

## ANALYSIS OF THE CINEMATOGRAPHIC EFFECT IN THE INTRODUCTION OF HISTORICAL ENVIRONMENT AND SPACE\*

Hızır Yıkılmaz\*, Seda Şimşek Tolacı

Faculty of Architecture, Suleyman Demirel University, Isparta, Turkey

**Abstract.** Each branch of art has its own forms of expression. In the historical process, however, different branches of art induced and supported each other. The relationship between architecture and cinema exemplifies this fact. As a widespread and effective mass media, cinema has emerged as a means of recording the movement phenomenon in spaces. In cinema, different choices are made for spaces, such as “real space”, “reproduction of a real space”, and “fictional space”, depending on the goal. Historical environment and historical places occupy an important part in this group. They seem to be frequently preferred in recent times. This preference is of great importance in terms of documentation and introduction of cultural spaces and raising awareness in this regard. Thus, this study aims to ensure that the cinematographic effect is used in a more conscious and correct manner in the introduction of cultural spaces. As a result of literature research and movie analyses, the criteria to pay attention to in the production of works were identified for this purpose. In the analysis, the “analytical hierarchy method” was used, which enables the evaluation of numerical data. As a result of the study, the parameters to be considered were determined in order to obtain more effective cinematographic works in introducing cultural spaces, and these parameters were ranked according to their degree of importance. The conscious use of these results in new cinematographic works to be produced with similar goals will make a significant contribution to the introduction and documentation of these spaces and will help to raise awareness in this regard.

**Keywords:** *Architecture and cinema, Architectural protection, Historic environment, Historical space, Analytical hierarchy method.*

**\*Corresponding Author:** Hızır Yıkılmaz, MSc. Architect, Faculty of Architecture, Suleyman Demirel University, Isparta, Turkey, Tel.: +90 537 287 4000, e-mail: [hiziryikilmaz@gmail.com](mailto:hiziryikilmaz@gmail.com)

**Received:** 24 March 2021;

**Accepted:** 9 July 2021;

**Published:** 2 December 2021.

### 1. Introduction

From past to present, people need to occupy spaces that are connected with other spaces within their reach. This basic need is available at any scale (Mehaffy *et al.*, 2019a). As a basic need, the need for shelter has paved the way for the emergence of architecture. The need for shelter is a consequence of the safety needs in Maslow's theory of needs. After meeting the physical needs, people engage in “self-actualization”, which is another need stated by Maslow. Maslow conceptualized this creative process through aesthetic concerns (Maslow, 1943).

In this context, humanity, which has gained experience in carrying out the processes of housing and creativity, has created the profession of architecture. Architecture has a dynamic feature that embodies different disciplines, many variables, and components. Cinema is one of the many disciplines associated with architecture,

\*Note: The study was produced using the data of the master's thesis named "Analysis of Cinematographical Effect in Promotion of Cultural Space" Graduate School of Natural and Applied Sciences- Süleyman Demirel University.

due to its structure as well as its semantic and technical components. As it covers the dimensions of movement, time, and space, its relationship with architecture is mutual, unlike other art disciplines. As a result of this interaction, cinema affects architecture, and architecture receives feedback from the cinema at different scales. For this reason, each product of cinema provides insight that will visually and intellectually contribute to architecture. Cinema forms an important basis for the design and perception of space. The preference of historical environments and places as the real space in the cinema is of importance in terms of architectural preservation. Documentation, perception, emphasis, and introduction of historical environments and buildings, preferred in any of the cinematographic works, especially in the architectural documentary, introduction, and biography categories, are important for the field of architectural conservation. The fact that the cinematographic effect provides mass communication on a national and international scale has emerged the necessity of strengthening this tool with the aim of architectural preservation. For this reason, it is aimed to determine the cinematographic elements necessary for the resulting product to be more useful in architectural preservation, as well as determining their order of importance relative to each other. Evaluation of the results in the application phase will lead to a more qualified result in the cinematographic work within the scope of architectural preservation.

## 2. Cinema and Architecture

The idea that a place is “alive” was valid until the 20<sup>th</sup> century, however, this idea is now internalized with the radical change in the awareness of the society (Salingaros, 2017). As the primary element of the form, “point” denotes a position in space. A shifted point becomes a line, and a shifted line becomes a plane. Volumetric areas are formed by shifting the planes (Ching, 2002). Hasol's (2012) concept of cinematic, as a branch of mechanics that deals with motion, in particular, is reached by treating architecture as a volume in a simple sense and adding motion to that volume (Hasol, 2012). Cinema has emerged by the effect of motion on the elements of space, which is one of the basic concepts of cinema. The scenario and editing of numerous movies have been influenced and shaped by this fact.

An example is the most impressive scene in the history of cinema, created by Soviet director and theorist Sergei Eisenstein. Eisenstein saw the Potemkin Stairs in Odessa, and edited the final scene in one of his masterpieces, *Battleship Potemkin*, according to that place (Figure 1).



Figure 1. Battleship Potemkin (Url-1,Url-2)

As another example, in Eisenstein's October movie (1928), the steps were used to express that the humanity of the 2<sup>nd</sup> President, one of the characters in the movie, remained the same, despite his increased powers. It was stated that the President's powers increased as he climbed the stairs, but he did not change as he stayed on the same step.

On the other hand, cinema pushes the boundaries of architecture by defining new spaces in the science fiction category, as in Vincenzo Natali's movie "Cube", and supports architecture through movies (e.g Wall-E) that accommodate architectural concepts such as sustainability (Figure 2).



**Figure 2.** Cube (Url-3) and Wall-E (Url-4)

Juhani Pallasmaa explains the spatial relationship between cinema and architecture as follows: The disciplines of architecture and cinema both render the living space. The two disciplines of art create and mediate images of the details in life. The two disciplines of art create and mediate images of the details in life. In *The Nature of Order*, Alexander mentioned that the great works built by humanity emerged within the framework of traditional mysticism and that the traditional urban fabric sheds light on the history and ancient genealogy (Alexander, 2004). In regions where societies experiencing differences in their socio-cultural and socio-economic structures; had an effect on differentiations of the city elements such as the avenues/streets, structure, squares and bench marks, also structures and inhabiting textures with varied styles had occurred (Tolacı & Beyhan, 2016). Cinema sheds light on the cultural archaeology of its time and the time it depicts. The architecture in cinema changes according to the cinematic story of the movie and the goals of the director, such as the architecture of terror, suffering, hesitation, boredom, alienation, abundance, and excess happiness. It interprets space and architectural images as amplifiers of specific emotions (Pallasmaa, 2001).

When the relationship between these two branches of art is evaluated, it can be stated that cinema uses architecture in creating cinematographic works. However, when an evaluation is made in terms of cinematographic architectural preservation, cinema can be considered as a tool of architectural preservation. In addition to the introduction of the architectural environments and artifacts within the scope of cultural heritage, it is also of importance in terms of documenting them. These documents will provide information about the construction periods and styles of the buildings, will guide preliminary preparations of the restitution and reconstruction decisions, and will provide visual insight. Along with written documents such as magazines, newspapers, articles,

and books, the documentaries are also of great importance. From this perspective, it is seen that movies also contribute to architecture and architectural protection. These two disciplines are constantly fed from each other and also support each other because of all the above-mentioned relationships.

### 3. Analytical Hierarchy Method

The study focused on the aim of determination of the criteria and priorities of these criteria to be considered in creating a cinema work with the aim of expanding the role of movies in the introduction of historical sites, buildings, and spaces. It was observed that studies with similar scope in the literature are based on philosophical grounds, discourse, personal opinions, and sometimes assumptions. In order to obtain objective results, the present study aims to get results based on mathematical foundations, unlike classical approaches. The relative importance of the criteria, determined as a result of the related literature review and movie analysis, was identified by the “analytical hierarchy method” (Jun & Jian-liang, 2008) developed by Thomas L. Saaty in 1970.

From past to present, humans have had to make decisions using different variables in new conditions (Montgomery and Johnson, 1976). In this context, the action of decision-making is based on a systematized scientific data (Zahedi, 1987). Considering the optimal time and outcome in obtaining results in this process, it is seen that one of the most suitable methods is the “analytical hierarchy method” (Partovi *et al.*, 1989). This hierarchical model is a powerful method that can help the decision-maker to make a healthy decision by logically combining his/her knowledge, experience, thoughts, and intuitions (Kuruüzüm & Atsan, 2001).

Theoretically, the analytical hierarchy method is applied in 4 stages. In the first stage, the problem is identified, its suitability for the system is checked and observed (Erikan, 2002). In the second stage, the hierarchical structure is established and the problem is formulated. In accordance with the goals of the problem to be solved, the criteria, sub-criteria, and their hierarchical importance are determined, compared, and defined according to the hierarchical system of the method (Saaty, 1980). In the third stage, the matrices were formed for pairwise comparison, weights of the criteria and alternative values are determined, and finally, the analyses are classified and evaluated (Saaty, 1980). (In the third stage of this study, the survey method was preferred to collect data, in accordance with the idea that “expert opinion” should be consulted used for objective results). In the fourth stage, consistency calculation is performed (Öner & Ülengin, 1995).

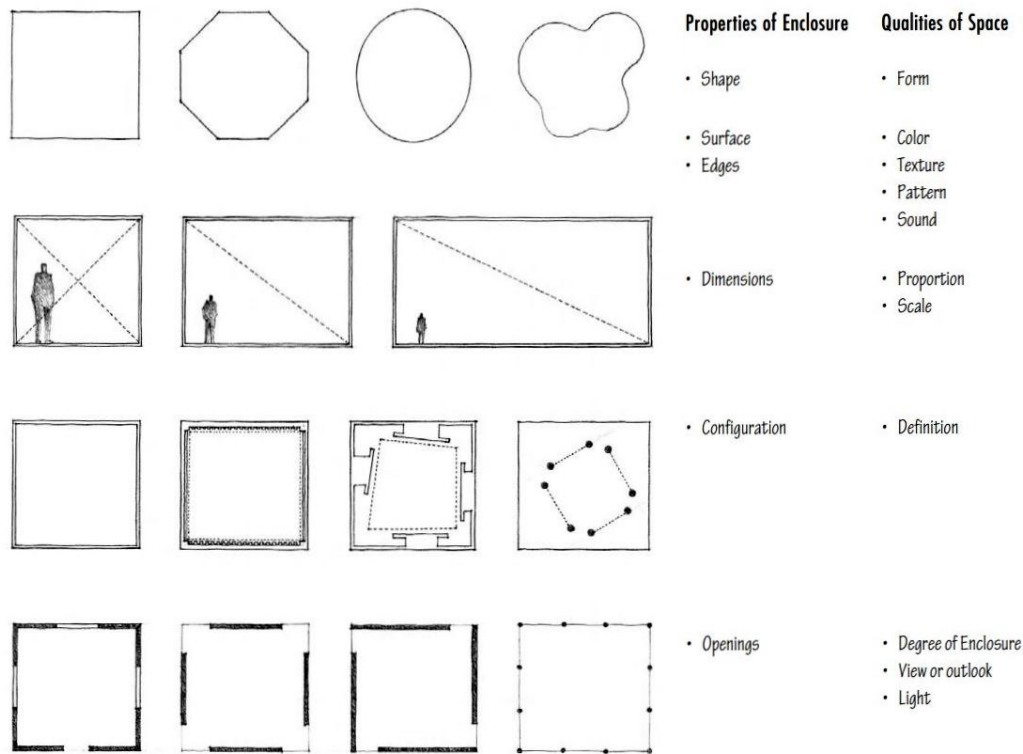
#### 3.1. Evaluation Criteria

According to Bazin’s definition, cinema reveals the human dimension in accordance with the research results of history, philosophy, literature, psychology, sociology, and other sciences (Bazin, 2011). This is possible through the principle of analytical hierarchy. As mentioned above, analytical hierarchy is a very effective method in decision-making. Furthermore, this method is used by many disciplines towards cinematographic analysis and comparisons, etc. Shooting angles and first screening time of historical places, the total number of sequences in which historical places are shown, objective presentation, IMDb vote count, and IMDb score information constitute the criteria of the study.



### 3.1.1. Shooting Angles of Historical Places

Architecture creates artificial spaces with building elements needed in natural space (earth, sky, nature) (Altan, 2015). Ching (2002) summarizes the qualities of space (Ching, 2002) (Figure 3).



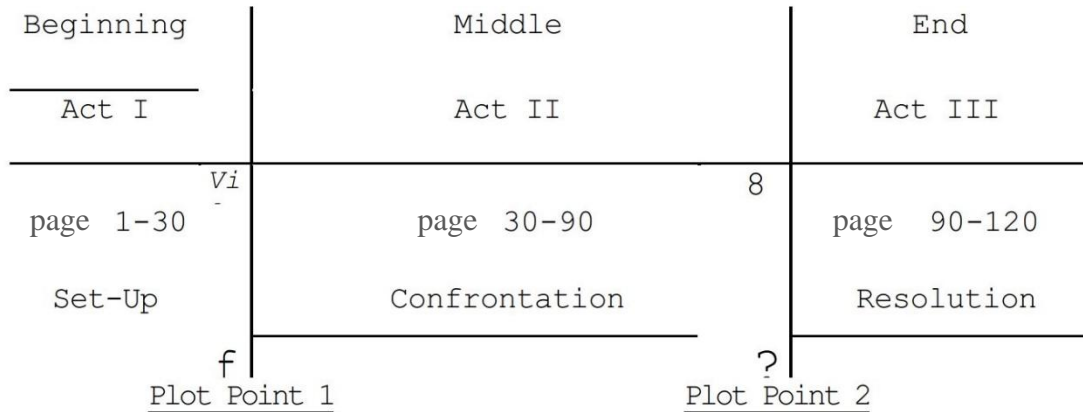
**Figure 3.** Qualities of Architectural Space (Ching, 2002)

We are constantly surrounded by spaces. The surfaces of buildings play a decisive role in how we experience the environment (Mehaffy *et al.*, 2019b). We move through spatial volumes, see shapes and objects, hear sounds, feel the breeze and smell the flowers blooming in the garden. Space is a material substance like wood and stone. However, it is formless by definition. Its visual form, light quality, size, and scale depend entirely on the boundaries defined by social form elements. As space is surrounded, molded, and organized by formal elements, architecture comes into existence (Ching, 2002).

While reviewing the works within the scope of the study, the data regarding the building structure should also be reviewed. It is necessary to examine the cinematographic plan by looking at the phases of architectural planning. Works should be analyzed with an approach that goes down to the plan, views, sections, and even the system details. In the context of the history, culture, and place of the building in urban memory, these designs made by the directors should be discovered in cinematographic works. From this point of view, it is necessary to perform classification and ranking the works.

### 3.1.2. First Screening Time of Historical Places

For the perception to focus on historical environment/space within the cinematographic work, it is important to provide these visuals at the beginning of the work since the perception of the audience is at its highest at the beginning. The sequence is also of importance. When Syd Field adapted a scenario in this context to a mural, he used it in association with the turning points at the beginning, in the middle, and in the final act (Figure 4) (Field, 2013).



**Figure 4.** Paradigm of a Screenplay (Field, 2013)

Act I is a twenty to thirty-page dramatic action. At this stage, the screenwriter establishes the story, introduces the characters, sets the dramatic premise of the movie, tells the current situation, and creates the relationships between the main character and the other characters. As a screenwriter, he or she is allowed about ten minutes for this act. This is because the audience makes a decision about the movie, either consciously or subconsciously, during this stage. If they cannot understand the subject or the events, or the introduction of the film is ambiguous or boring, they start to get distracted (Field, 2013).

Based on this information that Field discusses the basics of screenwriting, the importance of the temporal priority of the use of a visual of historical environments in a cinematographic work was understood. In light of this fact, the first screening process was included as a parameter in the study.

### 3.1.3. Total Number of Sequences showing Historical Places

Plan, or “shot”, in cinema is the section that is filmed using a single continuous shot (Singleton, 2004). The total time of scenes of the historical environment in the cinematographic plans is of importance in the selected works.

### 3.1.4. Objective Presentation

The sense of space, “genius loci” in general, means the spirit of the place. Spaces are the areas that surround and make people feel safe (Salingaros, 2017). These places left deep traces in memories with their architectural and historical features (Frederick, 2009).

In addition to the relationships they establish with the urban space, historical places also have a significant place in the memory of individuals and society. Reflecting successfully designed traditional architecture enables the exploration of different times and cultures among people living in geographically different places (Salingaros, 2017). The location of the venues and the correct and objective presentation of their identity in cinematography are of importance for the scope of this study. Space should be reflected accurately. Works should be analyzed and classified in this context.

### 3.1.5. IMDb Score

The foundations of the IMDb (Internet Movie Database) were laid in 1990 by the British computer programmer Col Needham, known for his interest in cinema. Accordingly, it was believed the inclusion of the IMDb score as an evaluation criterion in the study would provide a well-established data group (Url-5 and Url-6). It would be correct to make evaluations over the scores given by movie watchers, which constitute the target audience of these works.

### 3.1.6. IMDb Number of Votes

Different people from different countries have recorded data on cinematographic works in the IMDb database. The number of viewers expressing their opinion about the work is also important in these data. An evaluation to be made with the inclusion of this parameter in the study is of importance in obtaining the opinions of the target audience and evaluating the work objectively.

## 3.2. Data evaluation results

In the numerical analysis, the mathematical principles laid by Saaty (1980) were applied with the help of the Microsoft Excel program. An evaluation table developed by Saaty was used to calculate the main criteria in the system (Saaty, 1990) (Table 1).

**Table 1.** The Fundamental Scale (Saaty,1990)

The Fundamental Scale		
Intensity of importance on an absolute scale	Definition	Explanation
1	Equal importance	Two activities contribute to the objective
3	Moderate importance of one over another	Experience and judgment strongly favor one activity over another
5	Essential or strong importance	Experience and judgment strongly favor one activity over another
7	Very strong importance	An activity is strongly favored and its dominance demonstrated in practice
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2, 4, 6, 8	Intermediate values between the two adjacent judgments	When compromise is needed

Evaluation of the main criteria performed through a matrix. This matrix must be set up with certain criteria. In order to work comfortably while filling out the matrix and to express the criteria determined within the scope of this study with symbols instead of expressions in the tables, the criteria given in Table 1 are coded as follows:

- K1: Shooting Angles of Historical Places  
 K2: First Screening Time of Historical Places  
 K3: Total Number of Sequences showing Historical Places  
 K4: Objective Presentation  
 K5: IMDb Score  
 K6: IMDb Number of Votes

Expert opinions were obtained in order to make an objective comparison of the above-mentioned selection criteria determined by the analytical hierarchy method, and to include different opinions. In this context, a survey study on these criteria was applied to a group of 25 people (Table 2). In the questionnaire, the participants were asked to give a score between 1 and 6 (Table 3).

Reliability calculations of the survey result were made using the IBM SPSS program. According to the alpha coefficient,  $0.60 \leq \alpha < 0.80$  indicates quite a reliable scale (Terzi, 2019). In the study, the alpha coefficient was found to be 0.635. According to this result, the scale is quite reliable. Numerical comparisons of the criteria with each other were made using the average values obtained from the survey results (Table 4).

**Table 2.** Demographic Structure of the Participants

Demographic Variables		Frequency	%
<b>Gender</b>	Female	15	60
	Male	10	40
	Total	25	100
<b>Age</b>	20-25	2	8
	25-30	13	52
	30-35	4	16
	35-40	1	4
	40-45	3	12
	45-50	2	8
	Total	25	100
<b>Education</b>	Bachelor's Degree	10	40
	Master's Degree	15	60
	Total	25	100
<b>Job</b>	Architect	21	84
	Civil Engineer	1	4
	Conservator-Restorator-Art Historian	1	4
	Archaeologist	1	4
	Director	1	4
	Total*	25	100
*In addition, 28% of the respondents are academic staff.			



**Table 3.** Survey Results

	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
	Shooting Angles of Historical Places	The First Screening Time of Historical Places	Total Number of Sequences Showing Historical Places	Objective Display	IMDb Score	IMDb Number of Votes
<b>Person 1</b>	6	5	4	3	2	2
<b>Person 2</b>	5	4	5	6	3	4
<b>Person 3</b>	4	5	5	6	4	2
<b>Person 4</b>	3	5	6	5	6	5
<b>Person 5</b>	5	4	3	6	2	1
<b>Person 6</b>	4	3	5	5	6	6
<b>Person 7</b>	6	6	5	6	4	4
<b>Person 8</b>	5	5	5	6	5	6
<b>Person 9</b>	6	5	3	3	3	2
<b>Person 10</b>	5	5	5	6	1	1
<b>Person 11</b>	6	4	3	5	1	2
<b>Person 12</b>	6	5	4	3	2	2
<b>Person 13</b>	5	2	1	2	2	2
<b>Person 14</b>	6	3	5	6	3	4
<b>Person 15</b>	1	1	5	4	2	3
<b>Person 16</b>	4	5	5	3	6	5
<b>Person 17</b>	2	4	3	1	5	6
<b>Person 18</b>	6	4	6	4	6	6
<b>Person 19</b>	4	5	5	6	3	3
<b>Person 20</b>	1	1	1	6	2	1
<b>Person 21</b>	6	4	4	5	3	3
<b>Person 22</b>	1	6	5	3	2	4
<b>Person 23</b>	5	2	3	2	1	1
<b>Person 24</b>	5	3	6	4	2	1
<b>Person 25</b>	6	4	5	5	4	4
<b>Average</b>	<b>4,52</b>	<b>4</b>	<b>4,28</b>	<b>4,44</b>	<b>3,2</b>	<b>3,2</b>
<b>Standard deviation</b>	<b>1,69</b>	<b>1,38</b>	<b>1,37</b>	<b>1,56</b>	<b>1,66</b>	<b>1,76</b>

**Table 4.** Numerical Comparison Between Criteria

<b>K1</b>	>	<b>K2</b>	→	7
<b>K1</b>	>	<b>K3</b>	→	5
<b>K1</b>	>	<b>K4</b>	→	3
<b>K1</b>	>	<b>K5</b>	→	9
<b>K1</b>	>	<b>K6</b>	→	9
<b>K2</b>	<	<b>K3</b>	→	1/3
<b>K2</b>	<	<b>K4</b>	→	1/5
<b>K2</b>	>	<b>K5</b>	→	3
<b>K2</b>	>	<b>K6</b>	→	3
<b>K3</b>	<	<b>K4</b>	→	1/3
<b>K3</b>	>	<b>K5</b>	→	5
<b>K3</b>	>	<b>K6</b>	→	5
<b>K4</b>	>	<b>K5</b>	→	7
<b>K4</b>	>	<b>K6</b>	→	7
<b>K5</b>	=	<b>K6</b>	→	1

The Matrix A, which is prepared according to the numerical comparison table between the criteria, is the main step of the study. The Matrix A is obtained by comparing the first row of the matrix, K1 with other criteria. The same applies to the comparison of other criteria. Since the diagonal elements of the matrix are the comparison of the criteria with themselves, it is like a unit matrix. However, there is symmetric inverse calculation over the diagonal. The matrix can be created easily with the rules explained (Table 5).

**Table 5.** Matrix A

Matrix A	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>K1</b>	1,00	7,00	5,00	3,00	9,00	9,00
<b>K2</b>	0,14	1,00	0,33	0,20	3,00	3,00
<b>K3</b>	0,20	3,00	1,00	0,33	5,00	5,00
<b>K4</b>	0,33	5,00	3,00	1,00	7,00	7,00
<b>K5</b>	0,11	0,33	0,20	0,14	1,00	1,00
<b>K6</b>	0,11	0,33	0,20	0,14	1,00	1,00
<b>Total</b>	<b>1,90</b>	<b>16,67</b>	<b>9,73</b>	<b>4,82</b>	<b>26,00</b>	<b>26,00</b>

After obtaining Matrix A, the analytic hierarchy method is continued by normalizing the matrix. For normalization, the values of Matrix A are divided by the total values (Table 6), (Table 7).

**Table 6.** Normalized Matrix A

Normalized Matrix A	K1	K2	K3	K4	K5	K6
<b>K1</b>	1,00 / 1,90	7,00 / 16,67	5,00 / 9,73	3,00 / 4,82	9,00 / 26,00	9,00 / 26,00
<b>K2</b>	0,14 / 1,90	1,00 / 16,67	0,33 / 9,73	0,20 / 4,82	3,00 / 26,00	3,00 / 26,00
<b>K3</b>	0,20 / 1,90	3,00 / 16,67	1,00 / 9,73	0,33 / 4,82	5,00 / 26,00	5,00 / 26,00
<b>K4</b>	0,33 / 1,90	5,00 / 16,67	3,00 / 9,73	1,00 / 4,82	7,00 / 26,00	7,00 / 26,00
<b>K5</b>	0,11 / 1,90	0,33 / 16,67	0,20 / 9,73	0,14 / 4,82	1,00 / 26,00	1,00 / 26,00
<b>K6</b>	0,11 / 1,90	0,33 / 16,67	0,20 / 9,73	0,14 / 4,82	1,00 / 26,00	1,00 / 26,00

**Table 7.** Normalized Matrix A

Normalized Matrix A	K1	K2	K3	K4	K5	K6
<b>K1</b>	0,527	0,420	0,514	0,623	0,346	0,346
<b>K2</b>	0,075	0,060	0,034	0,042	0,115	0,115
<b>K3</b>	0,105	0,180	0,103	0,069	0,192	0,192
<b>K4</b>	0,176	0,300	0,308	0,208	0,269	0,269
<b>K5</b>	0,059	0,020	0,021	0,030	0,038	0,038
<b>K6</b>	0,059	0,020	0,021	0,030	0,038	0,038

After having the normalized matrix, the priorities vector is obtained. It is possible to find the Matrix W by taking the average of the sum of all row values (Table 8).

**Table 8.** W Matrix

Normalized Matrix A	K1	K2	K3	K4	K5	K6	W Matrix
<b>K1</b>	$(0,526755853 + 0,42 + 0,51369863 + 0,622529644 + 0,346153846 + 0,346153846) / 6 =$						0,462548637
<b>K2</b>	$(0,075250836 + 0,06 + 0,034246575 + 0,041501976 + 0,115384615 + 0,115384615) / 6 =$						0,073628103
<b>K3</b>	$(0,105351171 + 0,18 + 0,102739726 + 0,06916996 + 0,192307692 + 0,192307692) / 6 =$						0,140312707
<b>K4</b>	$(0,175585284 + 0,3 + 0,308219178 + 0,207509881 + 0,269230769 + 0,269230769) / 6 =$						0,254962647
<b>K5</b>	$(0,058528428 + 0,02 + 0,020547945 + 0,029644269 + 0,038461538 + 0,038461538) / 6 =$						0,034273953
<b>K6</b>	$(0,058528428 + 0,02 + 0,020547945 + 0,029644269 + 0,038461538 + 0,038461538) / 6 =$						0,034273953

It is necessary to check the consistency. For example, if A is greater than B, and B is greater than C, then C cannot be greater than A. In this way, the consistency can be easily checked with a single-scale evaluation. However, it is difficult to stay consistent on a scale scored in the range of 1-6. A consistency calculation must be performed to avoid inconsistencies that may occur. For this calculation, matrix A is multiplied by matrix W to obtain the Matrix D ( $D=A \times W$ ) (Table 9).

**Table 9.** D Matrix

AxW						
D Matrix	<b>3,06</b>	<b>0,44</b>	<b>0,88</b>	<b>1,68</b>	<b>0,21</b>	<b>0,21</b>

The Matrix E is obtained by dividing matrix D by matrix W, which is the weight matrix. The  $\lambda$  value is obtained by taking the average value of the Matrix E. The  $\lambda$  value, found in the study was 6.28 (Table 10).

**Table 10.** E Matrix

D/W						
E Matrix	6,61839	6,018268	6,281924	6,58159	6,09707	6,09707
$\lambda$	6,282385399					

The CI value, the consistency ratio, is calculated by the equation  $CI = (\lambda - n) / (n - 1)$ . The value n in this equation shows the number of criteria in the evaluation. Since there were six criteria in the study, this number equals 6.  $CI = 0.0561$  (Table 11).

**Table 11.** The CI value

$CI = (\lambda - n) / (n - 1)$	
$CI = (6,2823 - 6) / (6 - 1)$	<b>CI = 0,056477079876781</b>

In the final step of the calculation of consistency, it is necessary to obtain the CR value. A CR value of less than 10% indicates a consistent calculation. To find this value, “Random Index (RI)” is needed. The RI value is a constant that depends on the number of criteria in the selection (Table 12).

**Table 12.** The RI value (Saaty,1980)

N	1	2	3	4	5	6	7	8	9	10
RI	0,00	0,00	0,58	0,90	1,12	1,24	1,32	1,41	1,45	1,49

The CR value is calculated by the equation  $CR = CI / RI$ . Since the number of selection criteria was 6, the RI value is found as 1.24 according to the table. For  $CI = 0.056$ , the CR value is calculated as 0.046. Since the CR value is less than 10%, the operations performed are consistent (Table 13).

**Table 13.** The CR value

CI	RDI	$CR = CI / RDI$	CR
<b>0,05647708</b>	1,24		<b>0,045546032</b>
CONSISTENT as it is <b>0,04554603 &lt; 0,1</b>			

The W Matrix gives the classification of this study. In this context, the criteria are ordered as follows:  $K1 > K4 > K3 > K2 > K5 = K6$ . In other words, “K1: Shooting Angles of Historical Places” comes first. “K4: Objective Presentation” comes second. “K3: Total Number of Sequences showing Historical Places” comes third. “K2: First Screening Time of Historical Places” comes fourth, and “K5: IMDb Score”, and “K6: IMDb Number of Votes” share fifth place.

#### 4. Conclusion

This research was conducted within the scope of the relationship between architecture and cinema, which are among the significant visual arts. Historical environment and its components are frequently preferred in the use or reproduction of real spaces in cinema. At this point, cinema enters the field of architectural preservation.

Cinematography is a social science. In this study, it was analyzed by numerical



methods. The reason for this is to get objective and clear results. For detailed analysis, 6 cinema shooting criteria were determined and their priorities were revealed.

As a result of the study, the most important criterion was found to be the “Shooting Angles of Historical Places”. The angle determined is of importance in terms of the architectural features of the historical environment/building, such as material, color, shape, ratio, light, occupied-empty ratio, and texture. This is because, this result is important in terms of presenting information about the building's history, culture, and its place in urban memory. Specific angles/adjustments made by directors in cinematographic works create different visual perceptions.

In the results, the criterion of “Objective Presentation” ranked second. This result also revealed the importance of objective editing. Different meanings should not be attributed to the original features of historical buildings, as they convey the cultural heritage. This is because artificial environments also play a major role in the communication of socio-cultural characteristics of societies.

The criterion “Total Number of Sequences showing Historical Places” ranked third. Uninterrupted presentation of historical environments in a single shot and numerous such shots are important in terms of perceiving various architectural features simultaneously. This creates a visual document of the historical environment/building/space. Moreover, it helps to reveal many features of the entire built environment or structure, such as the period of construction, architectural styles, geography, and location.

“First Screening Time of Historical Places” was found to rank fourth. The first screening time is important for focusing on the historical environment/space within the cinematographic work. The reason for this is that the audience's perception is at its highest in the first minutes of the work. This is not only related to the visualization of the movie product but also the scenario. As the motion picture progresses in parallel with the scenario, the relevant section in the written text should also be included in the first section/pages.

In the study, it was understood that the importance of “IMDb Score” and “IMDb Vote Count” used in the selection of movies to be analyzed, expressing the popularity and cinematographic quality of the product, is lower than the other criteria. The fact that these values depend on personal opinions confirms this finding.

In the works produced, the use of objective results in practice will contribute to the introduction and preservation of historical places. The criteria and their priority are as important as the real space or the environment/structure/space selected for the reproduction of the real space. It is believed that the choices and practices will increase the quality of the work in terms of architectural preservation. It is recommended that cinema producers, and related individuals and institutions, who are concerned about the introduction of historical places, should handle the production process in the light of the quantitatively validated criteria. The works produced with this concern will be more qualified and target-oriented as the competent individuals of these two disciplines work together. It is of importance to work with the relevant competent individuals in selecting real spaces (architectural area, building, and space) and in the preparation of shooting platforms.

## References

- Alexander, C. (2004). *The Nature of Order. An Essay on the Art of Building and the Nature of the Universe. The Luminous Ground (Book 4)*. California: The Center for Environmental Structure.
- Altan, I. (2015). *The Concept of Space in Architecture*. Office 2005 Publishing House, Istanbul (in Turkish).
- Bazin, A. (2004). *What is cinema?*, University of California Press, California.
- Bunruamkaew, K. (2012). *How to do AHP Analysis in Excel*. University of Tsukuba, Tsukuba, Japan.
- Ching, F.D.K. (2007). *Architecture Form Space & Order*. John Wiley & Sons, New Jersey.
- Erikan, L. (2002). Making an Effective Decision in the Turkish Air Force Using Analytic Hierarchy Process for the Selection of the Candidate. Institute of Science and Technology, Istanbul, 64-66 (in Turkish).
- Field, S. (2005). *Screenplay: The Foundations of Screenwriting*. Dell Trade Paperback, New York
- Frederick, M. (2007). *101 Things I Learned in Architecture School*. The Mit Press Cambridge, Massachusetts, London, England.
- Goepel, K.D. (2013, June). Implementing the analytic hierarchy process as a standard method for multi-criteria decision making in corporate enterprises—a new AHP excel template with multiple inputs. In *Proceedings of the international symposium on the analytic hierarchy process (Vol.2, No.10, pp.1-10)*. Creative Decisions Foundation Kuala Lumpur.
- Hasol, D. (2012). *Encyclopedic Dictionary of Architecture*. Istanbul: Yapı Endüstri Merkezi Yayınları, (in Turkish)
- Jun, H., Jian-liang, P. (2008, December). Application of supplier selection based on the AHP theory. In *2008 IEEE International Symposium on Knowledge Acquisition and Modeling Workshop (pp. 1095-1097)*. IEEE.
- Kuruüzüm, A., Atsan, N. (2001). The analytic hierarchy process approach and its applications in business. *Akdeniz IIBF Journal*, 1, 83-105 (in Turkish).
- Mehaffy, M.W., Kryazheva, Y., Rudd, A. & Salingaros, N.A. (2019a). “6.1. Place Network.” In *a New Pattern Language for Growing Regions: Places, Networks, Processes*, 97-100. Portland, Oregon, USA.
- Mehaffy, M.W., Kryazheva, Y., Rudd, A. & Salingaros, N.A. (2019b) “12.3. Friendly Surfaces.” In *a New Pattern Language for Growing Regions: Places, Networks, Processes*, 192-194. Portland, Oregon, USA.
- Montgomery, D.C., Johnson, L.A. (1976). *Forecasting and Time Series Analysis*. Mc Graw-Hill, USA.
- Öner, A., Ülengin, F. (1995). AHP Approach in Weapon Selection. Kara Harp Okulu, I. Systems Engineering and Defense Applications Symposium, Proceedings-II, 1109-1122 (in Turkish).
- Pallasmaa, J. (2001). *The Architecture of Image: Existential Space in Cinema*. Rakennustieto Publishing, Helsinki.
- Pallasmaa, J. (2008). Lived Space in Architecture and Cinema, *Design and Cinema: Form Follows Film*.
- Partovi F.Y., Burton J., Banerjee A. (1989). Application of Analytic Hierarchy Process in Operations Management. *International Journal of Operations and Production Management*, 10(3), 5-19
- Saaty, T.L. (1980). *The Analytic Hierarchy Process*. McGraw-Hill, New York.
- Saaty, T.L. (1990). How to make a decision: The Analytic Hierarchy Process. *European Journal of Operational Research*, 48, 9-26.

- Salingaros, N.A. (2017). *Design Patterns and Living Architecture*. Sustasis Press, Portland Oregon, USA.
- Singleton, R.S. (2000). *Filmmaker's Dictionary*, Lone Eagle Publishing, California
- Şimşek Tolacı, S., Beyhan Ş.G. (2016). The Physical Analysis and Transformation of Minority Settlements: The Case of Zafer Neighborhood in Burdur. Sofia, Klimont Ohridski University Publishing (Developments in Science and Engineering), 656-676.
- Zahedi, F. (1987). A utility approach to the AHP. *Mathematical Modelling*, 9(3-5), 387-395.

#### **Internet Sources**

- Url-1, <http://www.sanatlog.com/wp-content/uploads/2008/11/unlu-merdiven-sahnesi-1.jpg> (12.11.2016)
- Url-2, [http://i1.trekearth.com/photos/48892/odessa\\_steps.jpg](http://i1.trekearth.com/photos/48892/odessa_steps.jpg) (12.11.2016)
- Url-3, <http://www.filmpiyaz.com/uploads/film/2016/05/kup-1080p-izle-cube-turkce-dublaj-1997-698.jpg> (12.11.2016)
- Url-4, <https://i.ytimg.com/vi/Eb4sMcyzCeg/maxresdefault.jpg> (12.11.2016)
- Url-5, <https://www.imdb.com/user/ur1000000/> (26.10.2020)
- Url-6, [https://help.imdb.com/article/imdb/general-information/what-is-imdb/G836CY29Z4SGNMK5?ref=helpsect\\_cons\\_1\\_1#](https://help.imdb.com/article/imdb/general-information/what-is-imdb/G836CY29Z4SGNMK5?ref=helpsect_cons_1_1#) (26.10.2020)