International Journal of Architectural Engineering & Urban Planning, Volume 31, Number 3, 2021
DOI: 10.22068/ijaup.31.3.588

Research Paper

Interpreting Iranian Architecture in the Post-Revolutionary Period with Interaction Model of Tectonic and Stereotomic Theory Approaches

Ameneh Hashemi [1], Ahmad Ekhlassi [2*], Mohsen Dolati [3]

[1] Ph.D. Candidate of Architecture, Karaj Branch, Islamic Azad University, Karaj, Iran
[2] Associate Professor, School of Architecture, Iran University of Science and Technology, Tehran, Iran
[3] Assistant Professor, School of Architecture, Karaj Branch, Islamic Azad University, Karaj, Iran

Received: August 2020, **Revised:** December 2020, **Accepted:** January 2021, **Publish Online:** January 2021

Abstract
Since tectonic and stereotomic theories have neither been used systematically nor dealt with simultaneously for interpreting architecture, it would be more effective to learn about the process of their interaction by explaining the theoretical position of the critics and their thoughts. The main question is that would it be possible to interpret architecture through the interaction of tectonic and stereotomical theories, precisely? In this regard, the research aimed to study and process the physical dimensions and spatial structure of Iranian architectural works in the post-revolutionary period based on the interaction of approaches of tectonic and stereotomical theories. The approach adopted in terms of epistemology is interpretive through deductive reasoning strategy. In this paper, qualitative research was carried out with the help of library documentation and field studies. The findings of this study indicate that the approaches in tectonic and stereotomical theories have affected the materials, elements, structure, and construction of the body and spatial configuration, regardless of the architectural style. In other words, the non-algebraic sum of the approaches which are affected by the interaction of both theories on these components whether integrated or non-integrated in the form, can be perceived and received. Also, the maximum interaction in the selected architectural works was on the construction component, including a combination of symbolic body configuration of tectonic theory along with the symbolic configuration of stereotomical theory.

Keywords: *Adaptive reuse, Valuable buildings, Interior architecture, Priorities, Nara grid.*

1. INTRODUCTION

The interaction of design ideas in architecture shows how different, similar, and sometimes contradictory approaches work together, and the effect their simultaneous presence will have on the dimensions of the body and spatial configuration of architecture. This means that different works of architecture need to be studied, theories to be analyzed and their interaction explained. However, tectonic and Stereotomic theories and their approaches have been ambiguous, at the same time, of interest to architectural researchers, each of whom has considered the theories and approaches from their own point of view. The background of philosophical and mythological studies in these two theories is perhaps the most ancient, the debate has intensified since the eighteenth century, and has further expanded to this day with different approaches. Tectonic and Stereotomic theories have been studied and discussed in Western resources, and the West has a unique position as to the origin of these two categories. A brief description of tectonic and stereotomic theories from the perspective of various theorists is as follows:

Sekler believed that tectonics is the return of art to the technical part of the building. He dealt with the relationships between structure and tectonics (Holst, Kirkegaard, & Mullins, 2010). Gergori writes that essentially the tectonic resides in details or the practice of the detailing (Kassim, Majid, Sharif, & Kadir, 2018). Kenneth Frampton described that tectonic was the natural use of structure or materials (Katona, 2010). It is also a building and, to put it more subtly, tectonics is the making of artistic products (Narsey, 2013). Hensel & Menges pointed to the influence of biological and climatic components on the formation and tectonics of

[*] *Corresponding author: ekhlassi@iust.ac.ir*

architecture (Hensel & Menges, 2008). Semper divided building products into light components (facade) and heavy elements (body). According to Semper, tectonics deals with the structural, technical, executive, and aesthetic layers of architecture simultaneously, and according to his theory of tectonic coating, the connection of technical and executive layers along with art and beauty leads to unity and cohesion in the shell and core (Liu & Lim, 2006). Frampton's theory is on par with Semper and holds the view of stereotomical and tectonic contrast. Architectural tectonics is concerned with lightness and work at height, while stereotomics is concerned with gravity and ground connection, and symbolically refers to the sky and the earth. He describes tectonics as a poetic discipline in construction, and introduces stereotomy as an integrated construction with rigid and heavy materials (Katona, 2010). In addition to the definition mentioned earlier, from his point of view, tectonics is a combination of art, and according to Butcher's description, it includes structural eloquence, the desire for a lighter and more effective structure, and the regular organization of the degree of usefulness (Wu & Fu, 2014). Schwartz interprets tectonics as the product of ideas that confirms the complexity and multifaceted nature of tectonics per se (Schwartz, 2017).

Based on Francesco Cacciatore' the term stereotomic is a combination of the two Greek roots: stereus, meaning rigid body, and tomia meaning cutting, in which the concept of construction is not perceived as the proximity and assembly of elements, but as the gradual reduction of matter from a rigid object. The stereotomical approach in architecture leads to the production of integrated and compact forms so that the individual components are indistinguishable from the whole. Accordingly, if the tectonic approach emphasizes the structural and technical aspects and details of the building, stereotomics is defined based on the creation of voids and the creation of spatial hierarchies and the definition of building boundaries (González & D'Acunto, 2016). Citing the root of the stereotomic lexicon, Robin Evans considers the science of rock cutting as a reduction operation related to the creation of voids in a solid body, and according to him, architecture begins with this procedure, with an integrated carcass to create space (González & D'Acunto, 2016). According to Aparicio, stereotomic spaces are derived from the idea of an integrated understanding of space and matter (Aparicio Guisado, 2000). In Alberto Campo' s words, stereotomics is an interconnected system of structures. Gonzalez recognizes stereotomics as an integrated and compact form in which the individual elements of the form are indistinguishable (González & D'Acunto, 2016). Neumeier recognizes a structure with a vast coherence of rigid and transparent materials as crystalline stereotomy (Kim, 2006). Arbaugh expresses stereotomics as a sculpture carved from a mass (Erbaugh, 2006). Despite the high antiquity of tectonic and stereotomical theories and the history of studies in Western architecture, these concepts are not long-lived in Iranian architecture and have rarely been considered.

Consequently, the interaction of the concepts emerging from these two theories on the body and spatial configuration has been neglected. Iranian architects have limited their assessments to specific buildings with a purely tectonic approach. Therefore, what is studied as the findings of the literature is merely generalization, and processing that is purely body and lacks the aspects of spatial configuration.

Their application may neither be found in contemporary Iranian architecture nor the world.

However, several studies focusing on tectonics have been conducted in Iran, which is based on traditional Iranian architecture. Iranian contemporary architecture, especially after the revolution, lacks codified studies not only in the field of tectonics but also in stereotomics. The main goal of this research is to bridge the gap in Iranian architecture. The current study attempts to serve as a new approach, fostering innovation in interpreting architecture, by incorporating architectural components within the approaches of tectonic and stereomical theories simultaneously.

This new approach can be the basis of an attitude adopted in architectural design process. Therefore, in this study, the main, targeted topic was interpreting and processing the physical dimensions and spatial structure of contemporary Iranian architectural work in the post-revolutionary period, based on the interaction of tectonic and stereotomical theories.

This research aimed to answer the questions of whether it is possible to interpret more accurately, contemporary Iranian architecture through the interaction of tectonic and stereotomical theories? How and what components of the body and spatial dimensions of contemporary Iranian architecture in the post-revolutionary period can be interpreted from the perspective of the interaction of approaches of tectonic and stereotomical theories? Therefore, various architectural works will be studied and analyzed to explain the approaches of tectonic and stereotomical theories on components such as materials, elements, structure, including construction in physical dimensions and spatial configuration, as well as identifying their manner of interaction.

2. LITERATURE REVIEW

To achieve one of the main goals of this article, which is to gain a comprehensive understanding of the interaction of tectonic and stereotomical theory approaches in architecture, it is necessary to first explain these two theories by reviewing the relevant literature. Recently, in the field of local and international research, several studies have focused on the evaluation of tectonic and stereotomical theories. Most research done to date on tectonic and stereotomic can be placed in three general categories. The first category describes tectonic and stereotomic characteristics, generally or partially, in the form of a work or an architect which exclusively examines the body configuration, regardless of spatial configuration. Articles such as "*Facade Tectonics in*

Traditional Houses of Shiraz, Iran, Case Study: Zinat-al-Molk House" by Ahmad Ekhlassi, Amirhossein Rafati and, "The art of building of Mies van der rohe" by Kim Ransoo and, "*A study of the architecture of the Iranian bazaar from the view of tectonic*" by Roya Yadegari belong to this category (Yadegari, 2015). These studies focus on the features of body configuration from the viewpoint of tectonic, rather than the theoretical principles.

In the section of art and aesthetic experience mentioned terms such as balance, dynamics, monuments, and recognizable structures and referred to circumstantiality and aesthetic traits with indicative form, such interpretations are direct in the architecture and can be explained by the visual or physical properties of a building.

The studies of the second category, include articles such as "*Improving the link between architecture and landscape with a tectonic approach*" by Mohsen Faizi, Ahmad Ekhlassi, and Maryam Naghibi; this article includes, detailed assessments via confederacy of landscape and tectonic (Faizi, Ekhlassi, & Naghibi, 2018). Whereas, Nezamaldin Anbari, Majid Mofidi, and Ahmad Ekhlassi studied in "S*ustainable tectonics: a conceptual framework to formulate the formal structure of sustainable designs*" (Ekhlassi & Rafati, 2015), which provided sustainability through the modification of essential design layers derived from tectonic studies. On the other hand, Chih-Ming Shih in "*The Tectonic Complexity of Minimalist Architecture*" analyzed the tectonic development of minimalist architecture. The three mentioned articles, have merged the concepts of sustainability, landscape, and ontology with tectonic in an attempt to highlight these concepts of tectonic. Meanwhile, they intend to show the relationship between tectonic (with the approach of aesthetic) and other concepts in broad terms, paying more attention to common beliefs, which leads to ignoring different approaches of tectonic that can be derived from fundamental studies.

The third category, including "*Stereotomic Models in Architecture*" by José Castelló and "*A Taxonomy of Architectural Tectonics*" by Joseph Schwartz Chad, have focused on the etymology of stereotomic and tectonic. They have only attended to the body and physical configuration while the emptiness of spatial configuration is evident. Tectonic and stereotomic in architectural design and their interaction are inevitable. Therefore, studying tectonic and stereotomic approaches with the view of their interaction on the spatial organization and body configuration is vital.

Malene Kirstine's "*Performative tectonics*" manuscript that was published in 2009, and Narsey's "*Expressive space*" are regarded as an essential source. Their results denote that if tectonic and stereotomic are used at the same time, it improves the quality of space. Nan-Weiw & Chao-Ching's "*Atectonic Expression from Theory to Practice*" (Wu & Fu, 2014) is a crucial resource in pointing out the roots of tectonic and stereotomic and their effect on the components. The rate of critique position of the literature review is shown in the table below.

Theoretical research, in most cases, remains exclusively within the three mentioned categories. This would mean that other aspects of the issue will be lost. Considering the review of related literature and examining the views of tectonic and stereotomical theorists, differences between this research and the previous ones can be considered from two perspectives:

1- In most of the previous studies, the main focus was on one or a limited number of theoretical approaches, which were mainly tectonic and from Semper's point of view. In this research, an attempt was made to compare the approaches of tectonic and stereotomical theory from the perspective of Butcher, Semper, and Frampton in architecture, through a new category in which the combination of the first and second category was necessary.

2- The simultaneous effect of these two theories' approach on the components of architecture and research on their interaction with each other has not been done in previous studies, and the present study endeavors to explain their interaction.

3. RESEARCH METHOD

This research is theoretical and based on library research. Deductive reasoning was one of the logical reasoning measures used as the method of analysis in this research. In other words, in this study, logical reasoning has derived its systemic order from homogeneity. The homogeneity of assumptions in architecture, tectonic and stereotomical theories is one of the measures on which this study is based.

This study sought to explain the interaction of approaches of tectonic and stereotomical theories in contemporary Iranian architecture in the post-revolutionary period. Thus, in the first step, to extract data and classify information, valid documents such as books, articles, and treatises were used to investigate post-revolutionary Iranian architecture, tectonic and stereotomical theories and their approaches. The aim was to gather efficient data via library research in order to lay the foundation of the research.

In the second step, the effect of the qualitative, independent variables were investigated, i.e., the approaches of tectonic and stereotomical theories on the dependent variable, and Iranian architecture in the post-revolutionary period (evaluation of 10 buildings). For this purpose the following were explicated and evaluated: explanation of the effect of these two theories on the selected buildings and how they interact, the influence on the components of buildings, including the four categories of materials, elements, structure, and construction and their impact. Finally, the interaction between these two theories was explained.

Table 1. The rate of critique position of Literature Review, Source: Authors

Critique position	First category	Second category	Third category
Tectonic body configuration	high	high	high
Tectonic spatial configuration	low	low	low
Stereotomic body configuration	low	-	medium
Stereotomic spatial configuration	low	-	low
Tectonic and stereotomic body configuration interaction	low	-	low
Tectonic and stereotomic spatial configuration interaction	low	-	low
Tectonic and stereotomic body and spatial configuration interaction	low	-	low

4. THEORETICAL FOUNDATIONS

Tectonics and stereotomy are two ancient architectural theories that interact with each other leading to architectural expression. To develop a framework and propose a model which explains an interactive approach, the views of three well-known theorists (Butcher, Semper, and Frampton) were examined.

4.1. Tectonic theory

Tectonics is a theory that is the result of experimental and individual thinking in which the executive and technical perspectives, especially aesthetics, are addressed simultaneously. The common denominator of all theories, regardless of their differences in attitude and method towards tectonic theory, is that the entrance of aesthetic issues into materials, elements, structure, and construction is inevitable. With these views in mind, it can be said that tectonics, with the help of creativity, refers to a quality of construction that is both beautiful and useful.

Tectonic theory allows the architect to express his art. The word tekton means carpenter or builder in Greek. Throughout the ages, it has been referred to the process of making and creating works of art in terms of skills, methods, materials, and concepts. The word has gradually undergone a semantic transformation from something physical and specific, such as carpentry, to a more general and pervasive concept, such as making it in a poetic sense (Frampton, 1995). Tectonics is an architectural expression with the language of art and the intervention of art and elegance on building organs and instruments and mechanical and electrical etc. It can be in the form of a physical shell (color, texture) or non-physical (light, sound) (Hurol, 2015). In this case, Carl Butcher (1844-1846) and Gottfried Semper (1802-1879), pioneering tectonic theorists, based their theory on the distinction between the technical and symbolic aspects of architecture, in other words, the core (body) and shell (representative and decorative) were presented in three categories.

The first category includes Butcher's thinking about the use of structures without cover and naked and free of any decoration, or uncoated concrete structure, and the core and shell are executed as a whole. For example, the use of exposed bricks or uncovered concrete structures, mainly emphasizes the style of brutalism. Continuity of executive and technical layers, along with beauty, according to Semper's tectonic coating theory, can lead to a shell and core to become cohesive (Liu & Lim, 2006).

The second category goes back to the Butcher's ideology, which exaggerates the use of artform in which the artform in part is inherently connected to the core, for instance, ionic style columns having flute and fillet are inseparable from the body.

The third group seeks the connection between the core and the shell. In the first case, a form is not required to follow the core but is related to it and the body, which is referred to as a dress up. But in the second case, the artform is required to form the core shape. For example, painting and coating the body, while preserving the body can also represent the form of the body, which is called dressing (Ploemen, 2013).

The concepts proposed by Butcher and Semper can also be found in Frampton's notion, a British architect, critic, and historian of architecture. Similarly, Frampton worked with two concepts: ontology and representation, which are related to the relationship between nucleus and shell, as mentioned by Butcher, not forgetting the symbolic and technical aspects of Semper. From Frampton's point of view, the role of culture is also essential in focusing on the core and body of architecture. Tectonics, in his interpretation, is related to lightness and working at height, while stereotomy was considered as an integrated construction with rigid and heavy materials. He describes tectonics as a poetic order in construction and introduces stereotomy as a kind of construction integrated with rigid and heavy materials (Katona, 2010). In addition to the above, from his point of view, tectonics is an intelligent combination and integration of art and technology, structural eloquence, the tendency to lighter and more effective structure, the tendency to use materials with their strength, regular organization, degree of usefulness. Frampton emphasized that connection is a fundamental tectonic factor and considers tectonics as a method of making materials such as wood and steel (Wu & Fu, 2014).

The prevailing views of Butcher, Semper, and Frampton on tectonic theory are as follows:

- Purposeful use of existing building materials to achieve a specific experience by humans (Semper/ Frampton)
- Purposeful use of techniques in materials processing to achieve a specific architectural state (Semper/ Frampton)
- Purposeful assembly of building components to gain an architectural experience (Semper/ Butcher/ Frampton)
- Purposeful use of structural principles to create an architectural style (Butcher/ Frampton)

Finally, the approaches of tectonic theory from the perspective of the above theorists can be divided into

approaches such as idea or aesthetics, construction, purpose, materials, and socio-cultural aspects (Sekler, 2009). According to Frampton, tectonics is lightweight and composed of linear components that enclose space in a matrix network; meanwhile, stereotomics is working on the ground, where mass and volume are formed jointly by the placement of heavy elements. Frampton actively used tectonics in modern construction with a focus on the framework of axial structures, while described stereotomics as the construction process with the placement of load-bearing elements on the ground (Schmidt).

4.2. Stereotomic theory

According to Semper and Frampton, stereotomics refers to the accumulation of materials and the creation of space and is devoid of any elegance and artistic expression in appearance (González & D'Acunto, 2016). Stereotomic theory approaches in architecture are heaviness, stillness, silence, concentration and integrity, privacy, observance, and spatial hierarchy (Kim, 2006). The stereotomic theory is based on the creation of space through non-axial stereotomic structures (beams and columns). Stereotomic structures solve spatial, formal, and functional concepts simultaneously (Söffker & Deplazes, 2005). In stereotomics, as in tectonics, Semper focuses more on assembling materials (Kim, 2006). For Semper, stereotomical elements provide the basis on which a tectonic framework is supported and successfully extended upwards (González & D'Acunto, 2016). According to Frampton and Semper, space is one of the main factors in the stereotomical design process, which can be outside the principles and laws of Cartesian geometry (González & D'Acunto, 2016). The tectonic and stereotomic perspectives presented in the works of Butcher, Semper, and Frampton, indicates that tectonics is mainly associated with an aesthetic approach. Also, technical approaches such as transparency and lightness, affect the body configuration through components including materials, elements, structures, and construction. Each of the mentioned components could be considered in one of these categories: 1- beauty or symbolism, 2- technical. The non-physical component of '*interaction with the environment and cultural context of the region*,' according to Frampton, can be raised in the spatial section (Kim, 2006). Stereotomics with seemingly less and more limited components that include materials, elements, structure, and construction affect the physical and spatial structure of architecture. These four components can be explained mainly by the approach of unity, continuity, perception and weight.

5. THEORETICAL MODEL

The theoretical model which elaborates on the theories mentioned above from the stance of physical and spatial critique is depicted in the following table, respectively:

Table 2. Theoretical model Explaining tectonic theories in architecture (physical critique position). Source: Authors

Tectonic indicators from the perspective of Butcher, Semper, and Frampton			
Intellectual systems	Tectonic indicators from Butcher's Perspective	Tectonic indicators from Semper's Perspective	Tectonic Indices from Frampton's Perspective
	Performance and usefulness (structure) (Wu & Fu, 2014)	-	Performance and usefulness (structure)
	Compatibility of materials with performance (materials) (Wu & Fu, 2014)	-	Compatibility of materials with performance (materials)
	Honesty and eloquence (structure) (Wu & Fu, 2014)	-	Honesty and eloquence (structure & construction)
	Integration of shell and body (structure & elements) (Ploemen, 2013)	-	Integration of shell and body (structure & elements)
	-	Date as reference	Canvas and history as a reference
	-	Attention to the tectonic properties of materials and artifacts (materials and elements)	Attention to the tectonic properties of materials and artifacts (materials and elements)
	-	Focus on the interior (Kim, 2006)	Focus on the interior
	Attention to shell (elements & materials) (Ploemen, 2013)	Attention to the core (structure) (Ploemen, 2013)	Attention to shell and core (structure) (Ploemen, 2013)
	Poetic order (construction)	Poetic order (construction)	Poetic order (construction)
	Clear and phenomenal transparency (Babaei, Soltanzade, & Sharik Zadeh, 2011; Kim, 2006)	Clear and phenomenal transparency (Kim, 2006) (materials & elements & structure & construction)	Clear and phenomenal transparency
The centrality of theories	Physical Configuration (Symbolic and Technical body Configuration) Relationships of Elements and Components/ Aesthetics/ Structure - Skin adherence to the core form (Semper) and separate shell from the core form (Butcher) (Schwartz, 2017) and attention to the shell and core (Frampton) (Ploemen, 2013). - Structural order and poetry and the return of art to the technical part of the building. - The tendency to light and delicate structure and expressive structure (Kim, 2006).		
Theorists	Butcher, Semper, and Frampton		

6. THE OPERATIONAL MODEL OF RESEARCH

In this study, to explain the interaction of tectonic and stereotomical approaches while analyzing components of materials, elements, structure, and construction in architecture, as well as to measure the operational model of the research, we sought a specific type of architecture. Thus, the following factors were considered: buildings that were cultural and official centers because of their extensive use by different social groups, different design ideas with innovation and creation of non-repetitive forms. On this account, 10 buildings with religious, cultural, and official use were selected and analyzed based on tectostreotomic (tectonic+stereotomic) explanation model (see table 4). Having been influenced by tectonic and stereotomical theories and through the designed operational model, the four components of material, element, structure and construction associated with architectural concepts can be interpreted and understood. Based on the theories of tectonics and stereotomy, which are finally separated by selective coding of body and spatial configuration, two forms were specified: integrated and non-integrated. In the integrated relationship of the components, the concepts adopt the tectonic and stereotomical approach at the same time. While, in the non-integrated relationship of components, concepts can be interpreted together, or in layers on top of each other.

Table 3. Theoretical model Explaining stereotomical theories in architecture (physical critique position). Source: Authors

Stereotomic indices from the perspective of Semper and Frampton	
Intellectual systems	Body compaction, integration, and cohesion of materials, elements, and structure, simultaneous perception of space and matter (materials, elements, structure, and construction) (Söffker & Deplazes, 2005).
The centrality of theories	body/ spatial configuration (Kim, 2006).
Theorists	Semper and Frampton

Table 4. Theoretical model of explaining stereotomical theories of architecture (position of spatial critique). Source: Authors

Stereotomic indices from the perspective of Semper and Frampton (spatial critique position) (Söffker & Deplazes, 2005)		
Intellectual systems	Tectonic spatial configuration	Stereotomic spatial configuration
	Relative (internal and external continuity and spatial ambiguity)	Absolute (Discontinuity and discontinuity inside and outside)
	Open (mass reduction and spatial expansion)	Compression (mass increase)
	Fragmented and linked (space is the result of connecting elements)	Net (space is the result of a continuous structure)
	Relative coherence of spatial elements	Absolute coherence of spatial elements
	Interactive relationship (no limitation of visual and physical connections)	Hierarchical relationship (limitation of visual and physical connections)
	Dynamic (tendency to move)	Fixed (tendency to stagnation)
	The gradual change in the organization of space (González & D’ Acunto, 2016)	Instant change in space organization
	Entanglement, coexistence, synchronicity	Separation and differentiation
	Spatial fluidity	Spatial fluidity
	Center of aversion and extraversion	Centralism
	Lightness and suspension of the space resulting from the structure	The heaviness and rigidity of the space resulting from the structure
The centrality of theories	Arrangement and organization of space (González & D’ Acunto, 2016)	
Theorists	Butcher, Semper and Frampton	

Table 5. Overview of the selected building to be analyzed. Source: Authors

Building name	Location	Name of architect	tectonic/ stereotomical features
Holy Cross Shrine ("Contemporary Architecture of Iran,")	Tehran	Rostam Veskanian	Stereotomic
Central Library ("The Line of Architect,")	Isfahan	Mohammadreza Ganei	Tectonic/ Stereotomic
Central hall (Baani Masoud, 2012)	Kermanshah	Ali Akbar Saremi	Stereotomic
Mellat Cinema (Baani Masoud, 2012)	Tehran	Reiza Daneshmir	Tectonic/ Stereotomic
Sports Complex (Samiei, Khodabakhshi, & Foroutan, 2016)	Rafsanjan	Hadi Mirmiran	Tectonic/ Stereotomic
Tamasha cinema (Baani Masoud, 2012)	Tehran	Babak Shokofi	Stereotomic
Engineering Organization ("Faculty of Fine Art,")	Qazvin	Alireza Taghaboni	Tectonic/ Stereotomic
Rong Cultural complex ("Faculty of Fine Art,")	Hormoz Island	Mohammadreza Godosi	Stereotomic
University Library ("Arch Projects,")	Semnan	Moje No group	Stereotomic
Termeh complex ("MemariTV,")	Hamedan	Farshad Mehdizade	Tectonic/ Stereotomic

In the following, we sought to systematize and provide strategies to facilitate the action and interaction between the approaches of theories through axial coding, and to establish a relationship between the components of materials, elements, structure, and construction with tectonic or stereotomical behavior, perception, and physics. Selective coding was performed in the process of classifying the central codes. The final results which were based on selective coding, are presented in detail in the following table:

Table 6. Introduction of axial and selective coding of concepts influenced by tectonic and stereotomical approaches. Source: Authors

Introduction of Axial Coding			
Tectonic elements with literal transparency of the glass type	nons. $T_{clear\ -a1}$	Materials of quasi-stereotomic instruments	$m_{s\ -}$ quasiS
Non-structural elements with stereotomical perception	nons. $T_{perception}$	Materials with tectonic behavior and properties	$m\ -\ T_{treat}$
Non-structural elements with stereotomical behavior	nons. S_{treat}	Structure with tectonic materials	$m_{s-}\ T$
Tectonic elements with the phenomenal transparency and space cohesion	nons. $T_{clear\ -b1}$	Non-structural elements with tectonic materials	$m_{nons-}\ T$
Tectonic elements with literal transparency and reducing materials type	nons. $T_{clear\ –a2}$	Non-structural elements with quasi stereotomic materials	$m_{nons\ -}$ quasiS
Tectonic elements with phenomenal transparency (create a rhythm)	nons. $T_{clear\ –b2}$	Materials with stereotomical perception	$m\ -\ T_{perception}$
Tectonic elements with phenomenal transparency	nons. $T_{clear\ –b3}$	Materials with tectonic behavior and properties	$m.\ T_{treat}$
construction with stereotomical behavior and features	con. S_{treat}	Tectonic crust materials to hide the structural form	$m_{artform-}\ T_a$
construction with stereotomic perception	con. $S_{perception}$	Tectonic crust materials to display the core form	$m_{artform-}\ T_b$
Tectonic construction with clear glassy transparency	con. $T_{clear\ -a1}$	Stereotomic shell materials to hide the shape of the structure	$m_{artform-}\ S_a$
Tectonic construction with literal transparency of reducing materials type	con. $T_{clear\ -a2}$	Stereotomic shell materials to display the core shape	$m_{artform-}\ S_b$
Tectonic construction continued with phenomenal transparency	con. $T_{clear\ –b3}$	Shellless stereotomic core materials	$m_{core\ form-}\ S_c$
construction with tectonic behavior and properties	con. T_{treat}	Stereotomically painted core materials	$m_{coreform-}\ S_d$
Tectonic construction with the transparency of the phenomenon of space cohesion	con. $T_{clear\ -b1}$	Materials with stereotomical behavior and properties	$m\ -\ S_{treat}$
Tectonic construction with phenomenal transparency	con. $T_{clear\ –b2}$	Tectonic structure with literal transparency of reducing materials type	$s.\ T_{clear\ –a2}$
-	-	The tectonic structure continued with phenomenal transparency	$s\ -\ T_{clear\ –b3}$
-	-	Tectonic structure with phenomenal transparency creates the rhythm	$s\ -\ T_{clear\ –b2}$
-	-	Tectonic structure with the transparency of the phenomenon of space cohesion	$s\ -\ T_{clear\ -b1}$
-	-	Tectonic structure with clear glass transparency	$s\ -\ T_{clear\text{-}a1}$
-	-	Structures with stereotomical behavior and characteristics	$s\ -\ S_{treat}$
-	-	Structures with stereotomical perception	$s\ -\ T_{perception}$
-	-	Structures with tectonic behavior and properties	$s\ -\ T_{treat}$
Introduction of Selective Coding			
Technical body configuration	$B_{Configuration\text{-}t}$	Spatial configuration	$S_{Configuration}$
Symbolic body configuration	$B_{Configuration\text{-}s}$	-	-

How the approaches of tectonic and stereotomical theories interact on the four components of materials, elements, structure, and construction through selective coding are introduced in the above table. The result of interaction with letters **A** and **B,** as an operational model are specified in the following tables.

Table 7. Operational model of tectonic and stereotomic interaction in architecture. Source: Authors

	Interaction of tectonic and stereotomic components (tectonic materials in interaction with stereotomical materials)					How to interact
Materials component	Materials of structural and non-structural elements (core)	Coding	Tectonic shell/ stereotomic shell	Coding		Combined (A) / Non-combative (B)
	Materials of structural elements, tectonic	m_{s-} T	Hide the core form by the shell	A & B	$m_{artform-}$ $T_{a\ \&\ b}$	B
	Materials of non-structural elements, tectonic	m_{nons-} T	Display the core form by shell		$m_{artform-}$ $S_{a\ \&\ b}$	B
	Materials of structural elements, stereotomic	m_{s-} S	without Skin	C & D	$m_{coreform-}$ $T_{c\ \&\ d}$	A
	Materials of non-structural elements, stereotomic	m_{nons-} S	Painted core		$m_{coreform-}$ $S_{c\ \&\ d}$	A
	Materials of structural/ non-structural elements, Stereotomic	$m_{coreform-}$ S	Shell materials, tectonic (light) (KOCAOĞLU, 2011)	$m_{artform-}$ $T_{a\ \&\ b}$		B
	Materials of structural/ non-structural elements, quasi-stereotomic	$m_{s\ \&\ nons-}$ quasiS	$m_{artform-}$ $T_{a\ \&\ b}$ $m_{artform-}$ $T_{clear\ -a1}$			B

	Interaction of tectonic and stereotomical components (stereotomic structure, elements, and construction or stereotomical perception in interaction with tectonic behavior of the structure, elements, and construction)						How to interact
Structure, elements and construction Component	Stereotomic structure, elements, construction	Coding	Tectonic behavior of construct or elements, structure		Coding		Combined (A) / Non-combative (B)
	Integrity and compactness of components	Con & s & nons - S	Principle of order, sensory or intellectual beauty		con& s& nons - $T_{treat-\ aesth}$		A
	Perception of the integrity and compactness of components	con & s & nons- $S_{perception}$	Literal transparency	Transparent surfaces	$_{a1}$	con & s & nons - $T_{clear\ -a1}$	A
				Materials reduction	$_{a2}$	con & s & nons - $T_{clear\ -a2}$	A
			Phenomenal transparency	Spatial coherence	$_{b1}$	con & s & nons - $T_{clear\ -b1}$	A
				Fluency and rhythm	$_{b2}$	con & s & nons - $T_{clear\ -b2}$	A
				Focus and continuity of vision	$_{b3}$	con & s & nons - $T_{clear\ –b3}$	A

	Tectonic structure, elements in interaction with stereotomical structure, elements/ stereotomical behavior/ stereotomical perception						How to interact
Structures and elements component	Tectonic Elements and Structures	Coding	stereotomic Elements and Structures	Coding			Combined (A) / Non-combative (B)
				$m_{s\ \&\ nons-}$ S			
	Variety and multiplicity and assembly Elements	s & nons - T	Stereotomic materials	Hide the core form by the shell	A & B	$m_{artform-}$ $S_{a\ \&\ b}$	B
				Display the core form by shell			B
				Disabled Skin	C & D	$m_{coreform-}$ $S_{c\ \&\ d}$	A
				Painted core			A
			Stereotomic behavior	s & nons - S_{treat}			A
			Stereotomic perception	s & nons - $S_{perception}$			A

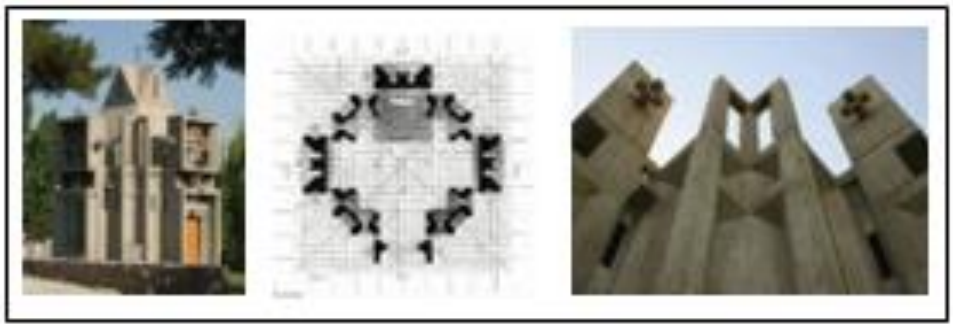
Construction component	Structure with tectonic/ stereotomical perception and behavior in interaction with tectonic/ stereotomic spatial organization				How to interact
	Structure	Coding	Structure	Coding	Combined (A) / Non-combative (B)
	Stereotomic perception	con - $S_{perception}$	Tectonic spatial organization	con $_{Configuration-}$ T	A
	Stereotomic behavior	con - S_{treat}			A
	Tectonic Behavior	con - T_{treat}	Stereotomic spatial organization	con $_{Configuration-}$ S	A
	Tectonic Perception	con - $T_{perception}$			A

Spatial organization	Tectonic/ stereotomic spatial organization in interaction with stereotomic/ tectonic spatial organization				How to interact
	Spatial organization	Coding	Spatial organization	Coding	Combined (A) / Non-combative (B)
	Tectonic spatial organization	$S_{Configuration-}$ T	Stereotomic spatial organization	con $_{Configuration-}$ S	B
	Stereotomic spatial organization	$S_{Configuration-}$ S	The spatial organization with tectonic behavior	con $_{Configuration-}$ T_{treat}	A

The operational model presented in the above tables on the selected buildings has been analyzed and tested as follows:

Using the selected codes, the relationship between each of the tectonic and stereotomic theory's components were measured. If an interactive relationship was found, the final result was determined as combined (integrated) or non-combined (non-integrated).

Due to the extension of the tables in the discussion, it seems to be sufficient to provide an analysis of the structure of the Holy Cross Shrine according to the above-mentioned operational model. The Holy Cross Shrine, like medieval domed churches with its symmetrical, central plan and different interpretation of concrete, creates a form and is an allegorical representation of the Holy Cross ("Contemporary Architecture of Iran,").



Picture 1. Holy Cross Shrine ("Contemporary Architecture of Iran,")

Table 8. The operational model of tectonic and stereotomic interaction in the architecture of the Holy Cross Shrine. Source: Authors

Analysis of **Materials** based on **tectonic** approaches			
Axial Coding	concept	Selective coding	
mT	Using light as one of the building materials to create visual pleasure and attraction in space	$S_{Configuration}$	1
m- T_{treat}	Purposeful use of techniques in concrete processing to achieve architectural mode and highlight the nature of concrete	$B_{Configuration-s}$	2
m- T_{treat}	Show the appearance of concrete intact and instantly induce the roughness of concrete to the audience	$B_{Configuration-s}$	3
m - T_{treat}	Adaptation of the materials used with force applied to them	$B_{Configuration-t}$	4
m- T_{treat}	Adaptation of materials used with the perception of space (Relatively simultaneous perception of space and matter)	$S_{Configuration}$	5

Analysis of **Materials** based on **stereotomical** approaches			
m_ $S_{perception}$	Creating a feeling of heaviness and viscosity to the ground by concrete	$B_{Configuration-s}$	1
$m_{s\ \&\ nons-}$ S	Integrated construction with rigid, dense, solid and homogeneous materials by concrete	$B_{Configuration-t}$	2
$m_{coreform\ -}$ S_c	Honesty in using concrete and revealing the nature of unpaid concrete	$B_{Configuration-s}$	3
Analysis of **Elements** based on **tectonic** approaches			
nons_ T_{treat}	Tectonics is a unified whole resulting from the cohesive composition of elements	$B_{Configuration-t}$	1
nons_ T_{treat}	Symbolic reading of numbers (focusing on squares and four) by the elements	$B_{Configuration-s}$	2
nons_ T_{treat}	Moving from plurality to unity with the poetic combination of elements	$B_{Configuration-s}$	3
nons_ $T_{clear\ –b3}$	Elements with a bottom-up stretching system accompany the observer with visual traction and movement	$B_{Configuration-s}$	4
Analysis of **Elements** based on **stereotomical** approaches			
nons_ S_{treat}	Physical elements contain and enclose light.	$B_{Configuration-t}$	1
nons_ S_{treat}	Emphasis on the creation of space and the creation of certain boundaries through elements (separation and differentiation of space)	$S_{Configuration}$	2
nons_ S_{treat}	Relatively immobile and stagnant assembly of hard and inelastic masses such as concrete walls	$B_{Configuration-t}$	3
nons_ S_{treat}	Due to Fermi similarity, the elements are perceived as square and rectangular.	$B_{Configuration-s}$	4
nons_ S_{treat}	Connection of architectural and ancillary elements Decorative	$B_{Configuration-t}$	5
Analysis of **Structure**-based on **tectonic** approaches			
s_ T_{treat}	Repetition the unit Instruments Along with the rhythm create Depressions, openings (relatively simultaneous perception of space and matter)	$S_{Configuration}$	1
Analysis of **Structure**-based on **stereotomical** approaches			
s_ S_{treat}	Continuity of execution of structures and architectural and symbolic elements	$B_{Configuration-t}$	1
s_ S_{treat}	Structures that enclose and shape architectural space (rule-based stereotomic spatial configuration)	$S_{Configuration}$	2
s_ S	The non-lattice structure is a combination of vertical elements and walls	$B_{Configuration-t}$	3
Analysis of **Construction** based on **tectonic** approaches			
con_ T_{treat}	Unity and regular organization in the composition of structural elements despite the multiplicity of components with emphasis on symmetry and orientation	$B_{Configuration-s}$	1
con_ T_{treat}	The ratio of the four elements of matter to a square shape and their effects on sacred architecture	$B_{Configuration-s}$	2
con_ T_{treat}	The body as a sign corresponds to Semper tectonic thinking	$B_{Configuration-s}$	3
con_ T_{treat}	The whole structure is durable and economically viable due to the homogeneity of the materials	$B_{Configuration-t}$	4
con_ $T_{clear\ -a2}$	Literal transparency of the reducing materials type has led to spatial integration and opening (absolute coherence) (Zarghami & Behrouz, 2015)	$S_{Configuration}$	5
con_ $T_{clear\ –b3}$	Phenomenal transparency by creating vertical axis orientation and upward visibility	$B_{Configuration-s}$	6
Analysis of **Construction** based on **stereotomical** approaches			
con_ S_{treat}	Visual massive structures are the result of a combination of heavy elements and masses.	$B_{Configuration-t}$	1
con_ S_{treat}	Coherent combination of elements to achieve an integrated structure	$B_{Configuration-t}$	2
con_ $S_{perception}$	Perception of the unit of space through the coherent placement of the elements of the structure together (absolute, compact and pure continuity)	$S_{Configuration}$	3
con_ $S_{perception}$	Inducing the feeling of an introverted fortress due to the lack of visual transparency in the facade	$B_{Configuration-t}$	4
con_ $S_{perception}$	The structure is like a sculpted statue or mansion.	$B_{Configuration-s}$	5
con_ S_{treat}	Centralism	$S_{Configuration}$	6

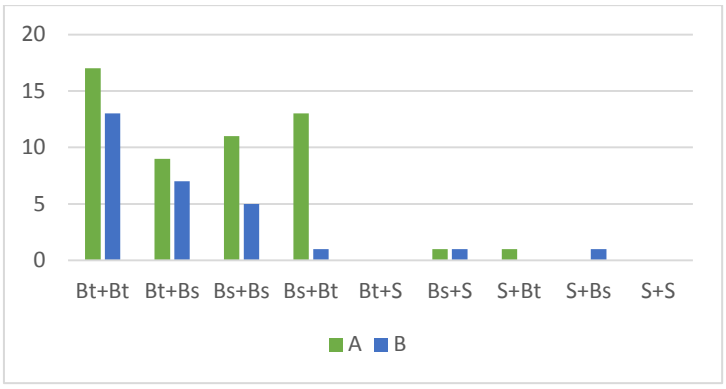
Table 9. Final analysis of the interaction of tectonic and stereotomical theory approaches on the components of the Holy Cross Shrine. Source: Authors

Final analysis of the interaction of tectonic and stereotomical theory approaches on the four components of the Holy Cross Shrine			
Materials component			How to interact
T (Tectonic)		S (Stereotomic)	(Combined) A / (Non-combinational) B
B Configuration-t4		B Configuration-t2	A
B Configuration-t		B Configuration-s	-
B Configuration-s2 / s2		B Configuration-s1/ s3	A/ A
B Configuration-s2	+	B Configuration-t2	A
B Configuration-t		S Configuration	-
B Configuration-s		S Configuration	-
S Configuration5		B Configuration-t2	A
S Configuration1		B Configuration-s1	B
S Configuration		S Configuration	-
Elements component			How to interact
T (Tectonic)		S (Stereotomic)	(Combined) A / (Non-combinational) B
B Configuration-t1 / t1		B Configuration-t3 / t1	A/ A
B Configuration-t		B Configuration-s	-
B Configuration-s2 / s3		B Configuration-s4 / s4	A/ A
B Configuration-s2 / s3 / s4	+	B Configuration-t5 / t5 / t3	A/ A/ A
B Configuration-t1		S Configuration2	A
B Configuration-s		S Configuration	-
S Configuration		B Configuration-t	-
S Configuration		B Configuration-s	-
S Configuration		S Configuration	-
Structure component			How to interact
T (Tectonic)		S (Stereotomic)	(Combined) A/ (Non-combinational) B
B Configuration-t		B Configuration-t	-
B Configuration-t		B Configuration-s	-
B Configuration-s		B Configuration-s	-
B Configuration-s	+	B Configuration-t	-
B Configuration-t		S Configuration	-
B Configuration-s		S Configuration	-
S Configuration1/ 1		B Configuration-t3 / t1	B/ A
S Configuration		B Configuration-s	-
S Configuration1		S Configuration2	A
Construction component			How to interact
T (Tectonic)		S (Stereotomic)	(Combined) A / (Non-combinational) B
B Configuration-t4 / t4		B Configuration-t2 / t1	A/ A
B Configuration-t		B Configuration-s5	-
B Configuration-s6		B Configuration-s	-
B Configuration-s2/ s3/ s2/ s3/ s6	+	B Configuration-t2/ t2/ t1/ t1/ t4	A/ A/ A/ A/ A
B Configuration-t4		S Configuration3	A
B Configuration-s1 / s2 / s3		S Configuration3 / 3/3	A/ A/ A
S Configuration		B Configuration-t	-
S Configuration		B Configuration-s	-
S Configuration5/ 1		S Configuration3/ 6	A/ A

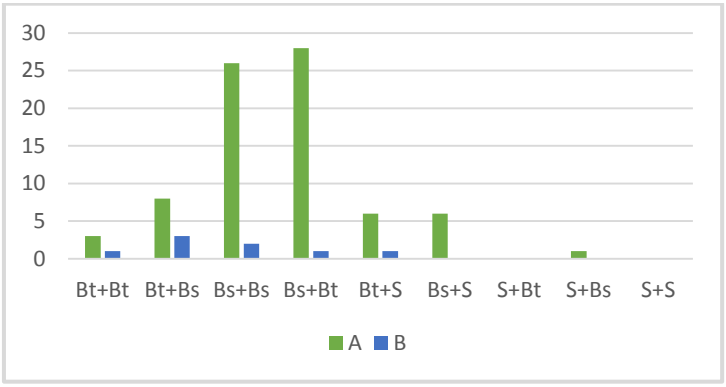
The outcome of analysis: The most interaction of tectonic and stereotomical approaches on the components of materials, elements, structure, and constrction is of integrated type.

Having Taken all the points into account, the components of each case sample were, finally, analyzed and the degree of the interaction between the two approaches- tectonic and stereotomical- were determined. The data gathered is summarized and presented in a bar chart.

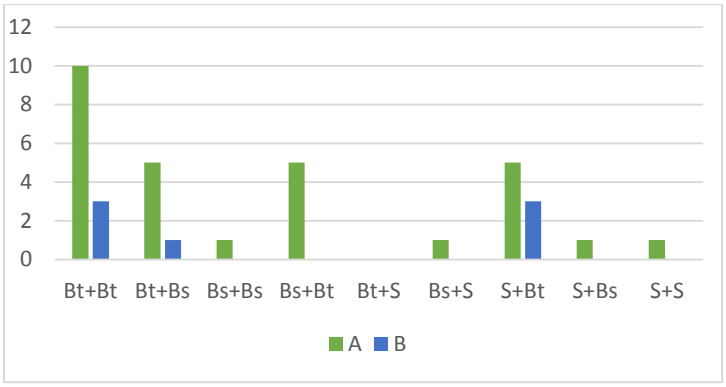
The variables were briefly written according to the selected coding and their frequency.



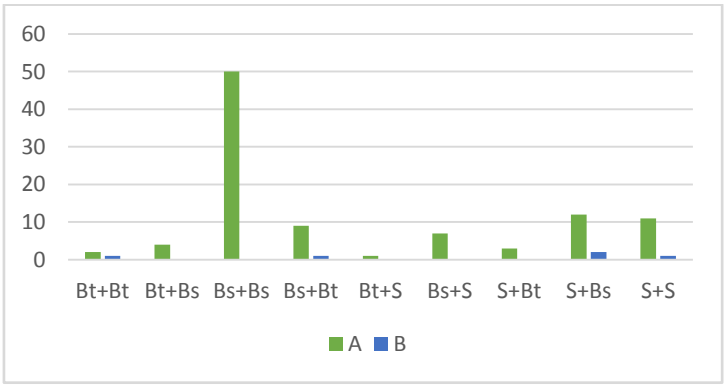
Picture 2. The extent of interaction between tectonic and stereotomical theoretical approaches on the materials of the analytical building. Source: Authors



Picture 3. The extent of interaction between tectonic and stereotomical theoretical approaches on the elements of the analytical building. Source: Authors



Picture 4. The extent of interaction between tectonic and stereotomical theoretical approaches on the structural component of the analytical building. Source: Authors



Picture 5. The extent of interaction between tectonic and stereotomical theoretical approaches on the construction component of the analytical building. Source: Authors

7. ANALYSIS OF FINDINGS

Different approaches to tectonic and stereotomical theories deal with structural, technical, executive, and aesthetics layers of architecture. They can be traced in different periods of Iranian architecture so that by studying and interpreting the components of architectural works through the approaches of these two theories, an accurate and reasoned analysis of Iranian architecture - in different periods - can be achieved. Having adopted the ideas of theorists in the field of tectonics and stereotomics on the selected buildings, the impact of materials, elements, structure, and construction on the architectural buildings during the post-revolution period was understood. In other words, the non-algebraic approaches influenced by the two theories, on the components, can be discussed in two ways:

- Simultaneous perception of the interaction of the approaches of tectonic and stereotomical theories on the components of materials, elements, structure, and construction indicates the impact of the approaches of both theories on the components at the same time (i.e., *Combined*).
- Asynchronous perception of the interaction of the approaches of tectonic and stereotomical theories on the components of materials, elements, structure, and construction indicates the separate effect of both theories on the components, that can be interpreted as layers on top or next to each other (i.e., *Non-combined*).

After analyzing the introduced buildings by the approaches of tectonic and stereotomical theories, and examining the effectiveness of the components of materials, elements, structure, and construction of each architectural work, only one sample went through a comprehensive analysis due to the breadth of analytical tables. It can be explicitly stated that regardless of the type of use and architectural style, all four components in the selected architectures were influenced by the approaches of tectonic and stereotomical theories with integrated / non-integrated interaction and the extent and type of interaction were as follows:

1- The highest interaction of the approaches of tectonic and stereotomical theories on the components was the integrated interaction type.

2- The approaches of tectonic and stereotomical theories affect the mentioned components in the building in terms of body configuration (technical and symbolic) and spatial configuration. According to the result of the bar chart, the most interaction of the approaches of tectonic and stereotomical theories was on the construction component with selective coding, combined and of the type of technical body configuration according to tectonic + technical body configuration according to stereotomic theory ($Bconf_t + Bconf_t$).

3- The highest degree of interaction between the approaches of tectonic and stereotomical theories on the component of materials was, combined, and of the type of technical body configuration according to tectonic theory + spatial configuration according to stereotomical theory ($Bconf_t + Bconf_t$).

4- The least degree of interaction between the approaches of tectonic and stereotomical theories on the component of the materials was, combined/ Non-combinational and of the type of technical body configuration according to tectonic theory + technical body configuration according to stereotomical theory ($Bconf_t + Sconf_t$).

5- The highest degree of interaction of the approaches of tectonic and stereotomical theories on the element's component was integrated, and of the type of technical body configuration according to the tectonic theory + technical body configuration according to the stereotomical theory ($Bconf_t + Bconf_t$).

6- The highest amount of interaction of the approaches of tectonic and stereotomical theories on the structure component was combined, and of the type of technical body configuration according to tectonic theory + Technical body configuration according to stereotomical theory ($Bconf_s + Bconf_t$).

7- The least degree of interaction between the approaches of tectonic and stereotomical theories on the component of the elements was, combined/ Non-combinational and of the type of technical body configuration according to tectonic theory + spatial configuration according to stereotomical theory ($Bconf_t + Sconf_t$) and of the type of spatial configuration according to tectonic theory + spatial configuration according to stereotomical theory ($Sconf_t + Sconf_t$).

8- The least degree of interaction between the approaches of tectonic and stereotomical theories on the component of the structure was, combined/ Non-combinational and of the type of technical body configuration according to tectonic theory + spatial configuration according to stereotomical theory ($Bconf_t + Sconf_t$).

9- The highest amount of interaction of the approaches of tectonic and stereotomical theories on the construction component was combined and of the type of symbolic body configuration according to tectonic theory + technical body configuration according to stereotomical theory ($Bconf_s + Bconf_t$).

10- The least degree of interaction between the approaches of tectonic and stereotomical theories on the component of construction was, Non-combinational and of the type of technical body configuration according to tectonic theory + spatial configuration according to stereotomical theory ($Bconf_t + Sconf_t$), and of the type of spatial configuration according to tectonic theory + spatial configuration according to stereotomical theory ($Sconf_t + Sconf_t$).

By looking at the interaction rate of the mentioned theories' graph, it can be seen that materials, elements, structure, and construction are affected by the approaches of tectonic and stereotomical theories of integrated or non-integrated type. Despite the limitations in the number of approaches to stereotomical theory, the maximum use of the capacities of this theory is evident.

8. CONCLUSION

It is important to note that Tectonic and stereotomical theories have neither been employed to interpret nor to critique architecture. Additionally, they have not been addressed simultaneously. This means that by understanding the theoretical position of the critics, and their thoughts, the explanation process will take on a broader, more effective dimension. Undoubtedly, development and evolution of architecture would not be possible without critique and explanation from different perspectives. One of the shortcomings of architectural critique is the explanation of works based on theory. Thus, we are required to fully understand the theory and then be able to interpret and adapt it in architecture. When it comes to tectonics and stereotomics' theories, the method of explanation should be developed in the same way. Understanding the approaches adopted in these theories and simultaneously applying their examples and ideas in architecture can provide a new way to interpret all architectural works. Since these two theories have somewhat complementary approaches, they can lead to architectural balancing. The interaction between tectonic and stereotomical theories can be considered as a designing method by architects, which can be a subject of detailed research in the future. As a result, this interaction and its outcome can be seen as an approach in the process of architectural design.

REFERENCES

Aparicio Guisado, J. M. (2000). El muro. *Madrid/Buenos Aires: Asppan/Universidad de Palermo*.

Arch Projects. Retrieved from https://arch-projects.com/qazvin-engineering-building. Accessed 1 April. 2020.

Baani Masoud, A. (2012). *Iranian contemporary architecture*. Tehran: Architectural art of the century publication.

Babaei, M., Soltanzade, H., & Sharik Zadeh, M. (2011). An introduction to the concept and types of transparency in contemporary western art and architecture. *Journal of Iranian Scientific Association of Architecture and Urban Planning, 3*, 4-8.

Contemporary Architecture of Iran. Retrieved from https://arch-projects.com/termeh-office-commercial-building. Accessed 4 June. 2020.

Ekhlassi, A., & Rafati, A. (2015). Facade Tectonics in Traditional Houses of Shiraz, Iran, Case Study: Zinat-al-Molk House. *Armanshahr Architecture & Urban Development, 8*(14), 1-11.

Erbaugh, A. (2006). *The Interaction of Poesis and Tekne in Tectonics.* University of Cincinnati.

Faculty of Fine Art. Retrieved from http://art.semnan.ac.ir/index.aspx?pageid=5243&newsview=16001. Accessed 1 April. 2020.

Faizi, M., Ekhlassi, A., & Naghibi, M. (2018). *Improving the link between architecture and landscape with a tectonic approach*. Paper presented at the International conference on civil engineering, architecture and urban management in IRAN, Tehran.

Frampton, K. (1995). *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*.

González, J. J. C., & D'Acunto, P. (2016). *Stereotomic Models in Architecture.* Paper presented at the CAADence in Architecture Conference Proceedings (Budapest, 2016).

Hensel, M., & Menges, A. (2008). Designing Morpho-Ecologies: Versatility and Vicissitude of Heterogeneous Space. *Architectural Design, 78*(2), 102-111.

Holst, M. K., Kirkegaard, P. H., & Mullins, M. (2010). *Performative tectonics.* Paper presented at the The First International Conference on Structures and Architecture, ICSA 2010.

Hurol, Y. (2015). *The tectonics of structural systems: an architectural approach*: Routledge.

Kassim, P. S. J., Majid, N. H. A., Sharif, H. M., & Kadir, T. A. Q. R. A. (2018). Hybrid Aesthetics Classification in Malay Neo-Classicality Reinventing Identity Through Aristocratic Structures. *Asia Proceedings of Social Sciences, 1*(4), 71-75.

Katona, V. (2010). Reconsidering the Tectonic. On the sacred ambivalence of the tectonic in the light of Martin Heidegger and relevant theoretical studies on architecture. *PERIODICA POLYTECHNICA ARCHITECTURE, 41*(1), 19-25.

Kim, R. (2006). *The art of building (Baukunst) of Mies van der Rohe.* Georgia Institute of Technology.

KOCAOĞLU, N. (2011). *A semperian approach to artificial light as a building material.* Citeseer.

The Line of Architect. Retrieved from http://archline.ir, Accessed 28 march. 2020.

Liu, Y.-T., & Lim, C.-K. (2006). New tectonics: a preliminary framework involving classic and digital thinking. *Design studies, 27*(3), 267-307.

MemariTV. Retrieved from http://memaritv.com/portfolio. Accessed 4 June. 2020.

Narsey, S. (2013). *Expressive space: engaging the architectural experience between the tectonic and stereotomic.*

Ploemen, R. R. (2013). Sphinx'Brikkenbouw as found.

Samiei, A., Khodabakhshi, S., & Foroutan, M. (2016). Comparative study of the representation of traditional architecture in contemporary Iranian paintings and architecture, case study: Parviz Kalantari's paintings and Seyed Hadi Mirmiran's architectural works. *Armanshahr Architecture & Urban Development journal*(17), 10.

Schmidt, A. M. D. The Tectonic Practice.

Schwartz, C. (2017). *A Taxonomy of Architectural Tectonics.* Paper presented at the Building Technology Educators' Society 2017 Conference: Poetics and Pragmatism.

Sekler, E. F. (2009). 'Structure, construction, tectonics'. *Time Architecture, 2*, 100-103.

Söffker, G. H., & Deplazes, A. (2005). *Constructing architecture: materials, processes, structures*: Springer Science & Business Media.

Wu, N.-W., & Fu, C.-C. (2014). Atectonic Expression from Theory to Practice: From Semper′ s Bekleidung to Empirical Projects. *Journal of Asian Architecture and Building Engineering, 13*(1), 9-16.

Yadegari, R. (2015). *A study of the architecture of the Iranian bazar from a point of tectonic*. Paper presented at the 1st International Conference on Human, Architecture, Civil Engineering, and City, Tabriz.

Zarghami, E., & Behrouz, S. (2015). The role and concept of "space" in recreating the theory of architecture and social sciences *Interdisciplinary Studies in the Humanities*(2), 85. doi:10.7508/ISIH.2015.26.004

AUTHOR (S) BIOSKETCHES

A. Hashemi ., *Ph.D. Candidate of Architecture, Karaj Branch, Islamic Azad University, Karaj, Iran*
Email*: arc.hashemi@yahoo.com*

A. Ekhlassi ., *Associate Professor, School of Architecture, Iran University of Science and Technology, Tehran, Iran*
Email*: ekhlassi@iust.ac.ir*

M. Dolati., *Assistant Professor, School of Architecture, Karaj Branch, Islamic Azad University, Karaj, Iran*
Email*: mohsen.dolati@kiau.ac.ir*

HOW TO CITE THIS ARTICLE

Hashemi, H., Ekhlassi, A., Dolati, M. (2021). Interpreting Iranian Architecture in the Post-Revolutionary Period with Interaction Model of Tectonic and Stereotomic Theory Approaches. *Int. J. Architect. Eng. Urban Plan,* 31(3): 1-15,. https://doi.org/10.22068/ijaup.31.3.588.

URL: http://ijaup.iust.ac.ir