

Design Elements in Interior Architecture: Examination and Analysis*

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ABSTRACT

In the analogy between design and language, two main categories are often distinguishable, that is, elements and principles. Elements can be considered as words in the design language and accordingly the principles would be the grammar or rules for employing these elements. The subsets of principles and elements in different fields of design are oftentimes inconsistent with each other and may vary according to the characteristics of that particular field. The roots of the formation and definition of many notions about the principles and elements of design can be found in applied arts or visual arts other than interior architecture, and hence they do not have a comprehensive and accurate definition tailored to the requirements of interior design. The purpose of this research was to discover and examine the design elements involved in interior design and the ways of achieving a precise and comprehensive definition of them by recognizing the design elements in interior architecture. As such, this study sought to define and refine the design elements in interior architecture and hence employed a methodical process to find a list of design elements in interior architecture, providing acceptable and agreed-upon definitions of design elements in interior architecture in the aftermath. Knowing the design elements and their examples in interior architecture are heavily involved in reading and describing an interior space. This qualitative-research research has accordingly sought to collect information from library sources and archives to offer initial definitions on design elements to be reviewed by experts in the field of interior architecture. Their views were then applied to the initial definitions in the form of the two-stage Delphi method to attain agreed-upon definitions for the Delphi panel. As a result of this research, various items were added to the previous body of design elements in interior architecture, and hence the list was revised with more precise definitions of design elements in the field of interior architecture, including point, line, surface, shape, form, mass, texture, role, color, light, space, time, smell and sound were obtained.

Keywords: Design, Design Elements, Interior Architecture, Interior Design.

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1. INTRODUCTION

The Persian term for design is often cited as “Tarahi”, which although may have various implications in various fields, is often employed to refer to planning and organizing (Lauer & Pentak, 2005, p. 4). In professions such as urban design, fashion design, industrial design, textile design, and design, it does not simply mean drawing. Moreover, design is at the essence of all sub-disciplines of art. Most definitions of design are accompanied with is contextual works and products, as in the above definition, planning and organizing can be assumed as one of the products and outputs of the practice of designing. Another category of definitions describes design in regards to human behaviors and attitudes, while some other definitions tend to describe the stages of a design action, hence placing their emphasis on the design process (Aimone, 2004, p. 43). But from another perspective, design can be considered through its constituent elements, and hence as an integration of content and form. “Content refers to the subject, narrative, or information that works of art seek to offer to their audiences. The form has a rather visual aspect and includes the use of different elements and design rules. Content is what artists try to express, and form is the means thereto” (Lauer & Pentak, 2005, p.5). Therefore, it seems that sufficient knowledge of the means of expression is key to any design-related practice. Such knowledge is assumed to be consisted of two different but interrelated parts, namely elements and principles. Principles and elements of design are factors discussed in applied and visual arts that are employed to design work and to understand the logical process devised therein. A better understanding of the principles and elements of design can reinforce the conscious (rather than intuitive) aspects of the design and help the designer articulate the desired content with more details. But first, it must be determined what are the principles and elements of design in interior architecture and how are they defined. Owing to the variety of definitions on design as being tailored to different arts such as sculpture, graphics, painting, and interior architecture, their definition, and scrutinization for each sub-discipline gains significance. In design sources and texts, there is no comprehensive and exclusive definition on the principles and elements of design in interior architecture, and as such, the proposed definitions are rather based on the personal views and experiences of the author(s) and hence are not the product of a scientific and specific method.

Therefore, the need to refine the definition of design principles and elements in interior architecture seems of paramount importance. The purpose of this study was to examine design elements in interior architecture to offer acceptable and agreed-upon definitions of them in interior architecture.

2. RESEARCH METHOD

The method employed in the study is qualitative in terms of data collection and a combination of qualitative and quantitative methods is used for information analysis. Library archives and case studies were used for collecting information. For data and information analysis purposes, qualitative interviews with experts (in the form of Delphi research) and finally descriptive statistical analysis of their opinions were used. In the course of the research, first as much possible information was gathered from library archives on the research subject (i.e., design elements), and then, a better understanding of written theoretical content was sought to achieve by examining examples of contemporary interior spaces that can be visited and studied. The set of studies was collected in the form of short definitions of design elements (Table 3) and was subject to the critical thinking of experts to be assessed and refined in the framework of Delphi research. Then their detailed comments were applied to the initial definitions and new definitions were generated (Table 4). These definitions were provided to experts in the second round of Delphi research to quantify their level of agreement/ disagreement. Then, the obtained results were measured by a descriptive statistical test to evaluate the degree of agreement with the obtained definitions and the degree of agreement of experts on the “acceptability of the definitions.”

3. DESIGN ELEMENTS

“Design elements are tangible components of any design. They embody the design principles and turn theoretical concepts into reality” (Nielson, 2011, p. 55). “Design elements have not been invented, but have been discovered and skillfully combined and balanced by artisans and designers throughout history. Owing to the fundamental and vital nature of design elements, design elements are discussed in almost every art book and/or wherever design work is taught or evaluated.” (Ibid, p. 62). A list of design elements has been compiled in Table 1 by examining the perspectives of theorists and the experts of interior architecture.

Table 1: Introduction of Design Elements Accepted by Interior Architecture Theorists

Theorists	Nielson, 2011	Kilmer and Kilmer, 2014	Ching, 1943a	Adams, 2009
Design Elements				
Point	*	*	*	*
Line	*		*	*
Surface	*		*	*

Theorists Design Elements	Nielson, 2011	Kilmer and Kilmer, 2014	Ching, 1943a	Adams, 2009
Shape	*	*	*	*
Form	*	*	*	*
Mass	*			*
Texture	*	*	*	*
Pattern	*		*	*
Color	*	*	*	*
Light	*	*	*	*
Space	*	*	*	*
Time	*	*		*

3.1. Point

The point is oftentimes introduced as the very first and simplest design element. The point is the result of the first contact of the pen (or any writing tool) with the paper (or any readable surface), by the formation of which other elements are defined. “The point species somewhere in space. Conceptually, it lacks length, width or depth, and hence it is static, self-centered and

has no direction” (Ching, 1943a, p. 4). “The point is the simplest and most inseparable element in visual communication, and wherever it is, whether natural or man-made, draws great attention” (Dandis, 1983, p. 71). The size of the point in the interior spaces of architectural projects is relative and sometimes appears in the attachments of the space. For example, the lighting elements on the ceiling (Fig. 1) are often perceived and visualized as points in space.

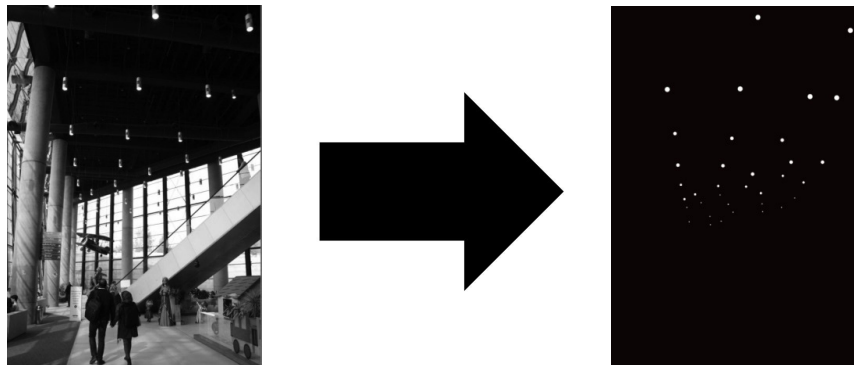


Fig. 1. Perception of Lighting Elements in the Interior of Tehran Book Garden as Points in Space

3.2. Line

The line is a key element in the formation of any visual structure (Ching, 1943b, p. 8). It is the most familiar element in the arts, and most writing and drawing tools employ the line. Humans constantly draw lines since childhood (Lauer & Pentak, 2005, p. 120), as it is one of the most basic design elements. If the points are so close together that they cannot be distinguished from each other, the ensuing chain of points gradually turns

into a new visual element called a “line”.

Every interior space is perceived as a combination of lines that are usually considered a dominant extension to create the work, such as horizontal lines that amplify movement and guide the viewer's eye (Fig. 2). In addition to describing the shape, the line can also articulate the edges of surfaces and the angles of volumes (Ching, 1943a, p. 89). Lines are also used to create textures and surfaces with different values (Zenlanski & Patfisher, 1996, p. 67).

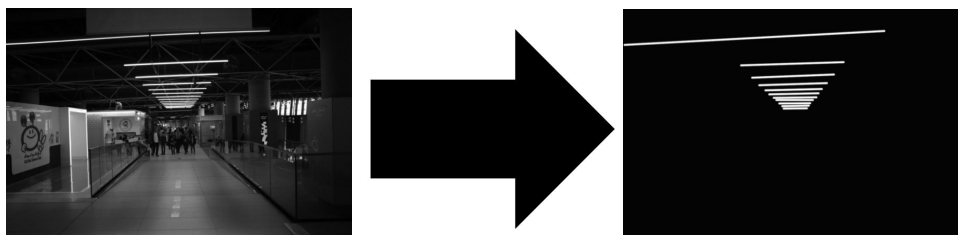


Fig. 2. Perception of Lighting Elements in the Interior of Tehran Book Garden as Lines in Space

3.3. Surface

Moving in a direction other than a single lead to the formation of the surface. Conceptually, a surface has length and width but lacks depth (Ching, 1943b, p. 18). Floors, walls, ceilings, and roofs are all surfaces employed for enclosing and shaping three-dimensional spatial volumes (Fig. 3). Within these spaces, furniture, props, and other interior design elements are situated,

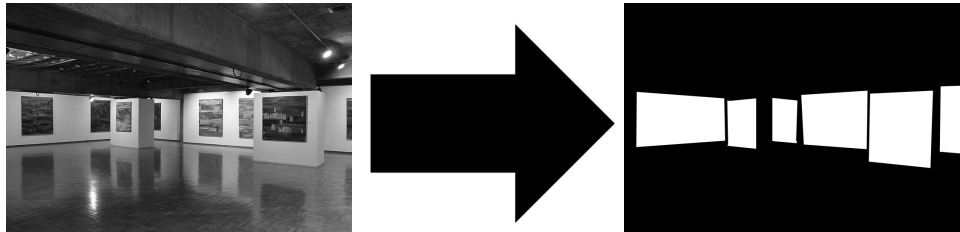


Fig. 3. Understanding the Inner Walls of Niavaran Cultural Center

3.4. Shape

The shape is a two-dimensional design element that is often perceived as a geometric shape such as a rectangle or triangle (Nielson, 2011, p. 55). As such, the shape is a visual area whose outer edge is defined by a line or color or a change in the visual value (Lauer & Pentak, 2005, p. 142). It is created by the special state of the lines or surfaces that separate the form from the background or the surrounding space (Ching, 1943a, p. 93). From a geometric point of view, all regular shapes

all of which also have a surface (Ching, 1943a, p. 92). The surfaces of the interior walls determine the size and shape of the interior spaces of a building and the visual characteristics of the surfaces determine the interrelationship of the elements, for which the size and distribution of the openings at the boundaries is the key to the quality of the created spaces and the degree of continuity of the adjacent spaces.

are somehow related to the circle, as infinitely regular polygons are also defined by being enclosed within a circle. The most important of these elements are the basic shapes of circles, triangles, and squares. Gestalt psychology argues that the human mind simplifies the visual image of its surroundings for cognitive purposes and breaks it down into its simplest, most orderly, and most common forms in its visual range. The simpler and more regular a form is (Fig. 4), the easier it is to understand (Ching, 1943b, p. 38).

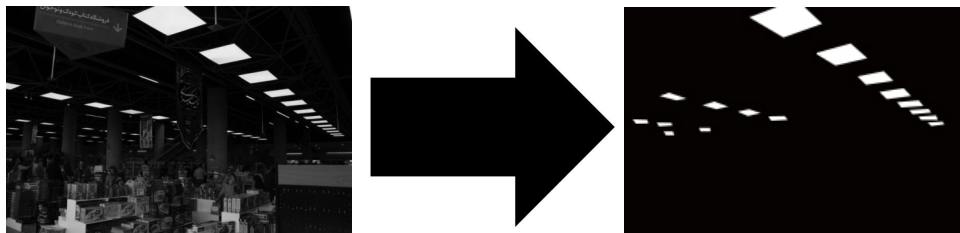


Fig. 4. Understanding the Square Shapes on the Roof of Tehran Book Garden

3.5. Form

A shape represents a two-dimensional design element, while a form represents a three-dimensional design element. The most commonly used term for the form is volume, and sometimes the word form refers to the overall structure of the work (Zenlanski & Patfisher, 1996, p. 86). A surface that extends in a direction other than the direction of its surface creates volume.

As a three-dimensional element of architecture and interior design, volumes can be both filled or hollow. The form is a term used for expressing the overall design and structure of a volume. The form of a volume

is determined by the shapes and the interrelationships between the lines and surfaces of that volume, delineating its boundaries (Fig. 5) (Ching, 1943a, p. 103). The form is the three-dimensional arrangement of objects in the interior. For example, the silhouette of objects and props has a perceivable shape that changes with the movement of the viewer and, hence the three-dimensional quality of the for, (Nielson, 2011, p. 63). Intervention in space creates the form, and in turn, the form gives the space the dimension and mass it reflects. In general, furniture and other objects used in interior design and architecture are referred to like elements with physical forms (Kilmer & Kilmer, 2014, p. 124).

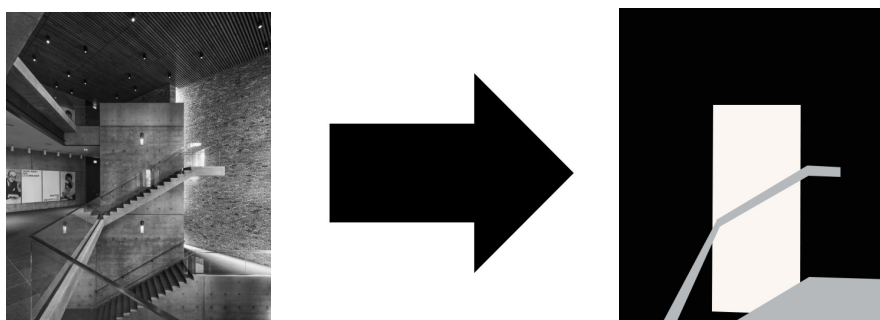


Fig. 5. Perception of the Volume and Face of the Staircase in the Exhibition Space Wrightwood 659 by Tadao Ando

3.6. Mass

Mass is the relative solidity, weight, or density of the form, which can be either real or visual. Although the actual dimensions of two objects may be similar, one may be heavier than the other due to its weight or mass or choice of structure in terms of visual scale

(Nielson, 2011, p. 55). The mass can also have a visual density in which case the structure material may not be filled (Fig. 6). A heavier or thicker mass will make the furniture pieces appear larger than furniture with the same dimensions but with hollow sections instead of filled ones (Fig. 6) (Ibid, p. 64).

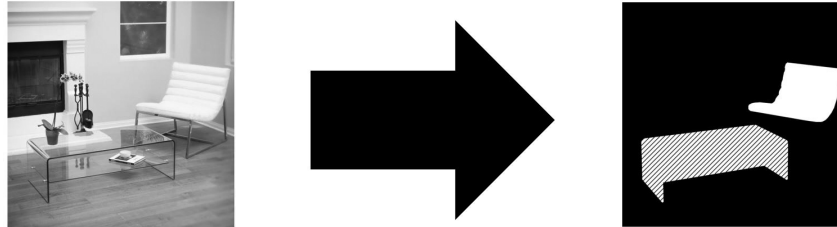


Fig. 6. Differences in Perception of Mass Owing to Differences in Materials

3.7. Texture

The texture represents the softness or roughness of the surface. It may be perceived through visual or tactile senses (Ibid, p. 55). The texture is a visual, and even more, a tactile, quality that is created by the size, shape, arrangement, and instrumental fit of a surface, which also determines the amount of light absorbed or

reflected by the surfaces of a form (Ching, 1943b, p. 34). Texture refers to the visual or tactile properties of natural and artificial objects or structures, and the term used to describe its properties pertains to the sense of sight and touch. The texture is an inseparable feature of the components used in the design or by which the interior is decorated (Fig. 7).



Fig. 7. Different Manifestations of Concrete Texture against Light Radiation in the Museum of Contemporary Art

3.8. Pattern

The pattern is perceived as the arrangement of themes in a recurring or varied order, a small scale of which may be read visually in the texture (Nielson, 2011, p. 55). A pattern is the arrangement of form or designs employed for shaping a regular whole and often consists of several themes or units designed that are arranged in

a larger combination. A pattern is an aesthetic design of a surface that results from the recurrence of a single element (Fig. 8), and the recurring element, that is, the motif, is a distinct shape, form, or color. Recurrence of a pattern often creates texture, and if the elements creating the pattern get as small as being perceived to have lost their character, they would gradually be redefined as the texture (Ching, 1943a, p. 101).

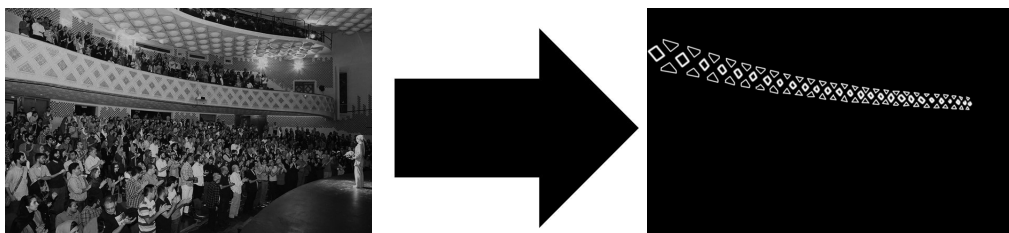


Fig. 8. The Geometric Patterns on the Walls of the City Theater (Teātr-e Šahr)

3.9. Light

There are two sources of light in the interior, that is

natural light and artificial light. Wide glass windows receive large amounts of natural light. Natural light is a desirable element in design. The quality, quantity,

and color of light affect how viewers perceive their surroundings and whether or not it demands direction,

control, and sometimes complementary sources of light (Nielson, 2011, p. 68).

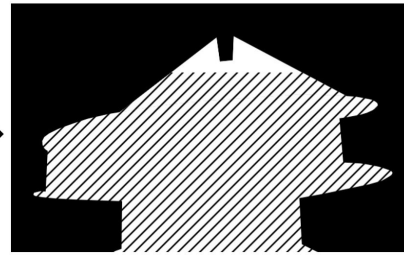
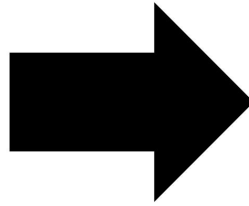


Fig. 9. The Effect of Light in Defining the Interior Space of the Museum of Contemporary Art

Light as a design element affects all other elements. Light can make a space big or small, friendly or devoid of emotion. Unlike the shape and form of a building or an interior space, the quality of light inside the building is not static and the designer must provide flexibility according to requirements and conditions (Fig. 9). The visual effect of light on the form, texture, color, and other elements of design, either of natural or artificial light, is academically significant (Friedmann, Pile, & Wilson, 1976, p. 66).

3.10. Color

Color is a light-related visual phenomenon that depends on one's perception of shadow, intensity, and degree of color. Color is the main feature in distinguishing the form from the environment, affecting its visual weight (Ching, 1943b, p. 34). Color is a quality of light that

is reflected from an object to the human eye. This stimulates different color cones in the retina and hence objects are viewed as colored phenomena. The physical properties of light and color are well-known attributes that are often overlooked in interior design. In the interior, the surface of a dark wall absorbs more of the reflected light and causes a lack of light and hence darkness in the space (Friedmann, Pile, & Wilson, 1976, p. 63). In addition to the mutual interaction and the effect of the degrees and shades of color relative to each other, the effect of color on one's perception of the form the dimensions, and the quality of the interior space is of paramount importance. The warmth or coldness of color, along with its hue, darkness, and degree of saturation, determines its ability to attract attention, hence making its source object or space memorable (Fig. 10).



Fig. 10. Application and Non-application of Color in Two Different Parts of the Interior of Tehran Book Garden

3.11. Space

Space is perceived as a diffuse and infinite entity until it is defined and hence limited. Indoor space restriction elements (that is, walls, floors, ceilings, and furniture) lead to the formation of spaces with unique dimensions and features. Spatial divisions and constraints form the basis of architectural planning (Nielson, 2011, p.

62). Every space carries its physical, visual, emotional, psychological, implicit, functional, and aesthetic characteristics. Various theories have sought to analyze the nature of space and how humans and space interact. There is such a cohesive relationship between man and the surrounding space that makes defining the boundary between the two highly challenging (Kilmer & Kilmer, 2014, p. 114).

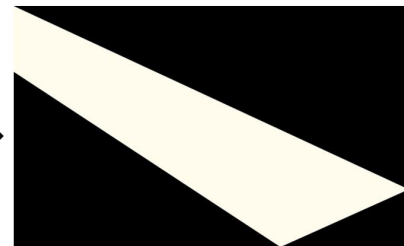
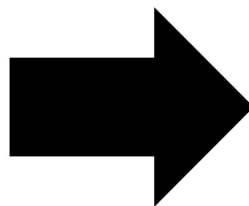
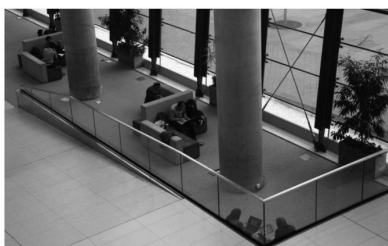


Fig. 11. Definition of Space by Changing the Floor Level in Tehran Book Garden

Space makes form visible, and this close relationship between the form and space can be evidenced in the various scales of interior design (Ching, 1943a, p. 104). Space in interior architecture consists of two types of areas, namely open and closed areas. Space may be positive (filled) or negative (hollow) (Nielson, 2011, p. 55). A positive space is a space with color, texture, shape, or mass that can include walls, furniture, artwork, rugs, or even paintings on the wall (Figure 11). Negative space is the space around a positive space (Ibid, p. 63).

3.12. Time

Moving in space at different time intervals leads to different spatial experiences (Kilmer & Kilmer, 2014, p. 131). Design elements are often formerly expressed

as two-dimensional or three-dimensional concepts that are fixed design entities. However, they are not fixed in existence, as “time” has a particular effect on their ability to withstand the forces of nature, as in heavy rain and cold that affects the texture of a brick or wall after several years of exposure. Colors fade away, textures wear out, forms evolve, and shapes change (Fig. 12), but some of these events can be pre-planned. For example, some surfaces of the external environment are tarnished by sunlight and turn into silvery-gray patina (Ibid, p. 133). Time is the fourth dimension of design element that designers need to plan for in their ideas and suggestions. They should be aware of what time can inflict to their project during its implementation and afterward, and they should even consider how people's attitudes and feelings may change over time (Ibid, p. 133).



Fig. 12. The Effect of Time (Rust) on the Final Covering of a Building, Soulages Museum

4. DEFINITIONS OF DESIGN ELEMENTS IN INTERIOR ARCHITECTURE

Findings and results of studies on the definition

of design elements in interior architecture from the perspective of academic proponents of interior architecture are presented in Table 2.

Table 2: Definitions of Design Elements from the Perspective of Interior Architecture Theorists

Theorists	Kilmer and Kilmer, 2014	Nielson, 2011	Zenlanski and Pat-fisher, 1996	Ching, 1943	Dandis, 1983
Design Elements					
Point				No length, width, and depth Specifies the location in space Static and focused No direction	The simplest and most inseparable element in visual communication
Line	Using lines to connect points or express relationships Distinguishing lines by being thick, thin, rough, smooth, fluid, or conical		Using lines to determine the distance and distinguish the properties of objects Using lines to create texture	A key element in shaping the visual structure	Point in move
Surface				The extension of the lines in an axis other than its direction Conceptually, it has length and width and no depth The length and width of the surface should also require a thickness for the surface to make it visible and tangible.	Shape

Theorists	Kilmer and Kilmer, 2014	Nielson, 2011	Zenlanski and Pat-fisher, 1996	Ching, 1943	Dandis, 1983
Design Elements					
Shape		Two dimensional design as a geometric identity		Created by the special state of the lines or sur-faces that separate a form from its background or its surrounding space.	
Form		Three dimensional shapes, such as cube, cone, or sphere	Design with a three dimensional representation	Volumes with shapes and relationships between lines and surfaces	
Mass		The relative weight, density, or solidity of a face Real or visual			
Texture	Perception of texture by visual or tactile properties of objects	Perception of texture with the visual or tactile sense		The visual and especially tactile quality The effect of absorption or reflection of light from the texture of surfaces on the perception of form	Having tactile and visual quality
Pattern		Arrangement of themes in a recurring or varying order			
Color		The most emotional and personal design element		Optical-visual phenomena depending on people's perception of shadow, intensity, and degree of color The main feature in distinguishing the form from the environment	
Light		Natural, artificial, or a combination of both		Change in opacity and brightness with the amount of light received	
Space		Open and closed areas Positive (filled) or negative (hollow)		The manifestation of the form The emergence of a close relationship between form and space at different scales of interior design	
Time	Creating various spatial experiences due to movement in space at time intervals Time as the fourth dimension of design Changing people's attitudes and feelings about being in space over time				

5. FINDINGS

In the previous section, the design elements were studied and defined from the perspective of experts by reviewing the research literature, but to refine the design elements in interior architecture, the following research question must be addressed:

- Are there other elements in addition to the twelve elements mentioned?
- Is it possible to remove some of the twelve elements from the design list?
- Is it possible to arrive at a comprehensive and concise definition for each of the design elements?

Gaining the ability to recognize design elements in interior architecture is a specialized matter that necessitates acquiring knowledge, performing studies, and reliving certain experiences. As such, the Delphi method was employed to address the aforementioned challenge in the current study¹.

The Delphi method is often undertaken with the collaboration of people who have knowledge and expertise in the subject of research. The selection of these people as the “Delphi panel” is one of the most important steps in this method, as the legitimacy of

the results relies directly on their competence and knowledge (Alidousti, 2006, p.13). The panel selected for the present study consisted of 14 academic experts, of which 9 had a master's degree, four had a Ph.D. degree and one had a postdoctoral degree. Thirteen of them have received at least one of their university degrees in interior design. Two people had purely academic knowledge while the rest also had practical experience. 7 people had 5-10 years of professional experience, three people 10-15 years of professional experience, one had 15-20 years of experience, and last but not least, three people had over 20 years of experience

In the first round of Delphi, a short definition was prepared for each of the twelve elements using the knowledge gained from library studies (Table 3). These definitions were scrutinized in the first round of Delphi by the panel. For this purpose, a questionnaire was prepared with items requiring the respondents to express their corrective opinion about the definition of the elements in a descriptive way. They were hence demanded to exclude unnecessary elements, and include the missing, yet necessary elements.

Table 3: Initial Definitions of Design Elements Presented in the First Round of Questionnaires

Design Element	Initial Definition
Point	The simplest visual element that has a relative shape and size
Line	The connection between the two points. It can vertical, horizontal, oblique, or curved.
Surface	Form-determining elements. They may be smooth or curved.
Shape	Two-dimensional close line, as the line forming a triangle or rectangle
Form	Three-dimensional shapes, like a cube, a cone, or sphere
Mass	Weight, density, or stiffness of a form
Texture	Smoothness or roughness of the surface. It may be either visually or tactile-ly tangible.
Pattern	The coexistence of themes in a comprehensible order
Color	Shades that change from light to dark and from high purity to low purity.
Light	Electromagnetic waves from natural or artificial sources, or a combination of both that makes seeing possible.
Space	Open, semi-open, or closed areas. It may be positive (filled) or negative (hollow).
Time	The fourth dimension of design, the passage of time can affect the physi-cality of other elements (such as the erosion of a piece of wood) or the perception of the human of their surroundings.

In response to the request for excluding irrelevant design elements, one expert was against the inclusion of the “mass”, one was against the “pattern”, one demanded the exclusion of the “light”, two were against the inclusion of the “time” and two others considered its notion legitimate but demanded other terminologies for it. But they wanted to change its name. The researchers considered the request to exclude the elements the “mass”, “pattern” and “light” to be unjustified given the opinion of most experts. They also argued that renaming the term “time” to “the passage of time” might solve some of the problems identified by the experts.

In response to the request of including missing elements, three experts suggested notions reflecting scale,

balance, and rhythm, which in the common definitions of theorists fall into the category of design principles. One expert suggested the inclusion of the elements of “furniture” and “layout”, one suggested the inclusion of architectural elements such as ceiling, floor, and wall. Three people suggested non-visual elements including “smell”, “sound” and “temperature”, two of which, namely “smell” and “sound” were added to the list of elements.

Based on the gathered feedback and opinions, each of the elements was redefined while new elements were added to the list. Then, the obtained definitions were presented in another Likert-scale questionnaire in the second round of Delphi to measure the degree of agreement of experts with the new definitions.

Modified definitions and frequency of each option are presented in Table 4. To quantify the data and to be able to calculate the standard deviation of the data,

a number from 1 to 5 was considered for each of the Likert scores².

Table 4: Secondary (Modified) Definitions of Design Elements Presented in the Second Round of Questionnaires Based on the Results of the First Round

Element	Definition	Very Low	Low	Moderate	High	Very High
Point	The simplest visual element that has a relative shape and size	0	2	4	4	2
Line	An element confined between two points in space that has a relative elongation.	0	0	6	4	2
Surface	The outermost perceptible layer of any element in space	0	1	4	4	3
Shape	Lines representing the wholeness of two-dimensional elements in space	0	0	5	5	2
Form	The physicality of any three-dimensional element in space	0	0	6	4	2
Mass	Weight, density or stiffness of a form in space	0	0	4	6	2
Texture	The emergence of a tangible quality of a surface such as roughness, smoothness, or softness	0	1	2	3	6
Pattern	Coexistence of themes in a comprehensible visual pattern	0	2	1	5	4
Color	Reflection of part of the wavelengths of ambient light that is not absorbed by an element in space	0	0	4	6	1
Light	Electromagnetic waves from natural or artificial sources, or a combination of both that makes seeing possible.	0	0	2	6	3
Space	Tangible limits with physical, sensory, and semantic qualities	0	2	2	5	3
Passage of Time	Changes in the qualities of the space or its elements over time	0	3	2	6	1
Smell	The perception of the effect of one or more aromatic chemical compounds in space by the olfactory organ	0	0	4	7	1
Sound	Understanding the effect of mechanical vibrations in space by the auditory organ	0	0	2	8	2

Then, the average agreement of experts with the definitions provided for each element was quantified. The closer the average to 1, the less the experts agree with the definition proposed, while the closer

the average to 5, the more the experts agree with the definition for each element. Then, to ensure the agreement of experts, the standard deviation of the data was calculated for each element separately (Table 5).

Table 5: Mean and SD of the Variable for the Agreement with the Given Definition

Elements	Mean Agreement	Mean Agreement (%)	SD
Point	3.5	70	0.95
Line	3.66	73.2	0.74
Surface	3.91	78.2	0.93
Shape	3.75	75	0.72
Form	3.66	73.2	0.74
Mass	3.38	76.6	0.68
Texture	4.16	83.2	0.98
Pattern	3.91	78.2	1.03
Color	3.41	68.2	0.66
Light	3.75	75	0.71
Space	3.75	75	1.01
Passage of Time	3.41	68.2	0.95
Smell	3.75	75	0.59
Sound	4	80	0.57

According to Table 5, the average agreement with the definitions provided for all elements is greater than the reference value. Since the quantified range of agreement was defined as 1 to 5, the average of the range is 3. Yet, the average of data for all definitions is more than 3, which indicates that the proposed definitions carry moderate consensus among the experts. Also, in only two cases, the standard deviation is more than 1, which does not exceed 1.03, indicating that the opinions of experts are not highly scattered around the average number, and hence a relative agreement with the average of opinions.

6. CONCLUSION

In the realm of interior architecture, although mostly considered as an applied specialty in which the technical approach is of paramount importance, the aesthetic side is always at the core of decisions. In this research, the design was examined from a common and popular perspective, through a perspective that divides the design into two main constituent subsets that is Elements and principles. Literature reviews and library archives indicate that those design elements are tangible and measurable components of design, in contrast to design principles, which are abstract concepts that control the use of design elements as

accepted rules. In other words, elements are words and terms of the design language, while principles are grammar and rules used to arrange those words (that is, the elements).

The purpose of this research was to define and scrutinize the design elements in interior architecture and sought to offer a comprehensive list of design elements in interior architecture through a methodical process. As such, this research intended to provide acceptable and agreed-upon definitions of design elements in the realm of interior architecture. To this end, a collection of library archives was reviewed with the help of case studies, resulting in short definitions for various elements. Then, the Delphi research method was employed to evaluate the accuracy and precision of the definitions, for which they were subjected to feedback and the opinion of experts. Accordingly, the opinions of Delphi panel members were applied to the original definitions to achieve refined definitions. These definitions were then offered to experts in the second round of Delphi research to quantify their agreement or disagreement this time. Then, the obtained results were measured by descriptive statistical test to assess the degree of agreement of experts with the obtained definitions. The list of design elements in interior architecture and the definition of each, derived from the process of this research, are presented in Table 6.

Table 6: Research Findings Including a List of Design Elements and a Refined Definition of Each

Element	Definition
Point	The simplest visual element that has a relative shape and size
Line	An element confined between two points in space that has a relative elongation.
Surface	The outermost perceptible layer of any element in space
Shape	Lines representing the wholeness of two-dimensional elements in space
Form	The physicality of any three-dimensional element in space
Mass	Weight, density, or stiffness of a form in space
Texture	The emergence of a tangible quality of a surface such as roughness, smoothness, or softness
Pattern	Coexistence of themes in a comprehensible visual pattern
Color	Reflection of part of the wavelengths of ambient light that is not absorbed by an element in space
Light	Electromagnetic waves from natural or artificial sources, or a combination of both that makes seeing possible.
Space	Tangible limits with physical, sensory, and semantic qualities
Passage of Time	Changes in the qualities of the space or its elements over time
Smell	The perception of the effect of one or more aromatic chemical compounds in space by the olfactory organ
Sound	Understanding the effect of mechanical vibrations in space by the auditory organ

Statistical analysis of the opinions of experts in both rounds of the Delphi method indicates that the refined definitions ensuing from the research were relatively agreeable to all the experts. Discussing and identifying the elements of design in interior architecture and its consequent effect on the literature of interior architecture can lead to a better comprehension of the paradigms of design in interior spaces for students, professors, and practitioners alike. Explaining the indicators and criteria for recognizing and scrutinizing interior architecture by defining the elements and principles

of design is one of the necessities for the formation of specialized literature on interior architecture. Studying and recognizing the principles of design in interior architecture and examining appropriate methods for teaching the principles and elements of design in the subject of interior architecture education, reading interior architecture projects based on the definitions of design principles and elements and the place of these principles and elements in the practice of interior design profession. It is one of the suggested areas for future research.

END NOTE

1. Delphi became known as an important scientific method in the mid-1960s and is now employed for a wide range of prospective and complex questions in various scientific fields and disciplines (Ahmadi, 2008, p. 16). The most important prerequisites to the application of Delphi include the need for expert judgment and the opinions of a large group, group agreement in achieving results, the existence of complex, large and interdisciplinary problems and disagreement or incompleteness of knowledge, the availability of experienced professionals, the need for anonymity in data collection, no time limit and no other effective method. Among these cases, the need for expert judgment, the need for group agreement in achieving results, incompleteness of knowledge and the availability of experts are among the main cases prioritizing this method in this research. Achieving consensus in the opinions of different people, non-influence of a particular opinion of an individual, freedom from any pressure and presenting unbiased views along with honesty are among the qualities that make the content obtained by the Delphi method highly credible. As such, this method seeks to gain the knowledge of a group of experts on a particular subject, concluding with a consensus among them. Therefore, the method employed in this can be considered that of the Delphi approach (Alidousti, 2006, p. 10).
2. One of the proposed methods for evaluating consensus with the subjects in the Delphi method is through the calculation of standard deviation. This is applicable when the questionnaires employed in the Delphi are based on Likert-like scales, and the items are scored on integers. In such case, the more the standard deviation of the responses, the less consensus is achieved, as the scatter of responses around the mean will be greater. In contrast, smaller standard deviations indicate more agreement because the responses are closer to the mean (Alidousti, 2006, p. 16).

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