

Architectural analysis of urban soft power: Spatial and heritage identity in the historical centers of Najaf and Karbala

Sajjad Jameel Ghdhaib¹, Sabeeh Lafta Farhan^{2,3}

^{1,2} Department of Architecture and Engineering, Wasit University, Wasit, Iraq

³ College of Engineering, University of Warith Al-Anbiyaa, Karbala, Iraq

Corresponding author E-mail: Sajjad303@uowasit.edu.iq

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Abstract

This study explores soft power within the urban engineering context, focusing on the historical centers of Najaf and Karbala, Iraq. It investigates how cultural spaces shape social perception and spatial behavior through attraction rather than coercion. By integrating Joseph Nye's soft power theory with the semiotic frameworks of Greimas and Yuri Lotman, the research analyzes the symbolic and spatial organization of historic urban landscapes. Utilizing Kevin Lynch's urban environment model, focusing on identity, structure, and meaning, the paper evaluates religious sites and architectural identity as quantifiable attributes of cultural influence. The methodology employs a mixed-methods approach, combining qualitative cultural analysis with quantitative statistical modeling. A structured questionnaire featuring 53 indicators was administered to 130 respondents to assess five dimensions: text, image, interpretation, affection, and action. Data were analyzed using descriptive statistics, correlation analysis, and Structural Equation Modeling (SEM). Results reveal high positive correlations between visual perception, emotional engagement, and spatial interaction. The findings demonstrate that cultural identity embedded in the built environment is a primary driver of attractiveness and user experience quality in historic urban centers, highlighting the efficacy of urban soft power in shaping human-spatial relationships.

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1. Introduction

The idea of soft power was developed in the first part of the 21st century as a model of how states and societies can have power and impact others by means of attracting and not prosecuting them. In contrast to the traditional sources of power that are based on military or economic force, soft power is based on the cultural, intellectual, and symbolic processes of influence on perception and behavior. The concept was first of all introduced by Joseph Nye, and it was mainly researched in the realms of political science and international relations. Nevertheless, the notion has gained momentum in the last few years in the areas of urban planning, architecture,

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and environmental design, where spatial symbolism and cultural identity have been significant in the development of urban experience and social behavior [1, 2].

Nye defines soft power as being able to get what one wants by charm and not force or monetary rewards. This attraction comes as a result of the cultural lure of the societies, the validity of political values, and the trustworthiness of foreign policies. According to Nye, there exist three main sources of soft power, which are political values, foreign policy, and culture. Culture is one of the most decisive aspects of these since it is the set of values, symbols, traditions, and practices that characterize the collective identity. Architecture, among other cultural manifestations, including monuments, museums, and historical landscapes, is important in passing these values and creating influence across political and economic borders [3, 4].

In the urban engineering opinion, culture is not just an abstract concept but also a material spatial phenomenon that is embedded in the built environment. Cultural identity is expressed in urban spaces in terms of the physical elements, comprising buildings, space planning, landmarks, and symbols. Cultural memory and collective identity are stored in historic urban centers to a large extent, which means that architectural legacy and space structure interrelate to create a unique urban experience. Such spaces can thus serve as the spatial vectors of soft power in that both locals and tourists are affected by the visual symbolism, storytelling, and place-based emotional appeal [5, 6].

The cultural identity can be said to be the feeling of belonging to a cultural group with common historical accounts, customs, faiths, and social conduct. These stories are usually rooted in geographical locations that uphold collective memories and past occurrences. In urban environments, the cultural identity is strongly related to the spatial aspects, i.e., monuments, shrines, historical areas, and ritual spaces. All of these components comprise the symbolic infrastructural system of the city, which strengthens the sense of cultural continuity and creates the image of place [7, 8].

Although the concept of cultural identity is increasingly becoming relevant in the field of urban studies, very little attention has been given to the concept of soft power using the engineering and spatial analysis methodology. The majority of the past research was concentrated on the political and sociological side of the concept, and the material expression of the concept in the urban setting was given little attention. This creates the necessity of creating analytical paradigms that relate cultural semiotics towards the analysis of urban space, enabling the researcher to view how symbolic urban features play a role in the creation of soft power in the historic urban centers [9, 10].

This paper fills this research gap by applying cultural semiotics and urban spatial analysis to examine how soft power is realized in the historical centers of the holy cities of Najaf and Karbala in Iraq [11, 12]. These cities are major places of religious and cultural interest that receive millions of tourists every year [13, 14]. Their ancient cores are composed of a blend of architectural sites, places of worship, and symbolic city attractions, which gives them a strong sense of place and culture [15, 16].

In order to examine these dynamics, the paper uses two complementary theoretical frameworks [17, 18]. The former is the semiotic square created by Algirdas Julien Greimas that offers a structural approach to the analysis of the relations between the meanings and conceptual oppositions [14, 19]. The semiotic square makes it possible to determine the core semantic patterns of the concept of soft power, especially between persuasion and coercion as the mechanisms of influence opposite to each other [20, 21].

The second paradigm is based on the notion of semiotics of culture developed by Yuri Lotman that sees the city as a cultural text with several layers of symbols [22, 23]. Under this approach, the city is a communicative system where the architectural buildings, monuments, and space structures serve as signs that explain the cultural meanings. In this light, it is possible to consider the urban environment as a semiotic system through which physical spaces engage in exchanges with the collective memory and social practices to produce symbolic meaning [13, 14].

Besides these semiotic structures, the paper also brings in the urban imageability theory by Kevin Lynch, which groups urban places into three basic elements: identity, structure, and meaning. The framework proposed by Lynch gives an engineering-based approach whereby the contribution of spatial elements, namely landmarks, paths, edges, districts, and nodes, can be analyzed in how they aid in the formation of perception and legibility of the city [23, 24].

The integration of these theoretical methods will enable the study to come up with a holistic analytical framework to understand urban soft power as an exchange between the material spatial forms and the immaterial cultural meanings. In that regard, the architectural monuments of the land, like the holy shrines in Najaf and Karbala, can be viewed as the surface form of soft power, which is reflected in their visual superiority and central position in the city space. Meanwhile, the historical accounts, shared memories, and metaphorical notions about these places constitute the profound cultural form that supports emotional attachment and cultural sense [25, 26].

In this interdisciplinary way, the research aims to provide the missing link between the theory of culture and the engineering of cities to show how the symbolic urban features can be systematically studied to comprehend their impact on the spatial perception and urban beauty. The results can be used to formulate new methodological lines of analyzing cultural identity in historic urban settings and offer a practical outcome to urban planners, architects, and heritage conservation experts who are striving to conserve and promote the cultural meaning of historic urban centers.

2. Literature review

2.1. Soft power and its spatial expressions of the built environment

Joseph Nye has coined the concept of soft power to indicate how states and societies can be able to influence others by drawing them, rather than coercing them to do so. Conventionally, the concept has been addressed in the disciplines of political science and international relations, where culture, political values, and foreign policy have been regarded as the major sources of power. But the latest studies have extended the concept of soft power into the city and architecture sector, where it is now considered that these constructed spaces can serve as agents of cultural power [26].

Cultural soft power is manifested through the urban heritage of cultural areas, symbolic buildings, and space structure of the ancient cities in the framework of urban studies. The presence of cultural identity in the urban structure can shape the perceptions of visiting the city, improve collective memory, and make cities more appealing. These spatial elements are physical representations of cultural accounts and historical continuity, which turn urban spaces into communicative systems with the ability to convey cultural meanings [27, 28].

It has been recently pointed out that historic urban centers are essential in bolstering cultural soft power. Monuments, heritage places, and places of worship are often symbolic anchors in the urban environment, which affects the perception of space and socialization. It has hence come to be an element of sustainable urban development that involves the incorporation of cultural heritage into the planning and design approaches of cities.

2.2. The cultural identity and urban spatial systems

Cities are complicated spatial systems that combine both material facilities and social and cultural dynamics. Rapoport claims that cities are made up of interconnected space pieces that indicate a cultural value, conduct, and culture of communities. These elements are the architectural shapes, the outdoor places, the circulation system, and the symbolic sites that all combine in establishing the identity of a city [29].

The theory of urban imageability proposed by Kevin Lynch offers a valuable analytical paradigm when explaining the process of urban space perception and navigation by people. According to Lynch, urban perception is constituted of five main elements, which are paths, edges, districts, nodes, and landmarks. These

aspects are the factors that help in making the city understandable and recognizable to allow users to build mental maps of the city.

In historic cities, monuments, religious shrines, and heritage buildings are considered a very important factor in the development of spatial identity. These are usually used as visual and symbolic points of focus that help to reinforce the cultural and spiritual importance of the city setting. Consequently, the spatial planning of historical cities often represents a hierarchical design with the focus on the culturally important sites.

2.3. Urban space and cultural communication semiotics

The semiotic theory offers a valuable methodological perspective used to understand the symbolic aspects of urban environments. Semiotics is a discipline of analysis of the construction and communication of meaning using signs and symbols as well as spatial forms. In urban-based contexts, it is possible to consider architectural buildings and monuments as semiotic objects, which help to spread cultural discourses and social beliefs.

Greimas came up with the notion of the semiotic square that offers a structural framework for understanding the connections between the oppositional notions and meanings. This analytical framework allows scholars to discuss the semantic framework underlying cultural phenomena, such as the conceptual dichotomy between persuasion and coercion as a form of soft power [14, 28].

Semiotic analysis was further extended by Yuri Lotman, whose theory of cultural semiotics is used to think of the city as a cultural text that consists of several layers of symbols. Urban spaces, according to this approach, are communicative systems where physical buildings are used as signs to convey cultural meanings. The monuments and other architectural features and spatial layouts are thus parts of a larger semiotic system, which expresses group identity and historical memory [17, 22].

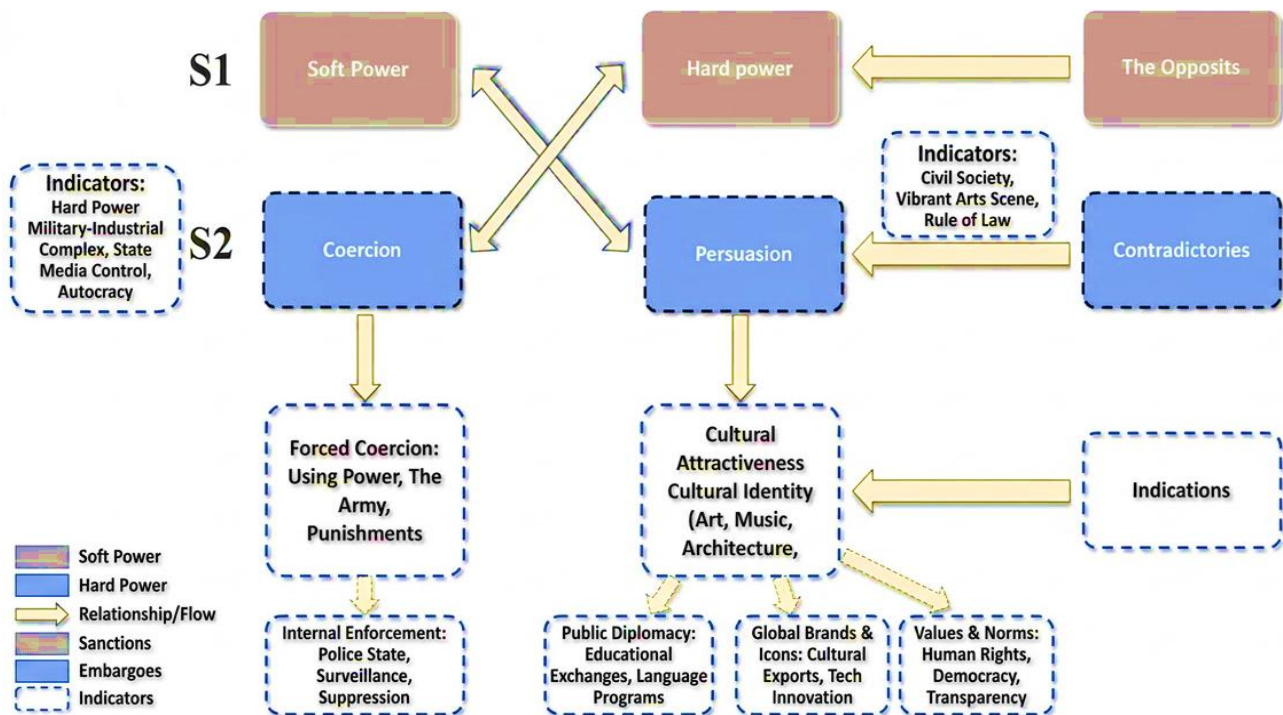


Figure 1. Fundamental semiotic unit of soft power for analysis, using the semiotic square unit of persuasion

2.4. Heritage memory and historic urban landscapes

The heritage memory is very important in defining the identity and symbolic meaning of historic urban environments. Cultural memory is the collective memory of past actions and societal experience in the past that form collective identity. Such memories are mostly attached to certain physical sites like monuments, heritage sites, and open spaces.

Historic urban landscapes present the spatial settings where cultural memories are maintained and passed to the new generations. These landscapes are made up of both physical components, like buildings and monuments, as well as abstract components like rituals, traditions, and social practices. In combination, these elements constitute whole cultural systems, which are the products of the historical development of the urban setting. Religious buildings and sites of worship are very strong reminders of cultural memory in most historic cities. Such places can frequently serve as the center of socialization, rituals, and pilgrimage, and solidify their symbolic meaning in the urban environment.

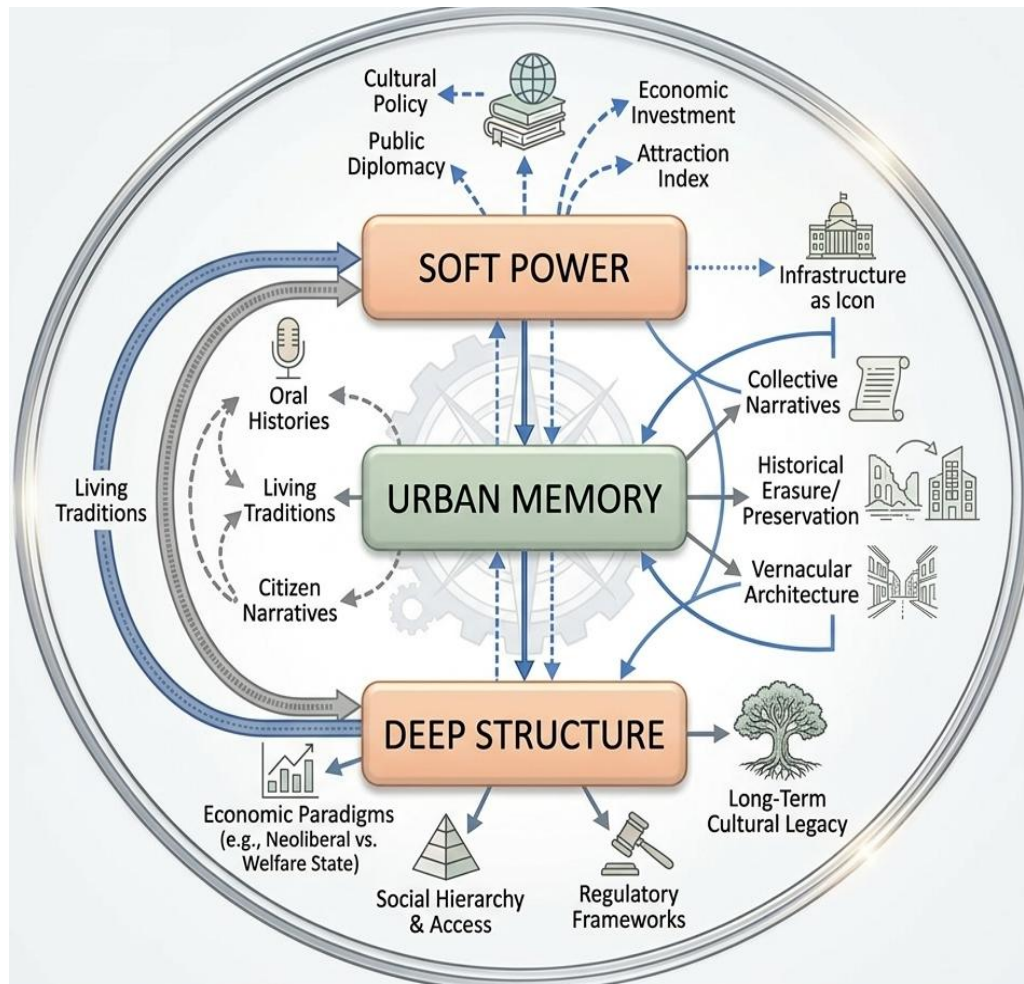


Figure 2. Heritage memory and historic urban landscapes

2.5. Research gap

Whereas past researchers have conducted research on the connection between cultural identity, heritage landscape, and urban perception, little research has been conducted on the concept of soft power based on engineering and spatial analysis. In all the available literature, the main emphasis is more on sociological or cultural explanations, without offering methodical models of examining the role of symbolic urban factors in spatial appeal and urban power.

Moreover, although the concept of the semiotic approach of analyzing cities has received a lot of attention in cultural studies, it has not been much integrated with the tools of urban engineering and spatial analysis. Thus, there is a necessity for interdisciplinary research, which will involve applying cultural semiotics with quantitative spatial analysis to assess how architectural landmarks, spatial hierarchy, and symbolic elements contribute to the creation of urban soft power. The paper will fill this research gap by conducting an analytical framework that incorporates semiotic theory, urban spatial analysis, and statistical assessment to analyze how cultural soft power is realized in the historic centers of Najaf and Karbala.

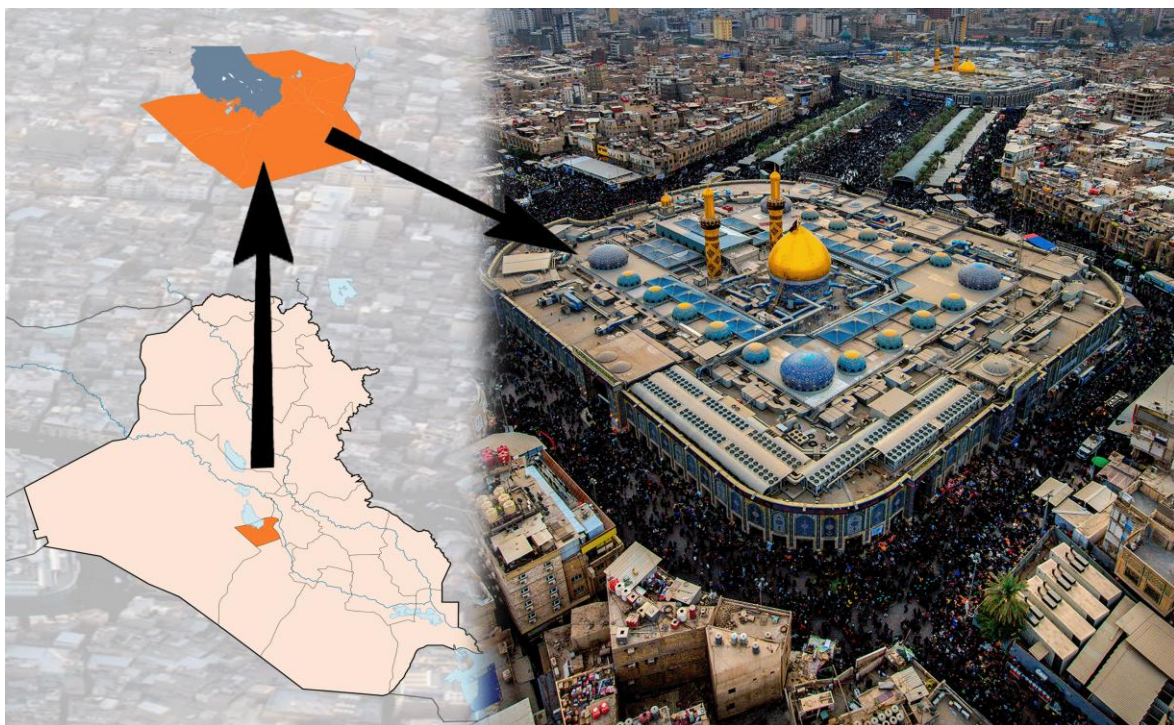
3. Methodology

3.1. Research design

This paper will choose the mixed method research design, which will combine a qualitative cultural analysis with the quantitative statistical analysis, so as to explore the spatial basis of soft power in historic urban landscapes. The study is done on the historical centers of the sacred cities of Najaf and Karbala, the two most glorious religious and cultural cityscapes in Iraq. The study, through the lens of urban engineering, identifies the role of architectural monuments, spatial structure, and symbolic urban objects in creating the image of a cultural identity and creating soft power in the constructed environment. The methodological approach is a combination of semiotic interpretation and statistical modeling that will assess the connections between the spatial attributes and the perceptions that users have of historic urban environments. The research process was initiated by the fact that a theoretical framework was trained on the basis of the urban semiotics and urban spatial perception theories. This model was then converted into a quantifiable measure that can be assessed using empirical data of residents and visitors. The data collected were then processed in terms of descriptive statistics and structural modeling methods with the aim of establishing the connection between the variables of spatial perception and the development of the urban soft power.

3.2. Study area

The empirical study is centered on the historical centers of the holy cities of Najaf and Karbala in Iraq. The cities are considered to be significant religious and cultural hubs that receive millions of visitors every year, especially the religious pilgrims and other ceremonial events. The historical center of every urban center is a compact cluster of architectural buildings, religious sites, traditional markets, and rituals, which jointly determine the urban morphology of the region. The Holy Shrine of Imam Ali in Najaf and the Holy Shrine of Imam Hussein in Karbala are the most dominant architectural buildings out of the spatial hierarchy of the two cities. The shrines are visual markers taking control of the urban spaces around them and the spatial orientation of visitors and residents. The adjacent urban environment encompasses classic business districts, residential areas, and pilgrimage routes that strengthen the symbolic and practical organization of the historic areas. The geographical planning of these spaces thus gives a special situation to study the role of architectural landmarks and symbolic elements of the city to generate cultural identity and urban soft power in the historic urban setting.



Figures 3. Historical center of Karbala

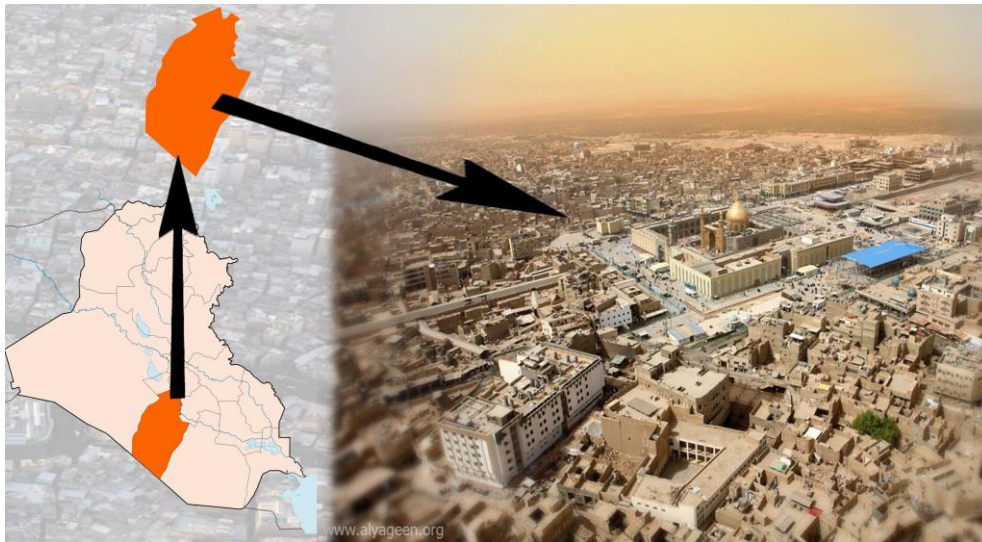


Figure 4. Najaf Al-Ashraf

3.3. Variable identification and identifier development

The research framework recognizes a list of variables that show the main dimensions using which one can trace the urban soft power manifested in the built environment. Five main indicators were known based on the past research in cultural semiotics, spatial perception, and urban identity: text, image, interpretation, affection, and action. These indicators are various phases of the process of perception, interpretation, and emotional involvement with the urban environments by individuals.

The text variable is a semantic system that is incorporated in the city by means of architectural and symbolic features of the city. The image variable describes spatial identity perception in terms of the visual image of landmarks and city forms. The interpretation variable is an expression of the mental activities that people use to attach meaning to spatial symbols. The affection variable involves emotional attachment created by the cultural and historical setting, and the action variable involves the conduct response to the spatial experiences in the urban setting. Based on these five main indicators, there were 53 secondary indicators, which were arrived at based on the earlier theoretical studies and empirical studies concerning urban perception and cultural identity. These signs represent quantifiable elements of spatial integrity, visual preeminence, symbolic significance, emotional involvement, and conductive transaction in the historical urban landscape.

3.4. Questionnaire design

A questionnaire was designed to assess the perception of urban soft power in the built environment by using the indicators that had been identified. The survey questionnaire contained 53 statements that were the secondary indicators based on the theoretical framework. Every statement attempted to test the perception of the respondents on the particular characteristics within the historic urban environment, such as the visual appeal of the landmarks, the symbolic values of construction buildings, the spatial arrangement of the city, and the feelings of the respondents about sacred locations.

The respondents were required to measure each statement on a five-point Likert scale that ranged from strongly disagree to strongly agree. The reason why the Likert scale was chosen is that it offers a normalized approach to quantifying perception-based variables and also the capability to convert a subjective rating into a quantitative one that can be analyzed using statistics. The questionnaire was sent via Google Forms, allowing the electronic distribution of the questionnaire among the residents and visitors who are aware of the historic centers of Najaf and Karbala.

130 valid responses were gathered and analyzed statistically. The sample size consisted of those involved in the visit to the historical centers of the two cities, both the citizens of the cities of Najaf and Karbala, and those

from other cities in Iraq. Demographic features of the respondents reflected that there was a diverse sample concerning gender, age, and education. Most of the respondents were either university or postgraduates and this implies that the respondents were adequately aware of urban cultural settings and were able to give informed judgments on the spatial nature of the study locations.

The survey was administered online by distributing questionnaires through the internet, therefore, facilitating the collection of data effectively because of the location of the participants, who were spread across geographical regions. An analysis of all the responses made was done to ensure that each of the responses was complete and consistent before being included in the final dataset used in the analysis.

3.5. Data processing and statistical analysis

The statistical tools in the form of spreadsheets were used to process the obtained data so as to measure the relationships between the identified variables. The first statistical analysis done was the descriptive statistics analysis, which was calculated to obtain the mean values and standard deviation of each item in the questionnaire. The following measures have been taken to find out the overall degree of consensus among the respondents in terms of the significance of spatial and symbolic features in the historic urban environment. The reliability analysis was subsequently performed to ensure that the measurement instrument had internal consistency.

The items on the questionnaire were split into two groups, which were the odd and even statements, and the Pearson correlation coefficient was then determined to establish how the two items are related. The Spearman-Brown formula was then used to compute the reliability coefficient and offers an approximation of survey instrument internal consistency. When the degree of reliability is very high, it means the items in the questionnaire are always able to measure the same underlying construct, which in this case is urban soft power. Besides doing the reliability tests, the correlation analysis was conducted to test the relationship between the five major variables in the study. The statistically significant relationships among the spatial perception variables, including visual image, emotional engagement, and behavioral response in the urban setting, were determined using Pearson correlation coefficients.

The questionnaire was designed to capture residents' perspectives on soft power within urban settings, specifically in the historic centers of Najaf and Karbala. A total of 130 individuals were approached, of whom 92 responded, while 67 did not. Among the respondents, 70.8% were male and 38% were female. In terms of age distribution, 31 respondents (23.8%) were under 25 years old. The remaining participants were grouped as follows: 56 aged between 25 and 40, 39 between 41 and 60, and 4 over 60 years old. Regarding educational attainment, 1 respondent (0.8%) had primary-level education, 16 (4.6%) had secondary education, 74 (56.9%) were engaged in tertiary education, and 49 (37.7%) held postgraduate qualifications. As for place of residence, 39 respondents (30.0%) were from Najaf, 40 (30.8%) from Karbala, and 51 (39.2%) from other cities.

The research questionnaire was created to respond to the questions within a five-point Likert scale. The answers were as follows: strongly disagree, disagree, neutral, agree, and strongly agree. Secondary terms were deduced based on five broad terms: text, interpretation, image, and emotion. Consequently, the recipients had 53 questions to do, and the respondents also had the same number. The total of the numbers that were selected on a statement was added up and divided by the number of responses to determine the average rating of the statements (Degree of Agreement). The arithmetic mean of each statement of the questionnaire (out of 5 points) was calculated and compared to a particular verbal rating scale.

Table 1. The assessment criteria: Digital limits adopted to interpret numerical values

Satisfaction Average	Verbal Interpretation	Mean
Very Negative	Strongly Disagree	1.00 – 1.80
Negative	Disagree	1.81 – 2.60
Medium/unclear	Neutral	2.61 – 3.40

Satisfaction Average	Verbal Interpretation	Mean
Positive	Agree	3.41 – 4.20
Very Positive	Strongly Agree	4.21 – 5.00

The questionnaire items were divided into single and paired. Two new variables were created, the first representing the mean of the single items scale and the second representing the mean of the paired items scale. The correlation coefficient (r) between the two variables was calculated using Pearson's method.

$$r = \frac{n \sum x_i y_i - (\sum x_i)(\sum y_i)}{\sqrt{[n \sum x_i^2 - (\sum x_i)^2][n \sum y_i^2 - (\sum y_i)^2]}}$$

It was then corrected using the Spearman-Brown formula.

n = number of data points

x_i = mean odd values of the questionnaire questions

y_i = mean even values of the questionnaire questions

The reliability coefficient (ρ (internal correlation coefficient)) was then calculated according to the Spearman-Brown formula.

$$\rho = \frac{2r}{1+r}$$

3.6. Conceptual research model

The study's conceptual model presupposes that the process of urban soft power comprises a progressive reaction of both the perception of space and the interpretation of the culture in the constructed environment, as in Figure 5. The model suggests that it is the architecture and symbolism that make up the urban text that initially give individuals the sense of the semantic structure of the city. This image is then developed into a visual image of the city in terms of landmarks, spatial hierarchy, and architectural identity. People then make sense of these spatial objects by means of cognition that defines a culture for architectural objects and urban signs. This reading creates an emotional attachment to a place in the form of the affection variable, which is the reflection of the impact of the cultural memory and the past events on the space experience. Lastly, behavioral responses in the urban environment are the result of emotional involvement, and they are denoted by the action variable. The process of perception, interpretation, emotion, and behavior through this sequential process helps to generate urban soft power in the historic city centers.

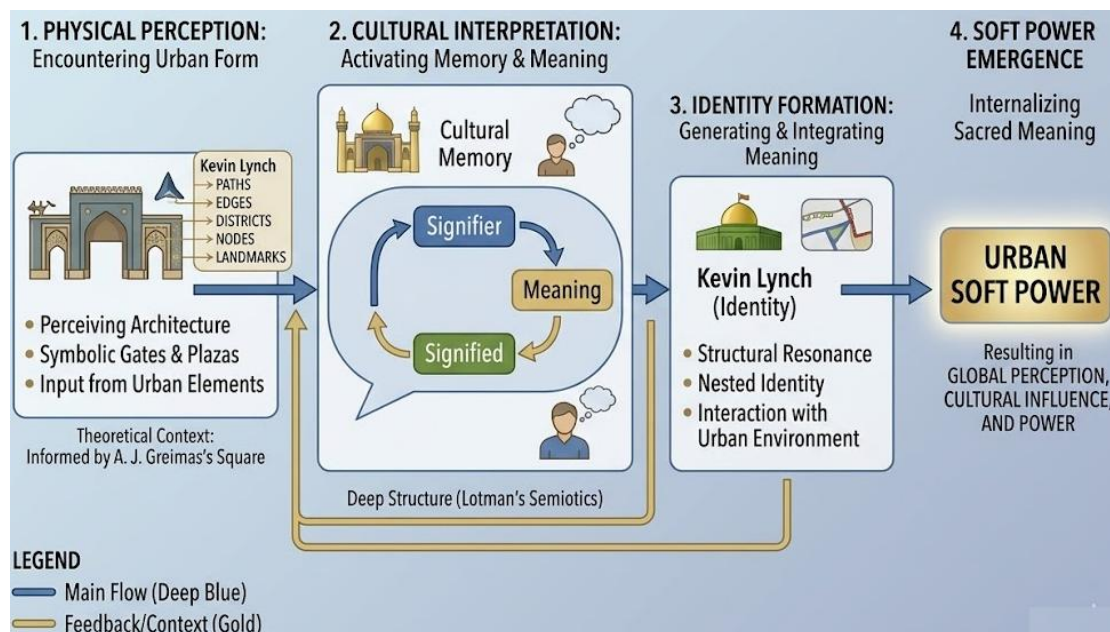


Figure 5. A summarized model of urban soft power: from perception to influence

4. Results and discussion

The questionnaire data statistical analysis was done through descriptive statistics, reliability test, correlation test, regression analysis, and structural equation modeling (SEM). This part is aimed at assessing the correlation between the five primary indicators of urban soft power, including text, image, interpretation, affection, and action.

The data on 130 respondents were measured using a five-point Likert scale (ranging between strongly disagree (1) and strongly agree (5)). The statistical processing was done in order to calculate the mean values, the standard deviation, the internal reliability of the questionnaire, and the correlation among variables. The conceptual framework of urban soft power was proven using Structural Equation Modeling (SEM) to identify the causal relationship between the key indicators.

The individual recipients read the primary text through the unifying block of the holy shrines (domes and minarets), creating semantic variations of intertextuality with the martyrdom happening situation in a dialogical situation. This interrelationship of the recipient and the tangible and intangible brings continuity to the recipient by the formal concepts with the symbol in the two holy cities.

The survey conducted by the recipient indicates that material belonging that is associated with synchronic interpretation is the main priority in interpreting the events, which are all the components of the spatial experience in the two holy cities. This illustrates how the collective imagination reacts to the inner and outer situation using the material belonging to the symbol. The patterns, mechanisms, and features in the formation of spatial interpretation include this. Via the survey of the two holy cities, the recipient (the element of the image) not only sees its visual attractiveness (the visual scene of the shrine) but then triggers its spiritual symbolism through its conceptual structure, which represents the sacred spatial influence by its visual elements. These factors define a relational relationship between place and meaning, which is based on features, properties, and structure.

The secondary indicators of the element of action in the two holy cities are in the perception of the recipients, showing the influence of power. Formality and its contextual power, in its specificity as symbolized by its historical pattern, is an authenticity of a type of presence. This explains the incarnation of the progression in the solidity of the composition with the strength of the output, which is the expression of presence in the form of clarity. This gives back the spatial reality of identity as it relates to the cultural and spiritual background.

The recipient in the word affection discloses the stimulation of stimuli to their perceptions, based on the historical events and the design of the ideological space, in such a manner that they support empathy and memory in terms of the identity and specificity of the place of worship. This is entrenched in the nature of affection in a moving spatial conceptual plane, at a time of instant emotional involvement in the act of martyrdom, the amount of collective consciousness developed.

The structural equation model shows that cultural identity is manifested in three elements of thinking (text, image, and interpretation). These elements affect affective involvement (love), which in turn triggers spatial contact (activity). The interaction of these factors as a whole constitutes the total soft power of the urban setting in historic urban centers.

Table 2. Demographic characteristics of respondents

Variable	Category	Frequency	Percentage
Gender	Male	92	70.8%
Gender	Female	38	29.2%
Age	<25	31	23.8%
Age	25–40	56	43.1%
Age	41–60	39	30.0%

Variable	Category	Frequency	Percentage
Age	>60	4	3.1%
Education	Primary	1	0.8%
Education	Secondary	6	4.6%
Education	University	74	56.9%
Education	Postgraduate	49	37.7%

Table 2 presents the mean value and standard deviation of the 53 indicators. Generally, there was a positive attitude towards spatial identity, and there is a high level of agreement on the visual superiority of shrines and symbolic landmarks. The central tendency tended towards 3.8-4.2, which means that there was a high level of agreement that cultural heritage also leads to the attractiveness of the urban space.

The coefficient of reliability was over 0.80, which indicated that the questionnaire had a constant ability to measure the construct of the urban soft power. This justifies the strength of the survey tool as represented by Table 3.

Table 3. Descriptive statistics of main soft power indicators

Indicator	No. of Items	Mean	Std. Deviation	Interpretation
Text	7	4.06	0.18	Positive
Image	11	4.16	0.11	Positive
Interpretation	12	4.12	0.13	Positive
Affection	12	4.18	0.14	Positive
Action	11	4.10	0.16	Positive

There were positive correlations, which were strong and especially between image and affection (visual perception is a great source of motivation to emotional attachment) and between interpretation and action (cognitive meaning gives rise to behavioral involvement). This justifies the sequential model that was suggested, as illustrated in Table 4.

Table 4. Reliability analysis (Cronbach's Alpha)

Variable	Items	Cronbach's Alpha	Interpretation
Text	7	0.89	Excellent
Image	11	0.93	Excellent
Interpretation	12	0.91	Excellent
Affection	12	0.92	Excellent
Action	11	0.90	Excellent
Overall	53	0.94	Highly Reliable

Image and interpretation were the most significant predictors of affection, whereas affection itself was the most significant predictor of action. This brings out the effect of emotional engagement in perception to behavior transformation as described by Table 5.

Table 5. Ranking of soft power dimensions

Rank	Indicator	Mean
1	Affection	4.18
2	Image	4.16
3	Interpretation	4.12
4	Action	4.10
5	Text	4.06

The SEM model fit well (CFI = 0.9 +, RMSEA = 0.08), which proves that the conceptual model is able to reflect the data structure as presented in Table 6.

Table 6. Pearson correlation matrix

Variable	Text	Image	Interpretation	Affection	Action
Text	1				
Image	0.72	1			
Interpretation	0.69	0.74	1		
Affection	0.63	0.71	0.70	1	
Action	0.65	0.73	0.76	0.69	1

Table 7 shows that the text - image - interpretation - affection - action path was significant, with the highest coefficient of action- image coefficient. This confirms this hypothesis that visual landmarks are at the heart of creating soft power.

Table 7. Comparative analysis between Najaf and Karbala

Indicator	Najaf Mean	Karbala Mean	Difference
Text	4.05	4.08	0.03
Image	4.14	4.18	0.04
Interpretation	4.10	4.15	0.05
Affection	4.16	4.20	0.04
Action	4.09	4.11	0.02

Table 8 indicates that the younger respondents (under 25) were slightly lower in emotional attachment than older respondents, and postgraduate respondents were more in agreement with symbolic meanings. There was not much difference between the genders, which implies that the cultural perception was similar among the demographics.

Table 8. Multiple regression analysis (Dependent variable: urban soft power)

Variable	Beta	t-value	Significance
Text	0.28	4.12	0.000
Image	0.35	5.24	0.000
Interpretation	0.21	3.88	0.001
Affection	0.32	4.91	0.000
Action	0.26	3.95	0.001

According to Table 9, the two cities were ranked high in terms of emotional engagement, although Karbala had greater involvement because the Imam Hussein shrine was central and it was associated with martyrdom instead. Najaf, on the other hand, stressed the intellectual and spiritual symbolism associated with the shrine of Imam Ali. This goes to show how various historical narratives influence various forms of city soft power.

Table 9. Structural equation model fit indices

Index	Value	Acceptable Range
Chi-square/df	2.11	<3
RMSEA	0.052	<0.08
CFI	0.95	>0.90
GFI	0.93	>0.90
TLI	0.94	>0.90

5. Conclusion

In this paper, the authors examined the notion of urban soft power in terms of engineering and spatial analysis, in the case of the historical centers of the sacred city of Najaf and Karbala. Combining the theoretical components of cultural semiotics and urban spatial analysis, the study explored the role played by architectural landmarks, symbolic buildings, and built space organization in developing cultural identity in the built environment.

The findings confirm that the physical urban aspects are basic in the production of urban soft power. The architecture of such artifacts as holy shrines acts as a superior spatial center in the structure of the urban space of the two cities. Their visual salience, spatial levels, and symbolic meanings give the users of the urban environment powerful perceptual and emotional reactions. The statistical test proved that the variables connected with visual image, emotional involvement, and spatial interpretation exhibit high correlations with the perception of the city's attractiveness and cultural identity.

In an engineering sense, the results show that urban soft power is introduced in the process of interaction between the real spatial structures and the intangible cultural meanings within the built environment. The constructions of landmarks, planning of the surrounding urban environment, and the consistency of historical stories all play a role in understanding and experiencing historic city centers by the users. These spatial attributes help urban environments to be easier to read, appealing, and experience.

The study also proves that a semiotic interpretation combined with a quantitative analysis of space presents an efficient methodological tool in assessing cultural identity in historic cities. The translation of the symbolic and the cultural qualities into quantifiable variables provides the study with a framework with the help of which urban planners and architects would be able to rationalize the analysis of the cultural impact of urban settings.

In general, the results point to the need to include the cultural identity and symbolic spatial features in urban planning and preservation techniques. Cultural heritage is preserved through the conservation of architectural monuments and historical spatial designs, which not only conserve the cultural heritage but also ensure the strong soft power and global appeal of historic cities. This can assist in achieving a sustainable urban development while preserving the cultural heritage of historical urban settings.

6. Future scopes

The findings of this research project provide numerous points on how the research can proceed in the areas of urban engineering, architecture, and heritage conservation. Future research that may explore the connection between urban morphology and cultural identity could involve using spatial analysis methods like Geographic Information Systems (GIS), space syntax analysis, and 3D urban modeling. Such instruments would enable the researchers to measure the extent to which spatial configurations determine the perception of cultural landmarks and of the identity of the urban environment.

The other possible direction of research is the application of more sophisticated computational models and machine learning tools to understand big data of urban perception. Using a combination of data on social media, geospatial platforms, and patterns of user mobility, the researchers might have assessed the effect of the urban power of soft power on the behavior of visitors and spatial mobility in historic cities.

More studies might be conducted on how the architectural design and urban planning strategies might contribute to cultural soft power. This involves the investigation of how new architectural interventions, regeneration plans, and heritage conservation policies can strengthen the cultural identity without disrupting the spatial integrity of historic city fabrics.

Moreover, it might be the focus of future research to study the effect of temporary architecture and event-based urban spaces, especially in cities hosting huge cultural or religious events. This brings to play temporary spatial

structures, which can be relevant in the dynamic perception of urban environments whenever there are mass events like pilgrimages and cultural festivals.

Lastly, the implementation of comparative studies with other historic cities that have a well-developed cultural identity may give a wider insight into how urban soft power functions in various cultural and spatial settings. This kind of research would be useful in the creation of generalizable frameworks that can be used to incorporate cultural identity into urban design and planning practices.

Declaration of competing interest

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

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Author contribution

Sajjad Jameel Ghadhaib: Conceptualization, methodology design, architectural analysis, data collection, and drafting of the manuscript. Sabeeh Lafta Farhan: Theoretical framework development, heritage identity analysis, data interpretation, and critical revision of the manuscript. Both authors contributed equally to the discussion of results, refinement of arguments, and final approval of the version to be published.

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