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Original Research Article

A Comparative Analysis of Semantic Indicators in Historical and Contemporary Urban Landscapes Using the Sequential Exploratory Design Method

(Case Study: Shiraz Urban Landscape)*

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Abstract | One of the most significant challenges facing contemporary cities is the concept of meaning and the reciprocal relationship between humans and their environment. Due to a lack of visual knowledge and the impacts of modernism, visual disruptions are evident in cities today. Transformations in urban landscapes during the contemporary era, along with the adoption of positivist approaches, have led to the neglect of environmental soft and fuzzy dimensions, such as "meaning." This study aims to compare meanings associated with historical and contemporary urban landscapes, as well as propose a method for comparing urban meaning across similar contexts and cities. The urban landscape of Shiraz, a metropolis in Iran, was selected as the case study because of the obvious difference between its historical and contemporary landscapes. This study adopts an interpretivist paradigm and a hermeneutic approach. Using an Exploratory Sequential Mixed Methods Design framework, the study first conducted in-depth, semi-structured interviews, which were then analyzed using content analysis. Based on the qualitative phase's findings, a semantic differential matrix was developed to quantitatively assess the differences in meaning between the historical and contemporary urban landscapes. The results revealed that citizens referred to various dimensions and components categorized under "climate," "feelings toward the urban fabric," "function," "infrastructure," "housing," "population," "people," "culture," and "security and sense of belonging" when comparing the historical and contemporary urban landscapes. Descriptive attributes of the contemporary urban landscape included "complex", "mysterious", "disturbing", "lacking identity", "tense", "chaotic", "dynamic", "modern", and "crowded", while the historical urban landscape was described as having "identity", "being older", "calming", "joyous", "legible", "simple", "ordered", "static", and "peaceful".

Keywords | *Urban Landscape Meaning, Historical Urban Landscape, Contemporary Urban Landscape, Semantic Differential Matrix, Shiraz City.*

Introduction| The urban landscape is considered the product of the interaction between humans and the environment. It represents both objective and subjective dimensions as a unified whole. It embodies the interplay between what is visible and hidden, real and imagined, stimulating and encouraging specific behaviors (Capone, 2013, 63). Changes in urban landscapes, especially those resulting from the loss of diversity, coherence, and identity, are often perceived as threats or negative transformations, particularly in the context of rapidly disappearing cultural landscapes. Landscape dynamics are commonly categorized into three phases: traditional landscapes prior to major 18th-century transformations; landscapes shaped by 19th- and 20th-century revolutions; and present-era postmodern landscapes. Since the second half of the 20th century, an ecological approach to integrated landscape management has emerged. With the revival of landscape ecology in the 1980s, a more holistic perspective developed, promoting a unified, integrated view of landscapes (Antrop, 2005, 21 & 22). In contemporary cities, the semantic disconnect between historical and modern urban landscapes results in fragmented interpretations of the

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urban landscape by its users. Some researchers attribute this semantic rupture to urban development policies and regulations. In the context of Iranian cities, professionals, urban managers, experts, and citizens broadly agree that contemporary urban landscapes are in crisis and disorder. Many believe that the roots of this visual and structural confusion lie in the neglect of historical continuity during the transition from traditional to modern urbanism (Esmaeeldokht et al., 2021, 46).

Theoretical investigations in the field of the perceived meaning of the city remain relatively limited. Studies related to landscape meaning mostly employ approaches and theories rooted in structuralist paradigms (Rahmani & Nourmohammadzad, 2019; Sajadzadeh, H., & Eris, 2017; Sholeh, 2011) or psychological perspectives on the environment (Nabavi et al., 2020; Mohsenzadeh et al., 2020; Barros et al., 2021; Ma et al., 2021; Huang & Li, 2016). The interview technique is an effective method for accessing individuals' subjective interpretations and discovering meanings attributed by participants without external interference or pre-structuring. Additionally, the semantic differential technique is a more appropriate quantitative tool for comparing differences in meaning between environments because it captures meaning directly through users' evaluations without imposed mediation. This study operates at a meso-scale, focusing on historical and contemporary urban landscapes. The research seeks to address the following key questions:

1. How do citizens describe the semantic differences between the historical urban landscape (historic fabric and zones) and the contemporary landscape (modern and new fabric and zones)?
2. What common and contrasting attributes do citizens use to describe each landscape?
3. What practical strategies can be derived from the semantic comparison of historical and contemporary urban landscapes?

Literature Review

Researchers have employed various methods to uncover the meaning of place. Some have used quantitative approaches, such as surveys, to measure the significance attributed to specific places. For example, Stedman (2002) used Likert-scale surveys to rank specific dimensions of place meaning among peripheral residents. Similarly, Young (1999) used a narrative approach, asking participants to describe a place on a five-point scale (Worster & Abrams, 2005; Kudryavtsev et al., 2012, 232). Other researchers have used qualitative methods to explore the broad range of meanings participants assign to places and the lived experiences through which these meanings are shaped. In some studies, participants have been asked to express their emotions and perceptions of a place through place narratives or by recounting the "story of the place." The built environment significantly influences the perception, experience, and interpretation of various spatial scenes. Urban images often emerge as complex compositions of diverse visual elements (Shen et al., 2021). Some scholars have used open-ended surveys, asking participants to describe memorable places and explain their significance, often complemented by semi-structured interviews with questions such as "How would you describe this place?" (Jacobs & Buijs, 2011). Nevertheless, there is still a lack of comprehensive studies that address spatial aspects, such as physical features encoded in the urban fabric, accessibility, and spatial composition, as well as social dimensions that reflect nonphysical meanings and values. Previous studies have also shown limitations in terms of integrated design and alignment with the recommendations of the Historic Urban Landscape (HUL) approach of UNESCO (2011), highlighting a gap in how these aspects are addressed (Długozima & Rybak-Niedziółka, 2022, 2).

Theoretical Foundations

• Urban landscape and the contextual approach to it

Jannière & Pouzin distinguish two approaches to interpreting the urban landscape. The first approach defines the urban landscape within the broader concept of landscape. The second approach focuses on urban materiality. The first group includes approaches that use the concept of landscape and various perceptions (architectural, geological, botanical, etc.) to examine the city as a perceived entity, not only seen but also sensed through other means and defined by language. The second group includes approaches that view the city as a subject of infrastructural development or an expanding metropolis that requires proper urban planning. After changes and transformations, this planning must be documented using photographic tools. All of these approaches share an internal aspect that includes the reality and perception of landscapes, as well as their references and representations (Sonkoly, 2017).

In general, landscape architects tend to adopt one of two approaches when defining the urban landscape. The first group emphasizes the natural features of the city, focusing on the theoretical and etymological roots of the landscape. The second group considers the urban landscape as our perception of the environment, limited by our knowledge and awareness of place, according to the definition of landscape. Landscape connects humans to the environment. In various cultures and languages, the concept of landscape is considered a combination of two terms: land (as a place) and the people who inhabit it. Webster's Dictionary defines

it as a stretch of natural scenery that can be seen at a glance (Swaffield, 2002, 142). The term "vista" is more appropriate when the objective aspect of the landscape is intended, while the term "mental image" is more suitable for subjective and cognitive concepts. Thus, the term "landscape" is used when both objective and subjective aspects are considered simultaneously and continuously. "Urban landscape," on the other hand, emphasizes natural elements within an urban context while acknowledging the role of other man-made elements (Asadpour, 2018, 30). Overall, the landscape can be regarded as "the product of human-environment interaction, a concept based on the meaningful relationship between humans and space and the unique characteristics of place, encompassing an objective-subjective whole" (Mansouri et al., 2021, 135). This objective-subjective duality forms an integrated whole called a landscape at three levels: macro, meso, and micro.

Kaplan & Kaplan (2009, 13) emphasized that pursuing coherence and legibility can generate meaning in an environment. Jack L. Nasar (1998) pursued people's evaluative image by following individuals' subjectivities, where meanings take shape. James Corner (1990, 77) also referred to the hermeneutic landscape in the context of representation and art. He introduced the idea of meaning's layered nature. However, Ann Whiston Spirn (1998)'s view best supports this study. She takes a linguistic approach to landscape, referencing grammatical rules and associating meaning with metaphor, narrative, and dialogue. The language of landscape revives the dynamic link between a place and its inhabitants, so the landscape is full of dialogues—storylines connecting place and people. Understanding landscape as a display of actions and opinions—not as an abstract stage—permits the perception of landscape as continuous meaning (Swaffield, 2002, 143 & 146).

Meaning is modified through people's interpretations of their daily encounters with the environment. Therefore, meaning is not intrinsic; everyone's interpretation plays a significant role in constructing it (Rapoport, 1990, 61). The meaning received from any text or context is not necessarily equivalent to its internal meaning, but rather the reader's interpretation, understanding, or perception (Sasani, 2010, 110). Some meanings are invented by humans. In general, any living being with senses has the ability to read and understand a landscape (Spirn, 1998, 23). Meaning is not transferred to the audience, but rather is actively constructed by them based on a complex interplay of codes or conventions. (Chandler, 2007, 11). In 1957, psychologist Charles Osgood and several colleagues published a book titled The Measurement of Meaning. These researchers developed a technique called "semantic differential" to systematically map connotations (affective meanings). This technique involves a pencil-and-paper test in which participants are asked to express their responses to a particular object, state, or event using at least nine pairs of bipolar adjectives on a seven-point scale. This method has been useful in studying attitudes and emotional reactions and has been relatively widely used in the social sciences (ibid., 142).

• Landscape in historical and contemporary contexts

When qualified by terms such as "natural," "cultural," "urban," or "historical," the concept of landscape often refers to a specific portion of the surrounding environment. The concept of the "historic urban landscape" is a new approach to historic cities that views them in relation to their cultural, natural, and historical characteristics. This approach serves as a management tool for comprehensively protecting urban values (Bandarin & Van Oers, 2012). The term "historic urban landscape" was first introduced in the Vienna Memorandum (2005). Accordingly, this memorandum presented a comprehensive view of the historic city and its surrounding environment under the title "Historic Urban Landscape." The document defines the historic urban landscape as encompassing buildings, structures, and open spaces within their natural and environmental settings, including archaeological sites reflecting human settlement during specific historical periods (ibid., 2005, 53). UNESCO (2011)'s Recommendation also defines an urban environment formed by historical layering, composed of cultural and natural values, as a historic urban landscape. This view extends beyond the "historic center" to the city's broader geographical setting (World Heritage Committee, 2011). The historic fabric is considered one of the most important components that bear a society's identity. It encompasses a cohesive set of architecture, culture, economy, and social exchanges within an urban structure. The historic fabric is the result of a city's gradual, organic growth over historical periods. In recent times, especially in Iranian cities, it has faced widespread destruction and large-scale redevelopment (Mahmoudzadeh & Saheli, 2020, 36; Staei & Naseri, 2019, 124).

Unlike the historic landscape, the contemporary urban landscape refers to parts of the city constructed and developed during modern times. The emphasis on time in categorizing historical and contemporary urban landscapes highlights their differences. Fixed design solutions' inability to create meaningful living environments and their neglect of local values were among the factors that led to changes in landscape design during the postmodern era (Erfani et al., 2019, 6). Sabounchi et al. emphasize the contemporary natural landscape of cities and argue that its low quality stems from a lack of proper connection and continuity with the city's components and structure. This lack of continuity prevents urban green spaces from realizing their environmental, social,

and economic benefits (Saboonchi et al., 2018, 14). The rupture and lack of continuity between the historic and contemporary urban landscapes are the focus of the present study.

• The meaning of urban landscape

Theories related to environmental meaning are categorized into two domains: psychology and linguistics (Gharehbaglou & Ardabilchi, 2020, 56) (Table 1). Within the psychological domain, theories focus on the external manifestation of meaning. Semantics, as an independent branch of linguistics, has emerged as a scientific discipline. It not only addresses how meaning is conveyed through individual words, but also how the combination of words, phrases, and sentences contributes to meaning-making in language (Sankaravelayuthan, 2018).

In recent decades (since the 1980s), an interactive approach has emerged, which views meaning as the result of both structure (syntax) and interpretation (hermeneutics). This approach emphasizes the role of the reader's interpretation in constructing meaning from a text (Sajadzadeh & Eris, 2017, 274 & 276).

Research Method

The present study aimed to quantitatively and qualitatively compare semantic indicators in historical and contemporary contexts. Due to the mixed-methods nature of the research, an exploratory sequential mixed-methods design was deemed an appropriate approach. Prior to conducting interviews, participants were explained the concept of an urban landscape as part of the urban environment (buildings, streets, people, and nature) that is seen and perceived daily and remains in memory. In-depth interviews lasting between 20 and 30 minutes were conducted. The interviews took place in parks located in various parts of the city. From November 5 to November 15, 2023, 69 interviews were conducted with participants between the hours of 9:00 a.m. and 1:00 p.m. and 4:00 p.m. and 7:00 p.m. Every other day, the interviews were coded using Atlas.ti software. Once theoretical saturation was reached, the coding process was discontinued. Open coding of the interviews was conducted by extracting and interpreting the descriptive expressions used by citizens. Next, the extracted codes were condensed and categorized. During this process, sets of attributes associated with historical and contemporary landscapes were collected.

After analyzing the interviews and considering that Verma et al. (2019) aimed to extract attributes from visual and auditory data and that Rahmani & Nourmohammadzad (2019) discovered that

Table 1. Different Approaches to Meaning. Source: Gharehbaglou & Ardabilchi, 2020, 90-16.

	Approach	Theorist	View on Meaning
Psychology	Empirical	Gibson (1966)	- Meaning is the relationship between perception, an invariant stimulus, and the source of that stimulus (Theory of Affordances).
		Hershberger (1970)	-It introduces two categories of meaning: Figurative meaning and reactive meaning. - It refers to two key subjects:Semantic differential scale and case study.
	Structuralist	Lynch (1960, 1981)	- The individual selects and organizes environmental data based on goals and assigns meaning to what is seen.
		Nasar (1998)	- Evaluative mental image/ Meaning, like identity and structure, is shared among individuals - Environmental meaning results from shared mental content
	Phenomenological	Pallasmaa (2005)	- His perspective aligns with Husserl's phenomenology and Merleau-Ponty's philosophy. - The individual experiences the environment through the mediation of the senses and the body
Linguistics	Semiotics – Structuralist	Saussure (2011)	- Meaning is a concept in the mind or an image of the surrounding world. - Meaning exists only through distinctions and differences.
		Carmona et al. (2010)	His perspective is based on Saussure's semiotics. - His perspective is based on the theory of the death of the author
	Semiotics – Pragmatism	Mumford (1930)	- The environment as a text reflects its formative cultural values, thereby embedding meanings within the environment.
		Knox & Pinch (2010)	- Urban landscapes reflect the dominant thoughts of society. - Landscape as text reflects the value system of its inhabitants. - Meaning emerges through use and function. - Objects are signifiers, and meaning is the signified. - They introduced graph theory as a domain for studying meaning in urban landscapes.
	Semantics	Norberg-Schulz (1980)	-Meaning is based on a phenomenological approach. - It is an inherent property of phenomena, arising from their nature and existence - Meaning results from induction, is a social phenomenon, and is context-dependent

physical form meanings could be perceived by tracking the attributes, characteristics, and features of each element, it was determined that identifying these attributes is an effective method for understanding the meaning of the environment. Consequently, a semantic differential matrix was developed based on these attributes. Frequently occurring concepts were then used to formulate a semantic differential scale questionnaire, which was administered to a larger sample of residents. This step aimed to quantify the findings more precisely and examine the potential to generalize the results from the small qualitative sample size to a larger quantitative sample (Gharehbaglou & Ardabilchi, 2020, 108). Though this technique originates in psychotherapy research, it has also been applied in urban studies. For example, it was used in a qualitative analysis of Sepah Street in Qazvin, Iran, where the findings showed that subjective qualities were not favorable (Khatibi, 2020). Latifi & Paknezhad (2021) used a semantic differential scale to evaluate Tehran's urban form through cityscape images. They found that Tehran's current landscape was not well-received by the participants, who could not agree on their preferred urban scenes. In the present study, the semantic differential matrix questionnaire was completed through random sampling in various urban areas based on Cochran's formula with a target sample size of 384 individuals. Out of the 410 questionnaires distributed, eight were incomplete, leaving 394 valid responses for analysis.

The content validity of the techniques and research tools was confirmed by academic experts in the first stage. In the second stage, five non-experts and five experts assessed the face validity to determine whether the questions were clear and appropriate. Individual differences, such as ethnicity, age, gender, lifestyle, length of time living in a neighborhood, and mode of transportation within the city, influence how people perceive the environment (Madanipour, 1996, 94). Some limitations of the interview tool include time consumption, high costs, and the need for skilled interviewers. Additionally, interviews must be conducted individually because joint interviews often result in one person speaking while the others remain silent or merely agree with the dominant speaker. Furthermore, respondents may have strong biases about their city, which can lead to different interpretations. In the final stage, participants taking the semantic differential questionnaire may also interpret certain concepts differently. Therefore, to ensure generalizability and a homogeneous research population, the diversity of participants' residential areas was considered a control variable. Using two different data collection tools from independent sources (Fig.1) enhances the reliability and credibility of the findings and reduces the likelihood of misinterpretation or bias introduced by either instrument.

Discussion

• Qualitative comparison of the meanings of historical and contemporary urban landscapes

In response to the open-ended interview question, "In your opinion, what are the differences between historical and contemporary urban landscapes?" participants used various expressions, components, and short phrases to describe the historical and contemporary urban landscapes of Shiraz. Through these qualitative descriptions, they articulated their perspectives. Participants identified distinctive features and attributes that expressed the differences between the two types of landscapes. Interviewees referred to multiple dimensions and components. Overall, the differences between the two types of landscapes fell under themes such as "climate", "feelings toward the urban fabric", "function", "infrastructure", "housing", "population", "people", "culture", "security", and "sense of belonging". A range of attributes was employed to describe and compare the two landscapes. When expressing these differences, citizens often used the term "urban fabric" instead of "landscape." Broadly speaking, they viewed the historical landscape as more powerful than the contemporary one. From spiritual and emotional standpoints, the historical landscape was considered more sacred, while the contemporary landscape was considered more materialistic. Thus, the historical landscape was considered more authentic, while the contemporary landscape was described as modern. Participants believed that the contemporary landscape had a better climate than the historical landscape and noted the difference in greenery, stating that the historical landscape suffers from

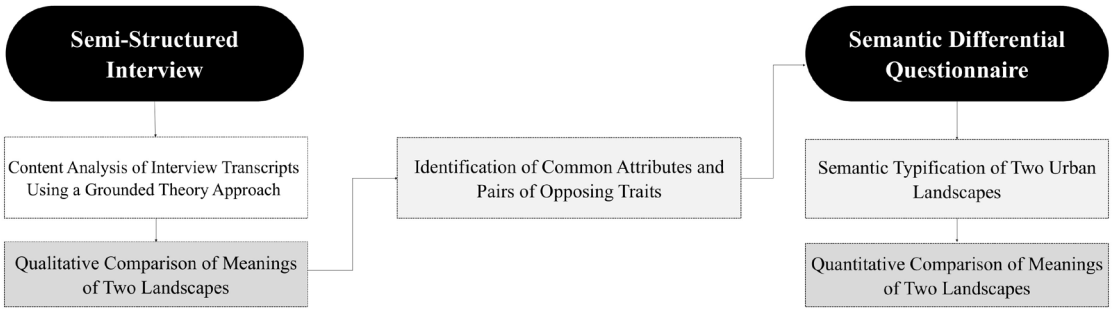

Fig.1. Research procedure. Source: Authors.

more pollution. Although the historical landscape has fewer amenities, it remains a popular shopping destination, while the contemporary landscape is more commonly associated with recreational activities. Since the contemporary landscape offers more excitement and entertainment, it was considered more comfortable. The nature of commercial spaces also differed when comparing traditional bazaars, such as Vakil Bazaar, to modern shopping malls and commercial centers.

Participants noted that the infrastructure of older buildings was of better quality than that of newer ones. The historical landscape exhibited architectural diversity, and construction permits were not easily granted. Overall, the buildings that shaped the historical and contemporary landscapes differed physically. Some participants believed that the contemporary landscape was neither modern nor historical. Differences between the two landscapes were also observed in the street layout. The narrow alleys characteristic of the old landscape contrasted with the wider roads and newer infrastructure. The historical zone (District 8) had a different budget allocation than other districts. The historical landscape was considered to have lower permeability, which made providing services more difficult. There were fewer underpasses and intersections in the old area. In contrast, the street network in the contemporary landscape was developed more systematically. However, some participants believed that urban growth had been insufficient, both in the past and present.

Regarding housing, participants noted that the concept of "home" has evolved in both landscapes. Some referenced distant memories, stating that homes used to be associated with peace and comfort, but today, they are merely seen as shelters. They also noted that the orientation of buildings differs across the two landscapes. Newly built homes are less common in lower-income neighborhoods. Physical deterioration is another noticeable difference. In the past, multiple families lived under one roof. Today, however, lifestyles have shifted and the traditional notion of home has faded. The sense of privacy seen in older neighborhoods is no longer present. Thus, the meaning of personal space differs between the two landscapes.

Though some described the historical landscape as crowded and unsuitable for living, it had a smaller population. The migration of the original residents, who were replaced by newcomers from other cities and foreign nationals, created cultural and ethnic contrasts between the historical and contemporary landscapes. While some citizens believed that the cultural level of the contemporary landscape's residents was higher, others insisted that people from both landscapes were equally authentic. Overall, the traditional socioeconomic division into "uptown" and "downtown" was evident in Shiraz, with the class gap being more pronounced in the contemporary landscape. In contrast, this gap was less evident in the historical context. Residents who participated in civic events were reportedly more socially aware and were located in the contemporary landscape. Additionally, components such as security and a sense of belonging were perceived as stronger in the historical landscape. The past was described as a time of greater calm and trust. Respondents mentioned that people used to follow laws more closely. Despite these contrasts, a few participants didn't perceive a major conflict between the two landscapes and found both beautiful in their own way.

Participants mentioned that, historically, residents were not allowed to personalize their surroundings, such as by altering facades. In contrast, such freedom was possible in the contemporary landscape, particularly on the walls of garden plots. Additionally, traditional Shirazi music was noted as absent from the contemporary setting. Building on previous sections, it can be stated that, although the historical and contemporary urban landscapes appear structurally similar in terms of objective, physical elements, they differ in their semantic codes, indicating a divergence in subjective content rather than form.

Participants often used metaphors to express their views, comparing the historical landscape to a tree root or a grandmother and the contemporary landscape to tree branches or fruit. This reflects a symbolic interpretation of the meaning of the landscape. Attributes and verbal nouns associated with the historical/old landscape included: "Pleasantness", "historical essence", "joy and liveliness", "integrity", "intimacy", "harmony", "distinct identity", "uniqueness", "beauty", "age", "strength", "calmness". Attributes associated with the contemporary landscape included: "Cohesion", "tension", "disorder", "lack of meaning", "beauty", "modernity", "technological presence", "sense of abandonment", "lack of calmness".

Table 2 presents a full list of attributes linked to the historical and contemporary urban landscapes of Shiraz, along with their overlaps and distinctions. The contrasting adjective pairs in Table 2 were derived based on the participants' word choices and cross-referenced with Persian dictionaries. From these, the more comprehensible pairs were selected for the semantic differential questionnaire, including: "Calming/ Tense", "Disturbing/ Joyous", "Having Identity/ Lacks Identity", "Static/ Dynamic", "Peaceful/ Crowded", "Being Older/ More Modern", "Mysterious/ Legible", "Chaotic/ Ordered" & "Complex/ Simple". These contrasting pairs were used as the basis for the next stage of the research, where citizens evaluated the urban landscapes using the semantic differential questionnaire.

• Comparison of the meaning of historical and contemporary urban landscapes (quantitative)

A semantic differentiation matrix was developed based on the contrasting attributes extracted from the interview text. First, three professors from the fields of urban planning, architecture, and landscape reviewed the validity of the

Table 2. Attributes and characteristics ascribed to the historical and contemporary urban landscapes of Shiraz. Source: Authors.

Basis for Collecting Attributes and Characteristics		Basis for Collecting Attributes and Characteristics	Attributes assigned to contemporary urban landscapes
Interview		Comfort, Tranquility, Calm, Pride, Silence, Liberation, Privacy, Disturbing, Happiness, Safety, Identity, Enjoyable, Relaxing, Grandeur, Comfort, Good Feeling, Pleasant View, Memorable, Vitality, Dynamism, Vitality, Enclosure, Curiosity, Mystery, Stillness, Harmony, Warm Space, Delicacy, Harmony, Liberation, Cozy, Uniformity, Legibility, Orderliness, Visible, Depressing, Beautiful, Decay, Lovable, Sincere People, Simplicity, Friendship And Companionship, Intertwining, Coherence, Spatial Determination	Lack of Identity and Meaning, Multi-Personality, Inclusive, Creative, Uniform, Lack of Grandeur, Imagination, Lack of Coherence, Lively Urban Space, Unique Architecture, Strangeness, Delightful, Private, Cozy, Calm, Memorable, Picturesque, Understandable, Good Feeling, Pleasant Weather, Identity, Sense of Re-Experience, Modernity, Progress, Hustle, Presence, Good View, Fast-Paced Life, Freedom And Movement, Dynamism, Noise, Attractiveness, Happiness and Vitality, Entertainment, Liveliness, Desirable Greenery, Healthy Social Interaction, Flexibility, Multi-Sensory Environment, New Environment, Norm-Breaking, Novelty, Beauty, Pause, Pleasant, Mysterious, Simplicity, Chaos, Greater Security, Well-Being, Physical Cohesion, Less Intimacy, Materialism
		Good Feeling, Historical Sense, Happiness and Vitality, Unity, Intimacy, Harmony, Distinct Identity, Uniqueness, Beauty, Older, Stronger, Happiness and Vitality, Calm	Coherence, Tension, Disorder, Meaningless, Beauty, Newer, Technological, Sense of Liberation, Lack of Calmness
Common attributes between historical and contemporary urban landscapes		Memorable, Vitality, Dynamism, Liveliness, Cozy, Mysterious, Beautiful, Decay, Calm, Beauty, Uniformity, Liberation, Uniqueness	
Dual attributes	Evaluation (Good-Bad)	(Calming / Tense), (Disturbing/Joyous), (Having Identity / Lacks Identity)	
	Activity (Active-Inactive)	(Peaceful / Crowded), (Static / Dynamic)	
	Strength (Weak-Strong)	(Being Older / More modern), (Mysterious / Legible), (Chaotic / Ordered), (Complex / Simple)	

questionnaire. Next, five urban planning experts completed the questionnaire and provided their opinions on the posed questions. After refining the questions and attribute pairs, the questionnaire was randomly distributed to 30 citizens across the city. Preliminary results showed that the questionnaire had satisfactory reliability (Cronbach's alpha coefficient of 0.805). Therefore, the questionnaire was distributed to a larger group of citizens. A total of 412 questionnaires were distributed. After removing eight incomplete questionnaires, 394 valid responses were obtained. Notably, the questionnaires were distributed and completed at various times throughout the day, primarily between 9 a.m. and 3 p.m., from October 5th to October 26th, 2023.

Descriptive statistics of the respondents' demographics revealed that 42.8% were male and 57.1% were female. The most common age range was 25-35 years old, followed by 45-55 years old. Forty-six-point seven percent held a master's degree, and 23.1% had a bachelor's degree. Regarding employment, 28.9% were in other occupations, 23.9% were students, and 23.3% were employees.

Pearson correlation tests were performed on the attributes of both the historical and contemporary landscapes. The results showed that the attributes, particularly those representing the meaning of the contemporary landscape, had a good correlation. The Pearson correlations between pairs of attributes describing historical and contemporary urban landscapes are presented separately in Tables 3 & 4. The analysis revealed that the "static/ dynamic" attribute pair did not correlate well with other attribute pairs when describing the meaning of historical and contemporary urban landscapes. It only showed a moderate correlation with the "peaceful/ crowded" pair ($r = 0.523$) in the historical urban landscape. In describing the meaning of contemporary urban landscapes, the "static/dynamic" pair also showed a correlation with the "peaceful/ crowded" pair, with a strength of 0.474.

Therefore, in describing the meaning of historical and contemporary urban landscapes, nine pairs of attributes can be used: "Calming/ Tense", "Disturbing/ Joyous", "Having identity/ Lacks identity", "Static/Dynamic", "Peaceful/ Crowded", "Being Older/ More modern", "Mysterious/ Legible", "Chaotic/ Ordered", "Complex/ Simple". The comparative semantic profiles of the historical and contemporary urban landscapes of Shiraz are presented in the following (Fig. 2). The attributes describing the contemporary urban landscape include, in order: "complex", "mysterious",

Table 3. Correlation of Attribute Pairs in Historical Urban Landscape. Source: Authors.

Dual attributes		Calming/ Tense	Disturbing/ Joyful	Having identity/ Lacks identity	Static/ Dynamic	Peaceful/ Crowded	Older/ More modern	Mysterious/ Legible	Mysterious/ Legible	Complex/ Simple
Calming/ Tense	Pearson Correlation	1	0.475**	0.472**	0.292**	0.168**	0.283**	0.290**	0.458**	0.145**
	Sig.	-	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.004
Disturbing/ Joyful	Pearson Correlation	0.475**	1	0.527**	0.070	0.167**	0.290**	0.383**	0.434**	0.155**
	Sig.	0.000	-	0.000	0.163	0.001	0.000	0.000	0.000	0.002
Having identity/ Lacks identity	Pearson Correlation	0.472**	0.527**	1	0.090	0.089	0.433**	0.242**	0.374**	0.082
	Sig.	0.000	0.000	-	0.074	0.079	0.000	0.000	0.000	0.102
Static/ Dynamic	Pearson Correlation	0.292**	0.070	0.090	1	0.523**	0.148**	0.058	0.234**	0.242**
	Sig.	0.000	0.163	0.074	-	0.000	0.000	0.254	0.000	0.000
Peaceful/ Crowded	Pearson Correlation	0.168**	0.167**	0.089	0.523**	1	0.145**	0.074	0.123*	0.154**
	Sig.	0.001	0.001	0.079	0.000	-	0.004	0.144	0.015	0.002
Older/ More modern	Pearson Correlation	0.283**	0.290**	0.433**	0.148**	0.145**	1	0.201**	0.119*	0.074
	Sig.	0.000	0.000	0.000	0.003	0.004	-	0.000	0.018	0.143
Mysterious/ Legible	Pearson Correlation	0.290**	0.383**	0.242**	0.058	0.074	0.201**	1	0.392**	0.269**
	Sig.	0.000	0.000	0.000	0.254	0.144	0.000	-	0.000	0.000
Mysterious/ Legible	Pearson Correlation	0.458**	0.434**	0.374**	0.234**	0.123*	0.119*	0.392**	1	0.364**
	Sig.	0.000	0.000	0.000	0.000	0.015	0.018	0.000	-	0.000
Complex/ Simple	Pearson Correlation	0.145**	0.155**	0.082	0.242**	0.154**	0.074	0.269**	0.364**	1
	Sig.	0.004	0.002	0.102	0.000	0.002	0.143	0.000	0.000	-

**Correlation is significant at the 0.01 level (2-tailed).

"disturbing", "lacks identity", "tense", "chaotic", "static", "more modern", and "crowded". The attributes describing the historical urban landscape include, in order: has "identity", "older", "calming", "Joyful", "legible", "simple", "ordered", "dynamic", and "Peaceful".

This study aimed to compare the meanings of these two subtexts qualitatively and quantitatively. Using the semantic differentiation technique, a quantitative comparison was also conducted. When examining the semantic changes in Karaj's urban landscape, Mohammadi & Rezazadeh (2019) noted that the functional, symbolic, and identity aspects received less attention, while the economic and political facets of landscape changes received more emphasis. This study complements their findings by showing that citizens perceive differences in the meanings of historical and contemporary landscapes in terms of "climate," "feelings toward the urban fabric," "function," "infrastructure," "housing," "population," "people," "culture," and "security and sense of belonging."

Previous studies have evaluated Tehran's urban form using the differential semantics scale and images of the city's landscape. Latifi & Paknezhad (2021) conducted one such study. The attributes classified in the evaluation dimension included orderly versus disorderly, identity versus no identity, homogeneous versus heterogeneous, and artificial versus natural. The classified attributes in the power dimension included classical-romantic, modern-traditional, short-tall, and symbolic-textual. Finally, the diverse-uniform and multi-shaped-monochromatic attributes were categorized under the activity dimension. These attributes differ from the nine pairs of attributes determined in this study by the people: "Calming/ Tense", "Disturbing/ Joyous", "Having Identity/ Lacks Identity", "Static/ Dynamic", "Peaceful/ Crowded", Being "Older/ More Modern", "Mysterious/ Legible", "Chaotic/ Ordered", and "Complex/ Simple". Only the attribute pairs "Orderly/ Chaotic", "Having Identity/ Lacks Identity", "Chaotic/ Ordered", and "Legible/ Mysterious"

Table 4. Correlation of Attribute Pairs in Contemporary Urban Landscape. Source: Authors.

Dual attributes		Calming/ Tense	Disturbing/ Joyful	Having identity/ Lacks identity	Static/ Dynamic	Peaceful/ Crowded	Older/ More modern	Mysterious/ Legible	Mysterious/ Legible	Complex/ Simple
Calming/ Tense	Pearson Correlation	1	0.579**	0.528**	0.505**	0.173**	0.351**	0.261**	0.462**	0.255**
	Sig.	-	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000
Disturbing/ Joyful	Pearson Correlation	0.579**	1	0.624**	0.254**	0.021	0.214**	0.219**	0.502**	0.189**
	Sig.	0.000	-	0.000	0.000	0.680	0.000	0.000	0.000	0.000
Has identity/ Lacks identity	Pearson Correlation	0.528**	0.624**	1	0.457**	0.122	0.291**	0.249**	0.459**	0.242**
	Sig.	0.000	0.000	-	0.000	0.016	0.000	0.000	0.000	0.000
Static-Dynamic	Pearson Correlation	0.505**	0.254**	0.457**	1	0.474**	0.407**	0.235**	0.440**	0.392**
	Sig.	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000
Peaceful/ Crowded	Pearson Correlation	0.173**	0.021	0.122	0.474**	1	0.362**	0.118	0.175**	0.319**
	Sig.	0.001	0.680	0.016	0.000	-	0.000	0.019	0.000	0.000
Older/ More modern	Pearson Correlation	0.351**	0.214**	0.291**	0.407**	0.362**	1	0.094	0.148**	0.101
	Sig.	0.000	0.000	0.000	0.000	0.000	-	0.062	0.003	0.045
Mysterious/ Legible	Pearson Correlation	0.261**	0.219**	0.249**	0.235**	0.118	0.094	1	0.346**	0.409**
	Sig.	0.000	0.000	0.000	0.000	0.019	0.062	-	0.000	0.000
Mysterious/ Legible	Pearson Correlation	0.462**	0.502**	0.459**	0.440**	0.175**	0.148**	0.346**	1	0.501**
	Sig.	0.000	0.000	0.000	0.000	0.000	0.003	0.000	-	0.000
Complex/ Simple	Pearson Correlation	0.255**	0.189**	0.242**	0.392**	0.319**	0.101	0.409**	0.501**	1
	Sig.	0.000	0.000	0.000	0.000	0.000	0.045	0.000	0.000	-

**Correlation is significant at the 0.01 level (2-tailed).

showed common results with the findings of the study conducted on the urban space of Sepah Street in Qazvin by Khatibi (2020). In Khatibi's study, both experts and citizens were respondents, and their perceptions differed in objective and subjective components. The quality of the subjective components was not satisfactory. Some of this study's results also show semantic similarities with meanings explored in Vancouver in Nasr (1998)'s book, which referred to degrees of pleasant/unpleasant, calming/disturbing, stimulating/boring, and exciting/spiritless. Using this technique, this study complements previous research, providing semantic profiles for historical and contemporary landscapes and clarifying the potential use of this research tool for future studies.

Conclusion

The goal of this study was to understand how users interpret urban landscapes and the common meanings they form. The first phase employed qualitative interviews, and the second phase used a semantic differentiation questionnaire. In response to the first research question—how citizens describe the semantic differences between historical and contemporary urban landscapes—the interviewees highlighted various dimensions and components, including "climate", "feelings toward the urban fabric", "function", "infrastructure", "housing", "population", "people", culture, "security", and "sense of belonging". They used a set of attributes to describe and compare the two landscapes.

In response to the second research question—what common and contrasting attributes do citizens use to describe the landscapes—the attributes and nouns assigned to the historical/old landscape include "good feelings", "a historical sense", "happiness and vitality", "unity", "intimacy", "harmony, a distinct identity", "uniqueness", "beauty", "being older", "stronger", and "calmness". The attributes assigned to the new landscape include "coherence", "tension", "chaos", "meaninglessness", "beauty",

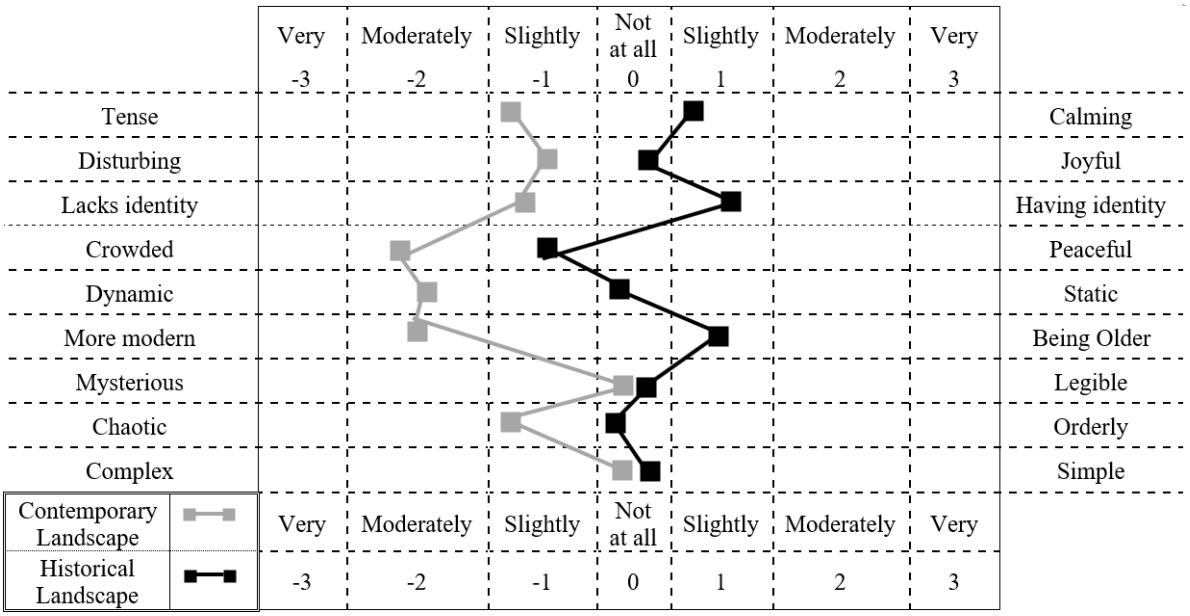

Fig. 2. Semantic Profile of Historical and Contemporary Urban Landscapes. Source: Authors.

"newness", "technology", "a sense of liberation", and "a lack of calmness". Common attributes of both the historical and contemporary landscapes include "memorable", "vital", "dynamic", "lively", "cozy", "mysterious", "beautiful", "decaying", "calm", "uniform", "liberating", and "unique".

The attribute pairs: "Calming/ Tense", "Disturbing/ Joyous", "Having identity/ Lacks identity", "Static/ Dynamic", "Peaceful/ Crowded", "BeingOlder/ More modern", "Mysterious/ Legible", "Chaotic/ Ordered", and "Complex/ Simple" were selected for further inquiry in the next phase using the semantic differentiation questionnaire.

Finally, it was found that the attributes describing the contemporary urban landscape included the following, in order: "complex", "mysterious", "disturbing", "lacking identity", "tense", "chaotic", "dynamic", "modern", and "crowded". The attributes describing the historical urban landscape included the following, "in order: having identity", "being older", "calming", "joyous", "legible", "simple", "ordered", "static", and "peaceful". A quantitative comparison and comparative semantic profile revealed that "having identity" was the attribute with the highest average score for the historical landscape, while "simple" had the lowest. In the contemporary landscape, "crowded" had the highest average score. Neither the historical nor the contemporary landscapes were closely associated with the pairs "legible / mysterious" or "simple/complex."

In response to the third research question—what are the practical solutions derived from the semantic comparison of two historical and contemporary urban landscapes—it can be noted that identifying citizens' perspectives on urban landscapes can play an important role in the following:

a) Formulating future urban appearance and landscape regulations.

(b) evaluating the current status of historical and contemporary urban landscapes in Shiraz.

Additionally, focusing on the differences highlighted by users can help create greater semantic cohesion and connection, not merely focusing on physical aspects.

c) A protection and enhancement plan for historical and contemporary urban landscapes can be developed that aims to create greater semantic cohesion and connection rather than merely focusing on physical aspects. The relationship between humans and the environment, and the meaning derived from it, should also be considered in designs.

Furthermore, future research in the field of semantic comparison of urban landscapes could be conducted in the following areas:

- Comparing the differences in the semantic models of urban landscapes from the perspectives of experts and citizens.
- Comparing the differences in the semantic models of urban landscapes from the perspectives of women and men.
- Comparing differences in the meaning of urban landscapes from the perspectives of various age and gender groups.
- Comparing the differences in the meaning of urban landscapes from the perspective of various social and economic groups.
- Examining the semantics of urban landscapes from the perspective of children.

Declaration of No Conflict of Interest

The authors declare that they have no conflict of interest in conducting this research.

Endnotes

*This article extracted from Ph.D. thesis of "Hajar Asadpour" entitled "Formulating a Semantic Model of the Urban Landscape; Case Study: Shiraz City" that under supervision of Dr. "Mahmoud Ghalehnoee" and Dr. "Armin Bahramian"which has been done at Art University of Isfahan, Faculty of Architecture & Urbanism, Isfahan, Iran in 2024.

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