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Original Research Article

An Analysis of the Stereotomic Theory: Towards a Framework for Reading Architecture (Study Course: Post-Iranian Revolution Architecture)*

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Abstract

Problem statement: The stereotomic theory is one of the oldest theories and is intellectually inconsistent with the tectonic theory. Thus, to regularly read architecture from this perspective, which results in reasoned critiques to improve the quality, first, it is required to classify implicit concepts related to the aforementioned theory to achieve its approaches. The important challenges of this research are aligning this theory with the conditions of contemporary architecture to analyze architecture through its lens and to explain how architectural components are influenced by the approaches of this theory. The results of this study can serve as a basis for reading architectural works and determining the contribution of architectural components to the acceptance of the designs framed by this theory.

Research objectives: This research aims to demonstrate how the approaches of the stereotomic theory affect the components of contemporary architecture and how the components react to the above theory.

Research method: The present study is qualitative. It was carried out on qualitative variables using library studies, deductive thinking, and interpretive analysis. The analyses were performed using Maxqda n's coding method in Max Kyoda software.

Conclusion: The results of the present study indicate the direct effect of architectural style and the low effect of the construction period on the being influenced by the body and architectural space by the approaches of the stereotomic theory. The components of materials, elements, structures, and construction in the architectural design process are mainly subconsciously influenced by the approaches of the mentioned theory. The structural component in the role of behavior is the most influenced by the approaches of the stereotomic theory, and the spatial body in neo-modern and technology-based architecture is the least influenced by the approaches of the theory.

Keywords: *Physical Configuration, Spatial Configuration, Contemporary Iranian Architecture, Architectural Components, Stereotomic Theory.*

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Introduction

Architecture, like a text, evokes a world of design ideas and values in its audience and has a language by which it communicates with the audience (Dabagh & Mokhtabad Amrei, 2011, 60). In the evolution of architecture, various insights can always be presented, some of which theoretically challenge the methods of creating architecture. The architectural theory includes any architectural writing system, whether comprehensive or non-comprehensive, based on aesthetic, cognitive, or functional classifications. The architectural theory should be seen above all as a principle in its historical context (Asgharzadeh, 2014, 8). The stereotomic theory and its approaches have been ambiguous and, at the same time, of interest to architectural scholars, who have each thought of it from their point of view and presented it in contrast to the tectonic theory (González, 2017, 26). “Yek-par-tarish” is the translation of the ancient word “stereotomic” into Farsi, on which the linguists in the field of architecture have a consensus. The stereotomic theory, as an experience-based theory, often covers formal, static, and spatial issues (ibid., 28). The philosophical and mythological studies that led to this theory date back to ancient times. The debate in this regard has intensified since the eighteenth century and has been expanded up to now with different approaches. One of its approaches is based on the integration of architectural elements and structural requirements, and the other is to create an opportunity to create space from the structure, which has led to the compaction and structural density (Deplazes, 2005, 13). It is of great importance to address in terms of the need to explain the theory from the standpoint of physical and spatial critique, to create a structured tool for valuing architectural works. Due to the lack of a comprehensive critique of Iranian architecture (past to present) based on the above theory, disagreement and consensus among theorists, the breadth and dispersion of concepts derived from the above theory, and additionally, the ambiguity in how to implement the theory on the physical/spatial body architecture doubles the importance of research. This research is an opportunity to discuss and explain to what extent

and how the four components of materials, elements, structures, and architectural construction are influenced by different approaches to this theory. This study mainly aims to explain the approaches of the above theory from the perspective of theorists in this field, then to discover the relationships between different approaches of the theory and architectural components, and explain how they influence the architectural body and space to finally read selected buildings. The time frame of the research includes the decades after the Iranian revolution. In the present study, some public buildings of contemporary Iranian architecture formed after the Iranian revolution have been selected and studied by architectural researchers and elites.

In other words, the current study attempted to provide a way to identify and understand the framework of this theory by examining architectural works. To achieve the research objectives, descriptive-analytical methods, basic and field studies, and the distribution of questionnaires among architectural experts have been used. Regarding the innovation and necessity of this research, it should be noted that what distinguishes it is the attempts made to remove the ambiguity in the field of assumptions and mental commonalities of theorists and to achieve a single model for reading architecture. This research points out the need to review the theory and tries to analyze and examine buildings with a full look at the approaches of this theory, so it has considered non-Farsi texts related to this issue as primary sources. Since no comprehensive research on this issue has been conducted in Iran so far, Farsi sources related to the introduction of the analyzed buildings have been used as secondary sources. The very limited access to Farsi sources and the lack of codified studies in the field in the Iranian document database, the breadth, and dispersion of topics, and the limited consensus of theorists have been among the limitations of this research. The practical applications of this research include the following:

- Informing architects, designers, and architecture students about the dimensions of the stereotomic theory;
- A more accurate reading of contemporary Iranian architecture from the perspective of the above theory;

- Grounding for comprehensive readings and interpretations of this theory.

Research Questions

- How can the works of contemporary architecture be read from the perspective of the theoretical approaches of the stereotomic theory?
- What is the reaction of architectural components in the face of the approaches of the mentioned theory?
- To what extent do the approaches of the abovementioned theory influence architectural components?

Research Background

Much research has been done on this theory and western scholars have a special place in addressing this issue. The following is a brief description of the views of various theorists. Most research on this theory can be divided into two general categories; The first group describes the models and prototypes from the above perspective and examines their physical structure. The second group mainly addresses the theory in terms of philosophy, mythology, and the intellectual systems and ideas governing it. The theory has been addressed theoretically in both groups. In such a case, the other aspect of the subject, i.e., the design of a tool for evaluating, reading, and explaining architectural works from the view of this theory, gets lost under the consensus of theorists. Several studies are summarized in [Table 1](#).

According to the studies, the extent to which this theory addresses the physical and spatial configuration has been examined in two separate categories presented in [Table 2](#).

Even though the theory has long been used to frame the research background, especially in western architecture, it has been less studied in Iranian architecture what has been studied as research literature is a generalization and superficial processing of the physical configuration, regardless of the study of spatial configuration and the examples of which may not be found not only in

contemporary Iranian architecture but also in the world. The difference between the present study and previous studies can be examined from the following perspectives:

- Comparing the views of stereotomic theorists and extracting their commonalities and differences;
- Recognizing the reaction of materials, elements, structures, and construction when facing the approaches of the mentioned theory;
- Creating practical examples in accordance with contemporary architecture based on the ancient principles of the theory.

Method

This research was carried out using library studies, field studies, and semi-structured interviews with architecture elites and professors. In this regard, the research structure is divided into three stages: In the first stage, the concepts of the theory were extracted based on two views of the body and space. Then, while aggregating the mental commonalities of theorists, the examples corresponding to the approaches of this theory in contemporary architecture were explained. The second stage was to determine the statistical population. In this stage, 20 buildings of contemporary post-Iranian revolution architecture were selected using stratified sampling, followed by semi-structured interviews with experts. To perform the interviews, first, the axes and dimensions of this theory were explained to the experts, and 10 buildings were selected (5 buildings of the post-modern style, 2 buildings of the deconstruction style, one building of the modern style, one building of the neo-modern style, and one building of the technological style). Next, the detailed descriptive information, the photos of the interior and exterior of the buildings, and their plan maps were presented to the experts during the interviews. In the third stage, it was explained how the four components, including materials, elements, structure, and construction, were influenced by the approaches of the studied theory. The reason for the intelligent choice of these four components was due

Table 1. A summary of the studies on the stereotomic theory with emphasis on physical and spatial structures. Source: Authors.

	Type	Authors	Title	Findings
1st Category	Book	Menges (2012)	Material Resourcefulness	Materials are reduced to create space and integrate spatial and structural elements. It is one of the design methods relying on coherence and rigidity.
	Thesis	Zecchin (2012)	The architecture of/in the Marginal Spaces	It is avoided to create transparent borders and determine the building with certain non-transparent elements.
	Book	Viollet-le-duc (1990)	The Architectural Theory of Viollet-le-Duc	The stereotomic theory is based on the principle of creating functional spaces with the help of structural details and the efficiency and effectiveness of details are considered the basis for judging them.
	Book	Castellanos (2012)	Plan Poché	It was pointed out that the importance of structural elements as secondary spaces, with the two functions of structural complement and architectural space.
	Thesis	Erbaugh (2006)	The Interaction of Poiesis and Tekne in Tectonics	The two concepts of tectonics and stereotomics in the creation of architecture are reasonably integrated.
	Paper	González & D'Acunt (2016)	Stereotomic Models in Architecture	A design method is invented based on continuous rigidity with the "experimental discovery on space and structure" and using the operation of "Boolean subtraction" to integrate spatial and structural parameters in the conceptual stage of the architectural design process.
2nd Category	Dissertation	González (2017)	Stereotomic Models in Architecture	The role of structure in the creation of integrated spaces and the potential application of the stereotomic theory in all architectural and structural scales, including five factors of conditions, principles, wants, limitations, and needs, are explained.
	Paper	Frampton (1995)	Studies in Tectonic Culture	The tectonic problem of form is addressed, the differences between tectonics and stereotomics are described, and the desired design is achieved by extracting the principles and rules of the two.
	Book	Cacciatore (2011)	The wall as a living place	The stereotomic theory is an idea based on the non-assembly of elements and refers to the gradual reduction of matter to reach space.
	Thesis	Kim (2006)	The art of building of Mies van der rohe	Construction is interpreted from tectonic and stereotomic perspectives and the relationship between the two is examined.
	Thesis	Narsey (2013)	Expressive space	It is explained how tectonic and stereotomic expressions are in the promotion of architectural space and how their simultaneous impact on architecture is.

Table 2. The degree of reference to the physical and spatial configuration based on the stereotomic theory in the records of theorists. Source: Authors.

Critical position	1 st Category	2 nd Category
Physical configuration based on the stereotomic theory	High	High
Spatial configuration based on the stereotomic theory	Low	Low

to the influences of each on the other that led to the formation of the body and the architectural space.

• **Data Interpretation Method**

In the present study, the data on the components of materials, elements, structures, and construction has been interpreted through the open, axial, and selective coding presented by Strauss and Corbin. The codes were classified by Maxqda software. The axial and selective coding steps are described in Table 3, respectively.

• **Axial Coding**

Axial coding refers to the process through which architectural components and the approaches of the mentioned theory are connected. In total, 26 open codes

were extracted, with the research subject as the central category. These codes were obtained by recognizing the classical approaches to the theory and generalizing them to contemporary examples. The codes are presented in Table 4.

• **Selective Coding**

The selective coding stage is the result of axial coding. At this stage, 15 axial codes were obtained and are systematically divided into two categories of the physical configuration (symbolic physical configuration and technical physical configuration) and the spatial configuration. The technical physical configuration encompasses construction techniques; the symbolic

Table 3. Axial and selective coding steps. Source: Authors.

Axial coding steps	
No.	
1	Understanding the approaches of the stereotomic theory from physical and spatial perspectives and defining 26 open codes
2	Separating the essential, perceptual, and behavioral characteristics of open codes
3	Recognizing the influenced components from open codes
4	Understanding how architectural components are influenced by essence, behavior, and perception defined in Step 2
Selective coding steps	
No.	
1	Separating the 15 axial codes into selected physical and spatial codes
2	Separating selected physical codes into two categories: symbolic and technical
3	Matching axial codes and selected codes

Table 4. Introduction of axial and selected codes. Source: Authors.

Open coding (mentioned in Table 12)	
Axial coding	
M/e/s/con S	Structural and non-structural materials/ elements/ structures/ construction with rigid and quasi-rigid essence
M/e/s/con S perception	Structural and non-structural materials/ elements/ structure / construction with a stereotomic perception
M/e/s/con S treat	Structural and non-structural materials/ elements/ structures/ construction with a stereotomic behavior
Selective coding	
Stereotomic configuration S-con	Spatial organization based on the stereotomic theory
Body configuration symbolic B-confs	Symbolic physical configuration
Body configuration technique B-conf	Technical physical configuration

physical configuration symbolically includes the body, and the spatial configuration refers to space and spatial organization. A special naming system (Table 4) is used to make it easier to use the codes.

Conceptual Model

To formulate a suitable method for reading architecture based on the stereotomic theory, its concepts should be cogitated more deeply. Merely studying the theory does not pave the way for explaining architecture from the perspective of this theory, and referring to the approaches of the theory and representing its examples in the contemporary period makes it possible to come up with an appropriate perspective to look at architecture. Following the extraction of approaches from the theorists’ point of view, which is discussed in detail in the “theoretical foundations” section, the theoretical framework of the research was designed to introduce the research variables and the relationships

between them. The four components of materials, elements, structure, and construction, which are the main components forming architecture, have been considered independent variables, and contemporary Iranian architecture has been proposed as the dependent variable. Moreover, the approaches of the stereotomic theory have been considered to be a moderating variable. To achieve a deeper cognition in the current period, the conceptual model affecting the audience’s understanding of body and space is briefly presented in Figure 1 by reviewing the previous literature, extracting concepts, and compiling examples.

Theoretical Foundations

• Stereotomic theory, concepts, and approaches

Many theorists and architects have commented on this architectural theory, but not all of them can be mentioned here. Therefore, the opinions of several experts have been examined and an attempt has been

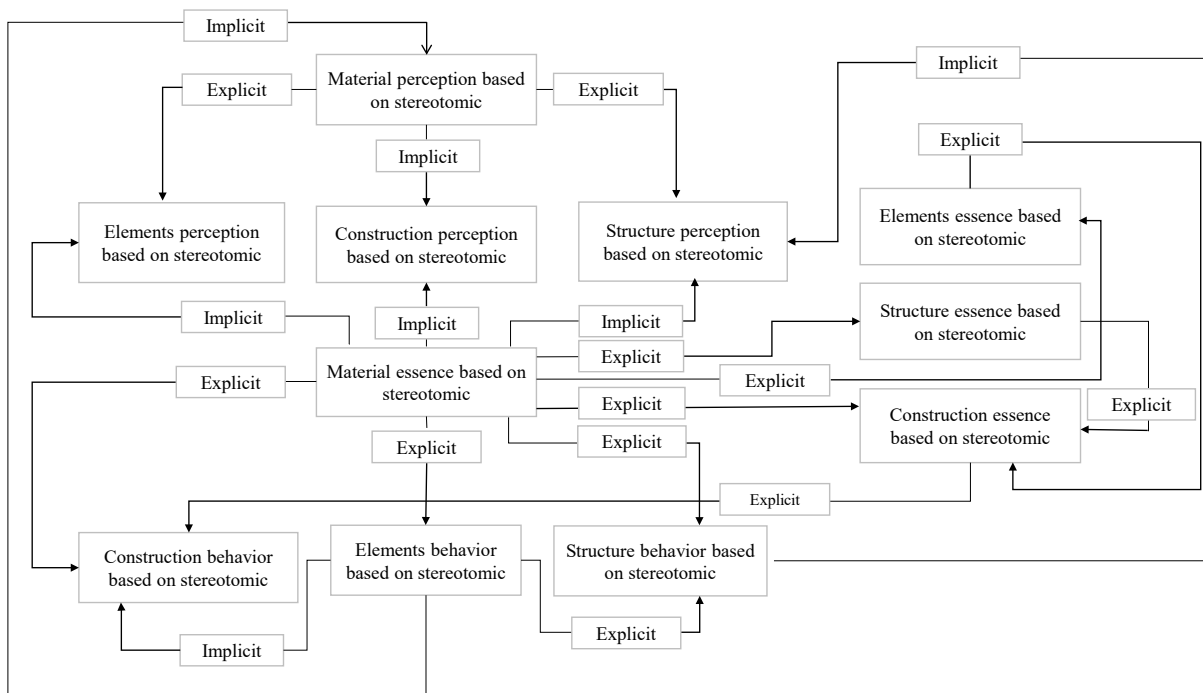


Fig. 1. Conceptual model of the theoretical framework of the research. Source: Authors.

made to provide a significant and effective summary of their interpretations. One of the approaches of the above theory in architecture refers to the creation of integrated and compact forms in such a way that the components are not recognizable from the whole. This is the opposite of assembling the elements and the artistic elegance of the tectonic theory. Tectonics simultaneously deals with the structural, technical, executive, and aesthetic layers of architecture, and the connection of the technical and executive layers with art and beauty leads to the unity and cohesion of the shell and the core (Liu & Lim, 2006, 267). In other words, tectonics refers to the separation of structure from architectural elements and defines the structure as linear, lattice, or matrix. According to the stereotomic view, construction is not achieved by connecting elements, which is one of the principles of the tectonic theory, and it is a system of continuous structures with architectural elements (González, 2017, 29). In this system, the elements cannot be recognized from the structure, while in tectonics, the structure is linear and can be identified (Kim, 2006, 37). Coherence is a concept common between the tectonic theory and the stereotomic theory. But this commonality has led to obvious differences between them (Vallhonrat, 1988, 129). Tectonic coherence has led to the integration of

structures and decorations, and stereotomic coherence has led to the sequence of structures and elements. In the stereotomic theory, the use of homogeneous and similar materials has helped to create an integrated structure (Bingöl, 2017, 49), and subsequently, the use of rigid materials has been considered effective for creating non-lattice (non-beam and column) structures, (Erbaugh, 2006, 44), which do not require geometry based on Euclidean principles (Algarin, 2006, 33). Stereotomics seeks to gradually reduce matter from the mass to reach space (González, 2017, 29), resulting in the creation of voids, and hierarchies, the definition of the boundaries defining the architectural space, such as floor, wall, and ceiling, and a better understanding of the space (Evans, 2000, 179). Stereotomics leads to the simultaneous understanding of space and matter (Aparicio, 2000, 19). From a modern point of view, stone and hard and heavy materials are no longer the only materials forming the new building system, so new materials with more popularity than stone should be used to create structures with less weight. As a result, implementing bulky and heavy building supports according to the stereotomic theory of the classical period seemed completely impossible, and the idea of integrated structures using quasi-rigid, lightweight materials such

as foam, fiberglass, and systems reinforced with carbon fiber and glass was proposed (González, 2017, 117). Stereotomics introduces a rigid and continuous form (Frampton & Rappel, 1996, 24) which tends to use light to perceive visual attraction using rigid materials and dense and similar masses (Kocaoglu, 2011, 78). To understand the stereotomic theory in the present age and to apply and update the goals and objectives of the above thinking, we need a structure to create a discourse based on materials, elements, structures, and construction in the contemporary period while confirming the above approaches in the classical period. The ancient approaches extracted from the intellectual systems of theorists can be divided into two physical and spatial categories, one of which is related to the building structure and the other affects space and spatial organization.

Studies and Reviews

• Explaining the roles of components in the face of the approaches of the stereotomic theory

By examining the theorists' ideas and separating the approaches derived from their thoughts, the reactions of the materials, elements, structures, and construction components to the approaches of the theory were divided into three categories: essence, behavior, and perception. Each component can accept one of the roles of essence, behavior, perception, or a combination of them at the same time. The component of materials with a stereotomic essence refers to the use of concrete, brick, stone, and rigid and quasi-rigid materials. The essential role of the components of elements and structures deals with the coherence and integration of the two. Behavior is divided into two categories: physical behavior and spatial behavior. The integrity and coherence of elements, structure, and construction ultimately lead to spatial separation and distinction in two dimensions: physical (tangible) and non-physical (intangible). The behavioral role of the components is followed by the process of perception. The sense of stationary in the structure, as well as the reduced visual transparency, which leads to a decrease in the perception of phenomenal transparency, the elimination

of fluidity, continuity, and flexibility of space, are clear and tangible examples of perceptual roles.

Discussion

After introducing and expressing the research variables, the findings and results of the theoretical and field studies are described in this section. Since the works of Iranian architecture, both in the contemporary and previous periods, have not been explained from the mentioned perspective, or have been studied generally, and no comprehensive research has been carried out on them, they cannot provide us with a structured tool with details. Therefore, one can clearly understand the necessity of this research on the works of contemporary post-revolutionary architecture, which are more tangible and accessible than the architecture of previous periods. In this regard, based on the studies collected by architectural researchers, 20 buildings related to the four post-Iranian revolution decades were selected through semi-structured interviews, and then, out of them, 10 buildings were selected for the final reading. To explain the approaches of the mentioned theories in Iranian architecture related to the post-revolution period, Table 5 introduces and briefly describes the characteristics of the selected buildings.

• Reading of the selected buildings based on the stereotomic theory

To analyze architecture based on the approaches of this theory, first, contemporary examples taken from the intellectual systems of theorists have been summarized in Table 6 and the roles of each of the components of materials, elements, structure, and construction have been determined In Table 7.

Stereotomic structures are not just for bearing static forces, and architects introduce status, demands, requirements, constraints, and design principles as non-static forces that form nonlinear structures. The design process is the result of a discourse on the relationships between these forces in a system, and the product of the relationships between them affects the physical and spatial configurations and leads to the creation of bodies and spaces based on the theory. It has been groundbreaking and accompanied by fundamental

Table 5. Introducing the analyzed buildings. Source: Authors.

No.	Building Name	Styles, trends & approaches	Form orientation	Decade (A.H.)
1	Isfahan’s central library	Sustainable values of Iranian architecture, common concepts of traditional architecture	Post modern	70s
2	Nezam mohandesi-qazvin	Sustainable values of Iranian architecture, expressionist forms, memorial, sculptural, and common concepts of traditional architecture	Post modern	80s
3	Rafsanjan Sport Complex (Bani-Masoud, 2012, 421)	Combining traditional and modern architecture, metaphorical, abstract values, pure volumes (Shayan & Memar Dezfuli , 2014, 7)	Post modern	80s
4	Termeh commercial center	Combining traditional and modern architecture, metaphorical, abstract values, pure volumes	Post modern	90s
5	Rong cultural center	Sustainable values of Iranian architecture, expressionist forms, memorial, sculptural, and common concepts of traditional architecture	Post modern	90s
6	Valiasr mosque	Deconstruction(Noghrekar,2014, 23	Deconstruction	80s
7	Semnan University library	Deconstruction	Deconstruction	90s
8	Holy shrine church	Modern, abstract	Modern	60s
9	Kermanshah Central Hall (Bani-Masoud, 2012, 409)	Sustainable values of Iranian architecture, expressionist forms, memorial, sculptural, and common concepts of traditional architecture (Shayan & Memar Dezfuli , 2014, 7)	Neo modern	80s
10	Pardis Mellat (Bani-Masoud, 2012, 471)	Structuralism, abstract shaping (Shayan & Memar Dezfuli , 2014, 8)	technologic	80s

Table 6. Introduction of qualitative examples and keywords of analysis based on the old concepts of the stereotomic theory approaches. Source: Authors.

The ancient concepts of the stereotomic theory	
Materials	Use hard materials such as stone, brick, and clay
Elements	The cohesion of architectural elements and structures
Structure	Non-axial structure
Construction	Compact, dense and continuous structures

changes. Architectural space is also perceived by the quality of light and its shadows, which are introduced as materials of metaphysical essence. The heavy essence and rigidity of the materials lead the structure to a perception of stillness, and the reduction of clear and phenomenal transparency leads to the creation of hierarchy and delimitation. Thus, the approach of the components in the face of the stereotomic theory has taken a different form and contemporary ideas have replaced the classical examples. As a result, old approaches have been replaced by new interpretations, constantly calling for a re-reading

of architecture. Each interpretation is subject to the rules made by adapting the classical patterns of the stereotomic theory to contemporary concepts and, while having all the ancient values, reproduces deeper and latent meanings and concepts. Contemporary interpretations with the fluidity of meaning also challenge the certainty and limitations of classical approaches and lead the audience to discover latent ideas. The effect of components on each other due to the influence of the approaches of the stereotomic theory The stereotomic theory is the result of the combination

Table 7. Introduction of qualitative examples and keywords of analysis based on contemporary examples in accordance with the old concepts of the stereotomic theory approaches. Source: Authors.

Role	The contemporary instance is consistent with the old notions of one-part theory	
Material	The texture of materials (perception by visual and tactile senses), color, light, shadow, and potential of materials and quasi-mass materials	Essence, Behavior & perception
	Decreased clarity from glassy materials	Essence & Behavior
Element	Functional requirements	Essence & Behavior
	Manufacturing technology	Essence & Behavior
Structure	Construction technology, simultaneous solution of formal concepts and functional and spatial necessities - the multifaceted role of the structure (structure as an architectural space and light carrier)	Essence & Behavior
	Structural considerations and the use of structures based on non-static forces	Essence & Behavior
Construction	Equilibrium resulting from dynamic continuity	Behavior
	Reaching from structure to space	Behavior
	Perception of stillness and abstraction (geometry, centralism, hierarchy, symmetry, and conventional proportions) and construction stability	Behavior & perception
	Constraints, needs, wants, and design principles	Behavior
	Design concepts such as pause and change motion	Behavior & perception
	Centralism and centralized organization and introversion and creating a center for the accumulation of visual energies	Behavior & perception
	Creating spatial and altitude hierarchies and multiple spatial sequences	Behavior & perception
	Reduce spatial interconnection and flexibility and transparency of space	Behavior

of different layers and serves as a basis for architectural critique and discourse. The different approaches of the stereotomic theory (layers) create architecture and provide the basis for the semantic multiplicity of architecture. The implicit and explicit relationships between the different layers will lead to a re-reading of the components from the perspective of stereotomic theory. The component of materials in the face of the approaches of the stereotomic theory, while accepting the essential, behavioral, and perceptual roles, leads to the explicit or implicit formation of different roles in other components. The components of elements and structures with the role of the stereotomic essence lead to the formation of structures with essential, behavioral, and perceptual roles. By considering the effect of the behavioral role of elements and structures in creating perception on the component of the structure, the hierarchy of the influence of the roles of the components can be determined. Figure 2 describes the path of reading architecture based on the stereotomic theory. Due to the large volume of analyses, only the analysis of the Holy Cross shrine building is included in the text in detail according to the above examples, and of course, the conclusion is related to the 10 works under study.

Case Study Analysis

• Introduction of the Holy Cross Shrine

The shrine of the Holy Cross, located in the southeastern corner of the Ararat complex, shows the artistic genius of the architect. Most of these buildings are made of the skillful use of concrete. The interior of the shrine is a small octagon with a domed roof and narrow beams of light shine through the outer apertures of the structure and create a unique effect in the dark interior. Adhering to the symmetrical and central floor plans of dome architecture in medieval Armenian churches, Veskanian created a novel form that is both ancient and avant-garde and is the most powerful symbol of the endurance of Armenian identity, both ancient and contemporary (Fig. 3).

• Analysis of the Church of the Holy Cross from the perspective of its stereotomic theory

To analyze the building from the perspective of the above theory, the following steps were performed:

1. First, the components of materials, elements, structures, and construction in this building are identified separately, and then how the components of materials are affected by the examples of stereotomic theory (ideas) that determine the essential, perceptual,

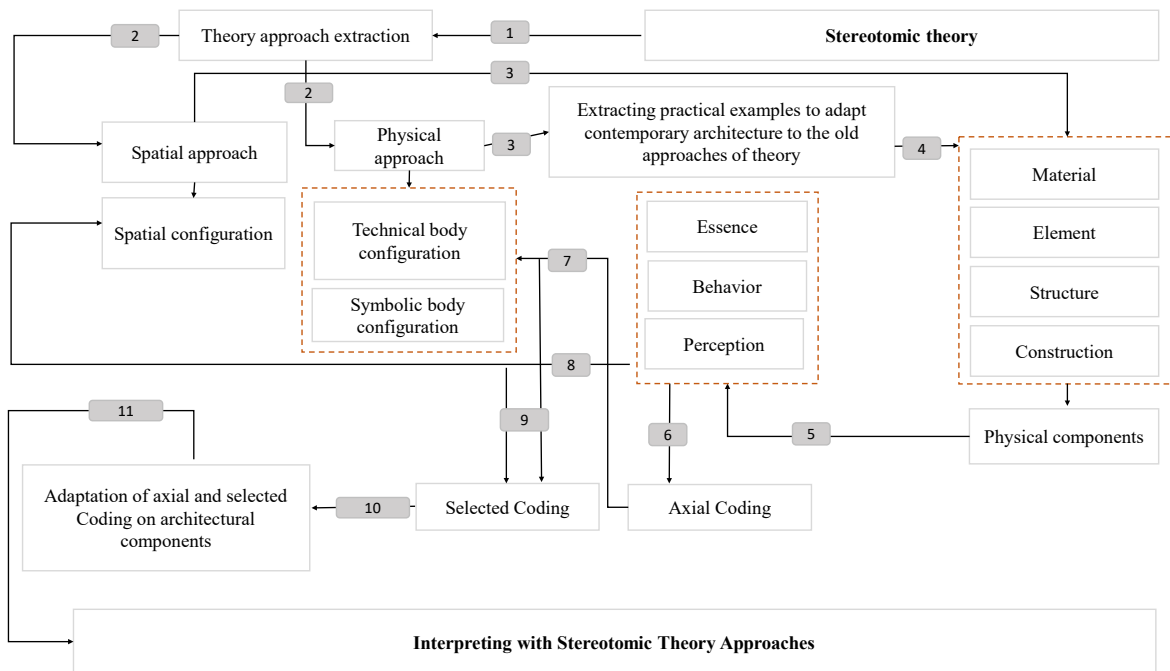


Fig. 2. The path of reading architecture based on the stereotomic theory. Source: Authors.

and behavioral roles of materials used. They were built with axial codes.

2. The ideas obtained from step 1 on the material component in the form of axial codes, in another role exert their influence on the body symbolically / technically and the spatial body with the selected codes.

3. The influence of material components on the components of elements, structure, and construction in terms of essential, perceptual, and behavioral roles, and type of explicit/implicit influence were determined in the form of concepts with central codes.

4. The ideas obtained from step 3 on the components of elements and structure and construction in the form of axial codes, in another role, exert their influence on the body in the form of a symbolic/technical body and a spatial body with selected codes.

5. The influence of the components of elements and structures on the components of the construction in terms of essential, behavioral, and perceptual roles, and the type of explicit or implicit influence, were determined with axial codes.

6. The ideas obtained from step 5 on the structural component in the form of axial codes exert their influence on the body in the form of a symbolic/technical body and a spatial body with selected codes.

The above six steps in Tables 8- 11 have been done in detail and practically on the building of the Holy Cross shrine.

The degree of being influenced by components by the stereotomic theory approaches in the form of axial codes (essence/behavior/perception) ultimately leads to the impact on the body symbolically/technically and the spatial structure of the 10 selected works presented in Table 5, in which three groups of postmodern and deconstructed style buildings and others are categorized, presented in the Figs. 4-8.

Research Findings

In this part of the research, the final results of the architectural reading of selected buildings of the post-revolutionary period of Iran are interpreted to be influenced by the approaches of stereotomic theory. The results of the above theory’s approaches indicate the relative effectiveness of the building. The messages of stereotomic theory can be received in essence, behavior, and perception by the components of materials, elements, structures, and construction, which subconsciously generate the body and space based on stereotomic, which are hidden and unavoidable dimensions in the process. It is an architectural

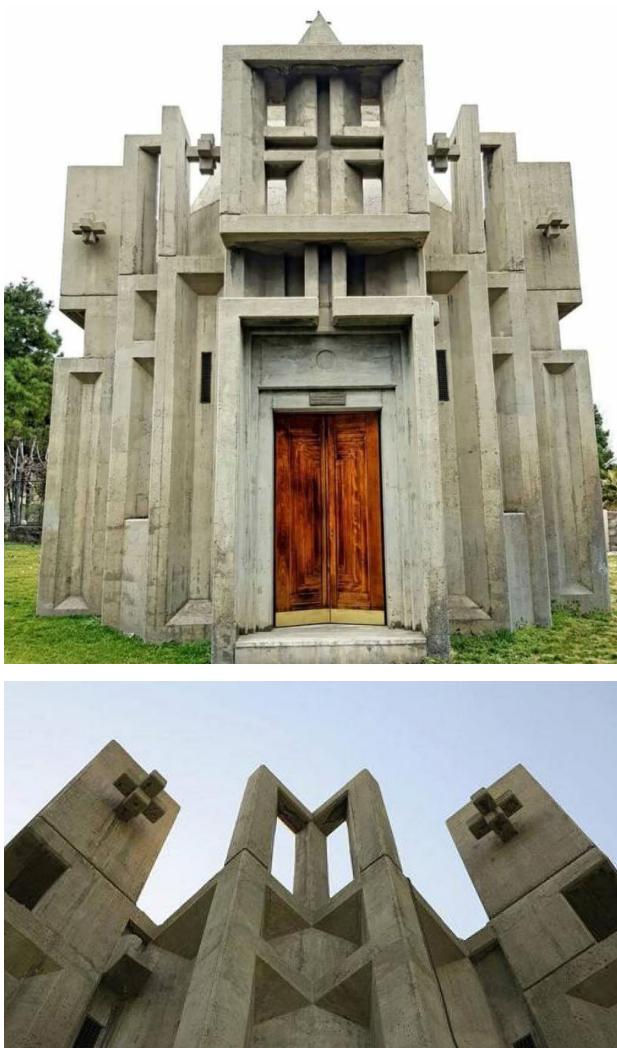


Fig. 3. Holy Cross Shrine. Source: <https://www.kojaro.com>.

design. By applying the ideas of theorists in the field of stereotomic to selected works (regardless of the period of construction, which according to the results cannot be interpreted, compared, and inferred) it can be seen that considering the type of architectural style, the degree of influence the components of materials, elements, structures, and construction can be interpreted from different approaches of the theory as follows:

1. The results obtained from the designs of the essence and behavior and perception of the stereotomic theory in Fig. 4 indicate that: In postmodern-style buildings, the material component has had the greatest impact on the role of behavior on the physical body technically and also on the role of perception on the physical body as a symbol. In addition, the maximum impact of the material component on the components of elements, structure, and construction is explicit.

2. The results of the designs of the essence and behavior and perception of the stereotomic theory in Fig. 5 indicate that: In deconstructive style buildings, the structural component has the greatest impact on the role of behavior in the physical and spatial structure.

3. The results obtained from the essential, behavioral, and perceptual roles of the stereotomic theory in Fig. 6 indicate that: In modern style construction, the structure component has had the greatest impact on the role of behavior on the physical body technically.

4. The results obtained from the designs of the essence and behavior and perception of the stereotomic theory in Fig. 7 indicate that: In neo-modern-style buildings, the structure component has had the greatest impact on the role of behavior on the physical body technically.

5. The results of the designs of the essence and behavior and perception of the stereotomic theory in Fig. 8 show that: In technological style building, the component of structure and construction has had the greatest impact on the role of essence and perception on the physical body technically and symbolically, respectively.

6. The results obtained from the designs of the essence and behavior and perception of the stereotomic theory in all the above diagrams indicate that: The spatial body has the least impact of the approaches of stereotomic theory by all components and the material component in terms of essence, behavior, and perception in any of the specified styles does not affect the spatial body. In general, the material component of the symbolic property of the body has a greater effect than the technical properties of the body, and consequently, the component of the elements has a minimal effect on the spatial body.

Conclusion

The research has achieved the effective participation of four components of the architecture of materials, elements, structures, and construction in being influenced by the approaches of stereotomic theory and by structuring the way of explaining and analyzing the theory to respond to the research gap of previous studies in this field. The achievements of the research are significant in that they have been associated with

Table 8. Analysis of the material component based on the approaches of the stereotomic theory. Source: Authors.

Component	Row	Concepts according to open codes	Axial Coding	Selective coding
Material	1	Creating a feeling of heaviness and viscosity to the ground by concrete materials (leading to the explicit formation of row 1 of the structure component)	m - S perception	BConfiguration-s
	2	Application of uncoated brutal concrete technique in the structure and revealing its roughness (leading to the explicit formation of rows 15 and 23 of the structure component)	m - S treat	BConfiguration-t
	3	Transfer of a sense of uniformity by the color of concrete in the facade to the audience (leading to the explicit formation of rows 3 and 17 components of the structure)	m- S perception	BConfiguration-s
	4	Integrated construction with solid, heavy, and homogeneous materials of concrete (leading to the explicit formation of rows 3 and 6 components and rows 2 and 10 of the structure)	ms&e- S	BConfiguration-t

Table 9. Analysis of the element component based on the approaches of the stereotomic theory. Source: Authors.

Component	Row	Concepts according to open codes	Axial Coding	Selective coding
Element	1	Physical elements include and determine the volume of incoming light (leading to the implicit formation of rows 17, 19, and 11 of the structure component)	e - S treat	BConfiguration-t
	2	Emphasis on the creation of space and the creation of certain boundaries through the elements (leading to the implicit formation of rows 2 of the structural component and rows 4 and 14 of the structure component)	e - S treat	SConfiguration
	3	Creating hard and inelastic elements such as a concrete wall (leading to the explicit formation of row 22 of the structure)	e - S treat	BConfiguration-t
	4	Repetition of single elements into integrated squares and rectangles and creating balance (leading to the implicit formation of row 21 components of the structure)	e - S treat	BConfiguration-s
	5	Continuity of architectural and structural elements (leading to the explicit formation of rows 1 and 3 of the structural component and 13 structures and implicit rows of 5 and 9 structures)	e - S treat	BConfiguration-t
	6	Perception of the feeling of heaviness and viscosity to the ground by the elements (leading to the implicit formation of rows 7 and 20 components of the structure)	e - S perception	BConfiguration-s

Table 10. Analysis of the structure component based on the approaches of the stereotomic theory. Source: Authors.

Component	Row	Concepts according to open codes	Axial Coding	Selective coding
Structure	1	Continuity of structure and architectural elements (leading to the implicit formation of row 12 components of the structure)	s - S treat	BConfiguration-t
	2	Dual function of the structure as a structural element and shaper of architectural space (leading to the implicit formation of row 18 components of the structure)	s - S treat	SConfiguration
	3	Non-lattice structure of a combination of vertical elements and walls (leading to the explicit formation of row 16 components of the structure)	s - S	BConfiguration-t
	4	The structure bears unstructured forces such as design principles, needs, quality, and demands of the design, which has led to non-structural stability. (Leads to the implicit formation of rows 6, 8, and 24 of the structure component)	s - S treat	SConfiguration

Table 11. Analysis of the construction component based on the approaches of the stereotomic theory. Source: Authors.

Component	No.	Concepts according to open codes	Axial Coding	Selective coding
Construction	1	The visual-heavy structure resulting from a combination of heavy elements and masses	con - S treat	BConfiguration-t
	2	Coherent combination of elements to achieve an integrated structure and coherent perception of the structure	con - S treat	BConfiguration-t
	3	Perception of the unit of space through the coherent placement of structural elements	con- S perception	SConfiguration
	4	Inducing the feeling of an introverted fortress due to the lack of visual transparency in the facade	con- S perception	BConfiguration-t
	5	The structure is carved like a statue or a mansion	con- S perception	BConfiguration-s
	6	Centralism in the outline of the structure	con- S perception	SConfiguration
	7	Tendency to stagnation in the interior	con- S perception	SConfiguration
	8	Limitations on visual links inside from outside	con - S treat	BConfiguration-t
	9	Emphasis on the creation of space by the elements of structure and the creation of certain boundaries	con - S treat	SConfiguration
	10	The stagnant structure consists of hard and inelastic masses	con - S treat	BConfiguration-t
	11	An instantaneous change in the perception of space due to the interactive shadow resulting from different levels of each other	con- S perception	BConfiguration-t
	12	The elasticity of the interactive shadow resulting from the surfaces and the visual coherence of the volumes	con - S treat	BConfiguration-t
	13	Connection of architectural and ancillary elements in the formation of the structure	con - S treat	BConfiguration-t
	14	Separation and clarity of internal and external borders	con - S treat	BConfiguration-t
	15	The idea of an integrated understanding of space and matter	con- S perception	SConfiguration
	16	The structure includes and shapes the architectural structure	con - S treat	SConfiguration
	17	The dramatic effect of shadows on the massive and form-oriented structure	con - S treat	BConfiguration-s
	18	Reaching from form to space (space is a function of the form)	con - S treat	SConfiguration
	19	The interaction of light and shadow evokes focus and silence	con- S perception	BConfiguration-t
	20	Induction of a sense of stillness and stillness due to repetitive similarities in structure	con- S perception	BConfiguration-s
	21	The formal structure of the project is rigid and abstracted from single and Euclidean volumes	con - S treat	BConfiguration-s
	22	Perception of spatial cohesion despite the multiplicity of elements	Space- S perception	BConfiguration-t
	23	Perception of interior space directly through the visual and tactile senses	con- S perception	SConfiguration
	24	Stereotomic approach to the design process as opposed to structural formulation	con -S	BConfiguration-s

the ability to incorporate architectural components with the approaches of the theories as a new approach to innovation in the reading of architecture. From both perspectives of physical and spatial structure, it has been proposed as an approach based on this attitude and has covered the gap resulting from the lack of focus on this category in architecture. In addition, by achieving

a single model for explanation and analysis, it can be extended to the architecture of several periods, and in the meantime, the direct impact of the architectural style and the low impact of the construction period on the impact of the body and architectural space of the three-component designs can be acknowledged. The conceptual framework expresses the view of this

Table 12. The legend of the codes and colors in charts 3 to 22. Source: Authors.

Structural materials with stereotomic essence	Non-structural materials with stereotomic essence	Structural materials with stereotomic behavior	Non-structural materials with stereotomic behavior	Structural materials with stereotomic perception	Non-structural materials with stereotomic perception
A	B	C	D	E	F
Elements with stereotomic essence	Elements with stereotomic behavior	Elements with stereotomic perception	Spatial configuration	Symbolic physical configuration	Technical physical configuration
A	B	C			
Structure with stereotomic essence	Structure with stereotomic behavior	Structure with stereotomic perception			
A	B	C			
Construction with stereotomic essence	Construction with stereotomic behavior	Construction with stereotomic perception			
A	B	C			

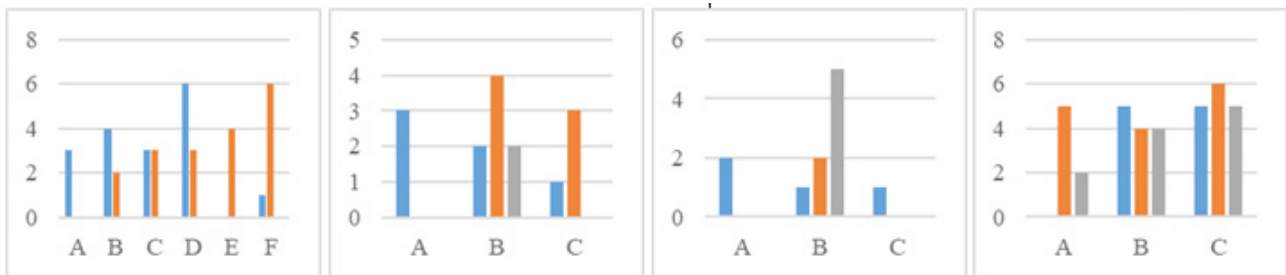


Fig. 4. From left to right, respectively, the degree of the influence of the components of materials, elements, structures, and construction with essential, behavioral, and perceptual roles on the physical and spatial configurations in the selected works in the postmodern style. Source: Authors.



Fig. 5. from left to right, respectively, the degree of the influence of the components of materials, elements, structures, and construction with essential, behavioral, and perceptual roles on the physical and spatial configurations in the selected works in the deconstruction style. Source: Authors.

research on the concepts of stereotype and architecture in response to the first question of the research. The architecture includes obvious components that can be studied by studying their deep relationships and their implicit and explicit connections with the mentioned concepts. These components include “materials, elements, structures, and construction”, which in the first stage of each component were examined separately in terms of essence, behavior, and perception based on the theory of stereotomy. In the second stage, the effect of the components in terms of the essence on the perception and behavior of other components was

explained explicitly or implicitly. In the third stage, the effect of the behavior of the components on the behavior and perception of each other is explicitly or implicitly discussed. In response to the second question of the study on the reaction of architectural components in the face of the approaches of the theory imposed on stereotomic, it was concluded that the evolution of the theory as a process of ups and downs and the relationship between man and architectural space through the architectural components of this theory can be considered from different perspectives. The dialectic between the components of architecture and the above

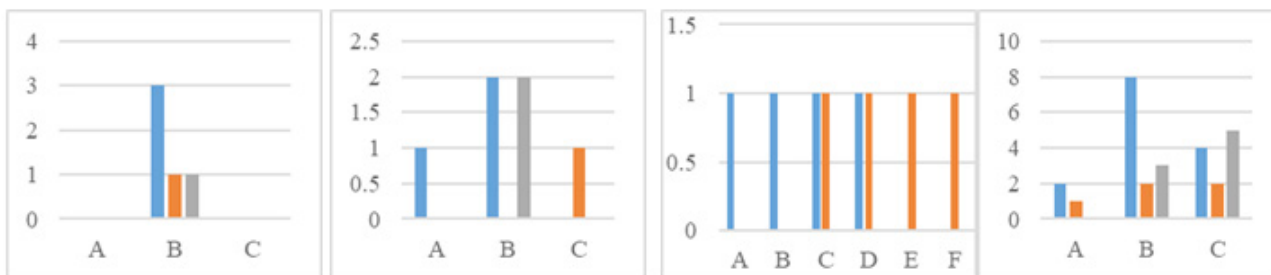


Fig. 6. From left to right, respectively, the degree of the influence of the components of materials, elements, structures, and construction with essential, behavioral, and perceptual roles on the physical and spatial configurations in works with the modern style. Source: Authors.

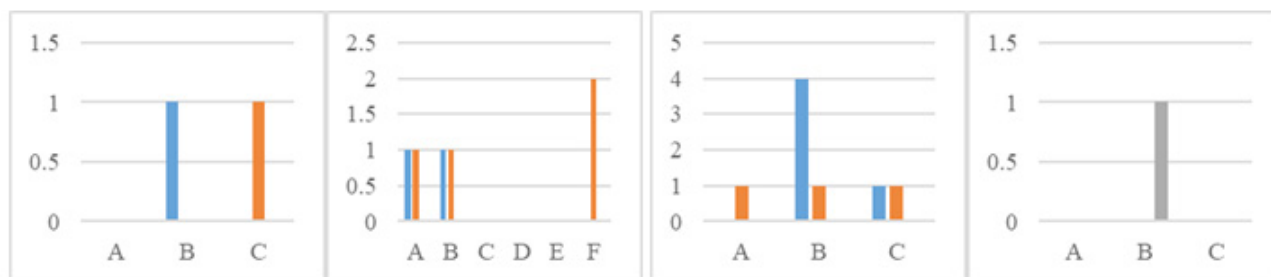


Fig. 7. Left to right, respectively, the degree of the influence of the components of materials, elements, structures, and construction with essential, behavioral, and perceptual rules on the physical and spatial configuration in the works with the neo-modern style. Source: Authors.

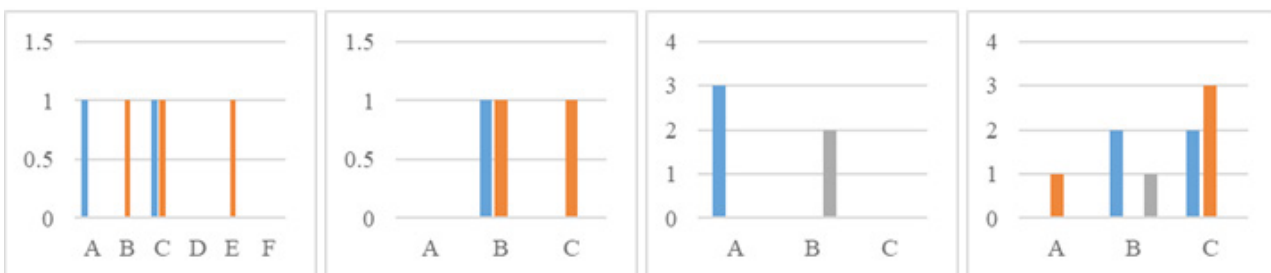


Fig. 8. From left to right, respectively, the degree of the influence of the components of elements, materials, structures, and construction with essential, behavioral, and perceptual roles on the physical and spatial configurations in the works with the technological style. Source: Authors.

theory indicates that the components with the three roles of essence, behavior, and perception can be transformed into architectural patterns through the examples presented in the research text. In response to the third question of the research, we can point to the continuous and inevitable impact of theoretical approaches on the components and then on the body and space. In general, the correlation of roles and components with each other is potentially important in terms of essential and perceptual roles.

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