

Explaining the Pragnanz of the Application of the Principles of Visual Perception of the Gestalt Theory in the Re-Reading Historical Houses of Yazd in the Qajar Period

Avid Talaei¹ , Mahsa Aghaei² , Zainab Damyar³ 

1. Corresponding author, Assistant Professor, Department of Architecture, Faculty of Art and Architecture, West Tehran Branch, Islamic Azad University, Tehran, Iran. E-mail: avid.talaei@gmail.com
2. Ph.D. Student of Architecture, Faculty of Art and Architecture, West Tehran Branch, Islamic Azad University, Tehran, Iran. E-mail: mahsa.aghaei@iau.ir
3. Ph.D. Researcher in Architecture, Faculty of Art and Architecture, West Tehran Branch, Islamic Azad University, Tehran, Iran. E-mail: zainabdamyar@gmail.com

Article Info

Article type:

Research Article

Article history:

Received August 19, 2024

Received in revised form September 29, 2024

Accepted December 8, 2024

Published online December 29, 2024

Keywords:

Gestalt theory,
Pragnanz,
Visual perception,
Yazd houses

ABSTRACT

Gestalt theory is one of the most influential theories in art and architecture, which focuses the process of visual perception on a unified view and integrity of the art work. Due to the alignment of the goal of visual communication and lasting effectiveness on the mind, the application of these principles is essential in architectural design. On the other hand, the traditional houses of Yazd during the Qajar period are considered to be among the most lasting architectural works of Iran, which apparently have no purpose other than lasting effectiveness in mind. In this regard, with the aim of studying the characteristics and visual perception, how to apply the laws of Gestalt visual perception in the historical houses of Yazd, to discover the quality of the impact of the laws of Gestalt visual perception on the houses and their capabilities in creating useful communication, as well as to investigate the significance of each principle of Gestalt. In order to analyze case samples, the descriptive-analytical method of Gestalt laws was used. The research method is a theory test based on 10 examples of traditional houses in Yazd during the Qajar period, which are among the most important houses, including the Golshan house, the Lari houses (Gholamohsin), the Lari houses (Ahmed), Mortaz, Rasoulzian, Heiran, Farhangi and Mozafari, Ulumi houses, and Sigari Akhavan. Based on the prevalence of Gestalt principles, this research examines the role of visual perception features in the historical houses of Yazd with principles of similarity, proximity, symmetry, form and context, continuity, dependence, surface, overlapping, restoration, closure and experience, as re-reading the historical houses architecture of Yazd in the Qajar period according to the Gestalt theory of visual perception.

Cite this article: Talaei, A., Aghaei, M., & Damyar, Z. (2024). Explaining the Pragnanz of the Application of the Principles of Visual Perception of the Gestalt Theory in the Re-reading Historical Houses of Yazd in the Qajar Period. *International Journal of Applied Arts Studies*, 9(4), 107-140.



© The Author(s).

Publisher: Islamic Azad University, Yazd Branch.

Introduction

Understanding architectural forms requires understanding the whole form before addressing the details. Visual perception is the result of an inferential process of the brain, which is trying to understand the sensory input provided by the retina. Among the five human senses, the eye is the most effective sense in identifying the surrounding environment. Humans tend to gain most of their knowledge by seeing. All understanding and reception of the environment is done through seeing (Tahmasabi Fard et al, 1402). Most of human's sensory inputs are visual, and for this reason, most of the time when we talk about perception, we mean visual perception. Perception begins with the first impression, then the whole building catches one's attention. Finally, it reaches a level of cognitive processing of perception. Perception is divided into two stages. The first is information gathering. It is shown by visual perception and the second is the processing of this information. Which is called cognition, it is shown by both visual and mental. Visual perception starts with the general appearance of the building, then it reaches the mass of the building (Sabry Hegzi, Anwar Abdel-Fatah, 2018). In Iran, little research has been done on the application of Gestalt theory in architecture, and direct research related to the existence or non-existence of this theory in the architecture of traditional houses is insignificant, and so far Gestalt theory has not been carried out on the body of traditional houses in Yazd in a hot and dry climate. This has led to the identification of the historical houses of Yazd in the Qajar period based on the Gestalt theory of visual perception. In the current research, the question is raised, which of the principles of Gestalt visual perception was used in the historical houses of Yazd during the Qajar period, and what is the amount of pregnancy of each of these houses? How are the components of Gestalt visual perception related to the architecture of historical houses in Yazd during the Qajar period?

Table 1. History of the research (Source: Authors)

Scope of investigation	Row	Title	Researchers and year of publication	Research method	Considerations done	Results
Theory Gestalt visual perception	1	Analyzing the principles of visual perception in decorative Kufi with emphasis on the principle of form and context, continuity and common destiny; A case example of the Grivar inscription of the Tomb of the Twelve Imams	Safiye Hatami*, Shahriar Shekarpur 2023	Descriptive-analytical method and information gathering method, library and field studies	Examining the principle of shape and context, the principle of continuity is used in the general view and the components of the inscription very much, the principle of continuity is used in the general view very much and in the middle parts, and the principle of common destiny is used in the general view very much and has no precedent in the composition.	The result of applying each of the gestalt principles leads to the realization of strong presence, which causes more impact and better communication between the audience and the work.
	2	The effect of environmental capabilities on the desirability of visibility in Iranian market halls based on "Gestalt theory" and "Isovist analysis" (case study: Isfahan market halls)	Somaye Pahlavan, Hossein Sultanzadeh *, Farah Habib 2022	The combined, quantitative and qualitative method is descriptive-analytical. The method of collecting information for this research in the form of field and documents	By showing the desirability of visibility and field of view, it analyzes the level of visual attractiveness in the bazaar of Isfahan and evaluates the perceptual environment using Gestalt psychology theory and environmental capabilities in	In Isovist's view, there is a direct relationship between area and understanding of gestalt indicators. At the entrance, the field of view is not directly related to Gestalt principles in all cases.

				(library)	measuring observer's sight lines.	
	3	Explaining the process of visual perception in painting with an approach to the theory of Gestalt psychology (case study: three paintings from the Herat school of Shahnameh Baisangari)	Farnoosh Shamili *, Jaafar Mohammadzadeh, Fatemeh Ghafouri Far 2021	Descriptive-analytical	It explains how to perceive and recognize visual patterns in the elements of paintings by using the laws of Gestalt.	Visual perception, the meaning of the visual pattern and the way the human organism works in seeing and visual organization, leads to receiving accurate recognition features in the formal structure of images.
	4	Evaluation of the visual perception of specialists and non-specialists of local urban spaces in Dezful city based on Gestalt theory	Mohammad Dehban, Behnaz Safarali Najjar, Koresh Momeni, Koresh Attarian* 2020	Descriptive-survey method with field and library studies	This research has determined the difference between the criteria of understanding of those who create the environment and the people who encounter the environment and live in it.	The visually perceptible rules of Gestalt, such as symmetry and the law of completeness, are of great importance to experts, while these principles are less important to the user group.
	5	Reading the painting of the Ascension of the Prophet (PBUH) by Sultan Muhammad from the perspective of Gestalt principles of	Salime Babakhan,* Behnam Kamrani 2020	Descriptive-analytical method and method of collecting library information	The adaptation of Gestalt principles to the picture can be evaluated with strong significance, that by applying each of these principles, the process of visual	The artist's unconscious use of gestalt principles has led to better organization of image components and easier reception of the work,

		visual perception			perception is formed.	which has caused the audience to actively communicate with the painting in different periods.
	6	Comparative analysis of spatial patterns and cognitive characteristics of the Iranian market using the theories of "space arrangement" and "gestalt" case study: Qazvin market complex	Ali Akbar Heydari*, Maryam Kiaei 2019	Descriptive-analytical and comparative method	By evaluating the quality of perception of the environment using Gestalt psychology theory and analyzing the spatial configuration system of the market using the method of space arrangement, it has analyzed the cognitive and perceptual aspects related to the market space.	Multiple objective and subjective factors together and sometimes with prioritizations to each other are effective in determining the correct navigation of the space.
	7	Reading interactive layout of typography "in order to control" from the perspective of gestalt principles of visual perception.	Zahra Rahbarnia, Neda Shafiqi* 2018	descriptive-analytical method and inductive method	The discovery of the quality of the influence of the rules of visual perception of Gestalt on the composition-graph has been done in order to identify its capabilities in creating beneficial communication.	A person's eye and mind will have an easier understanding, better organization and more logical communication to understand a complex subject with the help of Gestalt principles.

	8	Analysis of the spatial structure of the Qiblah bath (Khanam) based on Gestalt laws	Alireza Mashbaki Esfahani 2018	Descriptive-analytical method with a qualitative approach	This research has investigated the presence of Gestalt rules in the Qiblah bath.	Gestalt laws have had a significant impact on the physical and spatial structure of the Qiblah bath and integrated visual perception has been created
	9	Analyzing the plan structure of the noble Pahlavi house of artists (Mohteshmi) in Isfahan based on Gestalt rules	Ladan Shahzamani Sichani, Maryam Ghasemi Sichani* 2017	Mixed, quantitative and qualitative research method modeling	The principles of Gestalt psychology have been used in the placement of spaces, their surrounding shape and dimensions, the proportion of spaces being full and empty, and the type of combination in the house plan.	Gestalt rules have led to a regular spatial structure and direction of spatial relations in the plan of the noble house of artists.
	10	Application of Gestalt rules of visual perception in the graphic design of advertising billboards, a case example: commercial billboards in Tehran in 2014	Sahar Ittihadmohkam, Afsane Nazeri,* Yaser Sobhani Fard, Salar Faramarzi 2017	Descriptive-analytical	The study of visual features and qualities, how and how to apply the laws of Gestalt visual perception in the graphic design of advertising billboards in Tehran, and the amount of Gestalt principles used	The principles of graphic design are included in a group of gestalt rules, which can be understood as an interactive and two-way relationship between the two, and in each rule, some

					in billboard images has been studied.	design principles can be used and vice versa.
--	--	--	--	--	---------------------------------------	---

Research Method

This research is among qualitative research. The research method of this study is descriptive-analytical. The method of gathering information for this research is field and document (library). In this research, after examining all the historical houses of Yazd during the Qajar period, which are registered in the list of national monuments, 10 of the most important houses, including the Golshan house, Lariha (Gholamhosein), Lari (Ahmed), Mortaz, Rasoulia, Hiran, Farhani and Mozaffari, Ulumi, Akhwan Sigari and Shokohi were visited and carefully examined in the field, and then the visual impressions associated in the mind with the understanding of Gestalt principles were investigated. First, the general structure of the traditional houses of Yazd during the Qajar period has been analyzed and after explaining the principles of gestalt perception, the compatibility between the principles of gestalt and the structure of traditional houses of Yazd has been examined. Pragnanz has been obtained in the research results. Figure 1, shows the inference mechanism and the research method.

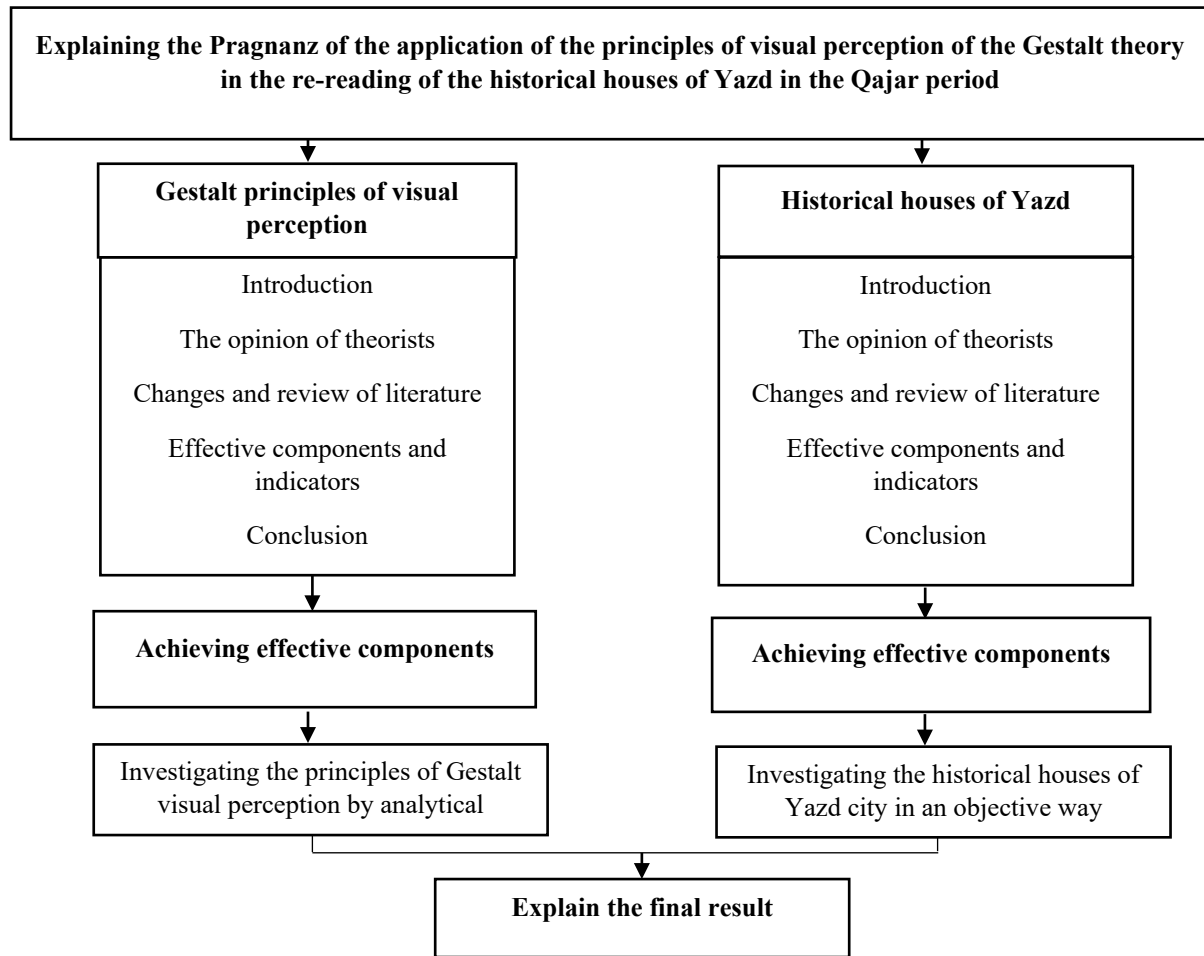


Figure 1. The theoretical framework of the research (Source: Authors)

Historical Houses of Yazd

God has made the house a place of comfort and physical and mental peace for people. In Dehkhoda culture, home is the place where a person lives (Dehkhoda, 2006: 1079). In a certain culture, house and home are different. House means a room and Sarai means a house (Moin, 2005: 1000). In Persian culture, Omid means a house, four walls with a roof, a room where a person lives. Manzel, place, residence are mentioned (Omid, 1984: 985). In the traditional architecture of Yazd, houses are designed and built based on special principles and patterns. The distinctive and distinguished feature in the architecture of historical houses in Yazd is the careful attention to detail. Details that can be found in spaces, corners, doors and windows, sashes; The architectural details of Yazd houses can be repeated. Many theorists have commented on the concept of home, including Christian Norberg Schultz, Imos Rappaport, Claire Cooper Marcus, Bachelard Gaston and many others; But the remarkable thing is that all theorists are determined

that the house is a place more than a physical structure that is perceived. The opinion of theorists about the concept of house is collected in (Figure 2).

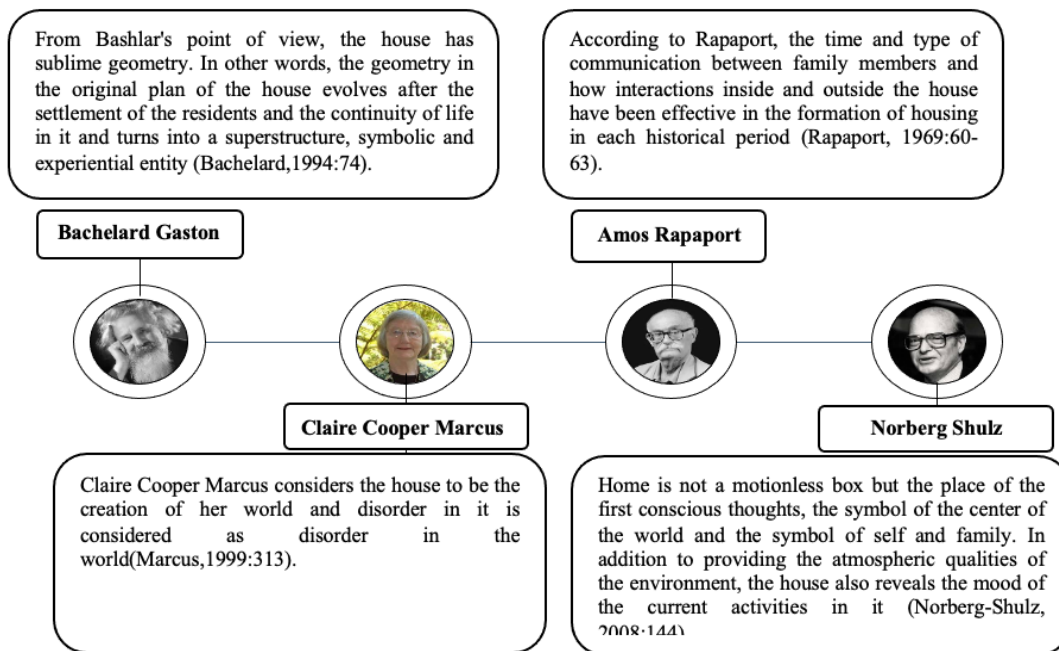


Figure 2. The opinion of theorists in the domain of the house (Source: Authors)

Course of Historical Development of the Houses in Qajar Period

Historical houses form a major part of the historical textures of cities. The Qajar period had an influential role in Iranian architecture. The architecture of the Qajar period can be considered the last period of Iran's model architecture, the period of metamorphosis of Iranian architectural concepts and the formation of new types of architectural elements. During the Qajar period, artists have acted according to Iranian culture in such a way as to make external culture impossible in themselves, this is one of the most valuable approaches of Qajar art (Pope, 1998: 149). In general, the architecture of the Qajar period can be divided into two general periods, the first period is from the beginning of the reign of Agha Muhammad Khan to the end of the reign of Muhammad Shah and the second period is from the beginning of the reign of Naser al-Din Shah to the end of the rule of the Qajar dynasty. And the second period of Qajar has been collected.

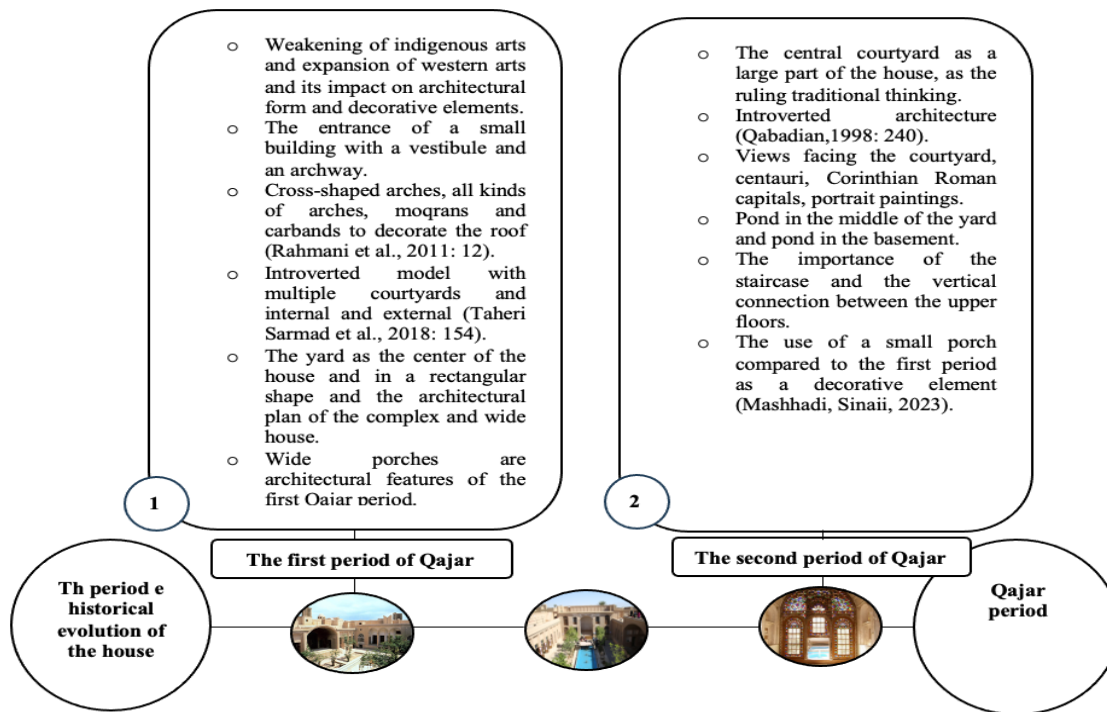


Figure 3. The historical evolution of the house during the Qajar period (Source: Authors)

Visual Perception

Architecture is one of disciplines in which discussing on the human beings is necessary. It has been widely stated that in designing or criticizing an architectural subject, one speaks of the perception (Abdolsamadi et al., 2019). Humans are creatures with perception, with different senses, including hearing, sight, touch, taste, and smell, and visual perception stands out as the most direct mode of perception in humans (Li et al., 2023). The discussion of perception is mainly focused on visual perception because most of the sensory inputs are visual. In architecture, visual perception is more important than other types of perception. Perception is studied to define human understanding of his environment. The quality of the environment is a major aspect of life (Ariannia et al., 2024). Perception is the biological and psychological process of acquiring information from the environment. This process is active and purposeful (Lang, 2012: 97). Humans do not perceive their environment randomly. The emotional inputs of the environment are collected by the human brain and find meanings in a certain order. According to Gestalt psychologists who are interested in this complex cognitive process, it is not the summation of all the parts that gives meaning to the whole, but the way the parts are combined with each other (Uzunoglu, Uzunoglu, 2011). The knowledge of geometry, like many human

sciences, has a long history, which has always been used in architecture to enhance the material and convey the spirit, meaning and special effect (Yaghoubi et al., 2024).

Gestalt Principles

Gestalt refers to the method according to which objects are placed and arranged together (Torrans, 1999). The principle of gestalt is general, material or psychological, with coordinates that its components individually do not have such coordinates. There are limited operations for the information that the mind can keep track of. When the amount and volume of visual information increases, the mind tries to simplify them using grouping. Therefore, Gestalt principles play a very important role in helping the human mind and perception. The principles of Gestalt include the principle of similarity, proximity, form and context, symmetry, dependence, continuity, closure, repair, surface, overlap and experience, all Gestalt principles are gathered in Figure 6.

Pragnanz

All the principles of Gestalt are under the influence of the principle of perfectionism, which forms the central core of Gestalt's perceptual theory (Shapourian, 2006: 94). Pragnanz is our perception of a good and strong gestalt or grouping, so that under the prevailing conditions (the perceptive power of the mind and the principles used in the work), it distinguishes it from existing weaker gestalts or groupings. In this research, it uses the significance of Gestalt principles because through it, it provides the basis and theoretical framework for a good and beautiful form (Sunstrum et al., 2024). Seven important principles out of the eleven general principles of Gestalt, which are the principle of similarity, proximity, continuity, restoration, form and context, dependence, overlap, create a strong presence. Therefore, the science of geometry is a powerful tool that has enabled the architect to measure spatial proportions and create balance, order and beauty (Ghaemi et al., 2023).

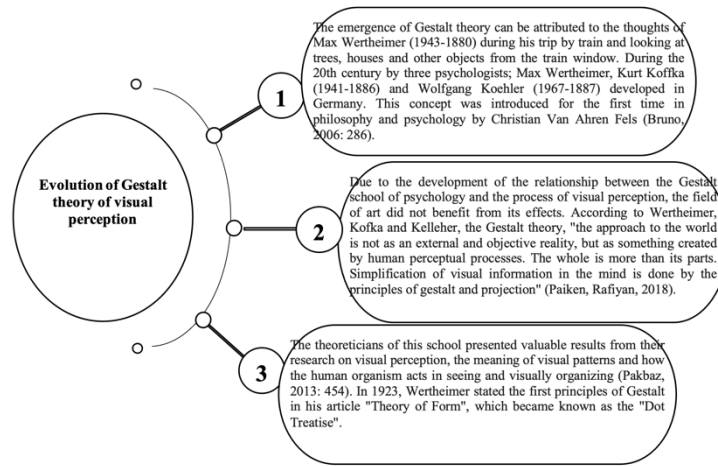


Figure 4. Evolution of Gestalt visual perception theory (Source: Authors)

Many theorists have discussed the Gestalt theory of visual perception. The most important opinion of theorists including William Itelsen, Rudolph Arnheim, Gregory is collected in Figure 5.

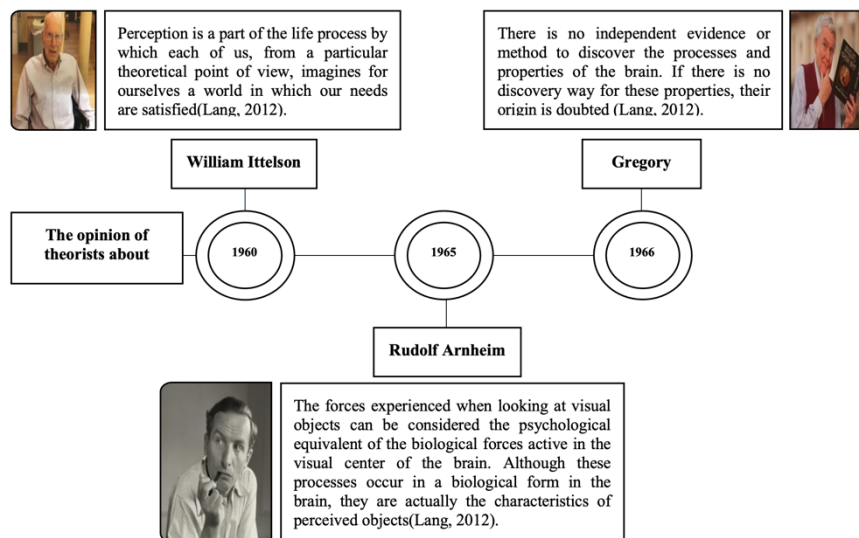


Figure 5 Theorists' opinion about the Gestalt theory of perception (Source: Authors)

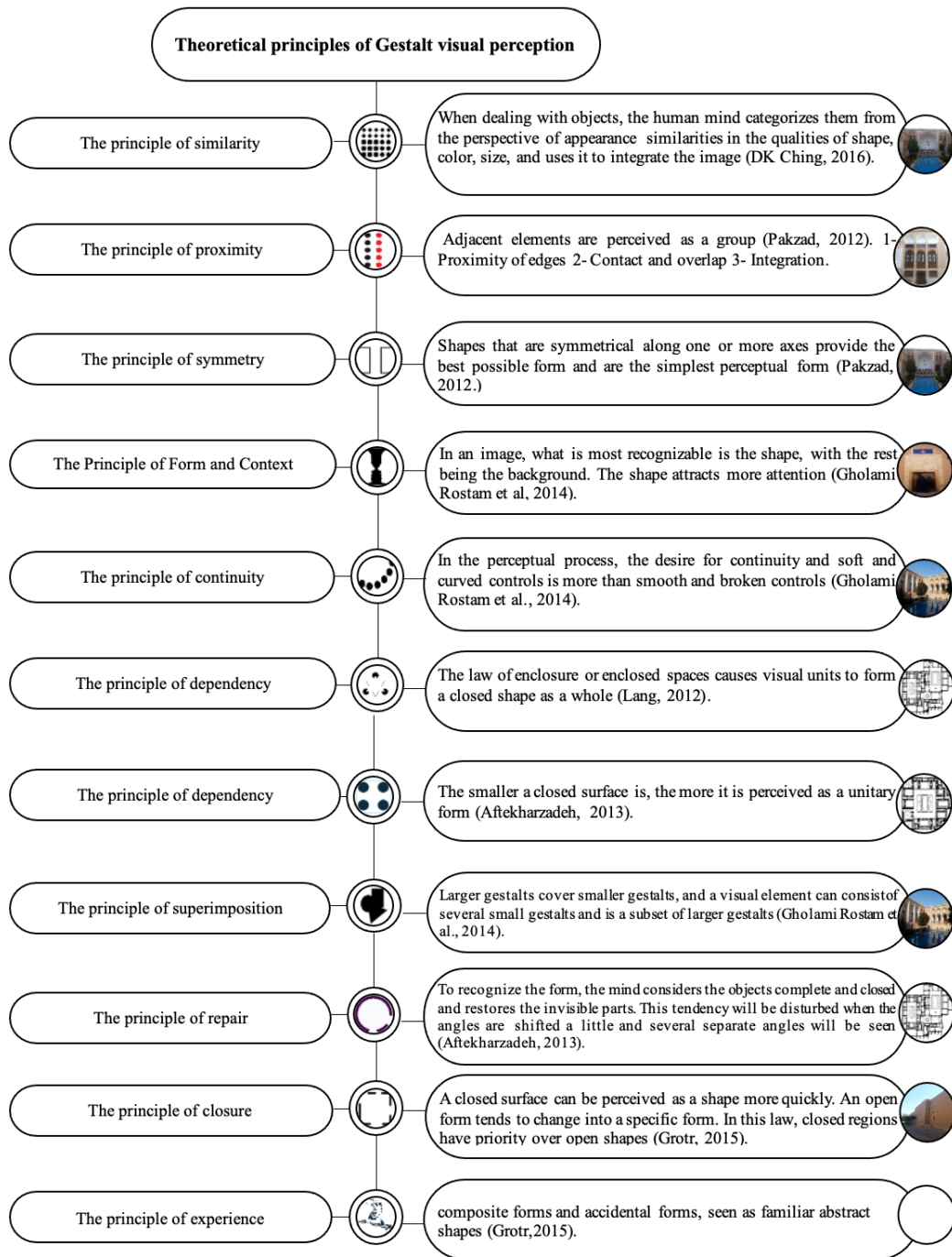


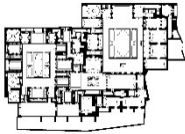
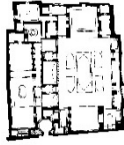

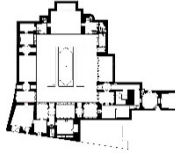
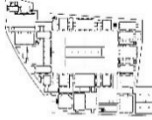
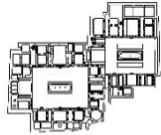
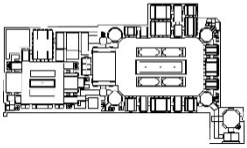
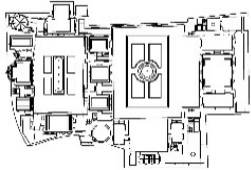
Figure 6. Principles of Gestalt visual perception theory (Source: Authors)



Case Sample Selection

Many houses were built in the Qajar period in Yazd city. After the preliminary investigation about the traditional houses of Yazd, ten important houses in the Qajar period, which are in the

same time frame, are not abandoned, are registered in the list of national monuments, and are still active and dynamic with the change of use, and are among the most important historical houses of the Qajar period. It is known that they are introduced in (Table 2).

Table 2. Selection of the case study sample




House	House plan	Location	House	House plan	Location
1-Golshan		Yazd, Tall neighborhood, 12th Farvardin St., Butchers Gate, next to Golshan reservoir	2-Rasulian		Yazd, Gudal Mosli neighborhood, Imam Khomeini St., Sahl Bin Ali Alley
3-Larriha (Gholam Hossein)		Yazd, Fahadan neighborhood, Gozer Yuzdaran	4-Heirani		Yazd, Fahadan neighborhood, Rokhtshor khane St., in front of Kurosh Hotel
5- Sigari Akhavan		Yazd, Amircha khmaq Square, Imam Khomeini St., Third Alley	6-Farhangi and Mozaffari		Yazd, Push Bagh neighborhood, Farrokhi St., Derband Arabha Alley
7-Mortaz		Yazd, Tabrizian Quarter, Qiam Street, Tehrani Bazaar, Mahmoudi Alley	8-Olumiha		Yazd, Butchers Quarter, Amirchak hmaq Square, Koi Kassabha








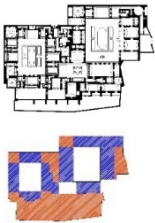



9-Shokuhi		Yazd, Imam Khomeini St., adjacent to Jame Mosque	10-Lariha (Ahmad)		Yazd, Fahadan neighborhood, Gozer Yuzdaran, in front of Lariha's house
------------------	---	--	--------------------------	---	--









Research Findings



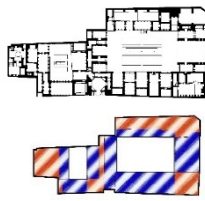

Since the field of study in this research is to know the features of hidden visual perception in the parts of the historical houses of Yazd in the Qajar period. First, the theoretical issues of the Gestalt theory were stated, and then the adoption of case examples of historical houses in Yazd from the principles of Gestalt was examined. The main focus of the research is the analysis and conclusions that explain the resulting pregnancy rate. At this stage, in (Table 3), it has been investigated, analyzed and analyzed the components of the principles of Gestalt perception in ten historical houses of Yazd during the Qajar period.


Table 3. Analysis of the components of Gestalt perception principles in historical houses of Yazd (Source: Authors)










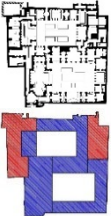
Golshan's house				
Gestalt principles		Case study	Analysis based on Gestalt principles	The objectivity of relationships
The principle of form and context			The wall of the building is simple and uniform, without components and decorations, and has a thatched covering as the background and front facade due to the presence of the arch, the rectangular brickwork frame around the entrance door, the platforms around it in the form of old people and the entrance door and its components as a shape are raised.	Merged
The Principle of symmetry			The principle of symmetry in the whole house can be seen in the form of the facade of the walls, and in the details, the elements and components of the walls and the plan of the spaces have symmetry.	obvious
	Proximity		The components of the walls in the form of doors, windows, arches and frames work as single groups.	obvious




original Proximity	Contact and overlap		The main spaces are connected by means of communication components such as corridors and beds.	obvious
	Consolidation		The placement of the spaces of the house is spatially within another space in the form of a labyrinth.	obvious
The principle of dependence			The central courtyards of the house create closed and semi-open spaces through the surrounding volumes in the form of rooms and other spaces.	obvious
The principle of similarity			Spaces and their components function similarly in multiple dimensions of the house.	Merged
The principle of continuity			The principle of continuity is perceived in the placement and repetition of frames, arches and doors of the walls of the central courtyard.	obvious
The principle of closure			The wall of the building in the form of a wall uniformly and the walls of the central courtyard, consisting of closed spaces, induce the principle of being closed.	obvious
The surface of principle			In this house, the module of the main spaces is determined based on the yard unit, and the closed surfaces are considered as the constituent units of the spaces.	hidden
The principle of restoration			The form of the house is perceived as a closed and integrated whole and components.	obvious
The principle of overlap			The general form of the house in the plan, the walls and their components separately have gestalt.	Merged
The principle of experience			Considering the construction of the building based on geometry and proportions and not using random shapes, the principle of experience is not perceived.	







Lari's House (Gholamhossein)				
Gestalt principles		Case study	Analysis based on Gestalt principles	Objectivity of relationships
The principle of form and context			Due to the presence of the arch, the rectangular frame made of bricks around the entrance door, the platforms around it in the form of old people, the arched space like stairs and the entrance door and its components are similar in shape, and the wall of the building is simple and uniform with a thatched appearance It forms.	Merged
The principle of symmetry			The walls around the central courtyard in the form of numerous elements and components, as well as the plan of the spaces and their components have the principle of symmetry.	obvious
original Proximity	Proximity		Doors, windows, arches and frames form the components of the walls as single groups.	obvious
	Contact and overlap		The overlap of the spaces is realized through the communication components and the connection of the main spaces through corridors and flats.	obvious
	Consolidation		The integration of the spaces of the house is in the form of a space within another space in the form of a labyrinth.	obvious
The principle of dependence			The formation of the closed form of the building is perceived through the volumes around the central courtyards in the form of closed and semi-open spaces in the form of rooms, halls and secondary spaces.	obvious
The principle of similarity			The perception of the propositions of the principle of similarity, consisting of shape, color and size, is perceived in the various components of the walls of the central courtyard and the plan of the house spaces.	Merged
The principle of continuity			The multiplicity and repetition of the elements and components of the walls of the central courtyard in the form of frames, consisting of arches and doors, evokes the	obvious



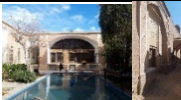





		principle of continuity.	
The principle of closure		The principle of closedness is understood based on the integrity and lack of holes of the surrounding wall of the house and the walls of the central courtyard consisting of closed spaces.	obvious
The surface of principle		Closed levels are explained as the units that make up the spaces based on the unit of gez and in the form of modules of the main spaces.	hidden
The principle of restoration		The form of the house is perceived as a closed and integrated whole and components.	obvious
The principle of overlap		Understanding the principle of gestalt is perceived in the plan, walls and components of the house as a whole and its components.	Merged
The principle of experience	○	The absence of the principle of experience regarding the construction of the house based on geometry, proportions and the lack of use of random spaces and shapes in it takes place.	○


Lari's house (Ahmad)			
Gestalt principles	Analysis based on Gestalt principles	Analysis based on Gestalt principles	Objectivity of relationships
The principle of form and context		The wall of the building is simple and uniform, without components and decorations, and has a thatched covering as the background and front facade due to the presence of the arch, the rectangular brickwork frame around the entrance door, the platforms around it in the form of old people and the entrance door and its components as a shape are raised	Merged





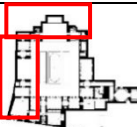



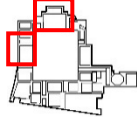
The principle of symmetry			The principle of symmetry in the whole house can be seen in the form of the facade of the walls, and in the details, the elements and components of the walls and the plan of the spaces have symmetry.	obvious
original	Proximity		The components of the walls in the form of doors, windows, arches and frames work as single groups.	obvious
	Contact and overlap		The main spaces are connected by means of communication components such as corridors and beds.	obvious
	Consolidation		The placement of the spaces of the house is spatially within another space in the form of a labyrinth.	obvious
The principle of dependence			The central courtyards of the house create closed and semi-open spaces through the surrounding volumes in the form of rooms and other spaces.	obvious
The principle of similarity			Spaces and their components function similarly in multiple dimensions of the house.	Merged
The principle of continuity			Spaces and their components function similarly in multiple dimensions of the house.	obvious
The principle of closure			The wall of the building in the form of a wall uniformly and the walls of the central courtyard, consisting of closed spaces, induce the principle of being closed.	obvious
The surface of principle			In this house, the module of the main spaces is determined based on the yard unit, and the closed surfaces are considered as the constituent units of the spaces.	hidden
The principle of restoration			The form of the house is perceived as a closed and integrated whole and components.	obvious

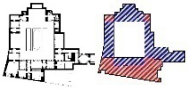
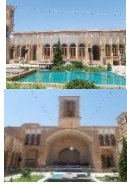


The principle of overlap		The general form of the house in the plan, the walls and their components separately have gestalt.	Merged
The principle of experience		Considering the construction of the building based on geometry and proportions and not using random shapes, the principle of experience is not perceived.	

Rasulian's house			
Gestalt principles	Case study	Analysis based on Gestalt principles	Objectivity of relationships
The principle of form and context		The wall of the building is simple and uniform, without components and decorations, and has a thatched covering as the background and front facade due to the presence of the arch, the rectangular brickwork frame around the entrance door, the platforms around it in the form of old people and the entrance door and its components as a shape are raised.	Merged
The principle of symmetry		The principle of symmetry in the whole house can be seen in the form of the facade of the walls, and in the details, the elements and components of the walls and the plan of the spaces have symmetry.	obvious
original Proximity	Proximity 	The components of the walls in the form of doors, windows, arches and frames work as single groups.	obvious
	Contact and overlap 	The main spaces are connected by means of communication components such as corridors and beds.	obvious
	Consolidation 	The placement of the spaces of the house is spatially within another space in the form of a labyrinth.	Obvious
The principle of dependence		The central courtyards of the house create closed and semi-open spaces through the surrounding volumes in the form of rooms and other spaces.	obvious





The principle of similarity		Spaces and their components function similarly in multiple dimensions of the house.	Merged
The principle of continuity		The principle of continuity is perceived in the placement and repetition of frames, arches and doors of the walls of the central courtyard.	obvious
The principle of closure		The wall of the building in the form of a wall uniformly and the walls of the central courtyard, consisting of closed spaces, induce the principle of being closed.	obvious
The surface principle		In this house, the module of the main spaces is determined based on the yard unit, and the closed surfaces are considered as the constituent units of the spaces.	hidden
The principle of restoration		The form of the house is perceived as a closed and integrated whole and components.	obvious
The principle of overlap		The general form of the house in the plan, the walls and their components separately have gestalt.	Merged
The principle of experience		Considering the construction of the building based on geometry and proportions and not using random shapes, the principle of experience is not perceived.	

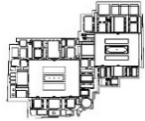
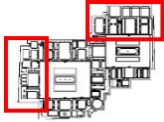





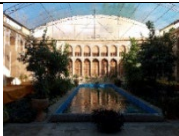


Heirani's House			
Gestalt principles	Case study	Analysis based on Gestalt principles	Objectivity of relationships
The principle of form and context		Due to the presence of the arch, the rectangular frame made of bricks around the entrance door, the platforms around it in the form of old people, the arched space like stairs and the entrance door and its components are similar in shape, and the wall of the building is simple and uniform with a thatched appearance It forms.	Merged



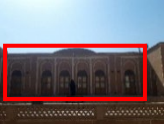

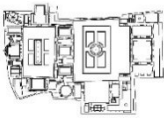
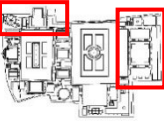


The principle of symmetry			The walls around the central courtyard in the form of numerous elements and components, as well as the plan of the spaces and their components have the principle of symmetry.	obvious
original Proximity	Proximity		Doors, windows, arches and frames form the components of the walls as single groups.	obvious
	Contact and overlap		The overlap of the spaces is realized through the communication components and the connection of the main spaces through corridors and flats.	obvious
	Consolidation		The integration of the spaces of the house is in the form of a space within another space in the form of a labyrinth.	obvious
The principle of dependence			The formation of the closed form of the building is perceived through the volumes around the central courtyards in the form of closed and semi-open spaces in the form of rooms, halls and secondary spaces.	obvious
The principle of similarity			The perception of the propositions of the principle of similarity, consisting of shape, color and size, is perceived in the various components of the walls of the central courtyard and the plan of the house spaces.	Merged
The principle of continuity			The multiplicity and repetition of the elements and components of the walls of the central courtyard in the form of frames, consisting of arches and doors, evokes the principle of continuity.	obvious
The principle of closure			The principle of closedness is understood based on the integrity and lack of holes of the surrounding wall of the house and the walls of the central courtyard consisting of closed spaces.	obvious
The surface of principle			Closed levels are explained as the units that make up the spaces based on the unit of gez and in the form of modules of the main spaces.	hidden


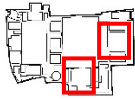
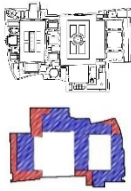



The principle of restoration		The form of the house is perceived as a closed and integrated whole and components.	obvious
The principle of overlap		Understanding the principle of gestalt is perceived in the plan, walls and components of the house as a whole and its components.	Merged
The principle of experience		The absence of the principle of experience regarding the construction of the house based on geometry, proportions and the lack of use of random spaces and shapes in it takes place.	



Farhang and Mozaffari 's House





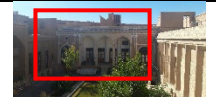


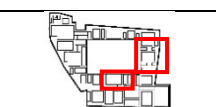
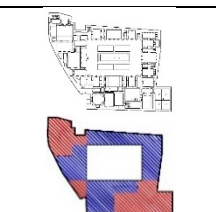
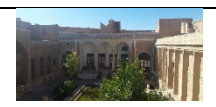
Gestalt principles		Case study	Analysis based on Gestalt principles	Objectivity of relationships
The principle of form and context			The wall of the building is simple and uniform, without components and decorations, and has a thatched covering as the background and front facade due to the presence of the arch, the rectangular brickwork frame around the entrance door, the platforms around it in the form of old people and the entrance door and its components as a shape are raised.	Merged
The principle of symmetry			The principle of symmetry in the whole house can be seen in the form of the facade of the walls, and in the details, the elements and components of the walls and the plan of the spaces have symmetry.	obvious
	Proximity		The components of the walls in the form of doors, windows, arches and frames work as single groups.	obvious
	Contact and overlap		The main spaces are connected by means of communication components such as corridors and beds.	obvious




original Proximity	Consolidation		The placement of the spaces of the house is spatially within another space in the form of a labyrinth.	obvious
The principle of dependence			The central courtyards of the house create closed and semi-open spaces through the surrounding volumes in the form of rooms and other spaces.	obvious
The principle of similarity			Spaces and their components function similarly in multiple dimensions of the house.	Merged
The principle of continuity			The principle of continuity is perceived in the placement and repetition of frames, arches and doors of the walls of the central courtyard.	obvious
The principle of closure			The wall of the building in the form of a wall uniformly and the walls of the central courtyard, consisting of closed spaces, induce the principle of being closed.	obvious
The surface of principle			In this house, the module of the main spaces is determined based on the yard unit, and the closed surfaces are considered as the constituent units of the spaces.	hidden
The principle of restoration			The form of the house is perceived as a closed and integrated whole and components.	obvious
The principle of overlap			The general form of the house in the plan, the walls and their components separately have gestalt.	obvious
The principle of experience			Considering the construction of the building based on geometry and proportions and not using random shapes, the principle of experience is not perceived.	







Olumiha's house				
Objectivity of relationships		Analysis based on Gestalt principles	Case study	Gestalt principles
The principle of form and context			Due to the presence of the arch, the rectangular frame made of bricks around the entrance door, the platforms around it in the form of old people, the arched space like stairs and the entrance door and its components are similar in shape, and the wall of the building is simple and uniform with a thatched appearance It forms.	Merged
The principle of symmetry			The walls around the central courtyard in the form of numerous elements and components, as well as the plan of the spaces and their components have the principle of symmetry.	obvious
original Proximity	Proximity		Doors, windows, arches and frames form the components of the walls as single groups.	obvious
	Contact and overlap		The overlap of the spaces is realized through the communication components and the connection of the main spaces through corridors and flats.	obvious
	Consolidation		The integration of the spaces of the house is in the form of a space within another space in the form of a labyrinth.	obvious
The principle of dependence			The formation of the closed form of the building is perceived through the volumes around the central courtyards in the form of closed and semi-open spaces in the form of rooms, halls and secondary spaces.	obvious
principle of similarity			The perception of the propositions of the principle of similarity, consisting of shape, color and size, is perceived in the various components of the walls of the central courtyard and the plan of the house spaces.	Merged
The principle of continuity			The multiplicity and repetition of the elements and components of the walls of the central courtyard in the form of frames, consisting of arches and doors, evokes the principle of continuity.	obvious



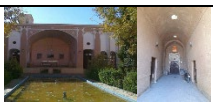
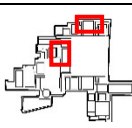
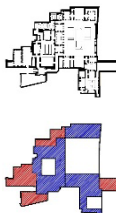



The principle of closure		The principle of closedness is understood based on the integrity and lack of holes of the surrounding wall of the house and the walls of the central courtyard consisting of closed spaces.	obvious
The surface principle		Closed levels are explained as the units that make up the spaces based on the unit of gez and in the form of modules of the main spaces.	hidden
The principle of restoration		The form of the house is perceived as a closed and integrated whole and components.	obvious
The principle of overlap		Understanding the principle of gestalt is perceived in the plan, walls and components of the house as a whole and its components.	Merged
The principle of experience		The absence of the principle of experience regarding the construction of the house based on geometry, proportions and the lack of use of random spaces and shapes in it. takes place	

Sigari Akhavan's house			
Gestalt principles	Case study	Analysis based on Gestalt principles	Objectivity of relationships
The principle of form and context		The wall of the building is simple and uniform, without components and decorations, and has a thatched covering as the background and front facade due to the presence of the arch, the rectangular brickwork frame around the entrance door, the platforms around it in the form of old people and the entrance door and its components as a shape are raised.	Merged
The principle of symmetry		The principle of symmetry in the whole house can be seen in the form of the facade of the walls, and in the details, the elements and components of the walls and the plan of the spaces have symmetry.	obvious

original Proxim ity	Proximity		The components of the walls in the form of doors, windows, arches and frames work as single groups.	obvious
	Contact and overlap		The main spaces are connected by means of communication components such as corridors and beds.	obvious
	Consolidation		The placement of the spaces of the house is spatially within another space in the form of a labyrinth.	obvious
The principle of dependence			The central courtyards of the house create closed and semi-open spaces through the surrounding volumes in the form of rooms and other spaces.	obvious
The principle of similarity			Spaces and their components function similarly in multiple dimensions of the house.	Merged
The principle of continuity			The principle of continuity is perceived in the placement and repetition of frames, arches and doors of the walls of the central courtyard.	obvious
The principle of closure			The wall of the building in the form of a wall uniformly and the walls of the central courtyard, consisting of closed spaces, induce the principle of being closed.	obvious
The surface principle			In this house, the module of the main spaces is determined based on the yard unit, and the closed surfaces are considered as the constituent units of the spaces.	hidden
The principle of restoration			The form of the house is perceived as a closed and integrated whole and components.	obvious
The principle of overlap			The general form of the house in the plan, the walls and their components separately have gestalt.	Merged

			
The principle of experience		Considering the construction of the building based on geometry and proportions and not using random shapes, the principle of experience is not perceived.	

Shokuhi's House				
Gestalt principles		Case study	Analysis based on Gestalt principles	Objectivity of relationships
The principle of form and context			Due to the presence of the arch, the rectangular frame made of bricks around the entrance door, the platforms around it in the form of old people, the arched space like stairs and the entrance door and its components are similar in shape, and the wall of the building is simple and uniform with a thatched appearance It forms.	Merged
The principle of symmetry			The walls around the central courtyard in the form of numerous elements and components, as well as the plan of the spaces and their components have the principle of symmetry.	obvious
original Proximity	Proximity		Doors, windows, arches and frames form the components of the walls as single groups.	obvious
	Contact and overlap		The overlap of the spaces is realized through the communication components and the connection of the main spaces through corridors and flats.	obvious
	Consolidation		The integration of the spaces of the house is in the form of a space within another space in the form of a labyrinth.	obvious
The principle of dependence			The formation of the closed form of the building is perceived through the volumes around the central courtyards in the form of closed and semi-open spaces in the form of rooms, halls and secondary spaces.	obvious

The principle of similarity		The perception of the propositions of the principle of similarity, consisting of shape, color and size, is perceived in the various components of the walls of the central courtyard and the plan of the house spaces.	Merged
The principle of continuity		The multiplicity and repetition of the elements and components of the walls of the central courtyard in the form of frames, consisting of arches and doors, evokes the principle of continuity.	obvious
The principle of closure		The principle of closedness is understood based on the integrity and lack of holes of the surrounding wall of the house and the walls of the central courtyard consisting of closed spaces.	obvious
The surface of principle		Closed levels are explained as the units that make up the spaces based on the unit of gez and in the form of modules of the main spaces.	hidden
The principle of restoration		The form of the house is perceived as a closed and integrated whole and components.	obvious
The principle of overlap		Understanding the principle of gestalt is perceived in the plan, walls and components of the house as a whole and its components.	Merged
The principle of experience		The absence of the principle of experience regarding the construction of the house based on geometry, proportions and the lack of use of random spaces and shapes in it takes place.	

Conclusion and Recommendations

Based on one of the most valuable and scientific principles of visual perception in the field of art, which is the gestalt principle, it shows that the eye and brain will have a better organization, overall easier and more logical connection to understand the complex subject and dense components of the work by using the gestalt principle. According to the analysis and

investigations carried out in the historical houses of Yazd as examples of introversion indicators in the Qajar period with Gestalt laws, it was observed in (Table 3) that this theory can be a conceptual framework for understanding the physical structure of the building and these houses are acceptable from the level of visual perception according to the theory have gestalt and the amount of pregnancy resulting from them is high and strong as shown in (Table 4).

Table 4. The degree of prevalence in the principles of Gestalt visual perception in the historical houses of Yazd during the Qajar period (Source: Authors)

Gestalt principles houses	original similarit y	Proximit y principle	The principle of continuit y	The principle of restoratio n	The principl e of form and context	The principle of dependenc e	The principl e of overlap	The original rate of pregnanc y
Golshan	*	*	*	*	*	*	*	A lot and strong
Lariha (Gholam Hossein)	*	*	*	*	*	*	*	A lot and strong
Lariha (Ahmad)	*	*	*	*	*	*	*	A lot and strong
Mortaz	*	*	*	*	*	*	*	A lot and strong
Rasoulia	*	*	*	*	*	*	*	A lot and strong
Heirani	*	*	*	*	*	*	*	A lot and strong
Farhangi and Mozaffari	*	*	*	*	*	*	*	A lot and strong
Olumiha	*	*	*	*	*	*	*	A lot and strong
Sigari Akhavan	*	*	*	*	*	*	*	A lot and strong
Shokuhi	*	*	*	*	*	*	*	A lot and strong

The result of the present research indicates that the principles of Gestalt are one of the effective factors in rereading the historical houses of Yazd and the results obtained from applying the rules of Gestalt to the case sample of houses showed that the houses selected in the analysis

place relatively all the rules of Gestalt except They consider the principle of experience and explain the seven important principles of Gestalt, which are the principle of similarity, proximity, continuity, restoration, form and context, dependence, overlapping, which creates a strong presence, and this shows that the historical houses of Yazd in the Qajar period were able to be universal. Create a good grouping and desirable beauty, in a way that can be expressed in the framework of Gestalt's theory of perception. This research can be applied to other buildings as well and it is suggested that the analysis of traditional houses related to other historical periods of Iranian architecture and in other cities based on the laws of visual perception of Gestalt theory should be the subject of future research.

Author Contributions

All authors contributed equally to the conceptualization of the article and writing of the original and subsequent drafts.

Data Availability Statement

Not applicable.

Acknowledgements

The authors would like to thank all participants as well, Dr. Mustafa Salehi (faculty member of Yazd University of Science and Art) is very grateful. With his talks and guidance on the architecture of traditional houses in Yazd and the psychology of the environment, he helped the authors to advance the goals of the research have done.

Ethical considerations

The study was approved by the Ethics Committee of the Islamic Azad University, West Tehran Branch. The authors avoided data fabrication, falsification, plagiarism, and misconduct.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest

The authors declare no conflict of interest.

References

- Abdolsamadi, M. A., Akbari Namdar, Sh., & Balilan, L. (2019). The Role of Architecture Education on Architectural Space Perception of Blind Students (Study Group: Blind Students of Tabriz Cultural Art Institute of Basir). *International journal of applied arts studies*, 4(4), 07-26.
- Ariannia, N., Naseri, N., & Yeganeh, M. (2024). Cognitive-emotional feasibility of the effect of visual quality of building form on promoting the sense of place attachment (Case study: Cultural iconic buildings of Iran's contemporary architecture). *Frontiers of Architectural Research*, 13, 37-56.
- Babakhan, S., & Kamrani, B. (2019). Reading the Ascension of the Prophet (PBUH) painting by Sultan Muhammad from the perspective of Gestalt principles of visual perception. *Negre Quarterly*, 15(53), 83-97.
- Bachelard, Gaston. (1994). *The Poetics of Space*, Boston: Beacon Press.
- Bruno, F. (2007). *Descriptive dictionary of psychology* (Taheri, F., Trans.). Tehran, Rushd Publishing House.
- Capps, G. (2003). *Image language* (Mohajer, F., Trans.). Tehran: Soroush.
- Dehban, M., Safar Ali Najjar, B., Momeni, K., & Attarian, K. (2019). Evaluation of the visual perception of specialists and non-specialists of local urban spaces in Dezful city based on Gestalt theory. *Arman Shahr Architecture and Urbanism*, 13(33), 107-119.
- Dehkhoda, Ali Akbar. (1999). *Persian dictionary*. Tehran: Dehkhoda.
- DK Ching, F. (2016) *Architecture: form, space and order* (Taghabani, A., & Sediqeh Qavidel, S., Trans.). Tehran: Varash Kitab Publications.
- Qabadian, V. (1998). *Climatic study of Iran's traditional buildings*. Tehran: Institute of Publishing and Printing, University of Tehran.
- Ghaemi, N., Akbari Namdar, Sh., Jamali, S., & Salek Zaman, J. (2023). Measuring the Effectiveness of Spatial-Physical Components Affecting the Interaction of Human Energy with the Environment in the Traditional Houses of the Qajar Era with an Emphasis on the Three Groups of Designers, Users, and Space Users. *International journal of applied arts studies*, 8(4), 07-24.
- Ghafourifar, F., Shamili, F., & Mohammadzadeh, J. (2021). Explaining the process of visual perception in painting with an approach to the theory of Gestalt psychology (case study: three paintings from the Herat school of Shahnameh Baisangri). *Firdous Art*, 2(5), 62-87.
- Gholami Rostam, N., Bamanian, M., & Ansari, M. (2014). Gestalt in Iranian garden plan design. *Jehlo Hanar*, 13, 63-72.
- Gruter, J. K. (2015). *Aesthetics in architecture* (Jahanshah P., & Hodayun, A. R. Trans.). Tehran: Shahid Beheshti University.
- Hatami, S., & Shekharpour, Sh. (2023). Analyzing the principles of visual perception in decorative Kufi with emphasis on the principle of form and context, continuity and common destiny. *Visual Arts Guide*, 6(4), 51-61.

- Heydari, A. A., & Kiaei, M. (2018). Comparative analysis of spatial patterns and cognitive characteristics of the Iranian market using the theories of "space arrangement" and "gestalt" (case study: Qazvin market complex). *Quarterly Journal of Urban Studies*, 9(33), 63-76.
- Iftikharzadeh, S. (2013). *From the chaos of perception to the knowledge of architecture*. Tehran: Simai Danesh.
- Ittiadmohkam, S., Nazeri, A., Sobhani Fard, Y., & Faramarezi, S. (2016). The application of Gestalt rules of visual perception in the graphic design of advertising billboards, a case example: commercial billboards in Tehran. *Bagh Nazar*, 14(55), 71-86.
- Lang, J. (2012). *Creation of architectural theory, the role of behavioral sciences in environment design* (Ainifar, A. Trans.). Tehran: University of Tehran Publications Institute.
- Li, Y., Li, M., Xu, Y., & Tao, J. (2023). "Interface-element-perception" model to evaluation of urban sidewalk visual landscape in the core area of Beijing. *Frontiers of Architectural Research*.
- Mashhadi, A., & Sinaii, A. (2023). Comparative analysis of the effectiveness of the physical and spatial configuration components of Qajar houses on culture and climate in "hot and dry" and "hot and humid" regions of Iran. *Architecture of hot and dry climate*, 11(1), 193-210.
- Marcus, C. C. (1999). *The House as Symbol of the Self*. Classic Readings in Architecture, Boston, WCB/McGraw-Hill, 299-321.
- Meshbaki Esfahani, A. (2017). Analysis of the spatial structure of the Qiblah bath (Khanem) based on Gestalt rules. *Sabz Memari magazine*, Piyapi, 10.
- Moin, M. (2005). *Moein dictionary*. Tehran: Amir Kabir.
- Norberg-Shulz, Ch. (2008). *Architecture: Presence, Language, Place* (Seyedahmadian, A. Trans.). Tehran: Niloofar.
- Omid, H. (1984). *Amid dictionary*. Tehran: Amir Kabir Publishing House.
- Pahlavan, S., Sultanzadeh, H., & Habib, F. (2022). The effect of environmental capabilities on the desirability of visibility in Iranian market halls based on "Gestalt theory" and "Isovist analysis" (case study: Isfahan market halls). *Sustainable Urban Development*, 3(9), 39-56.
- Pai Ken, I., & Rafiyan, M. (2018). In search of an integrated framework of space perception in human-environment interaction studies. *Armanshahr Architecture and Urbanism*, 28, 125-138.
- Pakbaz, R. (2014). *Encyclopedia of Art*. Tehran: Contemporary Culture.
- Pakzad, J. (2012). *Theoretical foundations and urban design process*. Tehran: Shahidi Publications.
- Pope, A. (1998). *The history of Iranian painting* (Yaqub, A. Trans.). Tehran: Hermi Publications.
- Rahmani, E., Nurai, S., & Shekarforosh, Z. (2011). Investigating the evolution of full and empty patterns in contemporary Iranian housing. *Abadi*, -(70), 0-0.
- Rahbarnia, Z., & Shafiqi, N. (2018). Reading the interactive layout of typography "for the purpose of control" from the perspective of Gestalt principles of visual perception. *Fine Arts Magazine - Visual Arts*, 23(2), 87-98.

- Rapoport, A. (1969). *House Form and Culture*. United State of America. University of Wisconsin Milwaukee.
- Sabry Hegzi, Y., & Anwar Abdel-Fata, N. (2018). Quantifying students' perception for deconstruction architecture. *Ain Shams Engineering Journal*, 9, 2745-2754. <https://doi.org/10.1016/j.asej.2017.09.006>
- Shafiqi, N., & Rehbarnia, Z. (2017). Reading interactive layout of typography "in order to control" from the perspective of Gestalt principles of visual perception. *Visual arts (fine arts)*, 23(2), 87-98.
- Shahzamani Sichani, L., & Ghasemi Sichani, M. (2016). Analyzing the structure of the Pahlavi Pahlavi house plan of Isfahan based on Gestalt rules. *Urban Management Journal*, 16(48), 461-470.
- Shapourian, R. (2006). *General principles of Gestalt psychology*. Tehran, Rushd publications.
- Sunstrum Frederique, N., Demirbilek, O., Gardner, N., Viengkham, C., & Spehar, B. (2024). Revealing the synergy between formal aesthetics and product semantics: Exploring the impact of visual form on product perception. *International Journal of Industrial Ergonomics*, 101.
- Taheri Sarmad, F., Ainifar, A., Shahcheraghi, A. (2018). Comparative comparison of typology of spatial organization and physical elements of Qajar and Pahlavi periods of traditional houses in Kermanshah. *Archaeological Researches of Iran*, 9(23), 149-168.
- Tahmasabi Fard, M., Habib, F., & Saeeda Zarabadi, Z. S. (2023). Explanation of effective criteria on visual disturbance in perception process. *Urban Future Research Quarterly*, 3(3), 75-60.
- Torrans, C. (1999). Gestalt and Instructional Design, Edit 704, March 8, 1999.
- Uzunoglu, S., & Uzunoglu, K. (2011). The application of formal perception of gestalt in architectural education. *Procedia - Social and Behavioral Sciences*, 28, 993-1003.
- Yaghoubi, T., Akbari Namdar, Sh., & Najafgholi pour Kalantari, N. (2024). Evaluation of the Existing Geometric Proportions in the Beauty of Historical Bridges of East Azerbaijan from Safavid to Pahlavi. *International journal of applied arts studies*, 9(1), 45-68.