Original Research Article

Conceptual Limits of Form in Architecture*

Samira Adeli[**1], Hadi Nadimi[***2]

1. Ph.D. candidate in Architecture, Faculty of Architecture and Urban Planning, Shahid Beheshti University, Tehran;
2. Professor of Department of History of Architecture and Heritage, Faculty of Architecture and Urban Planning, Shahid Beheshti University, Tehran, Iran.

Abstract

Problem statement: Form is a fundamental concept in the discourse of architecture that has been affected by the evolutions of architectural thinking. The non-systematic accumulation of form concepts results in ambiguity in contemporary discourse. On the other side, disregarding the dynamic nature of form, and poor identification of the factors influencing its evolution, and its application domains have made form a frozen concept and have reduced its effectiveness in responding to today's architectural issues.

Research objectives: this paper concentrates on clarifying and organizing the diverse concepts of the form. Besides a theoretical framework is provided to guarantee the conceptual dynamism of the form.

Research method: Present research is conducted based on Foucault's genealogy approach. First, the original conditions of the first appearance of form in philosophical thinking are examined, then based on the results obtained, is referred to revolutionary theories of architecture. The fundamental evolutions of the concept of the form will be analyzed, and finally, a critique of today's form status is provided.

Conclusion: According to the findings, the evolution of the concept of form is originated from the evolutions of philosophical knowledge of architecture from at least three perspectives: ontology, aesthetics, and epistemology. Among these factors, epistemological approaches have made the most substantial contribution to the evolutions of form, from pre-modern to the contemporary era. The evolution of philosophical knowledge of architecture has led to the formation of six conceptual limits of form, including appearance, idea, type, structure, meaning, and affordance. Each of these concepts has limited the architecture to specific aspects; however, introducing the concept of "form field" helps to gain a comprehensive understanding of architecture while providing a framework for organizing the form concepts. It also ensures the dynamics of this concept in line with the evolutions of philosophical knowledge of architecture.

Keywords: *Form, Philosophical Knowledge of Architecture, Conceptual Limit, Philosophical Thinking, Form Field.*

Introduction

The form is one of the fundamental concepts in architectural discourse that, despite its supremacy and widespread use, some scholars have challenged the efficiency of this concept in contemporary discourse. Adrian Forty has accounted for the complexity and ambiguity of this concept and its shortcomings in responding to today's architectural concerns, for the genesis of skeptic attitudes to the form (Forty, 2000, 172). The cause of this suspicion can be attributed to at least two primary factors. The variety and diversity of the form concepts in the history of theorizing while having been accumulated in the contemporary discourse in a non-systematic way are one of these factors, which lead to complexity and ambiguity. Neglect of the fact that this conceptual diversity shows the dynamism of the concept of form, is the other factor. The dynamism of the concept of form is a feature that provokes the constant continuous evolution of the form based on the evolutions in architectural thinking. In such conditions, the neglect of re-thinking of the form in the contemporary era has aroused this suspicion that the form has lasted longer than be useful. Accordingly, this article is going to fulfil two main purposes, including the explanation of a coherent system of the concepts of form, and the establishment of a theoretical basis that enables new interpretations of the form. The current research is specifically conducted to answer these questions: In the history of architectural theories, how has the concept of the form changed? What are the concepts of form in architectural discourse? What is the status of the form concepts in terms of conditions and consequences of developments? What interpretation of the form can, while organizing the concepts of the form, also guarantee its conceptual dynamics?

This study draws upon Foucault's genealogy a) to analyze the origin of the form in philosophical thinking, b) to recognize and analyze the conceptual changes of the form in architecture and c) to criticize the form. In the first part of the paper, it has been referred to the classical philosophy as the origin of the concept of the form, which leads to the identification of the fields of knowledge that constitute the application arena and theoretical approaches to the form. In the next part, the concepts of the form have been explained by reference to the revolutionary theories of architecture, based on three main subjects. At first, the concepts of the form and its transformation have been introduced. Form concepts are then analyzed in terms of the conditions and outcomes of their evolutions. this analysis aims at, the manifestation of the forces affecting form evolutions, the identification of architectural issues to which the concepts of form have responded, and recognition of the aspects of architecture that form concepts have emphasized them. Finally, while taking a critical approach to the state of the form in architectural discourse, it is directed to draw a theoretical framework for organizing form concepts.

Research Background

Studies that have been conducted on the form can be classified into two general categories. The first category includes the series of extensive researches that have extended the form aspects from various perspectives while focusing on a particular meaning of the form. In the second category, the concept of the form is investigated. A group of studies has investigated the history of the concept of the form. Most of the researches in this category have studied the concept of the form, from a philosophical perspective, or philosophical thinking has played a significant role in explaining the concept of the form. Two valuable studies by Tatarkiewicz and Ing arden are placed in this category. In investigating the concepts of the form in the history of aesthetics, Tatarkiewicz (1980) describes the five main concepts of the form by adopting a descriptive approach and an intuitive method. Ingarden (1960) also mentioned nine different meanings of the form in the philosophy of art. Adrian Forty's study is noteworthy among studies related to architectural discourse. This research examines the different attitudes of the form in the discourse of twentieth-

century architecture. He points to the ambiguous nature of form and believes that understanding the form is only possible through understanding "what it does not mean". Accordingly, he introduces eight concepts as oppositional categories of the concept of the form. Table 1 shows a summary of these scholars' ideas. This study concentrates on presenting an explanation of the concept of the form in architectural discourse. To this purpose, some measures have been adopted. 1) Philosophical thinking is considered an essential factor in the form evolutions; 2) specific methodology is adopted to study a wide range of architectural theories. The study also passes from the descriptive approach to an analytical-causal approach.

Theoretical Foundations

Form as a concept implies a specific understanding of architecture. Any theoretical knowledge is based on conceptualization, and change or transformation in knowledge requires change or transformation in its concepts. According to Reynolds in the book of "a Primer in Theory Construction", the revolutionary thinking in the field of scientific knowledge requires revolutionary conceptualizations (Reynolds, 1971, 22-26). As max weber has stated, scientific concepts generated by an inevitable simplification through abstraction (Turner, 1992, 214), and as each concept provides a limited-angle view, evolutions in knowledge, while changing the viewpoint, subject Concepts to constant change. The evolutionary nature of architectural knowledge leads to continual conceptual evolutions and changes in the meaning or referent of the previous concepts. Based on this attitude, the form is a continually changing concept,

which evolves from the evolutions of architectural thinking.

Foucault's genealogy is a theoretical-methodological approach that emphasizes two major attitudes to the form. These two approaches include a historical and a critical look at the form. Genealogy is based on the assumption that existence is historical. Based on this attitude, the form is considered a historical concept whose nature depends on the history in which form is emerged and evolved (Foucault, 2008). Form concepts are understood as the interaction of the factors that shape them, and understanding the concept of the form requires identifying the factors that influence its emergence and evolutions. Hence, the present situation of the form is the result of evolutions that have occurred. Genealogy, on the other side, undertakes a critical view, and tries to facilitate the construction of new concepts of the form through the criticism of its present situation and shows that the present meaning of the form is not the only imaginable meaning. A genealogy approach achieves this purpose through questioning today's status of the form, analyzing the background and conditions of the creation of the form concepts, and explaining the limitations and potentialities of the present configuration of form. The present study refers to the field of philosophical thinking to identify the conditions and forces that have given rise to the concepts of the form; the reasons for this are discussed below.

Philosophical thinking, the origin of the form: In Foucault's genealogy approach, source or "volume zero" analysis, as the first configuration of the concept, along with the analysis of conceptual changes, is an essential methodological step. Referring to the origin,

Table 1. 3 eminent types of research in the field of the history of the concept of form; their study field, and achievements. Source: Authors.

Researcher	The research field	Concepts of form
Tatarkiewicz	Aesthetics	Arrangement of parts, sensible aspect, contour, conceptual essence, contribution of mind.
Ingarden	Philosophy of Art	Determining factor, function of determination, arrangement of parts, mode, enduring aspect, presentational factor, what aimed at, created properties, regularity.
Forty	20th Century Architecture Discourse	Resistance to ornament, antidote to mass culture, versus social values, versus functionalism, versus meaning, versus reality, versus technical or environmental considerations.

leads to the appearance of the various forces and factors that contribute to the emergence of a concept. The reason for referring to philosophical thinking is the methodological necessity since, according to scholars in this field, the entry of form into the area of philosophical contemplation coincided with the beginning of its dynamic life (Forty, 2000, 154; Madrazo 1995; Pazouki, 2008, 155; Tatarkiewicz, 1980, 220).

Philosophical thinking, a driving force for the evolutions of the form: Identifying the form concepts requires investigating its changes over time. In the present study, to identify the form concepts, fundamental changes have been selected between two categories: partial-gradual change and fundamental-mutational change. The fundamental change has been most affected by the difference in the bases and foundations of architectural thinking or philosophy of architecture, which is influenced by philosophical thought in its general meaning. Theorists' reference to philosophical ideas as the basis for architectural theories is a long-standing tradition in the history of Western architectural theories (Collins, 1996, 24) and this has made the evolutions of philosophical thinking, a determining factor of the evolutions of architectural thinking and the concept of the form.

Research method

The present study is interpretive-analytical research in studies related to the history of concepts that is conducted based on Foucault's genealogy. Methodologically speaking it contains three essential steps: origin analysis, changing analysis of the concept of form, and critique of the form status. In the present research, the evolution of the concept of the form in architectural discourse is examined from the perspective of evolutions in philosophical thought. The fundamental evolutions in philosophical thinking, as well as considerations related to the periodization of architectural history, have been the criterion for classifying architectural theories. Accordingly, the history of architectural

theories is divided into five periods: classic, renaissance, pre-modern (17th century to early of 19th century), modern and post-modern[1], and are identified the most fundamental theories of each, as the context of analysis the form evolutions. These theories contain ideas of Vitruvius in the Classical discourse and ideas of Alberti and Vasari in the Renaissance. In addition, they include classic and romantic theories in the pre-modern, formalist, pragmatist, and idealist ideas in the modern era and architectural theories with different linguistic (including semiotics, structuralism, and post-structuralism), phenomenological and Marxist tendencies of the postmodern. After identifying the theories, the terms and concepts that represent and accompany the concept of the form in architectural discourses, are identified. Then through interpreting, analyzing, and categorizing the form concepts, the conditions and consequences of its transformations are explained. Finally, while taking a critical approach to the present configuration of the form, this concept is re-thought.

Philosophical origin of the form

"form" is the English translation of the Latin word "forma" which from the outset replaced two Greek words "eidos" [in Plato's philosophical opinions] and "morphe" [in Aristotle's philosophical opinions] (Tatarkiewicz, 1980, 220). The dynamic life of the form began in philosophy by Plato's specific understanding of this concept, which led to the generalization of the meaning of the form compared to its lexical meaning. The form was also interpreted in Aristotle's philosophy through different terms and approaches. Based on the dual origin of the form in philosophical thinking, the ideas of these two theorists are considered the origin of the form. Examining the opinions of these thinkers shows that the form is at least regarded as the basis of theorizing in various fields of philosophical knowledge, including ontology, epistemology, aesthetics, (Fathi, 2006, 174; Madrazo 1995, 19) and methodology (Edwards, 1972, 18-33; 254). In

these fields of thought, the form is an answer to the questions about the factors that guarantee the existence of an entity, make it understandable and aesthetic. From the ontological perspective, form implies the essence and is the fundamental cause and origin of any entity, and simultaneously is its actuality. A form is an object of true knowledge from the epistemological viewpoint, and the aesthetic viewpoint guarantees beauty. Form from methodological viewpoint guides and controls the objectivity and development of the phenomenon. Accordingly, the form has emerged as a multi-aspect concept. Besides, the expanding meaning of the form in philosophical thinking has led form to be considered both as the inner form and the outer form. Regardless of the difference between Platonic and Aristotelian perspectives, the inner form that also identified as the primary form, is a determining factor that guarantees the existence, beauty, and knowledge of the phenomenon and implies a non-sensible issue, and the outer form matching to the lexical meaning of form, adverts to the appearance and the sensible aspect of the phenomenon. On the one side, the multiplicity of the aspects and levels of form, and on the other hand, the inherent dynamics of the philosophical knowledge are affecting factors in the evolution of form in philosophical thinking. The dynamics and evolution of philosophical thinking have led to the evolution of the foundations of architectural theories, as well as the conceptual evolution of form.

Philosophical knowledge of architecture; a driving force behind form evolutions

The evolution of the concept of the form in architecture is the result of changes in the conditions, and factors affecting its genesis. Identifying these factors, have been referred to the most sophisticated configuration of concept in its "zero volume". The conceptual generalization of the form in philosophical thought has resulted in two modes of its presence in architectural discourse. Form, on the one side, is affected by the lexical-semantic

of this term and represents the external and the sensible appearance of the architectural work. On the other side, it is influenced by its interpretation in philosophical thinking, and has emerged as intrinsic form and the main object of philosophical knowledge of architecture. The conceptual duality of the form and its association with philosophical knowledge of architecture are two basic features of the form that have made it susceptible to change.

The analysis of architectural theories in terms of the evolutions in philosophical thinking reveals that the form evolutions in its both conceptual scales originate from the evolutions of philosophical knowledge of architecture which includes ontology, epistemology, and aesthetics. In each period, one of these three fields of knowledge has become the primary concern of the era, and the achievements have had the most significant impact on the evolution of philosophical knowledge of architecture and the emergence of a new concept of the form. According to the findings, in classical and renaissance discourse theorizing about the form was based on the beliefs of ontology and aesthetics while the discourse of architecture in pre-modern, modern and post-modern periods is most affected by epistemological considerations. In these eras, thinking about human cognitive and perceptual function is the most influencing factor in the transformations of the form. The present research indicates that the evolution of the predominant field of knowledge has also resulted in the compatible evolution of the conceptual system of other fields of knowledge in line with the new concept of form. This was the basis of referring to the new concept of form, to answer the issues of other fields of knowledge. Consequently, the concepts of the form have played three essential roles in each era and have referred to a component that has a decisive role in the existence of architecture, its perception, and aesthetic. Due to the dynamic nature of knowledge in different periods, the concept of the form has become open to interpretation and different definitions and boundaries have been drawn for it. Taking various

definitions and meanings, the form has been approached by the more appropriate concepts and terms, those either have been already present in the architectural vocabulary or have been entered from different fields of knowledge. Subsequently, new concepts and terms have emerged as a substitutefor the form in each discourse of architecture. In the present study, these concepts are classified under six general categories including appearance, idea, type, structure, meaning, and affordance. Each of these categories represents a set of form concepts that are aggregated into a single term due to their meaning affinity. The categories of the form, the transformations of each of them, and the factors that influence the emergence of the form concepts will be discussed in the following chapters.

The Form and its concepts in architecture
• The Form as appearance

"Appearance" is a concept of the form that implies a tangible aspect of the architectural work. The two words of "idea" and "morphe," which are associated with the term of form, imply visual appearance and outward in terms of lexical semantics (Tatarkiewicz, 1980, 220; Urmson, 1967, 119). Forty has stated that "Until the end of the nineteenth century, almost nowhere … was 'form' used in architecture in any other sense … than as a description of the sensory properties of buildings"[2] (Forty, 2000, 149). The form as appearance has taken a variety of interpretations, which largely owes to epistemological attitudes about the visual perception and the relation between visual sense and other senses, especially kinesthetic perceptions. Interpretations of appearance have appeared as lineament, body, space, and events in architectural theories.

- Lineament

Form as lineament refers to a set of peripheral lines and a geometric shape that defines and encloses the surfaces of architectural work. This meaning of form is synonymous with the terms such as design, shape, figure, contour and drawing (Tatarkiewicz, 1980, 233) and is predominant in Renaissance and

Vitruvius's theory. In addition, much attention has paid to this meaning of form in the rational pre-modern discourse. The issue of readability, ease of understanding, and the search for the scientific basis of architecture in geometry make geometric shapes so popular that architectural theories focus on "geometric shapes" rather than on physical components (such as columns, pediment, etc.). The continuity of this tendency in the modern era leads to the formation of "the language of form". In the postmodern discourse, this meaning of the form - despite the attention of some scholars such as Eisenman and Alexander – is just referred to as the physical features of the architectural work.

- Body

Form in lexical-semantic represents the material, physical, and sensible aspects of an object. Such meaning has brought form closer to concepts such as mass, physic, and body. According to Collins, before the 18th century, the physical components and structural features of the architecture had drawn the most attention among architects (Collins, 1996, 22). Except for a break in the modernist discourse, when the notion of space has been prevalent, again the postmodern theories, especially theories on phenomenology, with the notion of body-event, have concentrated on the body and physical aspects of architecture in terms of the experience presented to their audience (Pallasmaa, 2011, 123-130).

- Space

Space shows an interpretation of the form that considers the void part of architecture as the essence of architecture and the object of perception and aesthetic. Until the eighteenth century, the term was not widely used in architectural discourse and was just considered the distance between the physical components and the negation of material parts. Since the 18th century, the terms "void space" and "volume" have seriously come to use in architectural literature. Gottfried Semper in the 19th century, influenced by Hegel's aesthetics, defined spatial limitation as to the essence of architecture. The influence of theories of perception by psychological attitudes, in particular,

"empathy theory," has led to a new interpretation of the form. Based on this theory, the perception of form is the result of the self-projection of the human subject into an object (Schützeichel, 2013, 299). Hildebrand believes that this sense is a kind of kinesthetic experience of "the real or imagined movement" (Forty, 2000, 159). According to Worringer, this experience "includes the two impulses: expansion and delimitation" (Worringer, 1997, 5), and implies the concept of "space". For Hildebrand [and Schmarsow,] "the form in architecture is space; in architecture … space itself, in the sense of inherent form, becomes [an] effective form for the eye" (Forty, 2000, 159). During the postmodern, the modern geometric space replaces the space with a definite character, which is called "place".

- Event

The event represents an understanding of the appearance of architectural work, which is dedicated to the non-stationary and non- masonry architectural elements. This understanding of the form owes most to Marxist as a reaction against the authenticity of the appearance and reification of ideas and relationships. Such an approach was predominant in 'tendencies of the Situationists during the 1960s and 1970s, manifested particularly in the work of the Archigram group, and in the earlier writings and work of the architect Bernard Tschumi' (Forty, 2000, 170). In such a situation, architectural theories concentrate on the non-masonry elements of the architecture, such as the human events in the environment and mechanical events such as the movement of elevators and circulations that unlike freezing reification, represent movement and dynamics.

• The form as an idea

The idea is a conceptual limitation of form, which refers to the architect's mental image of the architectural work. The term "Idea" is the English translation of the word "eidos", and one of the two origins of the term "form". The concept of the idea is expanded entering the classical philosophy, and in addition to its lexical meaning, considers a non-sensible, immutable, general, and unifying element

that guarantees existence, knowledge, and beauty and enables the development of phenomena as a productive force. The idea is also considered as a primary form and an eternal and perfect exemplar that sensible and material objects are an incomplete imitation of it. In Medieval, the idea defines as 'eternal patterns in xdivine thinking' and gradually the term is extended 'to cover patterns, blueprints or plans in any body's mind… [Which] denote any object of thought' (Urmson, 1967, 119). The climax of the present of idea in architectural literature referrers to the classical and renaissance discourse, also it has been considered a key concept in the romantic and idealistic discourses. The origin and content of ideas are the primary sources of the emergence of different understandings of it, the result of which is the interpretation of the idea into an objective, subjective, and general imagination.

- Objective imagination

The objective idea refers to the imaginations of the architectural work that are independent of the characteristic of the architect, and the architect is only the recipient of that imaginations. This notion of the idea was prevalent in the classical, renaissance, and idealistic discourses. Based on traditional ontology, architecture is considered the mimesis of nature, and the idea is the content of the mimesis that the architect receives. In the discourse of Vitruvius, the idea refers to innate and alterable patterns that in the form of three kinds of expression, not only depicts the arrangement of architectural components[3] (Vitruvius, 1914, 13) but also illustrates the construction process (Madrazo, 1995, 76). 'The superiority of intellectual work over manual work' (ibid., 104) in the renaissance leads to a new interpretation of the idea. According to Alberti, the idea is an imagination in the form of lineament, that "internalized and idealized in the mind of artists" (Parcell, 2012, 138), when studying the nature through reason and intellectual work. Moreover, in the discourse of idealism, the architect is just the receiver of the idea through inspiration and intuition.

- Subjective imagination

The subjective idea is referred to an imagination of architectural work that the architect is responsible for. In the eighteenth century, the expressive role of architecture is particularly emphasized in the discourse of romanticism, through the supremacy of epistemological issues and the analogy of architecture with literature. Accordingly, the idea is referred to the content of architectural work that is most the product of the architect's emotions (Collins, 1998, 46), or character (Collins, 1998, 63). Adopting this attitude, individual innovation and creativity replace nature as the source of the idea, and the architect's role changes from the recipient to the creator of the idea.

- General imagination

The unique position of the idea as a basic concept in architectural theories weakens entering current discourse. In this era, the idea, influenced by epistemological interpretations, refers to any thinking, imagination, and mental content of the architect about the architectural work that precedes the objective manifestation of the work of architecture.

• The Form as type

Type is a concept of form that is broadly used to describe the general form, structure, or character distinguishing a particular class … objects [architectural works][4] (Johnson, 1994, 288). The pre-modern rationalist discourse pays the most attention to the concept of type. Type as a category of classification has also a considerable presence in classical and renaissance discourse[5]. In the modernist theories, emphasis on innovation leads to disconnection with the past and the emergence of the concept of "the language of form". However, the concept of type is further reinforced by postmodern theories based on "two distinct motives: one linked to the specifically Italian debate about [continuity], the other to Anglo- American preoccupation with [the] meaning" (Forty, 2000, 307). Various interpretations of type as the origin of the architectural work have been proposed in the history of architectural theories.

These include objective or subjective model, basic principles, necessities and requirements, and the type _context model.

- Objective or subjective model

Type in architecture is considered either an objective or subjective model for the creation of other architectural works. Influenced by epistemological considerations, its conceptual aspect has become predominant in architectural discourse. The notion of the "cabane" in Laugier's theory is the origin of the appearance of the concept of "type". According to Laugier, this concept is a mental image, "that the architect abstracts from the realm of sensible forms" (Madrazo, 1995, 171) and is a model for the invention of the new forms.

- Basic principles

The interpretation of type to the basic principles of architecture depends on the epistemological trends and an attempt, which explains the scientific foundation of architecture in pre-modern rational discourse. In such conditions, much attention is paid to the origin of the form, since it contains fundamental principles and the objective, invariable, and necessary features. De Quincy believes that "type" is the principle and law of nature that is discovered by the architect and as a general law is considered to be the basis of the individual works of architecture. By distinguishing architectural elements from the principles of their composition, Durand considers "type" the basic principles that in the form of geometric schemes, illustrate the way that fundamental elements of architecture are combined (ibid., 215-217). These patterns have been abstracted from previous architectural works and considered the primary form in the invention of new ones.

- Type - context and necessities

The crisis of style in the 19th century has compelled architectural theorists to introduce a style appropriate to that era. Accordingly, instead of paying attention to the general and constant entities, thinkers concentrate on the causes and factors leading to change and transformation, and

the biological analogy of architecture provides the context for referring to the Darwinian type- context model. According to this model, the type changes and evolves through interaction with the changing context. Adopting this approach, the concept of style reaches the architectural literature as a totality emerging from the effect of external factors on the primary form, and the primary form is dedicated to the essential features of the architecture that include 'the logic that is derived from the material, technique and functional Demands, [and] … the logic of perception" (ibid., 258).

• **The Form as a structure**

"Structure" is a concept of form, which is referring to "proportion", "order" and "arrangement". The structure is considered a long-lasting interpretation of form, which is used continuously in architectural theories in association with other concepts of form. However, the supremacy of this meaning of form" declined in the eighteenth century under the spell of romanticism" (Tatarkiewicz, 1980, 226). The concept of "structure" is predominant in the discourse of formalism and structuralism. Based on the nature of the components and the type of their relationship, various explanations for the structure have been provided: quantitative or qualitative relations between architectural elements, mental structure, the structured creation process, and the deep structure, are among the various interpretations of this meaning of form.

- Quantitative, qualitative, or interactive relation

The structure is considered as an aesthetic issue in classical and renaissance discourses and implies numerical and geometric relationships. Proportion, order, and arrangement are terms for this meaning of form[6]. In the pre-modern rational discourse, known geometry as architecture's scientific foundation, the geometrical relations are at the center of architects' attention. In the discourse of formalism and (post) structuralism, the structure is also fundamental in guaranteeing the beauty and perception of architectural work. Based on the formalist view, architectural work is considered a combination of

elements, and, "any instance of the relation among elements … is an instance of … [architectural] form." However, elements "are almost always more selective", (Carroll, 2012, 141) based on their contribution to "the point or purpose"(Carroll, 2012, 142) of the work of architecture or their relation to essential aspects of architectural work. These criteria may include function, the stability of the building, or space, according to which functional, constructional, or spatial relation among elements is counted the architectural form. In the discourse of pragmatism, the interactive relations of architectural work with human and the environment is the source, constitutes form (Dewey, 2005, 153).

- Mental structure

Mental structure refers to mental patterns affecting the architect's imagination and choices. This interpretation is associated with the supremacy of epistemological ideas, especially studying form perception in cognitive psychology in the 19th century. In this attitude, based on Kant's ideas, the mind is assumed to have a prior structure, and form is the result of active "contribution of the mind to the perceived object" (Tatarkiewicz, 1980, 221). This approach has also been widely used in creating architectural work, such that Gombrich considers architecture as a combination of elements, which is imposed by the architects "conceptual schema as an a priori concept" (Madrazo, 1995, 282). Based on this approach, the creation and configuration of architectural work mostly depend on the prior mental structures, as the source and origin of architecture.

- Structured process

In the postmodern, linguistic approaches and Marxist theories, provide a different explanation for structure emphasizing the creation process of architectural work. Based on this new perspective, much attention has been paid to the design and construction processes than the primary form. According to this approach, the structured procedures of the creation process guarantee the identity of the architectural work. Based on Chomsky's ideas, Eisenman considers the work of architecture a result of

structured geometrical procedures, "that transform the generic form into the specific form" (Madrazo, 1995, 327). Besides, Alexander introduces fifteen "geometric properties as transformations" (Alexander, 2003, 20) which configure the final form of architecture. Arnheim also believes that the work of architecture is subjected to the "ordering process" (Arnheim, 1977, 164) that "translate the play of forces into a visual pattern" (ibid., 267). Based on Marxist ideas, the creative process and the involved forces are crucial in the formation and perception of architectural work.

- Deep structure

Deep structure refers to foundational forces and basic infrastructures, which affect architectural work as a superstructure. This interpretation of the concept of structure is rooted in Freud's psychoanalytic ideas, Marxist approaches, and the structuralist tendencies in linguistics. Cultural, political, economic, and social structures are considered deep structures and the sources and origins of architecture.

• The Form as meaning

Meaning is a conceptual interpretation of form, implying on the perceptual and expressive aspects of the form. This conception of form is due to the focus on epistemological issues in architectural discourse since the 17th century that has been developed in the form of three terms of "character," "concept" and "meaning."

- Character

Character is a concept of form, implying on the perceptual aspect of the architectural work and its expressive nature. Different theorists have proposed various interpretations of the concept of character; Blondell attributes character to the quality of the architectural work, as well as its purpose and function. Louis Bullet refers to the character to explain the expressivity of architectural work; in contrast, Quatremère De Quincy considers "character" as a distinctive aspect of architectural work that makes it possible to be identified. "Character" is a common concept in the architectural literature of the 20th century - including Le Corbusier and Lynch - and

the literature of romanticism and phenomenology. In the romantic discourse, a sensible form is considered "an expression of an inner force, whether of the individuality of the artist or his culture"(Forty, 2000, 128). In the writings of Schulz 'Character denotes the general atmosphere which is the most comprehensive property of any place' (Norberg-Schulz, 1979, 11). According to forty "References to 'character' almost always raise issues of 'meaning', and this must be taken into account in the analysis of the term" (Forty, 2000, 120).

- Concept

The word "concept", which is affected by Kant's ideas in the field of epistemology, has been used in the architectural literature by the advent of modern discourse, especially in the area of the architectural design process. "Concept" is a clear perception of the architect's general idea about architecture, which organizes and conducts operational ideas about the work of architecture.

- Meaning

By the advent of postmodern theories, paying attention to the expressive and perceptual aspects of the form is most evident as the concept of "meaning." "Meaning" is a concept of form developed through the linguistic approach to architecture. Accordingly, architectural work is considered a text expressing a "meaning". According to Nesbitt, Central to the postmodern discussion of meaning is the definition of the essence of architecture, about which there is little consensus (Nesbitt, 1996, 44). Different theories about the essence of architecture or the nature and perception of "meaning" have formed different interpretations of the concept of "meaning." "Meaning" has been studied through different approaches, such as linguistics, phenomenology, and Marxism. In linguistics, different approaches including pragmatic, semantics, and (post) structuralism have taken different standpoints in this regard, and "meaning" is attributed to different issues, such as the architecture's effect on the user, function/ behavior, historical implications, the combination of architectural elements and the

structured design process (Broadbent, 1977, 122-140). In Phenomenological and Marxist theories, the meaning of architectural work is attributed to issues such as the technical aspect of the building, function, structured experiences of the user, the spirit of place, the construction process, and socio-cultural factors. Moreover, it is also believed that the political, economic, and ethical aspects of architecture constitute the meaning of architecture.

• **The Form as affordance**
Affordance is a concept of form, emphasizing the interaction between the physical features of the architecture and the perception and behavior of the user. The concept of affordance, based on a particular ontological state, 'is both a physical and a psychological property' (Gibson, 1979, 129). The concept has been put forward through a psychological approach to perception. Gibson first adopted the term in the field of ecological psychology to refer to the meaning of the environment. Gibson defines the affordances 'the opportunities or possibilities of action' (ibid., 18). Affordances are what the environment ' offers the animal, what it provides or furnishes' (ibid., 127). In the discourse of environmental psychology, various terms, such as demand character (Koffka, 1935), capability (L. Brown quoted by Brown, 2016), synapomorphy (Barker, 1968), compatibility (Kaplan, 1983), congruence (Michelson, 1976), ability (Greeno, 1994), effectivity (Shaw, Turvey & Mace, 198), and valence (Lewin, 1936), also refer to the concept of affordance. Even though affordance is introduced in the discourse of environmental psychology during the contemporary era, its footprint can be found in the theorists' ideas of various ages. Vitruvius (propriety), Alberti (convenience), Quatremère De Quincy (type as a hidden affordance), Semper (affordance of construction techniques and materials), Morris (force of numbers and proportions in the discipline), Wölfflin (possibilities of observation), Arnheim (visual factors of a composition), Eisenmann (affordances of geometrical the form and natural factors affecting the formation of the form), and Kahn (availabilities) are its examples. The thoughts of architects, such as

Alexander have been influenced by the complimentary property of the concept of affordance, which leads to the development of the concept of the pattern language. Besides, the term "diagram of forces" in Alexander's literature is the concept of "affordance". Alexander considers " the context as a single pattern - a unitary field of Forces" (Alexander, 1964, 90) that the form emerges through achieving a good fit between these forces. In phenomenological literature of Schulz, affordance has been referred to with terms such as "capacity" or "possibilities" (Norberg-Schulz, 1979, 18). Although affordance is a newly established concept in architectural theories in comparison with other concepts of form, it has been welcomed in contemporary theories because it helps to establish a connection between body and meaning (Table 2).

Concepts of the Form in architectural discourse
The analysis of architectural theories demonstrates that all concepts of form are present in different architectural discourses. With the evolution of philosophical knowledge of architecture, architectural concepts have been evolved; such a situation has changed theorists' focus and highlighted other concepts of form. Regarding the expansion of the concept of the form in philosophical thinking, at least two prominent concepts of form in each architectural discourse can be found, one rooted in lexical semantics and the other one is rooted in the philosophical meaning of the form[7]. Form as appearance mostly presents the transformation of the lexical meaning of form (the outer form); however, other categories of form stand for the transformations of the philosophical form (the inner form). For each concept of form, a discourse and a period are conceivable, in which the first emergence of that concept as an interpretation of form occurs. However, this concept may be also adopted by other architectural discourses, even with a different interpretation, as a new understanding of the form. Based on the ontological beliefs in classic and renaissance discourses, architecture

has been considered the art of mimesis, an "idea" that has referred to the content of mimesis, which has guaranteed ontological, epistemological, and aesthetics knowledge of architecture. During this era, the architectural appearance was dedicated to the architectural body, and lineament was considered the mental image of the architectural body. In the discourse of pre-modern rationalism with the supremacy of epistemological issues, the general and abstract features of the architectural work are considered the most critical factors in achieving knowledge, and the concept of type has been at the center of attention. In this era, in the discourse of romanticism, the concept of the idea is highlighted again; however, the idea instead of being the mimesis of nature includes emotions and feelings of the architect. In the pre-modern discourse, the concern about readability and ease of perception leads to a referral to lineament and geometrical patterns in the absence of any type of attention to the architectural body. In the modern discourse of formalism, the concept of structure is highlighted based on Kant's epistemology, and in the idealistic discourse influenced by Hegelian beliefs, the concept of the idea is revived. In this era affected by psychological approaches to perception, the architectural body is replaced with the concept of space. In postmodern discourse, the vanguard of epistemological beliefs and the linguistic analogy of architecture highlight the concept of "meaning," and based on the ecological psychology, the concept of affordance is introduced as the object of philosophical knowledge of architecture. In this era, the architectural body is re-considered, and the structured experience of humans is emphasized through the concept of "body_ event", especially in phenomenology attitudes and affordance-based approaches (Table 2).

Concepts of form and the quality of the philosophical knowledge of architecture

The six concepts of form, which are the objects of ontological, epistemological, and aesthetics knowledge of architecture, have three common aspects. Despite this similarity, each concept of form is representative of a particular orientation in philosophical knowledge of architecture, contains different contents and referents while highlighting a specific aspect and theme of architectural work. The study demonstrates that the concepts of form refer to at least the six aspects of architecture, including sensible, mental, synthetic, social, expressive, perceptual, symbolic, and interactive aspects of architecture.

Reference to the sensible aspect of architecture

Form as Appearance refers to the existence, knowledge, and beauty of architecture to its sensible aspect. According to this interpretation of form, the practice of architecture is considered an objective affair results in the creation of an objective product, and the sensible and material aspects of the architectural work are considered as the basis of the three fields of knowledge. In the history of architectural theory, other concepts of form have also referred to the sensible aspect of architecture as much as their conceptual affinity with appearance. The idea in the classic and renaissance discourses is concentrated on the appearance of the architectural work, and in some tendencies in formalism and idealism, there has been an inseparable connection between the idea and appearance. The concept of type in the meaning of the geometric model or pattern has also implied the general properties abstracted from the appearance of architectural work. The association between meaning and appearance of the architectural work appears in phenomenological tendencies and is considered the basis of the emergence of the concept of affordance.

- Reference to the mental aspect of architecture

The concept of idea attributes the existence, knowledge, and beauty of architecture to its mental aspect and emphasizes the mentality of the architect as a fundamental element in the philosophical knowledge of architecture. Other concepts of form

Table 2. The focal concept of form separated by a period and the primary interpretive approach. Source: Authors.

Period	Discourse	Focal concept of form in architectural discourse	Main interpretative field	Interpretive approach
Classic - Renaissance body		Idea	Ontology	Architecture is the art of mimesis and idea is the content of mimesis
		Lexical semantics	Lexical semantics	
Pre-modern	Rationalism – Classicism	Type	Epistemology	Perception as receiving general features
	Romanticism	Idea	Epistemology	Paying attention to the emotional and sentimental aspect of perception
		Lineament	Epistemology	Achieving readability and ease of perception through simple geometric shapes
Modern	Formalism	Structure	Epistemology	Kant's epistemology and the importance of relations
	Pragmatism	Structure (interactive relation)	Epistemology	Importance of experience in achieving knowledge and the importance of interaction and adoptability with the environment in the formation of phenomena
	Idealism	Idea	Ontology	Understanding architecture as a reflection and manifestation of a prior idea received by an architect based on Hegel's view
		Space	Epistemology	Psychology of perception and emphasis on the projection of physical sensation to the environment
Post modern	(Post) structuralism Semiotics Marxism Phenomenology	Meaning	Epistemology	The importance of finding the content of the architectural work
	Phenomenology Environmental psychology	affordance	Epistemology	The importance of understanding the environmental opportunities for action
	Phenomenology Environmental psychology	body_event	Epistemology	Emphasis on the bodily perception and human experience in relation to the physical properties of architectural work

such as type (mental model, mental structure), and concept referred to this aspect of architecture based on their conceptual affinity with the concept of idea.

- Reference to the synthetic aspect of architecture

Form in the meaning of structure refers to the synthetic aspect of architecture. According to this understanding of form, existence, knowledge, and beauty of architecture are evaluated based on the order, relation, or interaction between different parts or elements of architectural work. Other concepts of the form also refer to the synthetic aspect of architecture, based on their conceptual affinity with the concept of structure. The concept of the idea, especially in classic and renaissance discourses, the concept of type in the meaning of model and pattern, the concept of meaning in structuralism, and the

concept of affordance are examples of conceptual affinities with structure.

- Reference to the social aspect of architecture

Type is a concept of form, which emphasizes the social and collective aspects of architecture and attributes the existence, knowledge, and beauty of architecture to the general and common properties considered the foundation and origin of architecture. To the extent of conceptual affinity with type, other concepts of the form guarantee the social aspect of architecture, including the concept of idea in the meaning of objective imagination and the concept of mental structure or deep structure.

- Reference to the expressive, perceptual, and symbolic aspects of architecture

Meaning is a concept of form highlighting

the conceptual, expressive, communicative, or symbolic aspect of the architectural work. According to this understanding of form, existence, knowledge, and beauty of architecture are evaluated based on the meaning that the architectural work expresses, visualizes, or symbolizes. Other concepts of form have also referred to this aspect of architecture to the extent of their conceptual affinity with meaning. The concept of idea in the discourse of romanticism and idealism refers to the expressive and symbolic aspects of architecture. Moreover, the concept of affordance implies nonverbal communication. Some theories establish a strong relationship between the concepts of structure, type, and body with the meaning of architecture.
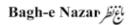
- Reference to the interactive aspect of architecture
Affordance is a concept of form emphasizing the interactive aspect of architecture. Affordance expresses the complementarity of the physical aspects of architectural work and the user's perception and behavior. This unique feature has introduced the concept of affordance as a critical concept reflecting the effort to overcome the historical gap between subject and object, human and the environment, and physical and conceptual/ behavioral aspects of architecture.

"Form field"; re-thinking form
Knowledge is generated, evaluated, and justified about… the values, (Carter & Little, 2007, 1322) which are the basis for explaining the admissibility or inadmissibility of types of knowledge. Being axiological, knowledge of architecture is always limited to a particular point of view, a feature that has been extended to the concepts of that field of knowledge. Inevitably, each concept of form has been referred to as specific and limited aspects of architecture. However, achieving a comprehensive knowledge of architecture requires considering a wide range of its aspects. On the other hand, adopting different axiologies, different orders, and relations between aspects of the architecture have

been established, which leads to the formation of a specific system. In such a situation, a particular aspect of architecture, with the highest validity, has determined and guaranteed the existence, knowledge, and beauty of the architectural work, and has been considered the concept of the form. The study reveals that all of the concepts of form are present in different architectural discourses; however, what distinguishes the architectural discourses from each other, is the importance and validity given to different aspects of architecture and highlighting and emphasizing on one or more of them.
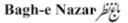
Accordingly, there are at least three challenges that lie in the way of explaining the form: a) Axiological necessities, b) the reference of the concepts of form to just a specific architectural aspect, and c) the significance of improving a comprehensive knowledge of architecture. Meeting these challenges, the concept of "form field" is introduced. "Form field" is a conceptual space consisting of a set of situations, which are occupied by the objects and referents of the three fields of knowledge. These situations indicate both determinant elements and affective ones. Based on this perspective, the form appears as a multi-layered concept, which different knowledge forces lead to the emergence of a different arrangement of the layers of the form, through prioritizing architectural aspects. The new order, in addition to arranging the form layers, sometimes leads to unification or disregard of some concepts of the form or reveals new layers and situations. Accordingly, the concept of form can be attributed to different layers based on the validity and importance of the architectural aspects; however, the aspect with the highest value implies the real concept of the form. On the one hand, such interpretation of form opens a way for new forces to emerge and guarantees the revival of the dynamic life of the form; besides, it enables paying attention to various aspects of architecture and can lead to meta-theories regarding the concept of form.

Conclusion

In this study, explaining the concept of form in architecture is achieved through identifying, analyzing, and criticizing the form evolutions, forces affecting these evolutions, and their consequences. In the history of architectural theory, based on six fundamental changes in the philosophical knowledge of architecture during the classical, renaissance, pre-modern, modern and post-modern periods, the concepts of the form have referred to appearance, idea, type, structure, meaning and affordance. Studying the origin of the form (both lexical and philosophical) and its transformation in architectural thought shows that form, contrary to the widespread opinion, implies a "cognitive position" rather than a specific aspect of architecture. Form refers to the most fundamental aspect of architectural work that is the object of the philosophical knowledge of architecture from at least three perspectives of ontology, epistemology, and aesthetics. Accordingly, the concept of the form has been changed based on the evolutions of the philosophical knowledge of architecture. The effectiveness of three philosophical fields of knowledge on the evolution of the form is variant among six periods, and architectural discourse from the pre-modern has encountered the predominance of epistemological concerns and human perceptual role in the transformation of the concept of form. Each of the concepts of form has emphasized a particular aspect of architecture based on their axiological background. Appearance has been referred to as a sensible aspect, idea has been referred to a mental aspect and type has emphasized general and social features of the work of architecture. The concept of structure has been referred to the synthetic aspect of architecture and meaning has been indicated to expressive, perceptual and symbolic aspects, finally affordance has been referred to physical-perceptual and interactive
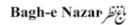
aspects of architectural work. Table 3 presents a summary of the presence of the form in the architectural discourse. It cannot be assumed that the concept of the form, as the fundamental object of philosophical knowledge of architecture, provides a comprehensive knowledge of architectural work without integrating the architectural aspects into a unifying connection. Introducing the concept of "form field" is an attempt toward adopting a holistic approach and a coherence explanation of the form. The "Form field" consists of ordered conceptual situations that are occupied by the objects of the philosophical knowledge of architecture. Different approaches in philosophical knowledge of architecture validate the architectural aspects based on their values; they prioritize architectural aspects and, in some cases, eliminate or merge them, and sometimes lead to the exposure to a new aspect of architecture. According to the priority of architectural aspects, conceptual situations are occupied, and a particular order is formed. The concept of form is attributed to the totality of the ordered situations; however, the most fundamental concept represents the concept of form. The "form field" enables the simultaneous attention to different architectural while ensuring the dynamics of the concept form. The importance of the concept of the form field is indicated when we realize that form, as a theoretical construct, is not just an instrument for thinking but also affects our architectural practices. Confining architectural work to just specific aspects leads to an orientation in the practice of architecture, and results in the creation of a work that is not qualified for human habitation. Accordingly, it can be stated that the common interpretation of form is not a unique, true, and unchangeable understanding of form; form is a multi-aspect concept that, based on the values of different architectural discourses, only some of its innumerable capacities have

been demonstrated. Any interpretation of form, based on its relation to philosophical knowledge of architecture requires adopting a comprehensive attitude towards native values and today's concerns of architecture, and then try to establish a new order of form field and take a comprehensive approach towards architectural practice.

Table 3. concepts of form, the context of primary conformation, semantic implication, and aspect of architecture that has been emphasized. Source: Authors.

Concepts of form		Interpretive field – knowledge field	Semantic implication	Relation with architecture	Semantic content
Appearance	Lineament	Lexical semantics	contour, shape	Reference to sensible aspect	Emphasis on the final product and the objective and sensible properties
	body	Lexical semantics	solid and material part		
	Space	Epistemology_psychology	Void and empty section		
	Event	Epistemology	Non-physical part		
Idea	Objective imagination	Ontology	Imagination in mind	Reference to mental aspect	Emphasis on architect's objective imagination
	Subjective imagination	Ontology_psychology, literature			Emphasis on the subjective characteristics of the architect
	General imagination	Lexical semantics			Emphasis on architect imagination
Type	Objective or subjective model	Ontology, epistemology	General, collective and common affair	Reference to social aspect	Emphasis on the continuity, coherence and the common origin
	Principles and necessities	Epistemology			
	Type-context	Epistemology_biology			Emphasis on continuity and at the same time dynamism
Structure	Quantitative or qualitative relation	Aesthetics - mathematics and Geometry, ontology_ biology, and mechanics	disciplinary and coherent affair	Reference to synthetic aspect	Emphasis on the relations between elements, order, and the coherence
	Mind structure	Epistemology_psychology			Emphasis on the collective imagination of the architect
	Process structure	Methodology_Linguistics			Emphasis on the formation of architecture
	Deep structure	Epistemology - psychoanalysis, sociology			Emphasis on infrastructures and socio-political, and critical nature of architecture
Meaning	Character	Epistemology_biology	Qualitative feature	Reference to qualitative aspect	Emphasis on the qualitative nature of architectural work
	Concept	Epistemology	General imagination and perception	Reference to expressive, communicative and symbolic aspects	Emphasis on the architect's conception of architecture
	Meaning	Epistemology_linguistics	Expressive content, message or perceived affair		Emphasis on the expressive and communicative nature of architectural work
Affordance	Possibilities, competencies, capability, value	Epistemology - ecological psychology	Physical feature - semantic	Reference to interactive aspect	Emphasis on the interaction of physical properties of architecture with psychical characteristics of human

Endnote

1. Philosophical thinking is classified into four periods including classical, medieval, modern, and postmodern. However, in the present study, due to considerations that will be mentioned, five periods including classical, renaissances, pre-modern, modern, and post-modern, have been selected. First, since the classical thoughts of Plato and Aristotle are also the basis of medieval thought, instead of medieval era, it has been referred to the Renaissance. A period which in spite of the similarity with classical period in philosophical thoughts,) has been associated with the evolution of architectural thought. During renaissance, unlike the classical period in which the emphasis was put on the practical aspect of architecture, attention has been paid to the mental aspect of architecture. Second, the modern era in philosophy is divided into two pre-modern and modern eras in architecture. The reasons for this division are a) its more proximity to architectural classifications, while the modern era refers to a specific part of this period, and b) the importance of thoughts of the 17th-19th century as a transition period that requires a deeper examination. Therefore, the history of architectural theory has been divided into five periods, and the context of search for the form concepts has been selected from the most predominant theories of each period.

2. The term form was used based on its lexical meaning in English literature until the 19th century. During this period, other terms had represented the philosophical meaning of form. According to Forty this has been stated inversely in German literature and the term form has been used in its philosophical meaning and the term Gestalt refers to the sensible features of the architectural work and in particular its apparent composition. However, entering the modern period, the term form also represented the philosophical meanings of form.

3. This visual appearance is displayed in three different forms: horizontal appearance on the ground, the vertical and front appearance, and building perspective.

4. In John Turner's art encyclopedia under the entry of form, the word "eidos" is defined as the mode or appearance of something that distinguishes it from others. It also represents the particular nature of everything that implies the concept of kind and type.

5. In this period, terms such as order and genre represent this meaning of form.

6. Also, among the six architectural features of Vitruvius, Tatarkiewicz attributes (choose a suitable word) "disposition, symmetry, eurhythmy and order", to the arrangement and order of the components of architecture. In the Albertian School, beauty is interpreted as harmony between components, which have been referred to by concepts such as concinnity (misspelling), collocation, order and number (Tatarkiewicz, 1980, 222-226).

7. In contemporary discourse, "form" with philosophical origin is determined using "the" or by capitalizing the beginning of the word.

Reference list

• Alexander, C. (1964). *Notes on the Synthesis of Form*. Cambridge: Harvard University Press.

• Alexander, C. (2003). New Concepts in Complexity Theory arising from studies in the Field of Architecture: A response by Christopher Alexander. *Katarxis Nº 3: New Science, New Urbanism, New Architecture?*, 3(3).

• Arnheim, R. (1977). *The Dynamics of Architectural Form: Based on the 1975 Mary Duke Biddle Lectures at the Cooper Union*. California: University of California Press.

• Barker, R. G. (1968). *Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behavior*. Stanford, CA: Stanford University Press.

• Broadbent, G. (1977). Introduction: A Plain Man's Guide to the Theory of Signs in Architecture. In K. Nesbitt (Ed.), *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965-1995* (1996 ed., pp. 122-140*)*. New York: Princeton Architectural Press.

• Brown, D. & Williamson, T. (2016). *Lancelot Brown and the Capability Men: Landscape Revolution in Eighteenth-century England*. London: Reaktion Books.

• Carroll, N. (2012). *Philosophy of Art: A Contemporary Introduction*. London: Routledge.

• Carter, S. M. & Little, M. (2007). Justifying Knowledge, Justifying Method, Taking Action: Epistemologies, Methodologies, and Methods in Qualitative Research. *Qualitative Health Research,* 17(10).

• Collins, P. (1996). *The History of Architectural Theory: Changing Ideals in Modern Architecture, 1750-1950* (translated from English to Persian by H. Hassan Pour). Tehran: Ghatreh.

• Collins, P. (1998). *Changing Ideals in Modern Architecture, 1750-1950*. Montreal: McGill-Queen's University Press.

• Dewey, J. (2005). *Art as Experience*. New York: Penguin Group Inc.

• Edwards, P. (1972). *The Encyclopedia of philosophy*. New York: the Macmillan Company & the free press.

• Fathi, H. (2006). *Estelahat morede estefade-ye Aflatoon dar bab nazariye-ye mosol* [Plato's terms for the theory of Ideas]. *Allameh* (10), 182-173.

• Forty, A. (2000). *Words and Buildings: A Vocabulary of Modern Architecture*. London: Thames & Hudson Ltd.

• Foucault, M. (2008). *Discipline and Punish: The Birth of the Prison* (translated from English to Persian by N. Sarkhosh & A. Jahandideh). Tehran: Nashr-e Ney.

• Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. Hillsdale, NJ: Lawrence Erlbaum Associates.

• Greeno, J. G. (1994). Gibson's affordances. *Psychological Review*, 101(2), 336-342.

• Ingarden, R. (1960). The General Question of the Essence of Form and Content. *The Journal of Philosophy,* 57(7), 222-233.

• Johnson, P. A. (1994). *The Theory of Architecture: Concepts, Themes & Practices*. New York: Wiley & sons, INC.

• Kaplan, S. (1983). A model of person-environment compatibility. *Environment and Behavior*, 15(3), 311-332.

• Koffka, K. (1935). *Principles of Gestalt Psychology*. New York: Harcourt, Brace and Company.

• Lewin, K. (1936). Principles of topological psychology. New York: McGraw-Hil.

• Madrazo, L. (1995). The Concept of Type in Architecture: An Inquiry Into the Nature of Architectural Form. (the degree of Doctor of Technical Sciences). Swiss Federal Institute of Technology, Zurich.

• Michelson, W. M. (1976). *Man and His Urban Environment: A Sociological Approach* (with Revisions). Boston: Addison-Wesley Professional.

• Nesbitt, K. (1996). *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965 - 1995*. New York: Princeton Architectural Press.

• Norberg-Schulz, C. (1979). *Genius loci: towards a phenomenology of architecture*. New York: Rizzoli.

• Pallasmaa, J. (2011). *The Embodied Image: Imagination and Imagery in Architecture*. London: Wiley and Sons Ltd.

• Parcell, S. (2012). *Four Historical Definitions of Architecture*. Montreal & Kingston: McGill-Queen's University Press.

• Pazouki, S. (2008). Seir-e tahavol ma'ani-ye vaje-ye Ideh dar tarikh-e falsafe-ye gharb [The evolution of the meaning of the word "idea" in the history of Western philosophy]. *Nameh-ye Farhang*, (34), 154-160.

• Reynolds, P. D. (1971). A primer in theory construction. Indianapolis & New York: Bobbs-Merrill Company, Inc.

• Schützeichel, R. (2013). Architecture as Bodily and Spatial Art: The Idea of Einfühlung in Early Theoretical Contributions by Heinrich Wölfflin and August Schmarsow. *Architectural Theory Review,* 18(3), 293-309. DOI:10.1080/13264826.2014.890007

• Shaw, R. E., Turvey, M. T. & Mace, W. M. (1982). Ecological Psychology: the Consequence of a Commitment to Realism. In W. W. D. Palermo (Ed.), *Cognition and Symbolic Processes* (Vol. 2, pp. 159- 226). Hillsdale, NJ: Lawrence Erlbaum.

• Tatarkiewicz, W. (1980). A history of six ideas: an essay in aesthetics. In Jan T. J. Srazednicki (Ed.), *Melbourne international philosophy series* (Vol. 5). The Netherlands: Kluwer Academic Publishers Group.

• Turner, B. S. (1992). *Max Weber: From History to Modernity*. London: Routledge.

• Urmson, J. O. U. (1967). Idea. In P. Edwards (Ed.), *The Encyclopedia of Philosophy* (Vol. 4). new york Macmillan.

• Vitruvius, P. (1914). *Vitruvius, the Ten Books on Architecture* (M. H. Morgan, Trans.). Cambridge: Harvard University Press.

• Worringer, W. (1997). *Abstraction and Empathy: A Contribution to the Psychology of Style*. Chicago: Ivan R. Dee.