

Meaning of Function in Architecture: Interpret Insider and Outsider Function

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ABSTRACT

In architecture, the concept of function had existed in the classical period and continued to develop into the postmodern period. It was generally associated with Vitruvius's phonumenal works, *De Architectura Libri Decem*, in particular with the *Vitruvian Triad*: *firmitatis*, *utilitatis*, and *venustatis*. This paper aimed to understand the meaning of function in architecture, through the literature study. The results showed that in each period, from classical to postmodern period, the concept of function underwent a development of meaning until its peak in the postmodern period. In the modern period, with its main motto "forms follow function", the concept of beauty had been eliminated. In the postmodern period there were ideas about functions in architecture, which not only attached to the functions of the direct users of the building but also attached to them the functions of indirect users both responsive and symbolic.

Keywords: function, insider function, outsider function

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1. Introduction

The term "function" has been widely used by various disciplines, such as mathematics, biochemistry, psychology, socio-anthropology, and architecture. The notions of function and derivative constitute the foundation of mathematical analysis [1]. Most biochemical and physiological studies of a function seek to reveal its mechanism. Function is studied by experimentation. In an experiment, one observes a structure, perturbs the system, and then observes the change in structure that has occurred. This is as true in metabolic studies, where most of the structures are molecular. Physiological, developmental, and evolutionary studies reveal the organism as a process [2]. In Socio-Anthropology, the concept of function cannot be separated from the concept of community structure. Radcliffe-Brown likens a society to an organism of the human body, and social life is like that of that organism [3]. Meanwhile, Malinowski sees the same function as use, which is associated with human psychological and biological needs. The function of a social system is the usefulness of the system in meeting the psycho-biological needs of individual members of a society [4].

In architecture, the concept of function is generally associated with buildings. The concept of function existed in the Classical

period which originated from the work of the phonumenal Vitruvius, *De Architectura Libri Decem*, and has continued to develop into the Postmodern period. This paper hopes to show the meaning of function in architecture, through literature search.

So far, even in academia, the function of architecture is always understood as an activity in a certain room. Of course, the notion that refers to Modern Architecture has reduced the real meaning, the broader meaning. The meaning of the function of architecture has developed following the period of development of architecture itself.

This study tries to reveal the meaning of architectural functions in each period of architectural development, which includes the Classical, Renaissance, Modern, and Postmodern periods. Interpretation is mainly carried out on the meaning of architectural functions in the Postmodern Period.

A good understanding of the function of architecture has an important meaning for the world of architectural design which does not only think about the relationship of form and function (functional meaning) but should also involve the "second" meaning (symbolic meaning). This meaning received a place and attention in the period of development of Postmodern architecture

2. Material and Methods

This study uses an approach to History and Architecture. Historical approach is used to trace the period of development of the concept of function in architecture: Classical, Renaissance, Modern, and Postmodern period. The architectural approach is used to reveal the meaning of architectural functions in each period. [Figure 1].

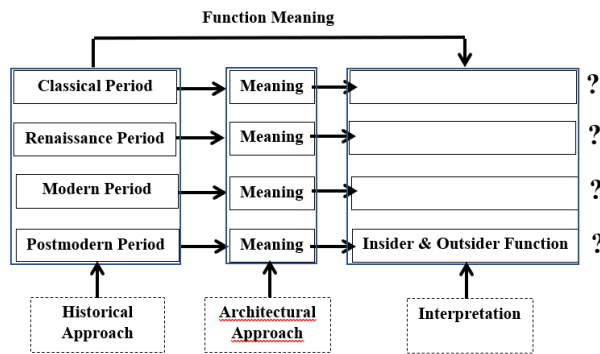


Figure 1. Diagram of Analysis Framework

2.1. Classical Period

De Architectura Libri Decem was the primary and earliest source of architectural theory. Vitruvius' great work was composed around the first century AD; by Morris Hicky Morgan, Vitruvius's work was published in an English edition under the title *The Ten Books on Architecture*. In the history of architectural theory, everything originated from the Vitruvian Triad [5], that architectural buildings should be erected with reference to: *firmitatis, utilitatis, and venustatis*. In the *De Architectura Libri Decem* book I part 3 it stated: "... *Haec autem ita fieri debent ut habeatur ratio firmitatis utilitatis venustatis* ..." [6], then Morgan called it: durability, convenience, beauty [7]. Durability was the strength of the building. Convenience was a state that was comfortable when used (usability). Beauty was aesthetics.

2.2. Renaissance Period

In the Renaissance period, the Vitruvian Triad continued to be a source of the study of architectural theory. Leon Battista Alberti in *De Re Aedificatoria* (On the Art of Building) (1485), stated that there were three things that couldnot be ignored at all, namely convenience, stability, and gracefulness and beauty [8]. In Henry Wotton's *The Elements of Architecture* (1624), it was also stated that a good building should have three conditions: commoditie, firmness, and delight [9]. Joseph Gwilt, in his 1826 edition of Vitruvius writings, published in London, used the words "strength, utility, and beauty." [10].

Utility is a special dimension in the Vitruvian Triad that represents the adaptation of construction to the purposes and functionality for which it is designed. The purpose and functionality of a building comes from the basic and secondary needs of humans [11]. Along with the increasing need, this dimension has also grown, nowadays it can be found in various forms.

2.3. Modern Period

Theorists and practitioners of modern architecture, led by Sullivan, use a reductionist approach in viewing architecture. The bombastic slogan "form follows function" is the basis of modern architectural design. Sullivan first presented his arguments that "form follows function" in his 1896 essay: *The Tall Office Building Artistically Considered*. Sullivan's objective in the essay was to answer the question: How do you give form to something that has never existed before? He did not mean give form to a specific building or an individual design project but to a functional building type – the modern high-rise office building (i.e., the skyscraper) [12]. The assumption is that architecture, as something created on purpose, is a purely functional embodiment. According to this understanding, function is defined as an activity or activity carried out by humans in an architectural building container. In architectural design, we must pay attention to the activities that will be accommodated in the building [13, 14]; the artistic dimension is removed. The famous aphorism of Louis Sullivan, "form follows function," has often been taken as a motto for the entire modernist movement in architecture and design. However, a closer examination of "functionalism" within the development of modern architecture reveals a variety of theoretical and practical approaches to understanding the relationship between form and function. [15, 16, 17]. Technical rationalism and determinism of functionality which "forms follow function" have appeared by students of architectural design around the world as if it were a self-evident truth [18].

Slogans such as "Less is More" by Mies van der Rohe [19], "A house is a machine to live in" by Le Corbusier (Le Corbusier, no year), and "ornamentation is crime" by Adolf Loos [20], seem to be compatible accompaniment to the slogan "form follows function", all of which aim to establish the principles of functionalism [21].

2.4. Postmodern Period

Robert Venturi, Brent C. Brolin, and Charles Jencks are considered to be the founders of the building of Postmodern Architectural Theory. They begin to explore the possibility of social and cultural aspects included in

architectural ideas [22, 23, 24]. Robert Venturi in his first book, *Complexity and Contradiction in Architecture*, sets out a set of visual preferences as opposed to modernism: complexity and contradiction over simplification, ambiguity and tension rather than bluntness, "both-and" rather than "either-or", elements serve multiple rather than elements work alone, a hybrid of the pure elements, and chaotic vitality rather than whole unity. Brent C. Brolin in *The Failure of Modern Architecture* highlights the social ills that arise in society caused by the presence of modern architecture. Initially, modern architects believe that they can change people's lives by changing their physical environment. They assume that everyone in the world has the same social basis and physical needs. The mistake of modern architects is that they basically recommend one program for everyone in all situations. Brolin suggests that it is best to solve an architectural design or built environment based on the people who will occupy it. Charles Jencks in *The Language of Post-Modern Architecture* defines postmodern architecture as "doubly-coded", that is, half is modern and the other half is the other (usually a traditional building or building regional language), or half-modern and half-conventional, in an effort to communicate with the public and the minority concerned, generally other architects. Architects who wish to overcome modernist impasse, or failure to communicate with their users, must use understood language, local and traditional symbolism. But they also have to communicate with their peers and use today's technology. Hence the definition of postmodernism as "double-coding" is a series of important dualities.

3. Results and Discussions

3.1. Building Functions

Since the 1970s, postmodernism in architecture was born. Postmodernism defined the function of architecture as the role and ability of architecture to influence and serve humans, not only humans who worked to do activities, but also humans who thought, had feelings and emotions, had dreams and ambitions, had nostalgia and memory. Rob Krier stated that architecture (form of space) had to provide physical protection from environmental influences, created a framework for activities, above all, architecture had to express symbolic and ethical values [25].

Architectural designs that are originally strange, with a monotonous style, are now more "down to earth" and more familiar to the human user. Human values and customs, whether they will use it directly or indirectly,

are also a priority factor in developing the design concept. Art has been revived, which is based on the results of local creativity. Architects and theorists begin to explore the possibility of social and cultural aspects included in architectural ideas.

Christian Norberg-Schultz believed that architectural functions could not be viewed physically but should also be seen in a socio-cultural view, then he conveyed four functions of Building Tasks: Physical Control, Functional Frame, Social Millieu, and Cultural Symbolization [26]. The role of Physical Control in building functions, which was being able to control climate (air, humidity, temperature, wind, rainfall and others), light, sound, smell, and others, such as dust, smoke, insects, animals, humans, and others. Physical Control dealt with the relationship between a building and its environment. The role of a functional frame in the function of a building, that it was able to accommodate human activities carried out in it. In principle, humans carried out activities in order to meet their daily needs. Therefore it needed an architectural container in the form of certain spaces to accommodate human activities. The role of Social Millieu in building functions, that it was able to express the social status of its users. Architecture should be able to express certain goals within the framework of the social institutions of the society in which it was presented. Architecture was presented to ensure that the social interaction process could take place as it should, and had a psychological effect on the socio-cultural environment. The role of Cultural Symbolization in building functions, that it was able to express cultural values and symbols used by the community where the architecture was presented. Through cultural symbolization, architecture could show that everyday life had a meaning that exceeded the current situation.

Larry LeRoy Ligo distinguished five types of functions in architectural buildings: Structural Articulation, Physical Function, Psychological Function, Social Function, Cultural / Existential Function [27]. The role of Structural Articulation in building functions, that it was able to articulate the structure of the building, so that it was able to show honesty. Exposure to materials and construction methods or the interior of a building could articulate the exterior of the building. The role of physical functions in building functions, that it was able to control the environment and accommodate the physical aspects intended by the building, such as road patterns and flexibility in spatial arrangements. The role of Psychological Function in building functions, that it was able to create an atmosphere that affected its human users. The role of the Social Function in building functions, that it was able to

emphasize its role in a community; it contributed to the social condition of a community environment. The role of Cultural / Existential Function in building functions, that it was able to show that it was a concrete form of a culture.

Leland M. Roth and Amanda C. Roth Clark provided functions in architectural buildings: Utilitarian Function, Circulatory Function, Symbolic Function, and Psychological and Physiological Function [28]. Utilitarian Function, which meant that the building accommodated specific functions in a space, such as a bedroom that could accommodate a bed to sleep in, or an office space that could accommodate an office desk for working. Circulatory Function, meaning that the building provided space that could connect one place to another. In general, a building had several rooms whose functions were related to one another. Symbolic Function, meaning that the building also had a symbolic function that was shown through its exterior appearance. Psychological and Physiological Function, which meant that a good architectural building had a psychological and physiological function. For example, a doctor's clinic waiting room was a place where people who were going to check their health feel a high level of anxiety. Therefore, the waiting room had to be designed to provide a view of the garden so as to reduce anxiety levels.

Geoffrey Broadbent in examining the deep structures of architecture suggested there were four deep structures: the building as Container for human activities, the building as modifier of the given climate, the building as cultural symbol, and the building as consumer of resources [29]. The building as container for human activities, meaning that the building had an internal space whose size and shape were sufficient to accommodate the activities in it. This internal space would still exist in physical relation to other spaces. The building as modifier of the given climate, meaning that a building whose surface, especially the outer walls and roof, acted as a barrier or filter of heat, light and sound between the inner space and the outer environment. The building as cultural symbol, meaning that the building was present as a cultural symbol. The building as consumer of resources, meaning that the building was a consumer of resources. All building materials had to be placed, extracted, transported, worked, re-transported, assembled and so on. Each operation added value; the fact of new builds also added to the site value.

3.2. Insider and Outsider Function

Inside and outside stand as a reason to be with each other while producing a whole, and the

two are equal actors in a two-way relationship. The inner-outer relationship cannot be understood as consisting only of physical boundaries, but the Physical as well as the material characteristics of architectural elements have an impact on the relationship between inside and outside [30]. The relationship between the two even becomes complex from a cultural perspective.

Then, how to respond to the concept of function in postmodern understanding so that it can be included in the concept of function as a form of architecture? Here it is necessary to distinguish between the direct and indirect activities carried out by humans. Direct activities are activities carried out by humans in an architectural container / space / building / form. Meanwhile, indirect activities are activities carried out by humans as a response or response to the presence of a place / space / building / architectural form. Humans who carry out direct activities are called direct users, and those who carry out indirect activities are called indirect users. Direct users are insiders, and indirect users are outsiders. The task of architectural buildings is to become a container for direct human users and indirect users in all their activities. So all the concepts of architectural building functions as described above have the task of accommodating all human activities of direct users and indirect users.

As an illustration, it needs to be presented here; an architectural form that accommodates office activities. Many office buildings use glass as a covering for the building. It is easy to understand why many office building owners want the use of glass on the face of their building. Glass is relatively cheap, easy to maintain and attractive. The more shiny the glass the more attractive the building is. The simple building suddenly becomes spacious in the interior and the exterior sparkles when covered with glass. By using Air Conditioning (AC) in the room, people who carry out activities in it feel comfortable. But what about the humans around the building? The glass-covered building certainly reflects the scorching tropical sunlight. People who passed in front of the building were immediately struck by the glare of the sunlight reflected by the glass walls of the office buildings. The higher the level of glass reflection, the greater the glare disturbance. In this illustration, humans who carry out activities in a space or office building are direct users (insiders), while humans who are around the building and are affected by their presence are indirect users (outsiders). Who can also be positioned as an outsider are observers.

The concepts of architectural building functions (according to postmodern understanding) can be placed in the position

of the insider function and the outsider function, which of course the placement of this position can overlap one function concept with another. This positioning is more to clarify that the concept of function in postmodern understanding does not only spoil direct users, but also pays attention to indirect users.

The following is the placement of function concepts in Postmodern understanding into insider and outsider functions.

Christian Norberg-Schultz:
Insider Function: Functional Frame;
Outsider Functions: Physical Control, Social Millieu, and Cultural Symbolization.

Larry LeRoy Ligo:
Insider Functions: Physical Function and Psychological Function;
Outsider Functions: Structural Articulation, Social Function, and Cultural / Existential Function.

Leland M. Roth and Amanda C. Roth Clark:
Insider Functions: Utilitarian Function, Circulatory Function, and Psychological and Physiological Function;
Outsider Function: Symbolic Function.

Geoffrey Broadbent:
Insider Function: The Building as Container for Human Activities;
Outsider Functions: The Building as Modifier of The Given Climate, The Building as Cultural Symbol, and The Building as Consumer of Resources.

In semiotics, by borrowing the term Umberto Eco (which distinguishes architectural functions: primary functions and secondary functions) (Eco, 1980), insider functions can be juxtaposed with primary functions and outsider functions with secondary functions.

4. Conclusion

The concept of function in architecture, has its origins in the Vitruvian Triad, and continues to evolve into the present postmodern period. Initially, the concept of function associated with "usefulness", together with the concepts of "power" and "beauty" built architectural theory. This situation seems to be continued and developed by the Renaissance generation. In the modern period, the concept of function and form in architecture is spoiled by getting rid of the concept of beauty.

As if correcting the mistakes of the theorists and practitioners of modern architecture, new rules emerge which try to include local culture and potential; that's the postmodern period. The concept of function in architecture undergoes a development of meaning,

originally, architecture is only functional (insider function), meaning that it is a container for main or main functions, then develops, it also accommodates outsider functions, both in the form of functions. responsive as well as symbolic functions.

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