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Original Research Article

A Tectonic Approach to Public Buildings of Contemporary Iranian Architecture in the First Pahlavi Period

Case study: Alborz High School, Museum of Ancient Iran, School of Fine Arts, Tabriz Municipality Building*

Nourmohammad Afshari¹, Bizhan Kalthornia^{2**}, Seyyed Ali Nouri³

1. Ph.D. Student, Department of Architecture, Kermanshah Branch, Islamic Azad University, Kermanshah, Iran.

2. Associate professor, Department of Architecture, Kermanshah Branch, Islamic Azad University, Kermanshah, Iran.

3. Associate professor, Department of Architecture, Kermanshah Branch, Islamic Azad University, Kermanshah, Iran.

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Abstract

Problem statement: The development of science over the years, particularly in the recent area, has led to the separation and specialization of the fields of knowledge and technology, itself leading to the highlighted distinction of structures, building systems, and architecture after these developments. As such, the tectonic approach corresponds to the combination of meaning and construction in architecture.

Research objective: The purpose of this study was to explain the tectonic components of world architecture and the tectonic interpretation of selected the First Pahlavi architectural buildings using the aforementioned criteria, and finally to extract the tectonic framework governing the architecture of public buildings of that era. Also, this research seeks to identify and explain the impact of architectural tectonics on the creation of spatial and construction harmony in public buildings of the First Pahlavi period of contemporary Iranian architecture.

Research method: This research employs a mixed, interpretive-historical method and a predominantly qualitative approach for collecting and analyzing the data. Furthermore, the authors analyzed the documents driven from the descriptive phenomenology of observations carried out by elites. The samples for the case study were selected by reviewing the findings extracted from questionnaires distributed among architectural experts. For this research, MaxQDA and SPSS were employed to prioritize and select buildings. Finally, using the three-way approach (phenomenological reading, researcher inferences based on available documents, rich tectonic literature), the strength and validity of the research were examined from different perspectives.

Conclusion: Given its role in determining the form and inducing visual stability, the observations revealed that the tectonic dimension of the structure was evident in all four cases of public buildings of the first Pahlavi period, sufficient for creating an efficient spatial organization. With its traditionalist architectural style, the building of Alborz High School was more in line with the tectonic dimensions. Tabriz Municipality building proved to have the least tectonic features corresponding to the classical architecture of the first Pahlavi period.

Keywords: *Architectural Tectonics, Public Building Architecture, Structure, and Architecture, First Pahlavi Architecture.*

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since 1922" was finished on 2020 under supervision of Dr. Bizhan Kalthornia and advisement of Dr. Ali Nouri at the Department of Architecture, Islamic Azad University of Kermanshah.

** Corresponding Author: Bizhankalthornia@yahoo.com, +09183367400

Introduction and problem statement

The current article seeks to examine the relationship between the art of architectural design and constituents of buildings such as structure and construction method. It is perceived that this examination takes place in the context of architecture, as structures and constituents are also part of the architecture. The main purpose of the research was to examine the structure and construction in contemporary Iranian architectural spaces, the beginning of which is assumed to be concurrent with the introduction of modern architecture in Iran. Therefore, this research can be perceived as a tectonic¹ interpretation of public buildings, since technology-based architecture in the West, and hence its technological and structural requirements, have gradually entered Iran in this era. Technology is the result of the industrial revolution and scientific revolutions all of which are undoubtedly rooted in the evolution of ideas and beliefs (Nari Qomi, 2015, 98). In brief, it is safe to argue that the purpose of this research was first to examine the relationship between construction, architecture, and structure in the process of formation, and second, the architecture with a tectonic approach, and finally, this study attempted to gain insight on the interpretation of selected public buildings in contemporary Iranian architecture related to the first Pahlavi period based on the framework obtained from this research. Furthermore, this study attempted to form a doctrine from the existing theories in the field of tectonics, as the product of opinions proposed in the first step of the research. In the second step, the hypotheses were tested, the corresponding criteria were determined and the theoretical framework of the research was optimized by analytically examining the relevant notions for selected contemporary Iranian buildings in the first Pahlavi period. It should be noted that public buildings, as one of the most essential notions in the current study, refer to buildings that belong to the community, which may be built or paid for by the government or the people. They are usually designed and built according to the opinion and approval of officials while being intended to benefit the public (Zarkash, 2012, 24). As mentioned, the necessity of conducting this study was further

highlighted by the fact that, before this period, buildings were often the product of coordination of architecture and building systems, and hence the components served the whole architecture, but in the contemporary era and a little earlier, that is, following the industrial and scientific revolution, the integrity of architecture, structure, and components of the building was subject to revision (Zarkash, 2005, 44), some of which are examined in this research as case studies. The selected buildings pertained to the first Pahlavi period in terms of geography and climate. Furthermore, convenience sampling was used for this purpose (Gal, 2016, 390). The present study was not based on a historical or a historiographical approach but rather sought to introduce a framework of the tectonic concept based on the phenomenological interpretation of public buildings corresponding to the first Pahlavi period. As such, the research was conducted with no particular focus on a certain spectrum of designers, as the purpose and focus of the research were to study the concept of tectonics in architecture, that is, the concept of tectonics is rightfully perceived to be correlated with the concept of the comprehensive proportion of the building components. Therefore, the issues of energy consumption and climate-oriented design were considered as aspects of the tectonic-based phenomenological reading of the buildings, the findings from which may help to determine the presence or absence of this aspect. One of the important references of the current research was the opinions and documents taken from Dr. Mostafa Kiani, an architect at the University of Tehran and the author of the book “Architecture of the First Pahlavi Period, Transformation of Thoughts, Origin, and Formation of Twenty-Year Architecture”, based on which the present research, containing the tectonic reading of the architectural buildings of the first Pahlavi period, was conducted. Hence, the current research spans a plethora of disciplines, focusing on public buildings in certain periods and styles, based on which the previously extracted global frameworks in this field were slightly altered or localized. Therefore, the purpose of this study is not to address the technical or formal structure of the building, but to formulate and describe criteria for

tectonics as a systematic framework for architecture that has been scrutinized during a specific period in contemporary Iranian architecture. On the other hand, since the interpretations are mostly based on phenomenological descriptions and observations, their applications are inevitable. This study emphasizes the necessity of revising the interaction between structure, architecture, and construction in contemporary Iranian architecture and employs a tectonic view that is the product of semantic forces to analyze the construction of public buildings built using the contemporary architecture of the first Pahlavi period. The deficiencies in the interaction technology and leading structures in today's Iranian architecture further highlight the necessity of similar studies, as confessed by contemporary architecture researchers. The elected buildings, which are among the most significant public buildings of contemporary architecture of the first Pahlavi period of Iran, were sampled to create a framework that is efficient in measuring the originality and beauty of architecture, while also posing as a conceptual model for designers and architects. It is also noteworthy that the present study is part of a more comprehensive study including public buildings of different periods of contemporary Iranian architecture, that is, the first Pahlavi, the second Pahlavi, and the architectural period after the Islamic Revolution.

Since studying all the topics and contents of all the different periods of architecture at once would not be efficient in examining all the necessary detail, it was decided that each era be separated and hence examined in a separate study. As such, the present article has only sought to examine the tectonic interpretation of public buildings corresponding to contemporary Iranian architecture in the first Pahlavi period. To achieve the objectives of the research, descriptive-analytical methods, field studies, questionnaires distributed among architecture experts², phenomenological discussion by architectural elites³, as well as MAXQDA and SPSS were used. The questionnaire was devised for the sole purpose of selecting buildings for the case study. In a comprehensive study, after the initial recognition of the relevant historical background, both in terms of

the subject of architectural tectonics and the field of contemporary Iranian architecture, international theories were analyzed, while contemporary Iranian architecture was studied in three separate periods⁴. Furthermore, after reviewing the studied samples, library-based data were supplemented with field surveys, architectural and structural plans, and construction information. Finally, the degree of similarity and differentiation of pre-analyzed tectonic concepts was determined based on the analysis of the aforementioned documents and architectural plans. First, 300 buildings belonging to all the three contemporary periods⁴ of the architecture were considered for the research. Then, based on the findings from the studies of contemporary Iranian architectural researchers, 14 type-styles were typologically studied and extracted in three independent periods⁴, and five to ten of the most important buildings of each style were selected based on their prominence in contemporary Iranian literature. In this stage, a total of 80 public buildings in three historical periods⁵ were selected and coded based on the aforementioned 14 architectural type-styles. In the next stage, research-made questionnaires were distributed among architects to determine the final sample size. Using the results from 30 questionnaires, the number of buildings for each period decreased to four buildings, and hence Alborz High School, Museum of Ancient Iran, Tabriz Municipality Building, and Faculty of School Arts were selected as the cases representing the first Pahlavi architecture period.

Research background

Few studies have been done on architectural tectonics in the world. The earliest architectural use of tectonics dates back to 1830. Modern times and the post-scientific and industrial revolutions caused the separation and hence the generation of new sciences, technologies, and arts, and architecture was no exception. It was then that the reintegration of the separate sciences, and more recently, the emergence of interdisciplinary concepts became increasingly important. Examination of the factors corresponding to construction, structure, architecture, and their

integration, along with the historical study of the tectonic concept of architecture, can be traced back to the mid-nineteen century. Professor Angus McDonald is a researcher and lecturer in architecture in the fields of architectural structure, cultural landscape design, and architectural history. McDonald describes six broad categories of diverse relationships between structure and architecture, namely (1) Structure decoration, (2) Structure as decoration, (3) Structure as architecture, (4) Structure as the generator of form, (5) Accepted structure, (6) Ignored structure (McDonald, 2004, 87). Schwartz (2017) sought to examine and describe tectonics in architecture (Schwartz, 2017, 24). Balinski & Januszkiewicz (2016) further examined digital tectonic design as a new approach in architectural design. Moreover, Beim (2013) explored the notion of tectonic thinking as it applied to contemporary architecture and urban planning. A plethora of studies has been conducted in this field, namely Schumacher (2012), Oxman (2010) Dickson & Parker (2015), Schmidt (2007), and Frampton (1990). The concept of tectonics is also one of the most understudied architectural concepts, the references for which are few and far between, especially in our country, Iran. In the field of contemporary architecture, several types of research have been conducted, most of which are arguably in no correlation with Architectural tectonics, including (Kabir Saber, 2015; Ghobadian, 2015; Nari Qomi, 2015; Tashakori & Tedli, 2016; Ansari 2016; Khalilikho, 2004; Habibi, 2016; Saremi, 1991; E'tesam, 1996; Samiei, 1995; Kiani, 1993; Bavar, 2009; Pakdaman, 1997; Bani Massoud, 2009; Diba, 2001). Furthermore, Kiani (2013) examined the reasons influencing the changes in architecture and urban planning in the Pahlavi period as well as the dynamism of shifts towards modernity, archeology, and modernity Soheili and Diba (2010) conducted a comparative study to examine the impact of government systems on the nationalist currents of Iranian and Turkish architecture. Mashayekhi (2010) sought to evaluate the developments of the Qajar period and its role in the development of the school-building measures in southern Iran (Bushehr), analyzing in the process

the formation of new educational centers and their cultural developments from the beginning to the end of the first Pahlavi dynasty. Shirazi and Younesi (2011) examined the effect of nationalism as a political concept on the government buildings of the Pahlavi period, hence categorizing their features. Moreover, Ebrahimi and Eslami (2010) investigated globalization in art, architecture, and the role of identity in the transition phase (late Qajar and Pahlavi) from traditional to modern society and their effects.

Theoretical foundations

• The concept of architectural tectonics

The relationship between structure and construction in architecture has always been the concern of architects in recent centuries. In the past, this distinction was not prominent as in its modern sense. This relationship and the issues of boundaries and overlap of notions of construction, structure, and architecture are the direct consequence of the separation of specialties and disciplines caused by the rapid development of science and technology after the scientific and industrial revolutions. With the ever-increasing development of science and technology, many notions lost their semantic associations altogether or at least underwent shifts, hence shaping novel concepts instead (Schwartz, 2017, 24). Table 1 lists the concepts related to tectonics as they would apply to the current study.

• Inference of indicators of tectonic approach

After examining the notion of tectonics and applying it to describe the tectonic criteria for each of the public buildings of contemporary architecture of the first Pahlavi period (Table 2 & Fig. 1) the desired indicators in each building were determined. These indicators were extracted from the descriptive observations and analysis of documents of selected buildings, which were in turn used for the analysis of tectonic readings of selected buildings.

• The architecture of the first Pahlavi period

The significance of examining the notions and the formation of contemporary architecture in the first Pahlavi period is owing to the perceived assumption that this period is the beginning of

Table 1. Definitions of tectonics according to various theorists. Source: Authors.

Theorist	Point of view
Gottfried Semper (Semper, 1851)	Consistency of materials and the architectural manifestation
Kenneth Frampton (Frampton, 1990)	Alleviation of the physical needs of the building while expressing the deepest feelings; Tectonics, the strict adherence of materials and structures to each other, and both to aesthetics
Edward Sekler (Sekler, 1965)	1. Tectonics: transmission of thought and meaning; 2. The power of visual expression of the structure through tectonics; 3. Tectonics is the emergence of forces related to the form of a building; 4. Tectonics in the Greek Temple: Participation of the viewer's sense in seeing the flow of forces in the structural elements; 5. Gothic Church: Tectonic participation with space and light in transmitting transcendent meanings; 6. Tectonics in Isfahan Grand Mosque: Demonstration of harmony and clarity of structural principles and details
Marco Frascari (Frascari, 1984)	Detail is like a story that tells the story of its construction, place, and dimensions; Ability to interpret construction through details; the active presence of details in the process of generating semantic association
Angus McDonald (McDonald, 2004)	Tectonics: recognition of form by structural necessities; Tectonics in the Gothic Church: Everything that is visible is a structure and hence has a technical justification; Tectonics in the modern era: the acquisition of architecture from the parts that make up a building; Modern tectonics: is the source of visual expression and appearance of structural structure; Tectonics: the fusion of art and science in architecture; Construction issue and environmental considerations

shifts and developments towards modernism in the contemporary period. It seems that the beginning of this period coincides with a great historical break in the field of architecture in terms of semantics, form, and construction techniques, the traces of which are still evident in our architecture today. Habibi (2016, 15) argues that the development in this era is rather exogenous, that is, the livelihood of the society is based on the rotation of goods, capital, and the resulting commercial relations, hence transforming from a productive society to a service-based society and then a consumption-based one. Also, the connection of traditional architects with the valuable resources of Iranian architecture and their subsequent configuration in the modern realms of architecture and urban planning led to a remarkable integration in the architectural style of this period. Public buildings of the first Pahlavi period in various streets of Tehran such as Saadi and Lalehzar, Jomhuri, Amirieh, Kakh, and the like, which were formed in the late Qajar and early Pahlavi period, are often perceived as the last genuine endeavors of the traditional generation of devoted architects to create a favorable atmosphere complemented with cultural consistency and wise integration (Kiani, 2014, 217).

Research method

This research was conducted using library archives,

field surveys, questionnaires distributed among architectural experts, and phenomenological descriptions by architectural elites. Moreover, MAXQDA was employed for the research. Since the study used a mixed approach, the structure of research can be divided into several stages. In the first stage, the basic concepts in the field of tectonics, the architecture of the first Pahlavi period, and also dimensions (conceptual and physical dimension) and criteria (structure, architecture, facilities, relation to environment, details, and materials) of architecture was extracted and explained. The second stage pertained to determining, analyzing, and studying the tectonic dimensions of study samples, purposively selected from a pool of public buildings of contemporary Iranian architecture in recent years. As mentioned in the introduction, 300 contemporary Iranian architectural buildings in three separate eras⁴, namely the first Pahlavi, the second Pahlavi, and the period after the Islamic Revolution were studied and analyzed in a comprehensive study. Then, using the findings from various studies by contemporary Iranian architectural researchers, 14 type-styles were derived corresponding to three independent periods, among which five to ten of the most important buildings of each style were selected based on their prominence in the contemporary Iranian literature. At this stage, a total of 80 public buildings in three historical periods

Table 2. Tectonic indicators in the analysis of selected contemporary architectural buildings of the first Pahlavi period. Source: Authors.

Row	Tectonic index			
	Structural orientation	Climatic environmental orientation	Materials orientation	Utilities orientation
	The role of structural elements (beams, columns, slabs, etc.) in organizing space	Compliance of form with the environment	The role of details in inducing the whole meaning of architecture	Integration of artificial lighting and other electrical elements with the geometry and architectural expression of the building
	Compatibility of structural elements with the spatial geometry	Compliance of form with the climate	Consistency of materials with the spirit of the architecture	Striking a balance between heating and cooling elements such as ducts and equipment visible with the form, geometry, and space organization
	Maintaining the visual stability of the whole building form in the viewer		Consistency of materials with the structure	
	Aesthetics			

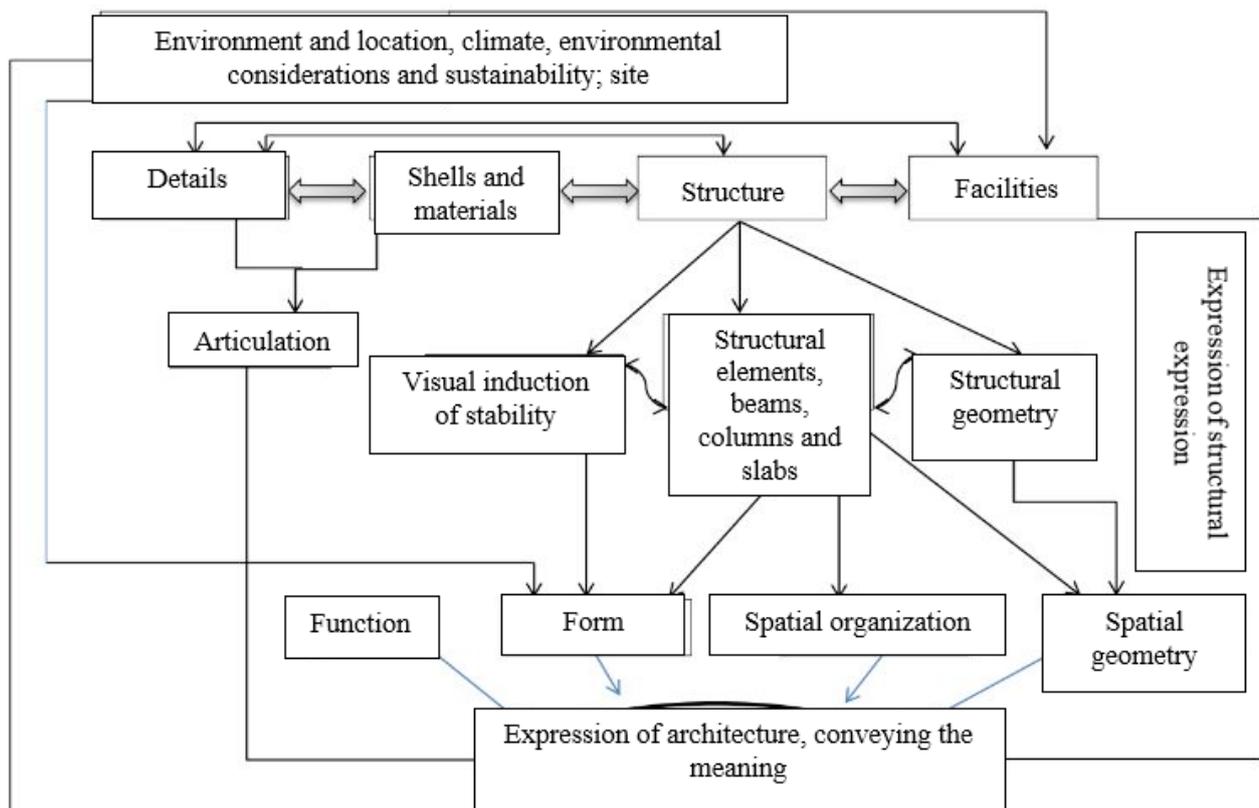


Fig. 1. Conceptual framework extracted from the relevant literature, dimensions, and criteria of tectonics in architecture for reading the buildings studied by architectural elites. Source: Authors.

were selected and coded based on the 14 type-styles. In the next stage, research-made questionnaires were distributed among architects to determine the final sample size. Using the results from 30 questionnaires, the number of buildings for each period decreased to four buildings, which were selected using purposive sampling⁵, following the analysis and prioritization

of significance (Razavi, Akbari, Jafarzadeh & Zali, 2013, 234). To ensure their content validity, the questionnaires were offered to several architectural experts in a pilot run for final control and correction. Furthermore, SPSS was used to analyze the data generated in this stage and the reliability of the questionnaire questions was calculated using

Cronbach's alpha⁶, which was determined to be 0.89. Due to the fluctuations, Cronbach's alpha was $0 / 8 < \alpha < 0/9$, indicating high internal consistency. In the third stage, the documents of selected buildings were provided to the architectural elites for further observation and phenomenological-based descriptions, the results of which were inputted and hence analyzed by MAXQDA software.

Table 2 presents the general stages as well as the methods used therein. The architectural experts and elites were responsible for the selection and ranking of buildings and also the use of the phenomenological method in this research, as they would require participants who are experienced at analyzing the corresponding phenomenon and can employ their knowledge to minimize the possible errors and mistakes, as they may occur in any area related to the validity of the research. As such, in-depth and long interviews, intended to derive phenomenological descriptions, were conducted with each of the panel members. After attaining 4 buildings from the first Pahlavi period through the information offered by the experts, 165 pages of extensive documents, including plans, and detailed images of the interiors and exteriors, were collected from various sources for the tectonic reading of the selected buildings, which were then offered to the aforementioned panel of elites for organized, description-based phenomenology for quantitative and qualitative designs. Furthermore, even though the building were carefully evaluated at the sample selection stage, most of the buildings were previously visited by the panel, some members of which were even in close contact with the building, hence confirming the reliability of the observation tool. Regarding how the experts were selected, it is noteworthy that experts are professionals who, according to the definitions based on the Delphi method, have at least four characteristics of knowledge, experience in the subject, willingness, and sufficient time to participate in the survey. Consequently, according to these criteria, architecture graduates with at least a master's degree who have the necessary experience and knowledge, as

well as sufficient desire and time to participate in the survey were included in the research. At first, various categories and dimensions of architectural tectonics were explained to the elites, then the selected documents were observed and described by them, but since the observations were mostly based on the analysis of documents, images, and the resulting phenomenology, architects with different specializations related to the extracted dimensions of architectural tectonics were used as observers to improve the quality of analysis. It should be noted that the reliability of the observer is a necessary condition, but it is not sufficient for obtaining reliable observational data. Given the triangulation and inference, and the elimination of minor errors (often in the climatic dimension), the conflict of description codes was minimized (observer agreement reliability). Moreover, open, axial, and selective coding methods were employed to input the data obtained from the description to MAXQDA, based on which the diagrams of each building were extracted separately. In this research, four main tectonic indicators, namely structure (McDonald 2004, 15), articulation, relationship with the environment, and space poetry (Rezakhani, 2014, 103) were examined. In general, both theoretical and practical studies were employed and considered in the present research. Regarding the theoretical phase, the examinations were performed mostly using descriptive-analytical methods and, in necessary cases, the corresponding components and criteria regarding the first Pahlavi period of contemporary Iranian architecture were extracted from retrospective studies. Library and internet resources (in forms of print, digital and online sources) were used for collecting and extracting information. Tables 3 and 4 as well as Fig. 2 show the details of the research method.

Discussion and findings

Following the introduction of the theoretical foundations of research, the findings and results obtained during theoretical and field studies are discussed here. As such, by analyzing and

summarizing the studies of contemporary Iranian architectural researchers, 4 type-styles (meaning the type of style, ie typology based on the styles of this period) related to the contemporary Pahlavi architecture were extracted, the most important buildings of each of which were then determined based on their prominence within the contemporary Iranian architectural literature. Regarding the architecture of the first Pahlavi period, 20 buildings were initially selected from contemporary public buildings, from which the final buildings for tectonic reading were selected through a questionnaire that was distributed among architectural experts. To ensure the validity of the research method, the questionnaire was given to several experts to be tested and, if required, corrected. Finally, according to Table 3, the researcher-made questionnaire was administered among 30 architectural experts, based on the results of which 4 of the more prominent architectural buildings were selected for further examination and analysis. The aforementioned buildings are then studied from the perspective

of architectural tectonic interpretation, the results of which are presented along with related descriptions in Figs. 3-6. To interpret the tectonic phenomenology of the buildings, the panel of literature examined the tectonic axes derived from the subject literature according to Fig. 1 in each building. As such, some of the buildings were in a desirable state in all the dimensions, while some performed poorly in some dimensions. Consequently, the results obtained from in-depth interviews, phenomenological descriptions, and other documents were inputted and coded (selective, open, axial) in MAXQDA software, and the outputs are presented in Figs. 3-6. The ranking of the 4 selected buildings among all the buildings examined by architectural experts is determined by considering the maximum average value in each period (Table 5). As it is clear, the axes and criteria studied in the tectonic reading of each building were different from the other buildings given the differences in rankings. Finally, according to the results obtained in this section, the necessary and

Table 3. Research methodology. Source: Authors.

Generalities of research methods	Titles
Research approach	Qualitative-quantitative (mixed methods)
Research objective	Generation of hypotheses
Research paradigm	Naturalist
Research method	Mixed method
Research type	Applied-development

Table 4. Research Stages. Source: Authors.

Research steps	Research methodology	Collecting information method	Analytical method	Description
Investigating the concept of tectonic from theorists	Interpretive-historical and descriptive-analytical	Library	Summary, categorization, and conclusion based on logical reasoning	Mixed method
Determining the dimensions and criteria of tectonics in architecture	Descriptive and analytical	Library	Summary, categorization, and conclusion based on logical reasoning	Feedback from experts
The architecture of contemporary Iranian public buildings	Descriptive and analytical	Library	Summary, categorization, and conclusion based on logical reasoning	-
Sample size design	Mixed (typology and survey)	Document analysis-questionnaire	Induction method - Likert scale (based on purposeful floor plan)	Expert opinion2
Analysis, evaluation, and reading of case studies	Documentary-phenomenological analysis	Field study-descriptive observation of elites - documentary interpretation	Open, central, and selective coding, analysis with MAXQDA software	Triangulation data gathering technique

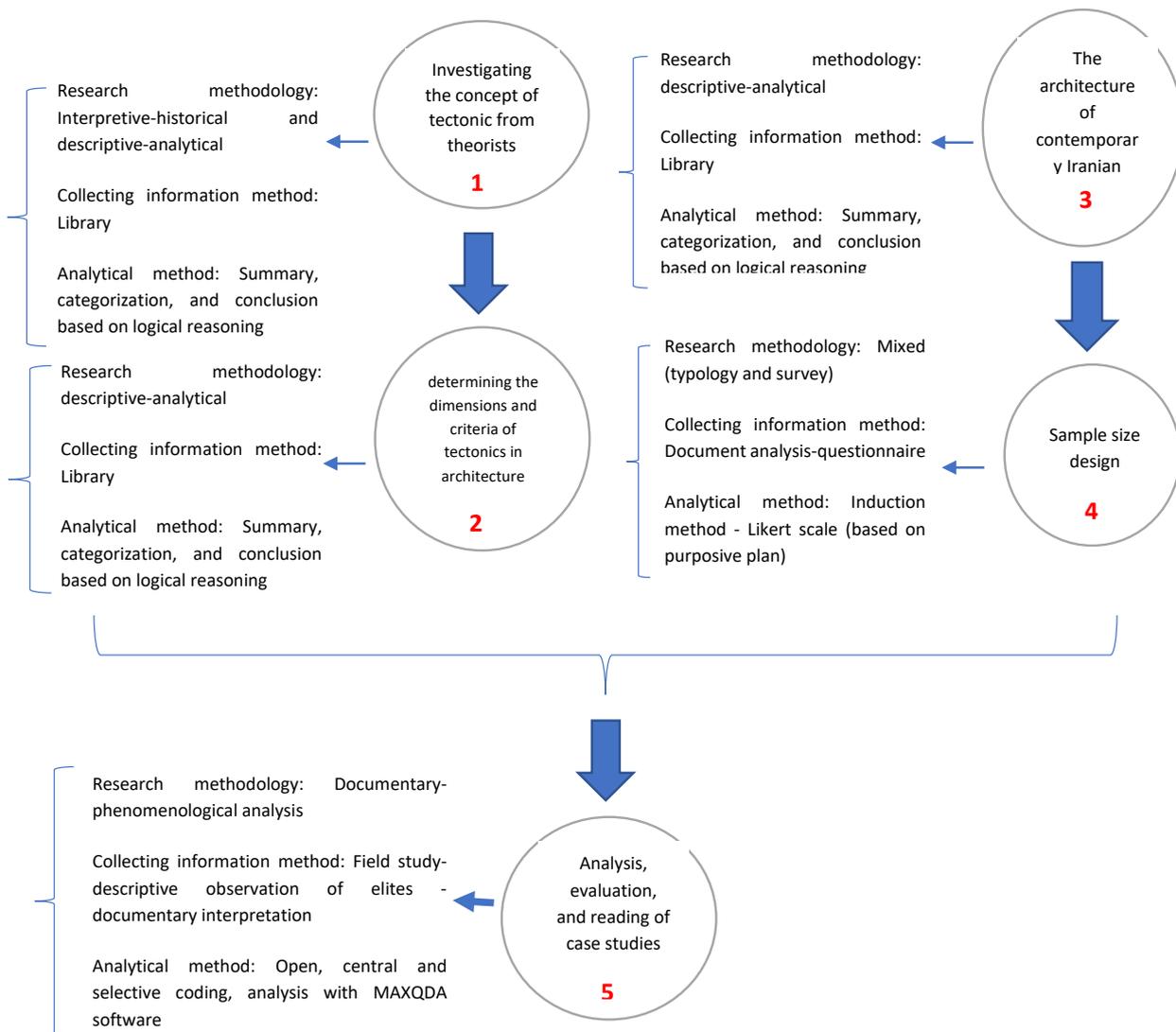


Fig. 2. Research stages. Source: Authors.

basic criteria in the tectonic reading of the building are given.

Traditionalist architecture and Tehran-style architecture: Alborz High School

Alborz High School (under the supervision of the Ministry of Education) was built for educational uses in an 8700 square meter land on three floors (one basement and two floors on the ground) with brick bearing wall structures was built in 1924. It is located in Alborz Street, Enghelab Avenue. The premises are collectively built in a mixed design of rectangular cubes in a linear structure with a maximum height of two floors. Moreover, it employs various features like the use of bricks as the main

and decorative materials, geometric divisions of the openings, and exhibiting differences between the height of the entrance and the dome located in the center. Fig. 3 illustrates the tectonic reading analysis of this building.

• National Architecture (Archaism in Architecture): Museum of Ancient Iran

The Museum of Ancient Iran was built for cultural purposes in 1934 for the National Monuments Association of Iran (Ministry of Education) in 8400 square meters of land with three floors (one basement and two floors on the ground). It is located at 30 Tir Street, Imam Khomeini Square, Tehran. The building is designed on three floors, the entrance of the museum is inspired by a large Sassanid arch,

Table 5. Descriptive statistics regarding the 4 selected buildings obtained from a questionnaire and statistical analysis. Source: Authors.

Selected building	Mean	Mean deviation	Median	SD	Variance
Alborz high school	7.27	0.5412	8	2.91	8.49
National Museum of Iran	8.44	0.3495	9	1.88	3.54
Department of Fine Arts	8.06	1.77	8	1.77	3.13
Tabriz Municipality Building	7.10	2.127	7	2.127	4.52

as the red brickwork of the walls, thick rafters, the central courtyard, its distinct spatial hierarchy, the multifaceted view of the building, geometric shapes and proportions, all were meant to reflect an archaist, magnificent building. Fig. 4 illustrates the tectonic reading analysis of this building

• Modern Architecture, International Style: School of Fine Arts

The School of Fine Arts for the Ministry of Science, Research and Technology, later the Ministry of Culture and Arts, was built with educational purposes in a 19850 square meters land in three to seven floors - variable with a system of concrete structures 1941 and went in operation 1949 under the supervision of the Ministry of Science, Research and Technology (University of Tehran). This building is located at the very site of the University of Tehran. Its campus is made up of eight building blocks that exhibit a combination of rectangular cubes, connected by a covered corridor along the longitudinal axis of the university. Owing to the slope of the ground, there is a difference in levels between the buildings, the length, and inaccessibility of which is alleviated by devising a plethora of stairs in the connecting corridors. Fig. 5 illustrates the tectonic reading analysis diagram of this building.

• Neoclassical Architecture: Tabriz Municipality

Tabriz Municipality building was built for administrative purposes in a land of 7000 square meters in three floors (one basement and two floors on the ground) and a five-story tower with reinforced concrete structures system in 1935 and was put into operation in 1939. It is located in the southwest of Shahr-dari Square, in the central part of Tabriz. The land has consisted of several polygons that are nevertheless in harmony with the surrounding

passages and have no natural features. The premises are a combination of rectangular cubes, and a tall tower is located at the intersection of its two wings. It was primarily intended to create a space for the establishment of one of the new institutions and to represent an urban symbol. Fig. 6 illustrates the tectonic reading analysis of this building.

Analysis of tectonic reading of architecture in four public buildings of the first Pahlavi period

The analysis of the sample buildings of this research indicates that the Alborz High School building takes advantage of a traditionalist architecture, which can easily be traced back to the Qajar period and has not yet completely severed its connection with past Iranian architecture. As such, it has a relatively complete overlap with tectonic dimensions in the axis of structure and articulation.

Since this type of structured formation and architecture are intertwined in the process, the structure can be considered as the organizer of space and hence the generator of form. Articulation is often perceived to reflect eloquence and honest expression, and in the corresponding style-type of the building, articulation has been properly observed both at a macro level, at the micro aspect, and also in terms of semantic association. In the so-called national style architecture, exhibited in the Museum of Ancient Iran, new structures (concrete skeletons) are introduced to the realm of national construction, and since it is still at the very beginning of this path, there is seemingly no complete harmony with the expression of architecture, but the craftsmanship of local and foreign architects has led to the formation of desirable articulations, especially in its micro dimension, which is further highlighted by the

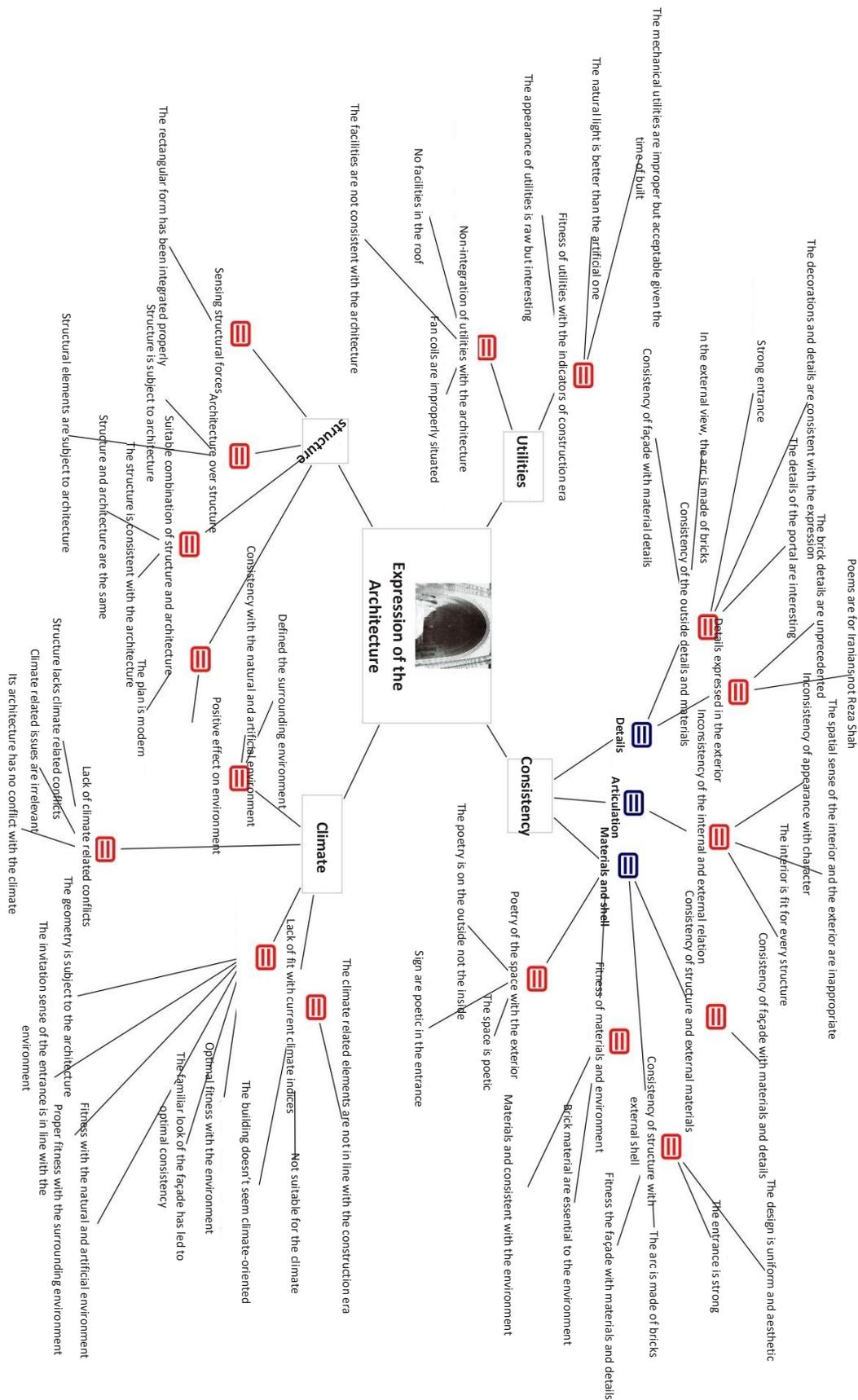


Fig. 4. Conceptual diagram of data analysis of descriptive observations of the panel of elites regarding the architecture of Museum of Ancient Iran, obtained from MaxQDA. Source: Authors.

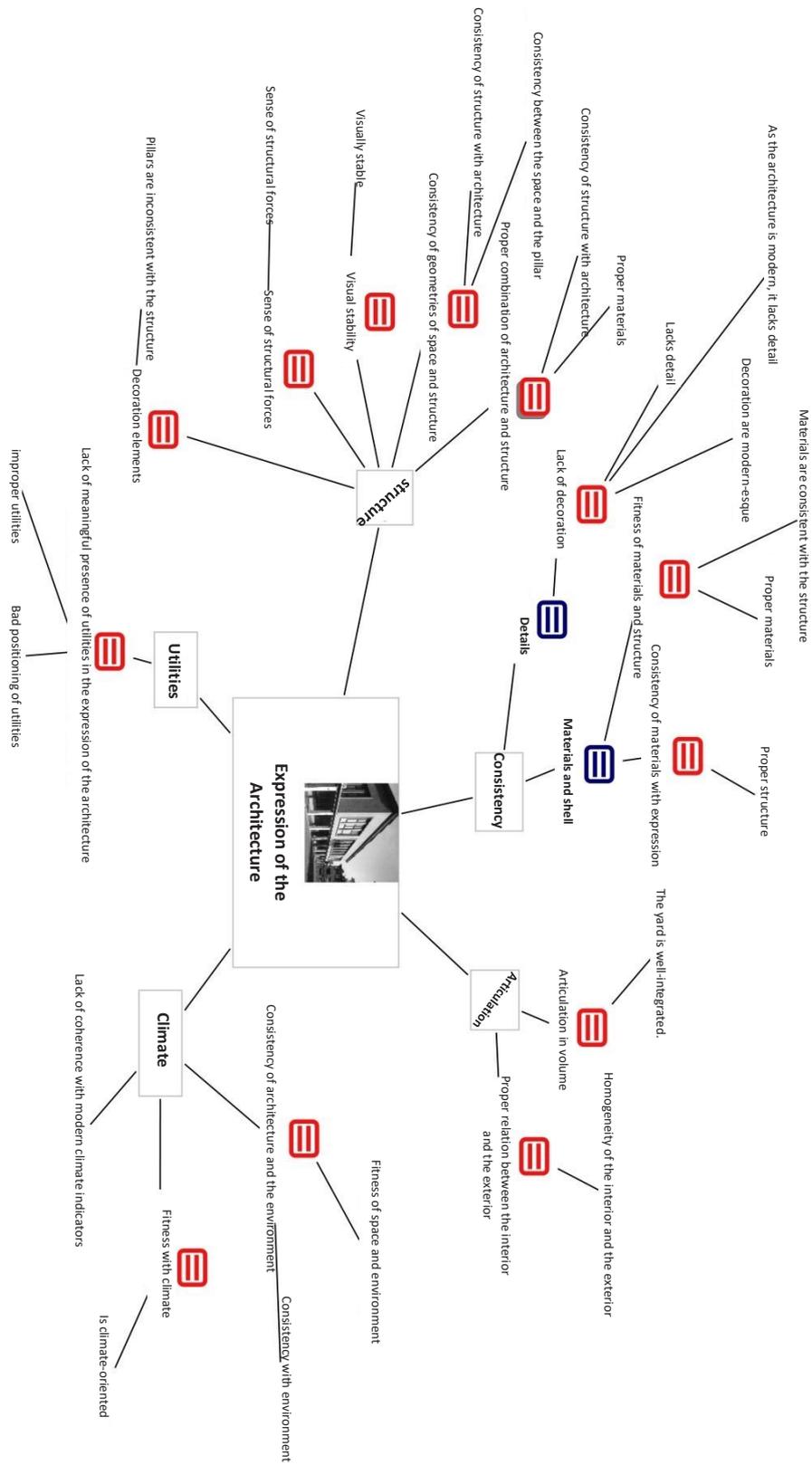


Fig. 5. Conceptual diagram of data analysis of descriptive observations of the panel of elites regarding the School of Fine Arts, obtained from MaxQDA. Source: Authors.

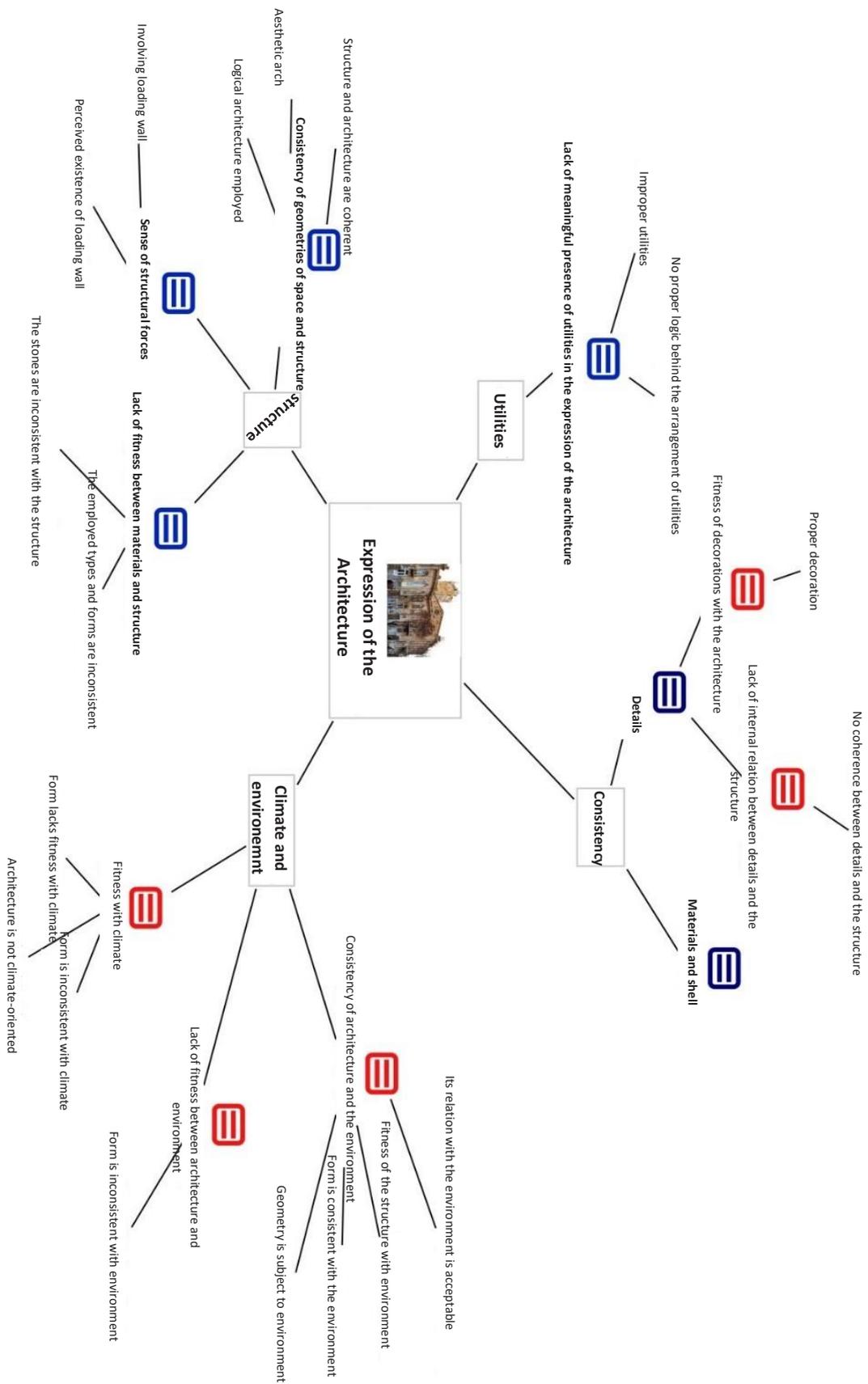


Fig. 6. Conceptual diagram of data analysis of descriptive observations of the panel of elites regarding the Tabriz Municipality, obtained from MaxQDA. Source: Authors.

special brickwork of the Museum of Ancient Iran, as the virtuoso use of brick materials has resulted in a favorable relationship with the surrounding artificial environment. One of the most prominent distinctions of modern and international style architecture, as reflected in the building of the School of Fine Arts is the separation of the structure from the shell, as the previous methods that were created based on the load-bearing wall can be called frame tectonics according to the tectonic, stereotonical and shell-separated structures, although in the neoclassicist style in Tabriz Municipality building, the structure has not yet been completely separated from the architectural shell. Also, the results from this study indicate that architectural materials, in addition to having a favorable combination with each other, themselves exhibit a consistent pattern with the overall expression of architecture, and are in full compliance with micro-articulation components in terms of tectonic reading. Moreover, it seems that the designers were not indulged in climate-related concerns in this building, which, can be considered acceptable in this regard, given the time of construction of this building. It seems that the building of Alborz High School is in line with the traditionalist style of architecture in the first Pahlavi period in terms of tectonic dimensions. Furthermore,

the Tabriz Municipality building, with its distinct neoclassical design, exhibits far fewer tectonic features than its roots in classical architecture. Nevertheless, in all these four buildings, the tectonic dimension of the structure is highly prominent in terms of creating a spatial organization, its role in determining the form, and inducing visual stability. Also, regarding the building of the School of Fine Arts, modern designs were employed to shape the more international side of the architecture of the first Pahlavi period and for the Alborz High School building, a plethora of traditionalist decorations was devised for the building, hence exalting the traditional style of the first Pahlavi architecture. Fig. 7 illustrates the results of the analysis of main tectonic features (articulation, structure, space poetry) derived from various stages and methods. The final results of this reading are also given in Table 6.

Conclusion

The purpose of this study was to examine the architectural readability of the buildings of the first Pahlavi period, namely, Alborz High School, Museum of Ancient Iran, Faculty of Fine Arts, Tabriz Municipality Building, from a tectonic perspective. The research employed analytical-descriptive methods, field studies, questionnaires and MaxQDA, and

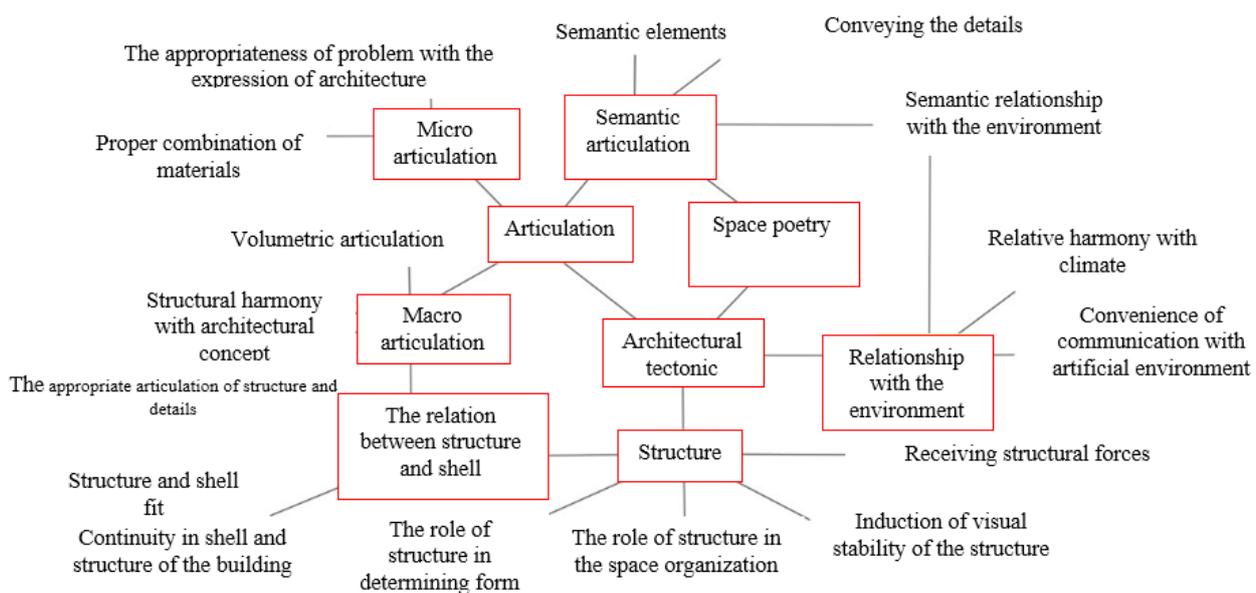


Fig. 7. The modified conceptual framework, dimensions, and tectonic criteria in architecture, based on the reading outcomes on target buildings acquired by the architectural elites; according to the criteria which are more applicable to today’s Iranian architecture. Source: Authors.

Table 6. Results of the tectonic reading of the sample buildings. Source: Authors.

Structure The selected building Type of structure The structure plays a role in the organization of space The structure plays a role in determining the form The structure induces visual stability The structural forces are obvious The structural and shell materials are suitable The continuity in structure and shell is obvious	Architectural style	Traditionalist architecture and Tehran-style architecture	National architecture	International style	Neo-classism
	Alborz high school	Museum of Ancient Iran	School of Fine Arts	Tabriz Municipality Building	
	Bearing wall	Concrete bearing wall	Concrete skeleton	Bearing concrete beams	
	✓	X	✓	✓	
	✓	X	✓	-	
	✓	✓	✓	✓	
	✓	✓	✓	✓	
	✓	✓	✓	×	
	✓		X	✓	
Macro articulation	The structural articulation and details are desirable	-	✓	✓	-
	The structure is in harmony with the concept of architecture	✓	✓	✓	-
Micro articulation	The materials are fit into the expression of architecture	✓	✓	✓	✓
Articulation	The composition of materials is appropriate	✓	✓	✓	✓
	It has semantic elements of architecture	✓	✓	✓	-
Semantic articulation	The structure contains details	✓	-	-	-
	There is a meaningful relationship with the environment	X	-	-	-
Relationship with the environment It has a relative harmony with the climate	Communication with the artificial environment is desirable	✓	✓	✓	✓
	✓	-	-	-	
Space poetry	It is characterized by the poetic nature of space	-	✓	✓	-

statistical analysis. Therefore, by examining the results of tectonic reading of four buildings in contemporary architecture of the first Pahlavi period of Iran, the following results were extracted:

- Examining the Alborz High School building, it was concluded that, regarding tectonic dimensions this, building was built with methods consistent with the

traditionalist architectural style of the first Pahlavi period.

- The building of Tabriz Municipality, constructed in the style of neoclassicism in the first Pahlavi period, offers much fewer tectonic features than what was commonplace in classical architecture.

- The tectonic dimension of the structure, in terms of

creating a spatial organization, its role in determining the form, and inducing visual stability, was evident in all four public buildings of the research.

- Tectonic aesthetic dimensions of space for the Museum of Ancient Iran were represented by the direct use of Iranian architectural motifs. Regarding the building of the School of Fine Arts, modern designs were employed to shape the more international side of the architecture of the first Pahlavi period and for the Alborz High School building, a plethora of traditionalist decorations was devised for the building, hence exalting the traditional style of the first Pahlavi architecture.

- It seems that the dimension of the utilities has been highly neglected in the architecture of all four buildings and the corresponding architectural style .

In terms of tectonic reading, it seems that among the four buildings studied in the first Pahlavi period, the Alborz High School building exhibited the most features corresponding to the traditional architectural style, while Tabriz Municipality building, with its distinct neoclassical architectural style, had minimal use of tectonic dimensions and components. Furthermore, it seems that the dimensions of architectural tectonic structures with their various components are more prominent in the architectural tectonic reading of these four contemporary Iranian public buildings than other components. Therefore, it should be stated that, in terms of architecture and urban planning, the principles and features of tectonics apply to the architectural buildings of the first Pahlavi period, and hence can be employed as a living and practical example in today's architecture, even though it might need adaptations and adjustment for the formation of current urban textures and tectonic architecture. Future researches are required to develop the relevant literature, framework, and principles in the context of the city, urban law, urban economy, urban landscape, and more tangible realities of construction and quality, as well as more complete frameworks for modernized technologies related to tectonics.

Endnotes

1. Tectonic is a term that has recently been used by some translators and architectural experts in our country as the equivalent of the word construction.
2. In terms of education, 17 had a master's degree, 6 were doctoral students, and 7 had a doctorate in architecture. In terms of age, 4 were between 25 and 30 years

old, 12 were 30 to 35 years old, 4 were 35 to 40 years old, 7 were 40 to 45 years old and 3 were over 45 years old.

3-Structural Architecture (Mehrdad Shahbazi), Urban Architecture (Bijan Kalthomia), Climate Architecture (Abbas Mehravan), Islamic Architecture (Saeed Moradi, Majid Rostami), Landscape Architecture (Morteza Mirgholami), Sociological Architecture (Babak Afshar)

4.1-The first Pahlavi, 2- The second Pahlavi 3, The period after the Islamic Revolution.

5. https://drive.google.com/file/d/1ppivH6kSeneKIwarsVbkM7_8RWRLsKZ/view

$$6. \alpha = \frac{K}{K-1} \left(1 - \frac{\sum_{i=1}^K a_i^2}{\sigma^2} \right)$$

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