only yield an answer that is weighted equally for each cultural set, and it has previously been shown that each society puts a different cultural value at the pinnacle of its cultural value pyramid. How can this be taken into account?

The obvious answer is to weight the results based on the hierarchical system of the cultural value pyramid. If each of the cultural systems is given a value on a scale of 1-4, with 1 representing the lowest cultural priority of a society and 4 the highest cultural priority of that society, it is a relatively simple mathematical equation. "A" equals the cultural priority studied first

$$X_1 = 4A_{(A_1, A_2, A_3 \ldots A_N)} + 3B_{(B_1 \ldots B_N)}$$

$$+ 2C_{(C_1 \ldots C_N)} + 1D_{(D_1 \ldots D_N)}^{2}$$

in the matrix and "D" the fourth multiplied by 4 for the highest cultural value and 1 the lowest. This would then give an answer that would be weighted to reflect the society's cultural values. This then is a method to weight the system and score the results so that an accurate forecast can be ascertained. If desired, by the community, the model can even be weighted according to

the individual and weighted in such a manner as to reflect the pluralism currently being advocated by many persons in our society.

Conclusion

In the preceding discussion, on models, several important conclusions have been implicit. Those conclusions are as follows:

1. Both speculative and practical reason can be applied to a design problem to produce a solution, but

2. the successful solution, in aesthetic terms, incorporates the advantages that are inherent in each method of reasoning. Therefore,

3. the planner must look to not only the reality of the existing trends but must also look for alternative actions and programs that can be applied to the design problem.

4. Models can be constructed to represent the existing urban environment in terms of both the "earth" and "world," but this construct is highly dependent upon the perceptions of the person constructing the model.

5. Models can be utilized to explore a design solution that a particular action or program might yield in the real world situation. But, those results are highly contingent upon the input that the modeler deems

important. Thus, individual perceptions are a factor in the end solution.

6. Finally, models can be used to produce a solution or an action based on rules of optimization that have been established by the modeler.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The impetus for this thesis was a concern for the aesthetic qualities of the urban environment. In the examination of these two subjects (aesthetics and the urban environment) their interrelationship was considered. This caused the research to move through a large number of topics: from art, architecture, anthropology, philosophy, psychology, to history and other disciplines. The discussions that were presented focused on three primary subjects.

The first subject was a study of a cultural ecological approach to aesthetics and the urban environment. The second topic that was investigated was formulation of a theory of urban aesthetics that might be applied in the design (both the creation and maintenance) of the urban environment. This formulation was not an attempt to provide a methodology but limited itself to theory. Finally, a third topic, on modeling, delved into a possible method for application of some of the theories that were previously developed. Here again, it should be noted, that this was not a ready-made practical tool, but

a methodology that could be followed. Therefore, the work that has been completed up to this point should be considered as a theoretical model of how the planner may view aesthetics and the urban environment. It is hoped that a practical application of these theories will be developed further at a later date.

In providing a summary of some of the conclusions that have been arrived at, in the first chapter on "Cultural Ecology" the following are the conclusions and findings of that investigation:

1. There are design principles that are used by any given society and these can be considered to be a reflection of that society's cultural values. That is, whether a society is considered as either "rational" or "pre-rational" there is a unique design methodology that is followed by the designers of that society.

2. These cultural values can be examined through semiotical investigations of either the cultural or the physical environments. Once the symbol-system reflected in the artifact is understood, the cultural value can be identified and then placed into a cultural value pyramid that is unique for that society. This cultural value pyramid is a device used to show a society's cultural value preferences.

3. There are interdependent relationships that the planner must be cognizant of when aesthetics is being

considered. The environment (both natural and cultural) effects human behavior settings and the behavioral patterns also effect the shape of the urban environment. Therefore, they can be considered as synomorphic.

4. There are both physiological as well as psychological limitatations that impinge upon human perception. Those limitations can be stated as follows:

A. The psychological limitations are: (1) that a person's ability to concretize new precepts is limited to prior experiences (for most people), (2) those prior experiences can be continually encouraged to create a better sense of the aesthetic.

B. The physiological limitations are also twofold: (1) the limitations of a person's sensory organs, and (2) the limitation of that person's prior experiences.

5. It is therefore possible (from points 4 A and B) for a design problem to yield a multiplicity of solutions. Since there are both individual constraints as well as societal constraints the solutions offered might all be considered equally correct. But, within any given social organization there is one solution that can be considered the best solution, and this is based on that group's cultural value pyramid.

In the second chapter, where a theory of urban aesthetics was developed, the key factors that were uncovered can be summed up as follows:

1. The creation of an aesthetic experience in a work of art necessitates that more than the subject matter (content) be considered. The form is equally important and both must be considered in the cultural context from which the work originates.

2. In order to successfully combine these three aspects of the art work (subject matter [content], form and the cultural context) the viewer must take a comprehensive position. That is, a transcendance view must be taken and the viewer must seek the underlying symbolic meaning of the art work. He/she must go beyond the cursory or surface view of the art work that is presented.

3. There are two components that the viewer must also consider in examining the art work; these two components are the means by which the subject matter, form and cultural context are viewed. In this thesis I have termed those components the "earth" or the materials that are available to the artist and the "world" which relates to the cultural values that the artist and/or the society holds.

4. In both the "earth" and "world" the art work must elevate the viewer perceptions to a new awareness

about the natural and cultural reality and in doing this create an emotional reaction in the viewer.

5. In the creation of the art work a comprehensive view is also necessary. That is, the artist or planner does not work in an historical vacuum but must be aware of what has previously transpired to influence the form of the city and also how both architectural forms and city plans have reflected the society's value system.

6. There must be a combination of rational thought (or a logical, ordered system of design) as well as an ability to also blend artistic or intuitive thinking into the art work or the city design.

7. It is through the combination of these two forms of thought (rational [practical] and intuitive) that a greater sense of the aesthetic is achieved.

Finally, chapter three concerned itself with the investigation of several models that have been used to analyze various aspects of the city. Those models have primarily concerned themselves with more easily quantified aspects of the urban environment than aesthetics, but they might also be considered as components that are included in aesthetics. The following are the key factors that were found in that investigation.

1. There are two modes of thinking which must be applied to a design problem in order for an aesthetic solution to be arrived at. Those modes have been termed

practical (rational) and speculative (intuitive). The former can be considered the test to which the latter is subjected.

2. Artists have made use of models in the creation of the works of art and both the process of creation and the work created can be considered as models. The model describing the artistic process will yield a predictable end product or art model.

3. A description of the existing form as well as the trends that are in motion in the urban environment can be described to adequately present a representation of the urban environment.

4. Based on the trends identified in the Descriptive Model, a Predictive Model can be developed that will help to indicate what the future form of the urban environment will be. But, this model does not account for any exogenous variables that have not been previously identified. It is in essence a "closed set."

5. An Explorative Model can also be developed which will allow the planner to understand what a change in the variables will yield. This changing of the variables can then be done on an individual basis to allow the planner to formulate new programs.

6. Once the three models (Descriptive, Predictive and Explorative) are developed, a Planning Model could be utilized. This Planning Model would have "rules

of optimization" applied to it, so that the programs instituted will yield the most beneficial results. But, these "rules of optimization" are based on the modelers' or planners' perception of the problem.

7. Finally, it should be again noted that this thesis was an attempt to develop a theory of urban aesthetics to which further investigation and development can be applied.

APPENDIX

TABLE OF THE FOUR FORMS OF THE MANIFESTATION OF CONSCIOUSNESS

TABLE OF THE FOUR FORMS OF THE MANIFESTATION OF CONSCIOUSNESS

	1ST FORM	2ND FORM	3RD FORM	4TH FORM
THE SENSE OF SPACE AND TIME	The sense of one-dimensional space. The world on the line. The line as space, everything else as time. Everything except things lying on this line is in motion.	The sense of two-dimensional space. The world on the plane. The plane as space, everything else as time. Angles and curves as motions.	The sense of three-dimensional space. The world in an infinite sphere. The *sphere* as space. Everything else as time. Phenomena as motions. A becoming and changing universe.	The sense of four-dimensional space. Spatial sensation of time.
PSYCHOLOGY	Appearance of the first sensation. Sensation a unit. Its division into two. The gradual evolution of sensations and the accumulation of remembrances concerning them.	Perception. The expression of sensations by cries, sounds, motions. The absence of words and speech. Were there speech it would consist of substantives only.	Concept. Words. Judgment. Syllogism. Reasoning. Speech. Written language. Allegory. Emotions.	Self-consciousness. New sensations. Higher emotions. Expansion of concepts. Direct knowledge. Symbolism. Cosmic consciousness.
LOGIC	The absence of thinking, or a *confused* thinking of the 2nd form.	This is this. That is that. This is not that. The beginnings of logic. The logic of the uniqueness of each separate thing.	A is A. A is not Not-A. Everything is either A or Not-A. Dualistic logic. A logic of antitheses. Syllogism.	A is both A and Not-A. *Tat twam asi. Thou art that.* "Tertium Organum." Logic of the unity of all.

MATHEMATICS	The absence of numeration, or a *confused* numeration of the 2nd form.	The comparison of *separate* visible objects or *separate* perceptions. The direct sensation of quantity. *Computation* within the limits of this sensation.	Every magnitude is equal to itself. The part is less than the whole, etc. Finite and constant numbers. The geometry of Euclid.	A magnitude can be not equal to itself. The part can be equal to the whole, etc. Metageometry. Mathematics of variable and infinite magnitudes.
FORMS OF ACTIONS	Reflex, unconscious, responsive action to external irritation.	Instinct. "Emotional" and expedient action without consciousness of results. Seeming consciousness. Inability to manipulate a lever.	The consciousness of the purpose of actions performed. The *possibility* of a consciousness of results. The cause of actions in the outer world in impressions received from the outer world. The impossibility of independent actions without impulses coming from the outside.	The starting of conscious actions. The starting of actions with the understanding of their cosmical meaning and purposes. The commencement of independent actions *proceeding from oneself*. MAGIC.
MORALS	Unconscious actions (like the actions of a man asleep).	The beginnings of the maternal, family, and tribal instincts. Laws of the life of the *species* as a condition of evolution. The unconscious submission to the "group soul" of the species manifesting through instincts.	Logical and conventional division into good and evil. The submission to the group consciousness of the family, of the clan, of the tribe, of the nation, of humanity, of the class, of the party, of a custom, of a fashion, etc.	The return to the law inside oneself. *A new conscience*. Emancipation from submission to the group-consciousness. The realization of oneself as an independent unit.

	1ST FORM	2ND FORM	3RD FORM	4TH FORM
FORMS OF CONSCIOUSNESS	Potential consciousness. Consciousness in a latent state—asleep. Consciousness as in sleep without dreams.	Simple consciousness. "It pains me," but the impossibility of saying, "I am conscious that it pains me." The reflected state of consciousness. Vision as in dreams. The passive state of consciousness.	The ability to think of one's states of consciousness. The division of I and Not-I. Active consciousness. *The moment when further evolution can be conscious only.*	The commencement of self-consciousness. Ecstatic states. Transitions to cosmic consciousness.
FORMS OF KNOWLEDGE	Unconscious receptivity of the environment, and unconscious reaction to it. "ADAPTABILITY."	The beginnings of attention. Observation. The accumulation of instincts. The recognition of everything *sensed* as real. The failure to discriminate between that which is illusory and that which is real.	Experience. Experimental knowledge. A complete and deep division and mutual misunderstanding between four forms of knowledge—religion, philosophy, science and art.	The beginning of the development of forms of knowledge. Mystic knowledge. A new sensation of time. The sensation of infinity. The sensation of the unreality of the phenomenal, visible world. A knowledge of the hidden substance of things by their outer signs. Unfoldment of the "world of the wondrous." Co-ordination in a complete whole of religion, philosophy, science and art.

Forms of Science	An accumulation of "traces" from the produced reflexes. The appearance of instinct and the accumulation of simple instincts.	Personal knowledge. Impotence to communicate experience. The beginnings of the communication of experience in the training of the young.	Positive science. Positive philosophy. Materialism. Spiritualistic philosophy. Dogmatic religions. Spiritism and pseudo-occultism. Sectarianism. Dualism. Matter and spirit. Separation of different forms of science.	Idealistic philosophy. Mathematics of the infinite. *Tertium Organum.* Mystical religion. God and the Cosmos—one. The sensation of a living and conscious universe. The union of all sciences into one. Occultism. Understanding of "*Dharma*," i. e., of laws of relativity.
Different Beings	The lower animal. Cells of the tissues and organs of the body. The one-dimensional being. *Vegetative or semi-vegetative life.*	The higher animal. The body of man. The two-dimensional being. The absence of duality, divisibility and disharmony. *Animal life.*	Man. A three-dimensional being *outwardly* and dual *inwardly.* Inner warfare. The impossibility of attaining inner harmony. The "soul" as the battlefield of the "spirit" and the "flesh." The kingdom of the personal. Unconscious automatism. The absence of personal immortality.	The beginnings of the transition to a new type, and a new sensation of space. Victory of consciousness. "Men of cosmical consciousness." Triumph of the super-personal principle. Conscious automatism. The attainment of inner unity and harmony. The "soul" as the center of independent actions. The beginnings of personal immortality.

SOURCE: P. D. Ouspensky, Tertium Organum, pp. 307-310.

BIBLIOGRAPHY

BIBLIOGRAPHY

Books

Alexander, Christopher. Notes on the Synthesis of Form. Cambridge, Mass.: Harvard University Press, 1964.

Anton, Thomas Julius. Governing Greater Stockholm. Berkeley, Calif.: University of California Press, 1975.

Arnheim, Rudolf. Visual Thinking. Berkeley, Calif.: University of California Press, 1969.

Ashcraft, Norman, and Scheflen, Albert. People Space. Garden City, N.Y.: Anchor Books, 1976.

Bachelard, Gaston. The Poetics of Space. Boston: Beacon Press, 1964.

Barker, Roger. Ecological Psychology. Stanford, Calif.: Stanford University Press, 1968.

Barnhart, E. L., ed. American College Dictionary. New York: Random House, 1963.

Bayer, Herbert; Gropius, Walter; and Gropius, Ise. Bauhaus 1919-1928. New York: The Museum of Modern Art, 1938.

Bell, Clive. Art. New York: Capricorn Books, 1958.

Bergson, Henri. The Creative Mind. New York: The Wisdom Library, 1946.

Black, M. Models and Metaphors. Ithaca, N.Y.: Cornell University Press, 1962.

Brinton, Crane. The Shaping of Modern Thought. Englewood, Cliffs, N.J.: Prentice-Hall, 1950.

Cassirer, Ernst. An Essay on Man. New York: Bantam Books, 1970.

Cassirer, Ernst. The Philosophy of Symbolic Forms. Vol. 1: Mythical Thought. New Haven, Conn.: Yale University Press.

deChardin, Pierre Teilhard. Let Me Explain. New York: Harper & Row, 1966.

Doxiadis, Constantinos A. Architecture in Transition. New York: Oxford University Press, 1963.

Fair, Ray C. A Short-Run Forecasting Model of the United States Economy. Princeton, N.J.: Heath Lexington Books, 1971.

Fathy, Hassan. Architecture for the Poor. Chicago: University of Chicago Press, 1973.

Fromm, Erich. The Sane Society. Greenwich, Conn.: Fawcett Pubs., 1955.

Fry, Roger. Transformations. Garden City, N.Y.: Anchor Books, 1956.

Galbraith, John K. The Affluent Society. Boston: Houghton-Mifflin, 1958.

Giedion, Sigfried. Space, Time and Architecture. Cambridge, Mass.: Harvard University Press, 1967.

Hall, Edward T. The Hidden Dimension. Garden City, N.Y.: Anchor Books, 1969.

Heidegger, Martin. Translated by Albert Hofstadter. Poetry, Language and Thought. New York: Harper Colophon Books, 1975.

The Holy Bible, King James Version.

Homer. The Iliad. Maryland, Penguin Books, 1961.

Isenberg, Arnold. Aesthetics and the Theory of Criticism. Chicago: University of Chicago Press, 1973.

Janson, H. W. History of Art. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973.

Jencks, Charles. The Language of Post-Modern Architecture. London, England: Rizzoli International Pubs., 1977.

Jencks, Charles, and Beard, George, eds. Meaning in Architecture. London, England: Barrie and Rockliff, 1969.

Kasner, Edward, and Newman, James. Mathematics and the Imagination. New York: Simon & Schuster, 1962.

Kostelanetz, Richard, ed. Moholy-Nagy. New York: Praeger Pubs., 1970.

Kraemer, Hendrik. World Cultures and World Religions: The Coming Dialogue. Philadelphia: Westminster Press, 1960.

Lange, Oscar. Translated by A. H. Walker. Political Economy. New York: MacMillan Press, 1963.

Langer, Susan. Feeling and Form. New York: Charles Scribner's Sons, 1953.

Levi-Strauss, Claude. The Savage Mind. Chicago: University of Chicago Press, 1966.

Lynch, Kevin. Image of a City. Cambridge, Mass.: The M.I.T. Press, 1960.

Martin, Leslie, and March, Lionel. Urban Space and Structures. London, England: Cambridge University, 1972.

Mitchell, William J. Computer-Aided Architectural Design. New York: Petrocelli/Charter, 1977.

Moholy-Nagy, Sibyl. Matrix of Man. New York: Praeger Pubs., 1968.

Morrill, Richard L. Proceedings of the IGA Symposium in Urban Geography. Lund, Sweden: Lund Press, 1960.

Mumford, Lewis. The Culture of Cities. New York: Harcourt, Brace and Co., 1938.

Norberg-Schulz, Christian. Existence, Space and Architecture. London, England: Studio Vista, 1971.

Norberg-Schulz, Christian. Intentions in Architecture. Cambridge, Mass.: The M.I.T. Press, 1965.

Ouspensky, P. D. Tertium Organum. New York: Vintage Books, 1970.

Parageorgiou, Alexander. Continuity and Change. London, England: Pall Mall Press, 1971.

Paulsson, Gregor. The Study of Cities. Copenhagen, Denmark: Ejnak Munsksgaard, 1959.

Philipson, Morris, ed. Aesthetics Today. New York: New American Library, 1961.

Polanyi, Karl. The Great Transformation. Boston: Beacon Press, 1944.

Polanyi, Michael. The Tacit Dimension. Garden City, N.Y.: Anchor Books, 1967.

Porteous, J. Douglas. Environment and Behavior. Reading, Mass.: Addison-Wesley Pubs., 1977.

Postan, M. M., and Habakkuk, H. J., eds. The Cambridge Economic History of Europe, Vol. VI. Cambridge, England: Cambridge University Press, 1966.

Reps, John. The Making of Urban America. Princeton, N.J.: Princeton University Press, 1965.

Rudofsky, Bernard. Architecture Without Architects. Garden City, N.Y.: Doubleday & Co., 1964.

Rudofsky, Bernard. The Prodigious Builders. New York: Harcourt Brace Jovanovich, 1977.

Runes, Dagobert D. Dictionary of Philosophy. Totowa, N.J.: Littlefield Adams & Co., 1972.

Ruskin, John. Lectures on Architecture and Painting. New York: J. Wiley & Sons, 1891.

Ruskin, John. Seven Lamps of Architecture. New York: E. P. Dutton & Co., 1906.

Sitte, Camillo. Translated by Stewart T. Charles. The Art of Building Cities. New York: Reinhold Pubs., 1945.

Smith, Edward Ellis, and Riggs, Durward S., eds. Land Use, Open Space and the Government Process. New York: Praeger Pubs., 1974.

Soleri, Paolo. Arcology, the City in the Image of Man. Cambridge, Mass.: The M.I.T. Press, 1969.

Sorokin, Pitirian A. Society, Culture and Personality, Vol. 1. New York: Cooper Square Pubs., 1962.

Stevens, Wallace. The Necessary Angel. New York: Alfred A. Knopf, 1951.

Tunnard, Christopher. The City of Man. New York: Charles Scribner's Sons, 1970.

Tzonis, Alexander. Towards a Non-Oppressive Environment. Boston, Mass.: The i Press, Inc., 1972.

Walker, Theodore D. Perception and Environmental Design. West Lafayette, Ind.: PDA Pubs., 1976.

Whitehead, A. N. The Function of Reason. Princeton, N.J.: Princeton University Press, 1929.

Newspapers

"Artfully Offbeat." Newsday (Long Island). 5 June 1977.

"Diebenkorn's Mastery." New York Times. 12 June 1977, sec. D.

"The Sculpture's Headache." Detroit Free Press. 11 May 1977.

"The Traditionalist." New York Times. 12 June 1977, sec. 5.

Magazines

Baziotes, William. "Untitled." Arts Magazine, April 1977, p. 22.

Birch, L. G. "Concept of Nature." American Scientist 39 (April 1951):294-302.

"Border Crisis." U.S. News and World Report, April 25, 1977, pp. 33-39.

Frackman, Noel. "Buckminster Fuller." Arts Magazine, April 1977, pp. 18-21.

Goodman, Paul. "The Sense of Crisis." Nation, November 13, 1967, pp. 2-4.

Harrison, Gordon. "Making Peace with the Earth." Saturday Review, November 6, 1971, pp. 77-85.

Hughes, Robert. "The Botch of an Epic Theme." Time Magazine, July 11, 1977, pp. 71-75.

Martin, Leslie. "Architect's Approach to Architecture." R.I.B.A. Journal, May 1967, pp. 191-200.

Maslow, A. H. and Mintz, N. L. "Effects of Esthetic Surroundings: Initial Effects of 3 Esthetic Conditions upon Perceiving 'Energy' and 'Well-Being' in Faces." Journal of Psychology 41: 247-253.

Moholy-Nagy, Sibyl. "The Arcology of Paolo Soleri." Architectural Forum, May 1970, pp. 70-75.

Silben, John R. "The Pollution of Time." The Centre Magazine, September/October 1971, pp. 2-9.

Stulberg, Robert B. "Heidegger and the Origins of the Work of Art." Journal of Aesthetics and Art Criticism, Winter 1973, pp. 257-265.

Willats, Steve. "Artwork as Social Model." Studio International, March/April 1976, pp. 100-105.

Williams, R. M. "The New Urban Pioneers." Saturday Review, July 23, 1977, pp. 8-14.

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