

Semiotic Dimensions of Architecture in the light of the Factors that influence Understanding and Interpretation of Meanings

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Introduction

There are many similarities that can be observed between architecture and language, which have led many thinkers such as Charles Jenks and Umberto Eco to consider architecture as a means of public communication and a form of unspoken language. This similarity draws attention to the semiotic dimension of architecture, which is considered as important as its other functional, structural, and aesthetical dimensions. The importance of this issue stems from the fact that buildings surround human beings all the time, and communicate with them on conscious and unconscious levels, causing a great impact on the way people perceive and interact with them, in addition to its influence on their thoughts and feelings towards their surroundings in the long term. This places a great responsibility on the architect, who must understand well the architectural language, its vocabulary, syntheses, and different meanings that it conveys to the users, so that he can design their buildings in more efficient way.

Problem of the Research

The lack of attention to the semiotic aspects of architecture can result in a deficiency in the quality of architectural design and a poverty in the visual language of buildings, which may cause inefficacy and inefficiency in their performance and has an effect on functional, mental and emotional levels. This requires more attention to be paid to studying the semiotic features of architecture and how meanings are expressed, understood, and interpreted by users.

Objective of the Research

The research aims to explore the semiotic dimensions of architecture to understand the types of meanings that are transmitted by buildings, and the different factors that affect their perception and interpretation by users. This will be employed to formulate a model that can be used by architects in the design process and in the analysis and criticism of projects.

Hypothesis of the Research

There are various levels of meanings that can be conveyed by architectural works, and their content, significance, influence, and perception are determined by the original objectives of designer and the expressive potentialities of the relation between building form, function, and context, as well as characteristics of users.

Methodology of the Research

This research is based upon deductive approach, by studying the ideas and contributions of thinkers in the fields of semiotics (the study of signs and symbols) and hermeneutics (the branch of knowledge that deals with interpretation) to extract general principles that can be applied to

the field of architecture to discover how meanings are transferred through buildings and how to imply messages in architectural design to be perceived by users.

Principles of Semiotics

The research begins with explaining the basic principles and concepts of semiotics which can be applied later in analysis and discussion of meaning in architecture. Semiotics is defined as that branch of knowledge which is concerned with the study of signs and symbols in different fields, and how recipients or audience perceive their meanings. The main term that semiotics studies revolve around is "the sign"; Which means the perceived (physical) thing that refers to something else, which may be an idea, a message, or a feeling. The Swiss linguist, Ferdinand de Saussure, proposed a concept consisting of two sides for the sign; The first is called the 'signifier' and the second is called the 'signified'. The signifier is any letter, word, sentence, sound, shape, drawing, smell, or action that represents something else, while the signified is the meaning or idea that is expressed by the signifier and perceived by recipients or audience.

Ogden & Richards developed this concept and added a third element called the "referent", which means the real thing that the sign represents. Thus, the new model has become composed of three elements: the 'symbol', which corresponds to the signifier, the 'thought', which corresponds to the signified, and the 'referent'. Charles Sanders Peirce had previously developed a similar model consisting also of three elements: 'representamen', which corresponds to the signifier or the symbol, 'object' which corresponds to the referent, and 'interpretant' which corresponds to the signified or the thought.

Peirce divided interpretant into three types: 'emotional interpretant', 'energetic interpretant', and 'logical interpretant'. 'Emotional interpretant' means the feelings that can be stimulated by the sign, while 'energetic interpretant' means the actions that can be urged by the sign, and 'logical interpretant' means the ideas that can be generated by the sign. Peirce also divided signs into three types according to their relations to their meanings. The first type is called "iconic signs" which are the signs that bear resemblance to their referent, for example, a drawing of a rose represents the rose itself or the meaning of love. The second type is called 'indexical signs' where there is a causal relation between sign and its meaning or, in other words, the sign shows evidence of the concept or object being represented, e.g., smoke signifies fire. The third type is called 'symbolic signs' in which the relation between signifier and signified is purely conventional and culturally specific, such as letters, numbers and words.

Understanding and interpretation of meaning

In semiotics, there are two levels of meaning for signs; The first is the direct apparent meaning of a sign which is called 'denotation', while the second is the implicit and indirect meaning which is called 'connotation'. The term 'interpretation' is more associated with the second level 'connotation', because it aims at explanation and clarification of events or texts in which the meaning is not clear at first glance. The branch of knowledge that deals with interpretation is called 'Hermeneutics'. It is primarily concerned with studying religious, historical, and literary texts, but it can be applied to all areas that need clarification of what is hidden or implicit, such as artistic and architectural works.

According to the theories and concepts of Hermeneutics, interpretation of any text or artwork is affected by many factors which are discussed in this research in details. Table (1) summarizes

these factors, which are divided into five categories: The original intentions of the author or creator, the possible meanings of individual parts and components of the work, the possible meanings of syntheses and compositions, the overall context in which the work is created, and the different features and characteristics of recipients who read or see the work.

Table (1): The different factors that affect understanding and interpretation of meanings

1) Original intentions of author or creator	2) Parts and components of the work	3) Syntheses and compositions used in the work	4) Overall context of the work's creation	5) characteristics of recipients or audience
<ul style="list-style-type: none"> • The influence of the stated and announced purposes of the work on its meaning. • The influence of work content on recognizing its real intentions and purposes. • The influence of creator background on the meaning of the work. <ul style="list-style-type: none"> • The possibility of having implicit or indirect intentions different from the apparent ones. 	<ul style="list-style-type: none"> • Types of parts & components: <ul style="list-style-type: none"> – Letters, words, lines, shapes, colors, etc. – Considered as iconic, indexical, or symbolic signs. • Meaning of parts & components: <ul style="list-style-type: none"> – Univocal (having only one possible meaning) or Equivocal (open to more than one interpretation). – Meanings are emotional, energetic, or logical. 	<ul style="list-style-type: none"> • Types of syntheses and compositions: <ul style="list-style-type: none"> – Sentences, paragraphs, form, relations between elements, etc. – Considered as iconic, indexical, or symbolic signs • Meaning of syntheses and compositions: <ul style="list-style-type: none"> – Univocal (having only one possible meaning) or Equivocal (open to more than one interpretation). – Meanings are emotional, energetic, or logical. 	<ul style="list-style-type: none"> • Physical context of the work: <ul style="list-style-type: none"> – Influence of place, surroundings, economic conditions, technology, etc. under which the work is created. • Non-Physical context of the work: <ul style="list-style-type: none"> – Influence of sociocultural, religious, political, etc. factors under which the work is created. 	<ul style="list-style-type: none"> • Influence of the purposes and capabilities of recipients or audience on understanding. • Influence of the backgrounds, beliefs, and ideologies of recipients or audience on understanding. • Influence of the tendencies, feelings and emotions of recipients or audience on understanding.

Understanding and Interpretation of Meaning in Architecture

Italian thinker Umberto Eco emphasized that architecture represents a special case of semiotics, because the primary role of buildings is to fulfill their functions not to transmit ideas or feelings as in literature or art. Nevertheless, architecture plays semiotic roles and communicates with users on mental, emotional, and sensual levels. As soon as a building or one of its parts is used, it turns into a symbol or a sign indicating its function and influencing users. Therefore, the issue of meaning in architecture needs to be analyzed and discussed according to the previous factors to explore its different dimensions and mechanisms.

a) Influence of Architect's Intentions on meaning of buildings

Architect's design intention is the general concept proposed by him/her to achieve the project purposes, solve its problems, and reconcile the forces affecting its design. These purposes are not the result of architect's own imaginations or self-thinking, but they are formed according to the influence of many factors, such as the owner's needs, budget, spatial program, functional and aesthetical requirements, site characteristics, environmental and urban context, available materials and construction methods, preferred architectural style or movement, etc. The role of architect is to formulate the appropriate solution that fulfills all these requirements together.

The intentions of designers have a great impact on the meanings that users receive from buildings. They are usually stated in project reports, architects' websites, academic studies, publications as well as in public meetings and conferences related to it. Architect's intentions also can be identified from the design of the building itself or deduced from his intellectual backgrounds. Sometimes there may be indirect or implicit purposes of the design different from the announced ones. Each case of them is discussed in this research with the help of architectural examples to indicate the effect of architects' intentions on the meanings conveyed by buildings.

b) Possible meanings of individual parts and components of buildings

Parts and components of buildings can be divided into several types: functional, structural, aesthetical, technical, etc. Functional components include architectural spaces such as rooms, corridors, and stairs. Structural components include columns, beams, slabs, and walls. Aesthetic components include lines, shapes, volumes, colors, and visual relationships between them. Each part or component is considered a sign referring to an interpretant or meaning related to something real, object or referent, located inside or outside the field of architecture.

Relation between any component and its meaning in architecture is similar to the relation between a sign and its interpretant in semiotics. This relation takes three types: either iconic, indexical, or symbolic. An example of iconic signs in architecture is Corinthian column because its form is inspired by flowers and plants. An example of indexical signs is the stairs because its shape results from its function. An example of symbolic signs is the crescent on top of minarets and domes of mosques because it is culturally specific.

According to Pierce's classification of interpretant, meanings perceived through architectural components can be categorized into three types: energetic, emotional, or symbolic. Energetic meanings occur when architectural components urge users to do some actions such as walking, sitting, going upstairs or downstairs. Emotional meanings occur when architectural components stimulate feelings such as comfort, pleasure, excitement, or admiration of aesthetic aspects of buildings. Logical meanings occur when architectural components generate ideas or concepts in users' minds, such as meaning of greatness, simplicity, emphasis, balance, harmony, contrast, etc.

c) Syntheses and composition and their influence on meaning

The specific meaning of an architectural component is indicated by its relation to other components, as words acquire their specific meanings from their locations in sentences and paragraphs. Composition of parts in architecture can be classified into several types based on its purpose and function, such as spatial compositions, aesthetic compositions, and structural compositions. Each one acquires its meaning from its components and the rules that govern them.

They can also be considered as 'iconic', 'indexical', or 'symbolic' signs. An iconic composition is that composition which resembles something else, such as metaphoric architecture in which a building is designed to look like a natural or artificial thing related to its function or site, e.g. Sydney operahouse which is inspired by the shape of seashells or ship sails because of its unique site on the waterfront. An indexical composition is that composition which bases its form directly on its function, such as typical or conventional designs of educational buildings, hospitals or factories. A symbolic composition is that composition which is culturally specific, such as various architectural styles of religious buildings in different countries and periods. Perceived meanings of compositions can also be categorized into three types: energetic, emotional, and logical. Energetic meanings are related to functions of architectural spaces, while emotional meanings are related to architectural aesthetics, and logical meanings are related to symbolic and metaphoric architecture. A number of examples are discussed in this research to illustrate the differences between each type.

d) Overall context of building's design and its influence on meaning

The physical and non-physical contexts surrounding design and construction of buildings can influence their meanings. Physical context includes the different characteristics of building site as well as economic conditions and technical capabilities available at place and time of construction, while non-physical context includes socio-cultural aspects of society at that place and time. These contexts have an important role in justifying and explaining the different reasons behind design decisions, and consequently contribute to building meanings. For example, it is difficult to understand and justify the design of Pompidou Center or Habitat 67 project without considering the technological and cultural atmosphere prevailing at the time and place of building.

e) Influence of users' characteristics on their understanding of meanings

Building users are usually different in their purposes, capabilities, observation, knowledge, objectivity, beliefs, ideologies, tendencies, emotions, etc. Therefore, they may understand meanings and receive building messages in different ways. Historic buildings are considered good examples of the effect of these differences on interpretation of architectural works. Historic buildings are designed and constructed under the influence of specific prevailing paradigms or factors. If any shift or change occurred in those paradigms or factors by succession of generations, meaning of historic buildings may change subsequently. Likewise, meaning of monuments and commemorative structures may also differ if any transformation occurred in political regime or dominant ideology under which they are built. In all these cases, buildings and monuments turn into signs symbolizing past eras or defunct beliefs which no longer have the same significance.

Conclusion

The research concludes several results, the most important among them is a proposed model for expression of meaning in architecture, which is a graphical representation of the various methods and techniques that can be used by architects to convey appropriate meanings through their designs (fig. 1). The research also proposes another graphical model to clarify how meanings are transmitted through buildings and the various factors that affect their formulation, understanding and interpretation (fig. 2). Finally, the research ends with a suggested methodology to analyze meanings conveyed by buildings on the levels of design concept, building components and compositions, for purposes of criticism, evaluation, development of architectural projects, and architectural education (table 2).

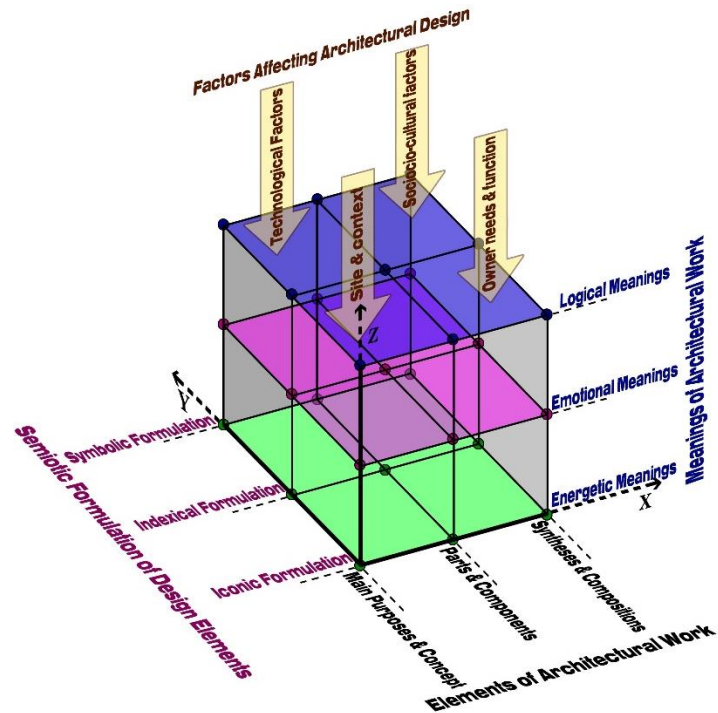


Fig. (1) Model of Meaning Expression in Architecture

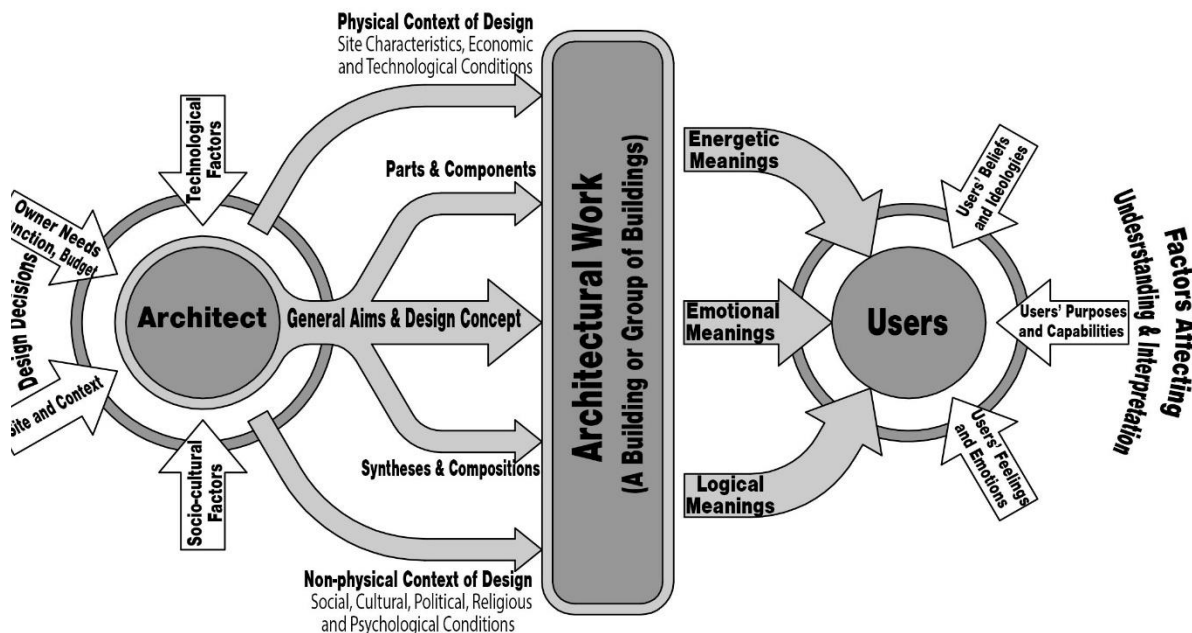


Fig. (2) Model of Meaning Transmission through Architecture

Table (2): Methodology of Meaning Analysis in Architectural Works

Elements of Semiotic Analysis of Architectural Works	Design Concept of Building	Parts & Components of Building	Syntheses & Compositions used in Building
<p>1) What is the method of semiotic formulation of architectural form?</p> <ul style="list-style-type: none"> – <i>Iconic</i> (i.e. form bears resemblance to something else) – <i>Indexical</i> (i.e. there is a causal relation between form & meaning) – <i>Symbolic</i> (i.e. form is conventional and culturally specific) <p>2) What are the types of meaning conveyed by the building?</p> <ul style="list-style-type: none"> – <i>Energetic</i> (i.e. design urges users to do specific actions) – <i>Emotional</i> (i.e. design stimulates specific feelings) – <i>Logical</i> (i.e. design generates specific ideas in users' minds) <p>3) Does physical context of design (i.e. site, technology, economy, etc.) have influence on meanings conveyed by the building?</p> <p>4) Does non-physical context of design (i.e. socio-cultural factors & paradigms) have influence on meanings conveyed by the building?</p> <p>5) Does the background of architect or owner have influence on meanings conveyed by the building?</p> <p>6) Are the discovered meanings compatible with the general aims and design concept announced by the architect?</p> <p>7) Are there any implicit intentions or hidden aims different from the announced ones?</p> <p>8) Do the meanings perceived by users agree with the announced aims and concept?</p> <p>9) Are the meanings perceived by users compatible with the general purposes, function, and site of the building?</p> <p>10) Do users understand any unexpected or unwanted meanings?</p>			

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