

# Investigating the Physical Elements and Structural Characteristics of Traditional Markets, in Creating a Sense of Belonging to a Place (A Case Study of *Arak* Traditional Market)

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**Abstract**— *In public spaces, particularly urban markets, physical components, such as form, color, materials, type, and dimensions, can influence social interactions and impact the quality of the experience. Place attachment is a bond between people and a space. Traditional markets have played an integral role in the cultural and social development of cities, providing a foundation for the development of place attachment indices and a suitable environment for attendance, action, and the enhancement of citizen connectivity. This article aims to explore the relationship between physical elements and place attachment in the Arak market and how these elements can inform the design of modern architectural spaces. The article applies a descriptive-analytical methodology and relies on library, archival, and field observations as data-gathering methods.*

**Index Terms**— *Sense of belonging to a place, Traditional markets, Urban spaces, Physical elements.*

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## I. INTRODUCTION

Humans have social needs and require access to spaces for personal and collective activities. Cities have emerged due to this need for social interaction. The physical characteristics of cities distinguish them from other human settlements. In recent years, designers have focused on improving the quality of urban spaces because of the inability of existing spaces to meet the needs of residents [1]. *Relph* (1976) argues that a site is more than a space and consists of spatial boundaries, activities, and meaning [2]. The sense of belonging to a particular place is an important factor in enhancing the quality of public spaces and meaning. Traditional markets, both in their design and morphology, have contributed to creating a sense of identity for a city. The expansion of cities and over-reliance on the use of cars has caused a shift from markets as the hub of social, cultural, and economic activity to a peripheral element in cities. The market in the city of *Arak*, an active traditional market in Iran, will be used as a case study to understand the effective physical elements that contribute to creating a sense of belonging to a place. The objective of this study is to understand how the elements of traditional markets contribute to creating a sense of belonging to a place, using the market in *Arak* as a case study.

### A. Research Methodology

Selecting an appropriate research method and applying it consistently throughout the research process in order to reach the research goal is a fundamental principle of scientific research. In this study, a descriptive-analytical approach was used to examine the impact of physical elements on market

quality and the sense of belonging. For this purpose, the traditional market of the city of *Arak* was chosen as a case study due to its abundance of physical elements that create a sense of belonging and its excellent environment for interactions with a historical background. Information was gathered through methods such as library research, documentary research, and field observations.

### B. Research history

The physical form and urban fabric of a city influence the identity of a city, which is influenced by thought, beliefs, and cultural levels. Physical form plays a critical role in city identity. Historically, cities had visual identity and created social life through complex forms. Cities today face the serious threat of losing their individual identity due to the increasing similarity in physical form. Urban scholars have argued that cities in the past had identity and individuality, unlike the generic masses of cities today. A sense of belonging exists in places where people feel an emotional attachment and relaxation, which attracts more people and creates quality environments and identity. Iranian traditional architecture has a relationship between identity and place, which attracts people and creates meaning. In recent years, the role of identity in Iranian architecture has diminished due to modern influence. Traditional markets have historically been successful places with a sense of belonging. Market architecture has created quality environments and a sense of community. Scholars have expressed views on the physical elements that contribute to creating a sense of place and belonging. According to *Lynch's* perspective, in order for a space to create a sense of place, it must have a distinguishable

identity that is memorable and tangible. This kind of sense of place can also have a sense of belonging, and the physical factors that impact it can be differentiation, simplicity of form, persistence, proficiency, superiority, and brightness of intersections. Other factors such as field of view, awareness of movement, group-related timing factors, names, and meanings can also play a role in shaping a sense of place [3]. According to *Irwin Altman*, a sense of belonging to a place is related to the attraction between people and the location. The physical factors involved in creating a sense of place include flexibility, scale, boundaries, and accessibility [4]. On the other hand, according to *Edward Relph*, belonging to a place involves understanding and appreciating one's own position and relationship to other things, creating a spiritual and psychological connection to a specific location [2]. The physical factors that contribute to a feeling of place include boundaries, elements that stimulate the senses (visual, auditory, olfactory, tactile, and kinetic), and contrast. According to *Fritz Steele*, the sense of place is shaped by the way people interact with their environments, and the physical factors involved include size, enclosure, separation, scale, proportionality, human scale, distance, texture, color, odor, sound, visual diversity, identity, security, and vivacity[5]. *Shamin Golrokh* and *Jahanshah Pakzad* believe that the concept of immersion can better explain the concept of belonging to a place, and the physical factors involved include flexibility, unity in space, and clear boundaries[ 6]. Last but not least, according to *Maria Lewicka*, location is the main concept in environmental psychology. The emotional connection individuals have with a place, including feelings of belonging to a place, identity of a place, and sense of place, is the subject of debate. The physical factors involved in creating a sense of belonging to a place include size, enclosure, variety, scale, localism, and the use of a unique symbol that represents the place. The sense of place is shaped by active interaction with the environment and understanding and appreciating one's own position and relationship to other things, creating a spiritual and psychological connection to a specific location [7].

## II. THEORETICAL FRAMEWORKS

### A. The concept of sense of place

Space is an essential component of place identity. Place identity is shaped by the interactions between human behavior, meaning, and the physical features of the environment. The quality of an environment is determined by the complex interplay between these three factors (the Canter model) [8]. It is important to understand that place includes both physical and mental/emotional components, as individuals may have a sense of connection to non-physical places, such as memories or virtual environments. According to the Oxford Dictionary, location refers to "a specific spatial position, such as a point or area (Oxford, 2003, p. 960)".

### B. The concept of the sense of belonging to the place

Belonging refers to a feeling of connection, ownership, and attachment to a place. It arises from the interactions and relationships between humans and the place, as well as between humans themselves in a specific location. The sense of belonging to the place extends beyond the awareness of being located in a particular place and involves an individual's experiences and perceptions [4]. Place attachment involves individuals' imagined representations of the place, including signs, meanings, functions, and personalities, which results in an emotional investment in the place and a sense of respecting the place [5, 9, 10].

### C. Factors constituting the sense of belonging to the place

According to *Motalebi*, three categories of factors constitute the sense of belonging to a place, each with its own contribution to emotional attachment. The first category refers to cognitive and perceptual factors, including mental processing, perception, and prior experiences that affect a person's interaction with a space. The second category is social factors, such as culture, symbols, and norms, which impact attachment through the environment as a substrate for social interactions. The third category is environmental-spatial factors, including activity and form factors, which contribute to attachment through shape, color, texture, and the spatial organization of a space. These factors work together to create meaningful and satisfying experiences for individuals, leading to a sense of connection and attachment to a place. *Motalebi's* theory highlights the multifaceted nature of place attachment and the importance of considering all factors when designing or analyzing the impact of spaces on human behavior [11].

### D. The relationship of physical elements with the sense of belonging to a place

Physical characteristics of a space, such as size, color, texture, and organization, can have a significant impact on the feelings of the people who use it and contribute to the sense of attachment to the location. This is due to the fact that physical elements provide an environment to carry out activities and meet the needs of users, and can create a sense of satisfaction, peace, and security from the environment, leading to the enhancement of the sense of belonging to the place. In addition, physical characteristics can also be derived from mental images and people's perception of the environment [12], including readability, fit between form and functions, physical distinction, proportions, degree of enclosure, visual variety, rhythm, color, smell, etc., and contribute to the creation of a context to create a relationship between users and the environment and increase a sense of belonging (Diagram 1).



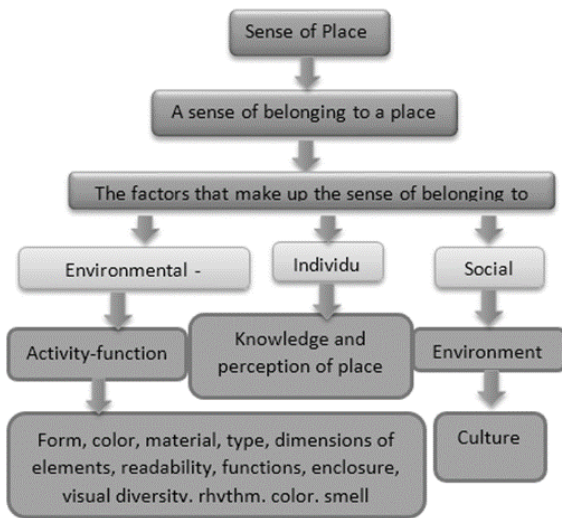
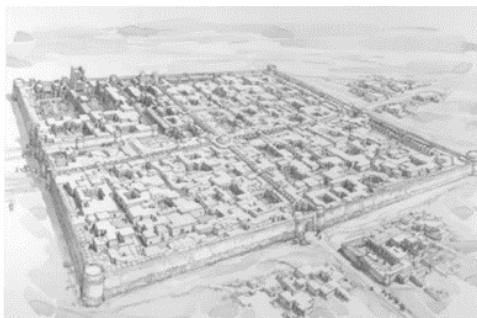


Diagram 1. Conceptual model related to research components.

### III. THE MARKET OF ARAK (A CASE STUDY)

Markets are a crucial aspect of the physical structure of Iranian cities and play a significant role in shaping their physical form. They are often located in the center of the city and serve as a nexus for multiple roads and corridors, connecting different parts of the city and its surroundings. The development and expansion of markets have been influenced by economic and political factors. Markets are typically designed with specific needs in mind and consist of a variety of physical elements. Markets were traditionally covered to protect traders and customers from extreme weather conditions, and materials commonly used for construction included rocks and bricks for walls and mud for ceiling coverings. The market of *Arak*, which is one of the oldest buildings in the city of *Arak*, has been chosen as a case study. Its layout was intentionally designed to be lively, dynamic, and responsive to the needs and senses of different individuals. Unlike many other markets, the layout of the market of *Arak* is regular and geometric, with specific geometric symmetry. It is located in the Sultan Abad district of *Arak*, which is one of the older parts of the city and has been influenced by the main and secondary alleys of the *Arak* market (Fig. 1 (a)). The building was constructed by *Yusuf Khan Ghajari* during the *Qajar* dynasty in 1228 AH (1812 AD) and is located in the center of the city (Fig. 1(b)).



(a)



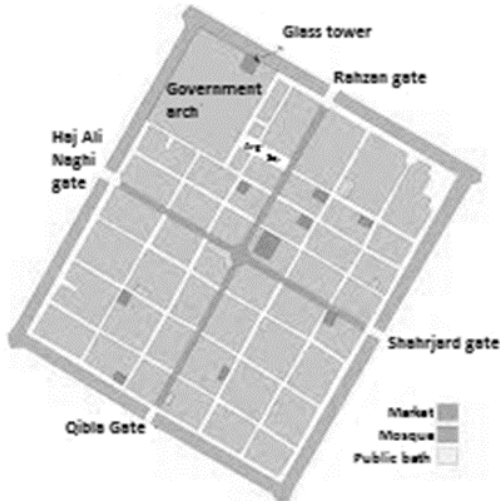
(b)

Fig. 1. a) The plan of Sultan Abad city and *Arak* market in the *Qajar* dynasty, b) Aerial image of *Arak* market,(authors' reference).

The market in *Arak* was not only a commercial center but also served as a hub of social and cultural activities. The market included elements such as public baths, water towers, mosques, schools, pathways, and caravanserais, which helped meet the needs of the city's residents. These facilities were an integral part of the market's function and added to its overall character as a central gathering place in the city. Unfortunately, many of these facilities have been lost over time due to various factors such as natural or human-induced destruction, or simply the passage of time. The width of the main streets in traditional Iranian markets is determined by the size of the city and the climate conditions. Typically, the streets in warmer climates, such as desert areas, have higher ceilings and larger spaces, while cooler climates, such as snowy regions, tend to have lower ceilings and smaller spaces. The height of the ceilings is also controlled to provide proper ventilation and light. This design feature ensures that the markets are comfortable and functional for both merchants and customers regardless of the time of year or weather conditions. The control of the height of the ceilings also contributes to the aesthetic appeal of the markets, providing an open and inviting atmosphere that reflects the character of the local community. The traditional Iranian architecture of the markets is a testament to the ingenuity and craftsmanship of the people who built them and serves as a symbol of the rich cultural heritage of the country.

The market in *Arak* is composed of two main streets that run perpendicular to each other, with 8 additional streets running perpendicular to them. The market is approximately 720 meters long from North to South and 200 meters wide from East to West (Fig. 2). The ceiling of the market is dome-shaped and constructed with bricks, mortar, limestone, and clay. Some of the larger domes are located at the intersection of the main streets, and they contain polygonal skylights that allow natural light to enter the markets. The market is bordered by four old city gates on all sides, providing access to the main streets and connecting the market to other parts of the city.

The architecture of the market in *Arak* has been designed in a way that keeps it cool in the summer and warm in the winter. The streets are designed so that there are exits throughout the market, which allows for an easy exit in case of an emergency.



**Fig. 2.** Castle *Sultan Abad* plan - Reconstruction from a map prepared by *Perskuryakoff* and *Okranovich* in 1851 CE, authors' reference.

The market is divided into different sections, including dedicated market areas, loading areas, and production workshops located in 20 *Sarā(sarais)* and *Timcheh*. The market has 500 shops, which are located on the main street.

There are many passages and buildings in the *Arak* market. These buildings are built at a distance of 50 meters from each other, and the buildings have a typically two-story structure, their shape varies, which creates a variety of open and closed spaces that communicate with the market. The open spaces help create a green environment, with roles in light and snow management. The covered spaces have dome-shaped roofs, which are decorated and draw the eye. The market in *Arak* has many beautiful buildings, such as the *Kasravi*, *Golshan*, and *Naozari* buildings, that have maintained their original structure. One interesting aspect of the architecture of the market in *Arak* is the contrast between the open space of the courtyard and the closed space of the arcade, as well as the use of geometry in the arrangement of the space. The light enters the spaces in two ways: there are daylightings on the roof, which are either central, at the highest point of the roof, or scattered along the ceiling members. In addition, light enters the spaces through the walls, in the form of windows, doors, and arches that help draw attention to the shops. The light moves in sync with the space and the design of the market, with more light entering the spaces where attention is needed, and the amount of light adjusting accordingly to the necessary amount of attention. In the main street of the market, the daylighting system draws attention to the shops, while the continuation of the light down the street encourages people to move forward. The impact of the physical factors of the traditional market of *Arak* on the creation and increase of a sense of belongingness in this place is summarized in the table below (Table 1).

**Table 1.** The impact of the physical factors of the traditional market of *Arak* city in creating and increasing the sense of belonging in this place.

Physical element	Definition of physical element	The impact of the physical element in creating a sense of belonging
<b>The main street (main line)</b>	Each market includes several main lines (main passageway) and several sub-lines that are connected to it in important and main parts of the market. The main line of the covered market and its surrounding cells is the most important route where important businesses were located and in which the many <i>sera</i> , <i>kayserias</i> and <i>timchehs</i> form the framework of the market.	The main line or passageway of the traditional market plays a significant role in creating a sense of attachment for customers and merchants alike. As the central artery connecting the entry and exit points, it provides easy access to the market and serves as its backbone. Its domed roof allows for natural light and ventilation, enhancing the market's functionality and vibrancy. Its layout and width, including vendor stalls, can greatly impact the market's overall atmosphere and feel.
<b>The side streets (sub-lines)</b>	Markets in small towns included a main street, but in big cities, in addition to the main street, there were also secondary streets that ran parallel or perpendicular to the main street. These secondary streets were connected to the boundaries of the houses, and were often dedicated to businesses of lesser importance.	These branches of the main avenue serve as an alternative route when the main street is too crowded, providing a more comfortable and convenient experience for visitors. The presence of less important guilds in the side streets and back alleys also contributes to a sense of attachment for customers by offering exclusive products that are not readily available on the main avenue.
<b>The <i>Sarā</i> or <i>Khāna(sarai)</i></b>	In <i>Arak</i> market, the cells or shops that surround the market streets are essential to defining their identity. These cells, which are the smallest and most important architectural elements, are	The <i>Sarā</i> or <i>Khāna</i> spaces in the traditional <i>Arak</i> market provide a sense of attachment and comfort for visitors and traders alike. The enclosed areas offer a quiet escape from the hustle and bustle of the main avenues and provide a

Physical element	Definition of physical element	The impact of the physical element in creating a sense of belonging
	designed for direct distribution of goods to consumers. A street in the market is typically composed of a number of cells or shops on both sides, and the dimensions of the shops can vary depending on the type of goods, environmental features, and local climate.	touch of greenery with their central courtyards. The role of lighting in these spaces creates a warm and inviting atmosphere. The Sarā spaces also serve as places to rest, eat, and socialize. The fact that they also receive and distribute goods from different parts of the market contributes to the overall sense of community and belonging within the market
<b>Timcheh</b>	<i>Timchehs</i> , which are part of Iranian markets, are architecturally similar to the main rows of the market but are built in a smaller size. They are typically roofed and have a central open area, surrounded by a two or three-story area that consists of cells or shops.	Each <i>timcheh</i> is a historical building that includes a covered central courtyard, a pond with a skylight above it, and a number of cells on two or three floors around it. The building is characterized by large, carved, and ornate domes, which are adorned with beautifully designed stucco and plasterwork that it can provide a unique shopping experience that can positively affect a sense of place.
<b>Cell (shop)</b>	In <i>Arak</i> market, the cells or shops that surround the market streets are essential to defining their identity. These cells, which are the smallest and most important architectural elements, are designed for direct distribution of goods to consumers. A street in the market is typically composed of a number of cells or shops on both sides, and the dimensions of the shops can vary depending on the type of goods, environmental features, and local climate.	The cells or shops that line the market streets in <i>Arak's</i> traditional market have a distinct impact on the overall atmosphere and sense of attachment for visitors and traders alike. The ground floor of each cell serves as a shop and a place for goods to be sold, while the upper floor rooms provide a space for administrative functions, such as offices and workshops.
<b>khanbar or kalehn-bar</b>	The traditional market of <i>Arak</i> features various types of cells, buildings and places, including " <i>Khanbar</i> ". A <i>khanbar</i> or <i>kalehn-bar</i> was a large area behind the serais where workshops and warehouses were located. In these areas, goods were stored or processed, and artisan workshops were typically located here.	It was a place to store goods, such as raw materials, and to work on them to transform them into finished products. The architecture and design of the <i>Khanbars</i> have a unique charm and beauty, providing a warm and welcoming atmosphere for visitors and traders alike.
<b>Chahar Suq or Chaharsu</b>	A <i>Chahar Suq</i> or <i>Chaharsu</i> is the part of the market where two main streets intersect, like a crossroad in a city( The <i>Chaharsu</i> was the heart of the ancient market).	A <i>chaharsu</i> is a common architectural feature in traditional Iranian markets, serving as a focal point for economic and social activity. A <i>chaharsu</i> is typically located at the heart of the market, providing a venue for traders, merchants, and shoppers to come together and conduct their business. This space has a large dome and special carvings. It also has the brightest light compared to other sections. It has been the central hub of social interaction for the people
<b>Skylights (light holes)</b>	At the center of each dome in market areas usually have windows that allow natural light and ventilation to enter, ensuring that the market areas remain well-lit and ventilated. These windows, often referred to as "light holes," contribute to the overall atmosphere of the market by letting in fresh air and providing natural lighting throughout the day.	The skylights, circular or multi-sided holes in the roof of the market that match the movements of the space and plan of the market and create a sense of continuity and rhythm. The size and placement of the skylight, as well as the use of natural light, can affect the sense of place. For example, a large skylight can create a sense of openness and spaciousness, while a smaller skylight may create a more intimate and cozy atmosphere
<b>The ceilings</b>	The ceilings of the traditional <i>Arak</i> market has a domed structure. Domes are visible	Different types of false ceilings (such as carvings, moqrans, etc.)in traditional markets not only serve as



Physical element	Definition of physical element	The impact of the physical element in creating a sense of belonging
	continuously along the north, south, and east-west axes of the ceilings. The dome that forms at the <i>chaharsu</i> , or the intersection of two axes, is larger and more distinct than the rest of the domes.	decorations but also play a major role in creating a type of acoustics to regulate sound and prevent unwanted echoes in the architecture of the market spaces, which creates a more comfortable and pleasurable environment for both vendors and customers. Moreover, these ceiling designs provide a visual interest and add a layer of complexity to the overall design of the market space, making it more appealing and attractive to visitors.

These physical factors (Fig. 3) create a unique and memorable shopping experience for visitors and merchants,

fostering a strong sense of attachment to the market.



Fig. 3. The Arak traditional market A) Main line, b) Sub-line, c) Sarā, d) Timcheh, e) Cell, f) Khanbar, g) Chahar Suq, h) Skylights, i) ceilings

#### IV. CONCLUSION

Modern architectural advances have resulted in the emergence of many physical elements in urban planning that have caused the loss of valuable heritage and the diminished originality of the art of architecture. One of the most crucial factors determining the relationship between humans and their environment, resulting in the creation of high-quality environments, is the sense of belonging to a place. This sense of attachment reflects a strong personal connection to a specific location and emphasizes the significance of place attachment. However, although most research focuses on the social dimension of the sense of belonging to a place, less attention has been given to the physical dimension, despite its significant role in creating and enhancing the sense of belonging to a place. This is particularly true in the context of valuable heritage such as traditional markets. The physical

components of traditional Iranian markets, including cells, *Sarais*, and *Timchehs*, alongside other elements such as mosques, coffeehouses, and water storages, make up an interdependent economic and social complex in a well-organized body in which there is a sense of belonging, security, and vitality. The *Arak* market is a successful example of a traditional market in which the form responds to the function, climate, and needs of individuals, resulting in satisfaction and a sense of attachment to that place. To create sustainable and high-quality spaces, it is essential to consider the physical elements contributing to the sense of attachment to a place along with the degree of influence of each element. Additionally, there should be careful consideration of traditional Iranian markets when designing contemporary spaces that provide citizens with a sense of identity and attachment to that place. Key physical factors contributing to this sense of attachment to place include the consideration of

human proportions in space design, balance of dimensions and functionality, integrated structure, appropriate perception of space by users, and the integration of quality elements in form and function that create a dynamic economic and social unit. The combination, rhythm, balance, unity, visual harmony, and visual beauty create a cohesive and cohesive space. By analyzing and understanding the attributes of traditional Iranian markets during the process of reconstruction and design of multi-functional urban spaces that respond to citizen needs, we can take a step towards creating high-quality, sustainable human-centric environments that provide a sense of attachment to place.

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