CREATING VISUAL EFFECT:
A DESIGN INSTRUCTION TOOL FOR IDENTIFYING COMPOSITIONAL THEORY COMPONENTS FOR INTERIOR DESIGN

A Thesis

Presented in Partial Fulfillment of the Requirements for the Degree Master of Arts in the Graduate School of The Ohio State University

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The Ohio State University
2012

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ABSTRACT

The objective of this research is to investigate the levels of awareness of compositional theory among interior design students, explore additional design principles that are effective in creating specific visual effects in interior spaces, and create a supplementary educational guide that will provide a learning tool for students and educators illustrating options and supplementing compositional theory for interior design and interior design education. It is suggested that the concept and model of this thesis be utilized as part of compositional theory in interior design education.
DEDICATION

This document is dedicated to my father, honoring his influence in my educational and professional endeavors in design.
ACKNOWLEDGMENTS

I wish to express my utmost gratitude to Professor Heike Goeller for her extraordinary insight, dedication, and encouragement throughout this endeavor. Her guidance has been an essential part of my growth as a designer and as a person. I would also like to thank Professor Peter Kwok Chan for his clarity of thought and consistent support. In addition, I would like to acknowledge the Department of Design for providing a supportive environment throughout my endeavors. Finally, I want to thank my wonderful husband David for his unrelenting patience and support, without which this would have been an impossible task.
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TERMINOLOGY

Visual composition: Basic elements and principles arranged in a space to create a visual whole.

Established elements: Components or parts which can be isolated and defined in any visual design and serve as the building blocks that make up the established principles of design.

Established principles: Tools used by designers to organize design elements in a visual composition.

Extended principles: Design principles that encompass one or more of the established principles and are successful in creating strong visual effects in environments while maintaining qualities of function.

Visual effect: The visual meaning conveyed in a composition that is the outcome of the manipulation of elements and principles.

Visual affect: A visual composition that influences or causes change in emotions.
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CHAPTER 1

RESEARCH FOCUS

"Form in its visual manifestation, is composed of the elements and their character and arrangement, and the energy they provoke in the viewer."

-Dondis A. Dondis

INTRODUCTION

Designing a visually communicative interior environment, (i.e., one which evokes meaningful references) requires a basic understanding of design elements and principles and the conscious incorporation of the principles in a composition. Design instruction tools that support the identification and application of compositional theory components for interior design will enhance the learning and teaching experience for both instructors and students (H. Goeller, personal communication, 2011).

The research for this study is based on the importance of comprehensive and progressive instruction of compositional theory in interior design education. Thus, a teaching tool for the instruction of compositional theory and visual expression in interior spaces was developed. Chapter 1 denotes the primary objectives of this study and pertinent background information specific to this area of study. Chapter 2 provides an overview and comparative illustration of the design elements and the established principles of design in the context of nature, graphic design, architecture, and interior design. Chapter 3 introduces and comparatively...
illustrates ten extended principles of design in the context of nature, graphic design, architecture, and also identifies the visual effect that can be created by each principle. Chapter 4 outlines the teaching tool that was developed from this study and provides instruction for use. Finally, Chapter 5 summarizes this study and provides suggestions for educational use and future research.

RATIONALE

In visual compositions, research has affirmed the direct relationship between design principles and visual effect (or meaning) and the importance of it in the design process (Dondis 1973, p15). In interior design, visual effect is created out of the arrangement of design elements and principles in a composition; viewers relate these elements and principles interactively, find significance, and derive meaning (i.e., emotional feelings) from the composition. Many of the guidelines for understanding visual effect stem from investigation of the process of human perception (Dondis 1973, p20). Dondis A. Dondis stresses the importance of Gestalt psychology as instrumental to the relationship between design compositional theory and visual effect (meaning). He writes...

“Much of what we know about the interaction and effect of human perception on visual meaning is drawn from the research and experimentation in Gestalt psychology, but Gestalt thinking has more to offer than just the relationship between psychophysiological phenomena and visual expression. Its theoretical base is the belief that an approach to understanding and analyzing all systems requires recognizing that the system (or object or event) as a whole is made up of interacting parts, which can be isolated and viewed as completely independent and then reassembled into the whole.” (Dondis 1973, p39).

In taking a closer look at available references that outline the use of design principles in creating visual effect in interior design it became clear that compared to the principles used in visual communication design (Dondis 1973, LeBorg 2004,
Wong 1972), in interior design literature only the basic design principles are identified (Kilmer & Kilmer 1992, Kubba 2003). Also, according to Professor Heike Goeller of The Ohio State University Design Department, there appears to be very little importance placed on compositional theory and the significance of visual effects is left until upper level courses to be explained (H. Goeller, personal communication, 2012). Thus, many interior design students may lack an overall understanding of the impact and potential of the use of compositional principles for the purpose of creating meaningful visual effects. This study identifies the principles and explains their potential application.

**THEORY**

The general notion for this study is that higher levels of comprehension and conscious use of the design elements and principles while controlled may yield stronger visual effects (as perceived by the viewer) in an interior space. This theory stemmed research in educational theories that outline the principles of design in interior space design, as well as, interviews with design professors. Valid research needs to be addressed in the areas of:

1) Perception of visual compositions (i.e., how interior spaces that contain design principles are perceived emotionally).

2) Conscience awareness of the use of design elements and principles.

Study data collected from testing of foundation-level design students comprehension of design principles and visual effect can be used to inform the creation of an educational tool for the instruction of compositional theory and visual effects in interior design, thereby providing interior designers with a wider selection of tools for designing more meaningful interior spaces.
OBJECTIVES AND PURPOSE

The objectives of this study are as follows:

1) To investigate the theory of this thesis by defining foundation-level design student’s perception of meaning and awareness of design principles in visual compositions.

2) To present the established elements and principles of design through visual diagramming and comparison.

3) To explore and outline an additional list of design principles effective in creating visual effects in interior compositions.

4) To successfully create an educational tool that visually illustrates the practice of utilizing the additional principles in interior spaces.

STUDY 1

In the early stages of this study, the focus of investigation was to collect data and identify patterns in the psychological (i.e., emotional) responses to visual compositions containing various design elements and principles. With the collected data, the goal was to create an educational guide for interior designers that demonstrates the arrangement of basic elements and principles for an intended emotional effect.

A survey was created to collect data and consisted of seven selected images including nature, architecture, and interior spaces. The criteria for selection were as follows:

1) Images of visual compositions that clearly contain one or more of the established design principles.
2) Compositions that may be perceived as visually pleasing.

3) A variety of visual compositions (i.e., nature, architecture, and interior design).

The study participants consisted of ten foundation-level design students at The Ohio State University. Eight males and seven females participated with an age range of 17-37. The participants were asked the following questions:

1) If they had ever taken a design course.

2) To record a list of words that they would use to describe something that is visually appealing to them.

3) Whether or not each image is or is not visually appealing to them and which design elements stand out.

4) To choose their favorite overall image.

The following figures (figure 1.0, figure 1.1, and figure 1.2) show the distributed surveys. The selected images were based on the content of design elements and principles and the link between their use compositionally and visual effect.
Figure 1.0. Page one and two of the pre-test

Figure 1.1. Page three and four of the pre-test
Figure 1.2. Page five of the pre-test

STUDY 1 RESULTS AND CONCLUSIONS

Ten of the fifteen pre-tests were returned and completed by the participants. The participant background information indicated that three of the ten participants had no prior design education and seven of the ten participants had foundation-level design education. The participants all demonstrated an awareness of the elements and principles of design in each image; however, there were too many different (i.e., emotion-based responses) for each image making it too difficult to successfully identify and/or systemize a clear pattern. The information gained from this study is as follows:

1) An awareness of design elements and principles exists in foundation-level design students.
2) The use of design elements and principals in a visual composition evoked emotional responses; however, the participants were unable to answer why.

In hindsight, the test should have been distributed to a larger group of participants and perhaps should have included images that are more abstract and therefore easier for the participants to evaluate.

**STUDY 2**

Given that the preliminary testing rendered weak data with regards to tracking patterns and similarities in the emotional responses of the use of design elements and principles in a composition, a refined approach to this study was considered in order to understand how design students identify design elements and principles in a composition.

The study was designed as a classroom activity and was paired with an introductory lesson that outlined the fundamental elements and principles of design (i.e., scale, pattern, rhythm, unity, balance, and contrast). The fifty students were then asked to do the following assignment:

1) Choose a photograph or image of a visual composition (i.e., an interior space).

2) Identify the elements and principles of design in the space.

3) Illustrate the spatial composition abstractly while maintaining the architectural integrity of the space by cutting and pasting only black and white construction paper.

4) Write a summary explaining which elements and principles of design (from the lesson) were recognized in the interior space and how the abstraction process provided a better understanding for the spatial composition.
The following examples (figure 1.3, figure 1.4, figure 1.5, and figure 1.6) are examples of two different student’s responses to the same task.

Figure 1.3. Example of an interior space.  

Figure 1.4. Student abstract interpretation of the interior space.
STUDY 2 - RESULTS AND CONCLUSIONS

The results of the student assignment demonstrated the ability for high level abstract thinking and confirmed the overall recognition of compositional components (i.e., design elements and principles) amongst foundation-level design students. When comparing the two studies, the data suggests that foundation-level design students achieve a more comprehensive understanding for compositional theory through educational activities. The results of this study prompt further research on:

1) The design principles and elements that are successful in producing visual effects in interior space compositions.
2) Activity-based methods to better educate foundation-level interior design students in making identifying the components of design and the potential for the creation of visual effect.

RESEARCHING EXISTING SOURCES IN COMPOSITIONAL THEORY

For this study, a valuable source that discusses the link between the use of design principles and the visual communication is Dondis A. Dondis’ book, *A Primer of Visual Literacy*, which identifies the use of techniques in creating visual effects as applied to graphic design. In describing visual solutions in a composition, Dondis writes...

“a form with visual content, but the content is highly influenced by the significance of the constituent parts, such as color, tone, texture, dimension, proportion, and their compositional relationships to meaning” (Dondis, 1973, p.15).

In *A Primer of Visual Literacy*, Dondis lists a substantial number of techniques (i.e., design principles) that offer the designer an extensive array of means for the visual expression of content (Dondis, 1973, p110). This prompts the following questions:

1) Can the techniques be applied to interior spaces?
2) What kind of visual effect(s) would they help to achieve in interior space design?

The following were selected from *A Primer of Visual Literacy* for their potential to operate successfully in creating visual effect in an interior space. They are as follows:

1) Irregularity
2) Complexity
3) Fragmentation
4) Exaggeration
5) Distortion
6) Diffusion
7) Episodicity
8) Instability

Christian Leborg, in his book *Visual Grammar*, diagrams two additional techniques that provided the opportunity for them to be included in the list. They are:

9) Movement
10) Interaction

These additional techniques will hereafter be referred to as “extended principles” in this document. The selected principles are easily identifiable and can potentially serve as additional tools for the process of designing an interior space (i.e., use of design principles) and result of an interior space (i.e., visual effect).

The following chapters serve as a visual guide for the overview of the established principles of design as well as the exploration of the extended principles in interior design. In Chapter 3, each extended principle has been represented compositionally using visual examples of nature, graphic design, architecture, and interior design. This is the most comprehensive method for the instruction of observing and understanding the visual effects created by the utilization of the principles. This information connects to the preliminary hypothesis and study for this study suggesting that there is an association between the use of individual design principles and the psychological (emotional) response in interior space compositions.
CHAPTER 2

ESTABLISHED PRINCIPLES OF DESIGN:
OVERVIEW AND ANALYSIS

INTRODUCTION

The fundamental part of interior design education incorporates the theory of design composition which is divided into elements and principles. In combination, these guidelines are used in the creation of meaningful and functional interior designs. This chapter serves as an overview of basic compositional theory of design and graphically illustrates the visual effect for each principle.

BASIC DESIGN THEORY: THE ESTABLISHED ELEMENTS OF DESIGN

The very basics of design and compositional theory include the elements of design. The basic elements of design are useful tools for designers and can be thought of as the vocabulary in design language (Kilmer & Kilmer, 1992, p.96). Design elements are components or parts which can be isolated and defined in any visual design and serve as the building blocks that make up the established principles of design. There are several approaches of presenting the design elements that can be found in various publications. For example, Wucius Wong, author of Principles of Two-Dimensional Design, labels the design elements as: point, line, plane, volume, shape, color, texture, position, and space (Wong, 1972, p.7). Authors
Rosemary and W. Otie Kilmer, of *Designing Interiors* label the design elements as space, line, form, shape, texture, time, color, and light (Kilmer & Kilmer, 1992, p.96). A narrowed list of design elements has been compiled from several sources for this document (i.e.*Principles of Two-Dimensional Design*, *Designing Interiors*, *A Primer of Visual Literacy*, and *Visual Grammar*). These elements were selected as they serve as the framework of the design principles that are outlined in this study (figure 2.0).

![Diagram of design elements](image)

Figure 2.0. Narrowed list of design elements
BASIC DESIGN THEORY: THE ESTABLISHED PRINCIPLES OF DESIGN

The fundamental (or established) principles of design are vital tools used by designers to organize design elements in a visual composition or environment (Kilmer & Kilmer, 1992, p.96). The most commonly used basic design principles are:

1. unity
2. balance
3. rhythm
4. scale
5. emphasis
6. contrast
7. variety

These principles have been acknowledged across the fields of art and design for many years. The exact historical origin of the established principles of design is unclear; however, it is important to note the contributions made to the field of design by German psychologists Max Wertheimer, Kurt Koffka, and Wolfgang Kohler. These three men worked to establish Gestalt psychology, addressing the basic problem in the science of perception and explored a human’s ability to make sense of visual data as a whole (Lupton & Miller, 1991, p.30). In this study, Gestalt serves as a foundation for the analytical process of identifying and isolating patterns in the understanding of the visual compositions.

DESIGN ELEMENTS AND PRINCIPLES IN NATURE

Nature serves as a foundational source for a better understanding of the elements and principles of design. It may be argued that it is within the context of the natural environment that the principles of design materialized. A substantial amount of data has been compiled regarding the presence of elements and principles of design in nature. For example, Kimberly Elam's book Geometry of Design visually outlines proportion (or the Golden Section) in nature by
diagramming a fish (figure 2.1). Proportion is defined by John Bowers in *Introduction to two-dimensional design* as “the size relationship between parts of a form.” Conscientious use of proportion is an important part of the design process; however, it is not necessarily defined as a design principle and will not be outlined in this study.

![Diagram of a fish with golden section rectangles](image)

Figure 2.1. Proportion in nature by Kimberly Elam

In *Geometry of Design*, Kimberly Elam suggests that many of the design elements and principles in nature exist as a result of two influences. For example:

1) A single or multiple living organism’s characteristics that exist for survival (e.g., the baboon’s hind-end emphasizes in color and size in order to attract a mate and reproduce (figure 2.2)), and

2) The result of natural landscape formations (e.g., the visual symmetry of a mountain range reflecting on a lake surface (figure 2.3)).

It is quite possible that human exposure to visual elements and principles in nature has created a preference for them in man-made environments and contributed to their acceptance in the field of visual arts and design. For this thesis,
nature serves as an appropriate foundation and resource for the examination of the selected design principles.

The fundamental principles of design have been outlined in this chapter to serve as building blocks for the extended set of principles presented in Chapter 3. The images that were selected for this chapter serve as effective visual examples of the established design principles at play in nature, graphic design, architecture, and interior design.

Figure 2.2 Emphasis of Baboon hind end

Figure 2.3. Symmetry in nature
The following provides an overview of options for how these principles are represented in the different design fields

UNITY

Unity is defined in the Oxford English Dictionary as a derivative of unus meaning 'one.' In design, unity is defined as the forming of a whole or the totality of related parts. Unity is a design principle that is similar to the principle of balance because it can be used to create the perception of stability and harmony in a visual composition. A designer can create unity by repeating various design elements such as shape, pattern, form, texture, and color within a space or environment (Kilmer & Kilmer, 1992, p.121). There are two sub-principles of unity: 1) harmony and 2) similarity. Harmony refers to using the proper combination of unity and variety to provide a sense of ‘oneness’ in a space. Similarity, on the other hand, refers to the use of design elements that are similar in size, texture, tone, and shape which can visually unify a particular space (Dondis, 1973, p.35).

UNITY IN NATURE

In nature, unity can be seen in the form of symbiotic relationships in which living organisms coexist and collaborate (e.g., moss grows on a tree to protect it from potentially damaging elements while the tree simultaneously serves as a host upon which the moss can grow). The collaboration of the moss and the tree serve as a good visual example of symbiotic unity (figure 2.4).
UNITY IN GRAPHIC DESIGN

The yin and yang symbol is a good example of unity in the two-dimensional context as it properly represents the result of two separate units that have become one (figure 2.5). *The Kiss*, a colored woodcut by architect and designer Peter Behrens in 1898, presents unity in the organic flow of hair which unifies the two figures (figure 2.6). In this context, the use of the principle forces the viewer to perceive the context of the composition as a whole rather than two separate figures.
UNITY IN ARCHITECTURE

In architecture and interior space design, unity is considered one of the most essential principles to producing harmony. Frank Lloyd Wright’s *Fallingwater* in Pennsylvania is an example of architecture designed to blend the building and the natural landscape into a visual whole (figure 2.7).
Figure 2.7. Frank Lloyd Wright’s *Fallingwater*, Pennsylvania

UNITY IN INTERIOR DESIGN

Human beings have a natural tendency to gravitate towards a harmonious environment, and, in order to achieve harmony in a space, the materials, colors, textures, and elements must all be unified. Harmony may not always be desired in an interior space where instability or spontaneity may be required. Sam Kubba, author of *Space Planning for Commercial and Residential Interiors*, recommends three methods of achieving unity in an interior space: 1) having a central and consistent theme throughout the space (e.g., color, style, pattern, shape, etc...), 2)
using repetition of elements (e.g., shape, size, texture, color, etc...), and 3) having a strong focal point so that the space and elements revolve around it.

An example of unity in an interior space is Philippe Starck’s Katsuya Restaurant (figure 2.8). In order to create a unified theme, he consistently uses rectilinear shapes that result in the formation of the spatial envelope. The furniture is rectilinear in shape and is mirrored by a tiled pattern in the ceiling. In addition, unity is presented in this space through the use of analogous color which creates a visually calm environment. An additional example of unity in an interior space is El Porteño in Buenos Aires by Philippe Starck (figure 2.9). Starck repeats the furniture, colors, and shapes consistently within the space thereby creating the sense of stability and calm.

Figure 2.8. Katsuya Restaurant in California
Figure 2.9. El Porteño in Buenos Aires

**BALANCE**

Balance is a design principle that is commonly used to create visual stability and/or equilibrium in a composition. Visual balance can be created through the even distribution of weight in space, shape, texture, and color. There are three basic types of balance that are most commonly used by designers in a visual composition:

1) Symmetrical Balance
2) Asymmetrical Balance
3) Radial Balance

**BALANCE (SYMMETRY)**

Symmetry refers to the axial balance of two sides of an object, shape, or spatial arrangement. A form or space has symmetry when it can be divided diagonally, vertically, or horizontally and the resulting sides are in effect the same
(Bowers, 2008, p.67). Symmetry is the most commonly used principle to create balance in a visual composition.

**BALANCE (SYMMETRY) IN NATURE**

Symmetrical Balance is frequently encountered throughout our natural environment (e.g., humans, animals, insects, and plants). The butterfly (figure 2.10) exhibits symmetrical balance when the wings are at full extension.

![Figure 2.10. Symmetrical balance in nature](image)

**BALANCE (SYMMETRY) IN GRAPHIC**

In graphic design, symmetry can be used to balance the visual space and direct focus in one general location. Shapes or objects can be arranged symmetrically in a space to create balance and focus (figure 2.11).
Figure 2.11. Symmetrical balance in 2D

BALANCE (SYMMETRY) IN ARCHITECTURE

In architecture and interior space design, symmetrical balance is commonly referred to as ‘formal’ in character. In architecture, symmetry is often seen in historical architecture and architecture that symbolizes ‘stateliness’. The façade of the Parthenon in Athens (figure 2.12) is an example of symmetrical balance in historical architecture. The façade of the Parthenon can be visually bisected at the center, presenting two sides that are essentially the same. Similarly, the U.S. Capitol Building (figure 2.13) is an example of symmetrical balance used in ‘stately’ architecture.
Figure 2.12. The Greek Parthenon in Athens

Figure 2.13. The United States Capitol Building

BALANCE (SYMMETRY) IN INTERIOR DESIGN

In interior design, symmetry is often used to create visual balance within a space. Symmetry can also be used in an interior space to direct the eye to a
particular location. The Ben Sherman Store in New York City (figure 2.14) is an example of symmetry in an interior space. The furniture, spatial elements, colors, and lighting are emulated on each side of the center axis thereby creating visual balance and focus towards the center of the space.

Figure 2.14. Ben Sherman Store in New York City

BALANCE (ASYMMETRY)

Asymmetrical balance can be seen when an object, shape, or spatial arrangement is visually divided and the two sides are not the equal in size and/or shape. There is more flexibility with asymmetrical balance as there are no mirror images or centerlines.
BALANCE (ASYMMETRY) IN NATURE

In nature, asymmetry typically occurs as essential functions for survival or as a result of a physical defect. The male fiddler crab (figure 2.15) is an example of asymmetry in nature. One claw is much larger than the other thus providing emphasis to attract the female crab.

Figure 2.15. Asymmetrical balance in nature

BALANCE (ASYMMETRY) IN GRAPHIC DESIGN

In graphic design, asymmetry can be used to promote visual activity and movement throughout a composition. Asymmetry can encourage visual movement around a particular point (figure 2.16, figure 2.17).
Figure 2.16. Asymmetry in 2D

Figure 2.17. Analysis of visual movement
BALANCE (ASYMMETRY) IN ARCHITECTURE

Similarly, when used in architecture, asymmetry can guide the eye around the visual arrangement (figure 2.18, figure 2.19). Although the windows and porch are positioned asymmetrically, visual balance still exists as the left side of the building and the steps create a visual association in color and texture.

![Figure 2.19. Asymmetrical balance in architecture](image1)

![Figure 2.19. Analysis of asymmetrical balance in architecture.](image2)

BALANCE (ASYMMETRY) IN INTERIOR DESIGN

In interior design, asymmetry can be used to create more informal balance in an interior space. Asymmetrical balance is commonly found in more modern interiors and can be achieved through the conscious use of color, size, and placement of spatial elements. The Arlington Free Clinic in Virginia is a good example of asymmetrical balance in an interior space (figure 2.20). In the space,
asymmetrical balance is attained by having the large ceiling element balanced by the grouping of small benches on the floor directly below (figure 2.21). The Le Lan Restaurant by Philippe Starck in Beijing is an example of asymmetrical balance using furniture as the space is balanced through the visual relationships of color and scale (figure 2.22, 2.23).

Figure 2.20. The Arlington Free Clinic in Virginia

Figure 2.21. Analysis of asymmetry in the interior space
Figure 2.22. Le Lan Restaurant in Beijing

Figure 2.23. Analysis of asymmetry in color and scale
BALANCE (RADIAL)

Radial Balance refers to the circular arrangement of objects or shapes around a center point and is generally multi-symmetrical. Radial balance is a less common method of achieving balance but can be used to direct focus from or towards the center point of a visual element.

BALANCE (RADIAL) IN NATURE

In nature, radial balance is commonly seen in flowering plants (figure 2.24). Figure 2.25 is diagrammed to illustrate the radial balance of the flower. Each petal grows outward from the center point creating symmetrical balance on each axis.

![Figure 2.24 Radial balance in nature](image1) ![Figure 2.25 Analysis of radial balance](image2)

BALANCE (RADIAL) IN GRAPHIC DESIGN

In graphic design, radial balance can be used to direct attention to or away from the center point. Figure 2.67 is an example of the most commonly used form of radial balance which is created by straight lines (equally spaced apart) radiating
from the center point. It is important to note that the physical center of a visual element is not always the center of the radiation. Radial balance can be used to create graphic designs that are ‘powerful’ and eye-catching.

Figure 2.26. Radial balance in 2D

BALANCE (RADIAL) IN INTERIOR DESIGN

In interior design, radial balance is closely related to symmetrical balance but has a central point from which elements radiate outward. Radial balance can be used to create focal points and exhibit circular movement. Typical methods of radial balance in interiors are circular dining arrangements (figure 2.27, 2.28) and windows designs as can be seen in The Guggenheim Museum (figure 2.29).
Figure 2.27. Circular dining table arrangement

Figure 2.28 Analysis of radial symmetry
RHYTHM

Rhythm exists all around us as in the auditory flow of a musical melody or the beating of the human heartbeat. Visually, rhythm can be seen in the reoccurrence of shapes, objects, colors, and patterns. Rhythm produces organized movement and/or patterns and can be accomplished through two main forms: 1) repetition, and 2) progression.

RHYTHM (REPETITION)

Repetition is the most commonly used form of rhythm in design because it is an easy and straightforward way to create visual harmony. Repetition can be
applied to a space using the design elements of shape, size, floor, and texture using the methods of direction and position (Wong, 1972, p.29).

RHYTHM (REPETITION) IN NATURE

In nature, repetition can be seen in the spun pattern of a spider web. The lines of the web are aligned and evenly spaced; creating a pattern that can be perceived as rhythmical (figure 2.30).

Figure 2.30. Repetition in nature
RHYTHM (REPETITION) IN GRAPHIC DESIGN

In graphic design, repetition serves as a visual connection that leads the eye from one point to another. This can be used to hold a composition together and/or direct attention towards a particular direction. Figure 2.31 is a basic example of repetition of shape as the triangles are aligned, evenly spaced, and pointed in the same direction.

Figure 2.31. Repetition in 2D
RHYTHM (REPETITION) IN ARCHITECTURE

In architecture, the repeating of elements creates a consistency that lends to the unified appearance of a building. The towers in San Francisco (figure 2.32) are a good example of repetition in architecture as one exterior floor design is repeated several times (figure 2.33).

Figure 2.32. San Francisco Towers

Figure 2.33. Analysis of repetition
RHYTHM (REPETITION) IN INTERIOR DESIGN

In interior design, repetition is a commonly used method of incorporating rhythm into an interior space as it is successful in creating uninterrupted visual steps towards a desired focus. Repetition can be applied to a space through the repeating of spatial elements, fixtures, furniture, textures, or colors. The interior space (figure 2.34) is an example of repetition through spatial components and color. The red elements occupy the same space in the same manner which encourages the eye to progress through the space. The town house in Miami (figures 2.35, 2.36) is an example of repetition created through the placement of light fixtures. The large light fixtures are repeated in a consistent manner creating a rhythm that leads the eye through the space towards the spatial element in the foreground.

Figure 2.34. Repetition in interior design
Figure 2.35. Town house interior in Miami

Figure 2.36. Analysis of repetition
RHYTHM (PROGRESSIVE)

Progressive rhythm is a form of rhythm that creates directional sequences and gradual change. Progressive rhythm is often applied through color (e.g., light to dark) and scale (e.g., small to large) and can emphasize a direction in a visual composition.

RHYTHM (PROGRESSIVE) IN NATURE

The nautilus shell is an exemplary example of progressive rhythm in nature (figure 2.37). The size of the shell gradually decreases as the form progresses to the center.

Figure 2.37. Progressive rhythm in nature
RHYTHM (PROGRESSIVE) IN GRAPHIC DESIGN

The figure below (figure 2.38) is a two-dimensional example of progressive rhythm. The progression of the square is illustrated in size and gradient. This principle can be used in graphic design to lead the eye in a directional sequence.

![Progressive rhythm in 2D](image)

Figure 2.38. Progressive rhythm in 2D

RHYTHM (PROGRESSIVE) IN ARCHITECTURE

In architecture, progressive rhythm serves as a dynamic method of creating directional flow. The Chrysler Building in New York City (figures 2.39, 2.40) is an example of progressive rhythm in architecture as elements are repeated and progress in size.
Figure 2.39. The Chrysler Building in New York City

Figure 2.40. Analysis of progressive rhythm in architecture
RHYTHM (PROGRESSIVE) IN INTERIOR DESIGN

In interior design, progressive rhythm is a gradual change in the size, direction, or color of an object or space (Kubba, 2003, p.117). Spiral staircases are an excellent example of progressive rhythm in interiors (figure 2.41) as the steps repeat and progress directing visual and physical movement vertically.

Figure 2.41. Progressive rhythm in interior design
SCALE

In design, scale has to do with calculating the physical size of an element in relation to another element and the importance that it has in the visual composition. Scale can be used to draw attention to, or reject attention from, particular components in a visual space (Moore & Allen, 1976, p.17).

SCALE IN NATURE

Scale is often seen in nature due to the variation in sizes among living organisms. For example, to humans, a leaf appears to be small in scale; however, to an ant, the same leaf appears to be much larger (figure 2.42).

Figure 2.42. Scale in nature
SCALE IN GRAPHIC DESIGN

In graphic design, scale can be used to manipulate a visual message in a composition. For example, when one shape is larger than another, the largest shape is perceived as dominant (figure 2.43). In graphic design, this method can be applied to forms and typeface.

Figure 2.43. Scale in 2D
SCALE IN ARCHITECTURE

In architecture and interior design, scale is used as the visual comparison of the size of an object or environment to the size of an average human being. Good examples of scale used in architecture are scale models (figure 2.44). These models serve as visual representations of buildings that are visually small in scale to humans.

Figure 2.44. Scale model of a building
SCALE IN INTERIOR DESIGN

In interior design, scale can be used to create visual balance within a space. The spatial elements, furniture, color, texture, and pattern must all be considered as an integral part of scale in the space. In order to achieve visual balance, all elements in a visual space should be in scale with one another. The Clift Hotel by Philippe Starck in San Francisco is an example of a visually unbalanced space through the use of scale (figure 2.45). The exaggerated scale of the chair gives the additional elements in the space a 'shrunken' appearance therefore creating visual irregularity. Of course, if visual balance is not the goal, this method of scale can be used to create dramatic effect in an interior space.

Figure 2.45. The Clift Hotel in San Francisco
EMPHASIS

In design, emphasis is a principle that is employed when there is a specific need for dominant and subordinate relationships in a visual composition. Emphasis creates variety through form, color, texture, and line.

EMPHASIS IN NATURE

In nature, emphasis can be seen where dominance and importance is necessary. The emphasized tail of the peacock appears to have dominance when compared to the body and is therefore the focal point (figure 2.46).

Figure 2.46. Emphasis in nature
EMPHASIS IN GRAPHIC DESIGN

In graphic design, emphasis is a useful principle for creating focal points and optimum visibility in a composition. Figure 2.47 is a two-dimensional example of emphasis through color. The blackening of one circle creates emphasis and dominance causing the remaining circles to appear subordinate.

Figure 2.47. Emphasis in 2D
EMPHASIS IN INTERIOR DESIGN

In architecture and interior design, emphasis can be used to accentuate elements and create focal points with line, form, color, scale, and texture. The St. Martin’s Lane Hotel in London, England is a good example of emphasis applied to an interior space through form and color (figure 2.48). The individual green column stands out from the remaining elements in the space creating a focal point and directing the eye to the standing bar tables.

Figure 2.48. St. Martin’s Lane Hotel in London, England
CONTRAST

In design, Contrast is used to create visual intensity and variety in a visual composition but should; however, always be applied in a way that maintains unity. Contrast refers to the arrangement of (usually juxtaposed) elements or qualities in a visual composition (e.g., light to dark, small to large, smooth to rough, etc..), and can be achieved through the application of line, form, color, size, and texture.

CONTRAST IN NATURE

In nature, visual contrast is abundant in pattern and color. The zebra is an example of contrast by means of line and color (Figure 2.49). The black and white stripes create immense visual contrast. Perhaps the zebra's contrasting pattern exists to visually confuse predators.

Figure 2.49. Contrast in nature
CONTRAST IN GRAPHIC DESIGN

Two-dimensionally, contrast is used to create visual interest and hierarchy by creating differences in size, shape, and color. Figure 2.50 is a basic example of contrast in 2D as it illustrates the effect that contrast can provide in a visual composition.

![Contrast in 2D](image)

Figure 2.50. Contrast in 2D

CONTRAST IN ARCHITECTURE AND INTERIOR DESIGN

Contrast is one of the most common and essential principles used in architecture and interior design as it can be used to differentiate elements within a visual arrangement. If a building or interior space has excessive visual monotony,
then it becomes difficult to identify the organization and/or hierarchy. Contrast enables interior designers to create visual separation through color, texture, shape, size, and line. The Dalki Theme Park in Korea (figure 2.51) is an example of contrast through color. The two floors are given two different color schemes (green and red) creating visual differentiation of the two spaces. An example of contrast through shape is the Cole Haan store in Chicago (figure 2.52). The application of circular and rectangular shapes creates a dichotomy that gives the space visual interest.

Figure 2.51. The Dalki Theme Park in Korea
Figure 2.52. The Cole Haan Store in Chicago

VARIETY

It is said that variety is the “spice of life”. In design, variety can be used to provide visual interest and uniqueness and can be applied to a visual composition through several means. Of course, it is important to use variety with a degree of unity as too much variety may create visual discord.
VARIETY IN NATURE

In nature, variety is abundant both visually and biologically. This variety exists in order to maintain the various life forms that dwell there. An example of visual variety in nature is a forest (figure 2.53). Forests are full of various lines, forms, colors, and textures that create a visual interest.

![Variety in nature](image)

Figure 2.53. Variety in nature

VARIETY IN GRAPHIC DESIGN

In graphic design, variety can be created via line, shape, color, alignment, and texture. Graphic designers can use variety to create visual hierarchy and interest in
a composition. The figure below (figure 2.54) is an example of how variety can be used to create diversity while keeping a dominant theme.

![Figure 2.54. Variety in 2D](image)

**VARIETY IN ARCHITECTURE**

Cityscapes are the best example of variety in architecture. The variety amongst buildings is boundless and provides diversity in the visual appearance of a city (figure 2.55).
VARIETY IN INTERIOR DESIGN

Interior designers use variety to capture attention and create visual interest in a space. Variety can be incorporated into an interior space through line, scale, shape, color, texture, pattern, furniture, and lighting. While variety is a useful strategy for creating diverse interior spaces, it should be consciously applied so that some degree of unity is visible. The Dalki Theme Park in Korea is an example of variety applied to a space through shape, color, and scale (figure 2.56). The use of two main shapes (circle and hexagon) and the variety of size and color amongst the space creates a visually interesting appearance that is far from static. While the level of variety is high in this space, unity is present through the use of repetition. Variety can also be applied to interior spaces through the simple selection of furniture. The interior space (figure 2.57) is an example of variety due to the use of chairs that vary in color and style. This method creates visual interest with minimal effort.

Figure 2.55. Variety in architecture
Figure 2.56. The Dalki Theme Park in Korea

Figure 2.57. Variety of furnishings in an interior space
CHAPTER SUMMARY

In interior design, it is imperative that designers have a complete understanding for the basic design principles and how they appear in a composition. It is for this reason that the basic design principles were outlined and illustrated as such in this chapter (figure 2.58). The next chapter introduces the additional set of principles that have been derived from the graphic design field and explore how they can be integrated into the interior space design practice.

Figure 2.58. Matrix of established principles
CHAPTER 3

EXTENDED PRINCIPLES FOR INTERIOR DESIGN:
RESEARCH AND ANALYSIS

INTRODUCTION

There are a substantial amount of existing sources on the formal compositional theory for interior space design students. These sources provide design students with the basic tools (viz., fundamental design elements and principles) that interior designers can use to create strong solutions to given problems (Kilmer & Kilmer, 96). Many existing sources for compositional theory in graphic design present a list of additional tools (i.e., extended principles) for creating meaningful visual compositions; however, these principles are not prevalent in interior design education or practice prompting the questions for investigation:

1) What do these extended principles look like in interior space design?
2) Can these extended principles be used to create visual effect in interior spaces?
3) How can these extended principles be taught to interior space design students in a comprehensive manner?

These questions were catalysts in developing a teaching tool that will aide in more progressive compositional theory in interior space design education.
TEN EXTENDED DESIGN PRINCIPLES FOR INTERIOR SPACE DESIGN

Through investigation for this thesis, it became clear that many additional design principles exist in graphic design compositional theory. The most notable source for the additional principles is Dondis A. Dondis' *A Primer of Visual Literacy*; however, not all of the principles can be successfully used in a three-dimensional context (viz., interior design). The ten extended principles that are covered in this chapter were chosen because they each encompass one or more of the established principles and because of their usability in creating strong visual effects in environments while maintaining qualities of function. Below is a recapitulation of the extended principles that are outlined in this chapter:

1) Irregularity
2) Complexity
3) Fragmentation
4) Exaggeration
5) Distortion
6) Diffusion
7) Episodicity
8) Instability
9) Interaction
10) Movement

EXISTING USE OF EXTENDED PRINCIPLES IN THE INTERIOR DESIGN FIELD

While the extended principles may not be commonly distinguished in interior design education, there are many designers who commonly utilize these principles in the field. The three significant designers whose work has been closely examined for this study are: 1) Antoni Gaudi, 2) Frank Gehry, and 3) Philippe Starck.

Antoni Gaudi was an innovative architect and designer of the Spanish Art Nouveau movement. Well ahead of his time, Gaudi designed against the formalities of visual order and explored new strategies and techniques in architecture and
interior design (Antoni Gaudi, Great Buildings Online). Frank Gehry is most recognized for his deconstructive approach to architecture. His use of distortion, complexity, and deconstruction emphasizes new ideas in design theory (Frank Gehry, Great Buildings Online). Philippe Starck is a world renowned designer famous for his progressive approach to designing products and interiors. His approach to design is one of transgression as he consistently breaks the conventional rules of convention in design. Many works of these three influential designers are used in this chapter as they are excellent examples of the utilization of the extended design principles in interior design and architecture.

**VISUALLY DEFINING THE EXTENDED PRINCIPLES**

This chapter serves as a model for utilization of the 10 extended principles and the visual effect that they create. The images were selected because they successfully illustrate how the extended principles generate visual effect in nature, graphic design, architecture, and interior design. This comprehensive framework lends to the development of a recognized set of extended principles that can aide in the further progression of interior design practice and education. It is important to note that the following content is one interpretation of the extended principles in a visual composition and, of course, personal interpretation is a factor.

**IRREGULARITY**

Irregularity is an approach that emphasizes unconventional design and is commonly used to create a visually stimulating effect. This can be achieved by emphasizing the variety of line, shape, color, and pattern within a visual composition.
IRREGULARITY IN NATURE

In nature, irregularity often occurs in the formation of mountain ranges. The shapes, sizes, distances, heights, and colors of the individual rock formations naturally create irregular arrangements (figure 3.0, figure 3.1).

Figure 3.0. Irregularity in Nature

Figure 3.1. Analysis of irregularity in nature
IRREGULARITY IN GRAPHIC DESIGN

In graphic design, irregularity can be used as a method to create unsystematic visual arrangements. In figure 3.2, the irregular spacing of the lines creates a visual composition that can be perceived as unpredictable.

Figure 3.2. Irregularity in 2D
IRREGULARITY IN ARCHITECTURE

In architecture, irregularity can be used to emphasize components of architecture. The Herzog & De Meuron Towers in New York (figure 3.3) is an example of an irregular arrangement. Each floor of the tower has been arranged in a distinctive manner creating the perception of a random shifting of the architectural components.

![Image of Herzog & De Meuron Towers](image)

Figure 3.3. Rendering of the Herzog & De Meuron Tower

IRREGULARITY IN INTERIOR DESIGN

In interior design, irregularity can be used to emphasize variety and create the perception of random arrangements in a space which can be perceived as
informal or casual. The Ilori Eyeglass retail store (figure 3.4) is an example of an irregular arrangement that works to draw attention to the eyeglass display. The unstructured arrangement of shapes creates more visual interest towards the merchandise. The S Bar by designer Philippe Starck (figure 3.5) is a good example of irregular use of furniture. Starck strategically hang table lamps, upside down, from the ceiling to create and emphasize irregularity in the space.

Figure 3.4. Ilori Eyeglass Store
COMPLEXITY

Complexity, unlike the more formal principles of design (e.g., balance and unity), amplifies chaos and discord in visual compositions through the use of multiple design elements and principles. Author, Dondis, of A Primer of Visual Literacy, refers to complexity as visual intricacy that is made up of many units and forces resulting in a pattern that may be difficult to organize and/or understand (Dondis, 1973, p.144). Complexity can be categorized as a design principle that, when used purposefully in design, can create a strong visual message.

COMPLEXITY IN NATURE

In nature, complexity exists in the growth patterns and systems of living organisms both microscopically and topographically. The human nervous system
consists of complex, interwoven cells with no discernible pattern (figure 3.6) and can be perceived as chaotic, unrestrained, and/or abstract. Complex topography in nature can be seen in the growth system of tree limbs in which the branches grow outward in multiple directions to collect sunlight (figure 3.7). Nature serves as a good reference for understanding how the principle of complexity can be applied to an interior space design. It is important to note that in order to create complexity in a design, careful planning and intricate placement may be required.

Figure 3.6. The Human Nervous System

Figure 3.7. Growth system of tree branches
COMPLEXITY IN GRAPHIC DESIGN

In graphic design, complexity can be used to arrange design elements (viz., line, shape, and space) unsystematically to create a complex appearance. A graphic designer might use complexity to create a design that will be perceived as exciting and/or spontaneous as in figure 3.8.

Figure 3.8. Complexity in 2D

COMPLEXITY IN ARCHITECTURE

In traditional architecture (e.g., gothic architecture), complexity is demonstrated as smaller, organized systems of ornamentation as can be seen in the example of The Duamo Church in Milan (figure 3.9). In modern day architecture, the
demonstration of complexity has shifted from smaller, organized systems of elements and principles to larger and less controlled systems (e.g., the rendering of the design for the Singapore Civic and Culture building (figure 3.10) in which the variety of shapes, disorganization of lines, and disjointed structural balance make for a truly complex design).

Figure 3.9. The Duamo Church in Milan
Figure 3.10. Singapore Civic and Cultural Center

COMPLEXITY IN INTERIOR DESIGN

In interior design, complexity can produce successful results in a space if it is applied conscientiously and properly. Complexity can be implemented into an interior space through the use of design elements (viz., line, shape, space, texture, color, and light). The Volkswagen Autostadt Exhibit in Germany (figure 3.11), serves as an example of conscious application of complexity in a space. The complexity of the green structure and floor graphic encompasses the space and provides visual movement and flow from one point of interest to another.
Of course, using complexity in an interior space can produce unsuccessful results when applied incorrectly. In order to create a successful complex space, there must be an overall theme involving all of the elements within the space. In the case of the The Rocal Monceau Hotel Lobby (figure 3.12), complexity has not been achieved as the remaining elements (i.e., furniture, floor, spatial envelope, etc...) must be similarly complex in design in order to create an overall unified theme.
**FRAGMENTATION**

Fragmentation is a design principle that can be used to break up the appearance of a visual whole by fragmenting an object or space into separate pieces. Fragmentation can be achieved in design by creating patterns that display visual space between shapes.

Figure 3.12. The Royal Monceau Hotel Lobby
FRAGMENTATION IN NATURE

In nature, fragmentation occurs in surfaces (e.g., dirt, mud, clay, etc...) that appear to have been cracked as a result of a physical disturbance (e.g., pressure, heat, erosion, etc...) (figure 3.13).

Figure 3.13. Fragmentation in Nature
FRAGMENTATION IN GRAPHIC DESIGN

In graphic design, fragmentation can be achieved by generating visual space between forms. This creates the appearance of a whole that has been fragmented into separate pieces (e.g., puzzle pieces) (figure 3.14).

Figure 3.14. Fragmentation in 2D

FRAGMENTATION IN ARCHITECTURE

In architecture, fragmentation can be utilized to create the appearance of spaces and surfaces that have been segmented. An example of fragmentation in architecture is The BMW Edge Theater in Melbourne; where the ceiling element has
been assembled with a structure that visually separates the whole into individual shapes, creating a ‘cracked’ appearance (figure 3.15).

Figure 3.15. BMW Edge Theater in Melbourne

FRAGMENTATION IN INTERIOR DESIGN

In interior design, fragmentation can be used to create the appearance of separated surfaces and/or spatial envelopes. An example of fragmentation created in an interior space seen in The Cristal Office in Madrid (figure 3.16). In this space, the lines of recessed lighting converge with the coordinating lines on the floor to form the appearance of segmentation of the spatial envelope. An additional example
of fragmentation used in an interior space is The Conga Room in Los Angeles (figure 3.17), where fragmentation has been utilized on the surface of the main element in the space. The surface appears “broken” and the separate pieces create a visually interesting pattern.

Figure 3.16. The Cristal Office in Madrid
EXAGGERATION

In design, exaggeration is a principle that can be used to create visual emphasis. Designers commonly use exaggeration to amplify elements in a space or visual context. Exaggeration can be achieved through the applicable use of repetition, scale, contrast, and color.

EXAGGERATION IN NATURE

In nature, exaggeration can be observed in the fanned plumage (or tail) of the male peacock (figure 3.18). The large scale, vibrant colors, and repetition of pattern create exaggeration in order to capture the attention of the female peacock.
EXAGGERATION IN GRAPHIC DESIGN

In graphic design, exaggeration can be used to overstate visual messages by amplifying shapes, text, and color in a visual composition. Figure 3.19 is an example of how repetition, scale, and contrast of the two-dimensional triangle create visual exaggeration.
EXAGGERATION IN ARCHITECTURE

Exaggeration is commonly used by architects to modernize existing architecture. The Architecture Center in London is an example of exaggeration in architecture (figure 3.20). The entrance of the building is exaggerated creating visual emphasis when compared to the buildings around it.
EXAGGERATION IN INTERIOR DESIGN

In interior design, exaggeration can be used to overstate desired components in a space and can be created through the exaggeration of size and/or quantity of spatial elements, furniture, color, and scale. The Wagamama Noodle Bar in Amsterdam is an example of exaggeration applied to a space via color and scale (figure 3.21). The oversized pendant fixtures draw attention to the designated dining area and the red underside of the fixtures lower the visual appearance of the ceiling height (figure 3.22). The patio of the Mondrian Hotel, California by Philippe
Starck is an example of exaggeration implemented through scale (figure 3.23). Starck uses planter pots that are much larger in scale to create spatial boundaries.

Figure 3.21. Wagamama Noodle Bar in Amsterdam

Figure 3.22. Analysis of exaggeration in an interior space
DISTORTION

Distortion is a design principle that can be used to alter the appearance of shapes, forms, and space in a visual composition. Distortion can be achieved by applying techniques (e.g., twisting, bending, blurring, expanding, and contracting) to design elements (i.e., line, shape, space, texture, pattern, color, and light). Dondis A. Dondis suggests that distortion can be used in a visual composition to tamper with visual realism (Dondis, 1973, p.122).

DISTORTION IN NATURE

In nature, distortion can occur through temporary influences (figure 3.24). In this example, the ripples in the water surface visually alter the fish by creating the appearance of textures and patterns. In figure 3.25, distortion occurs through the temporary distension of the snake's body. The pattern of the snake's scales has
changed dramatically in size, shape, and color due to the distorting effect. Distortion can also occasionally occur in nature through permanent influences (e.g., the distorted growth of a tree).

Figure 3.24. Distortion in nature (distorting effects of water)

Figure 3.25. Distortion in nature (distorted body of snake)
DISTORTION IN GRAPHIC DESIGN

In graphic design, distortion can be achieved by graphically altering one or more design elements. In Figure 3.26, the photograph has been visually distorted by manipulating the lines and shapes in the composition to create a 'mutated' appearance.

Figure 3.26. Distortion in graphic design

DISTORTION IN ARCHITECTURE

Distortion has been widely used as part of deconstructivist architecture. Deconstructivism in architecture focuses on the overall aesthetics of a structure and can be described as 'unconventional' in practice. An example of distortion in
architecture is The Raisin Building in Prague by Frank Gehry (figure 3.27). The ‘warped’ construction of the window grid creates the appearance of movement.

Figure 3.27. The Raisin building in Prague
DISTORTION IN INTERIOR DESIGN

Distortion is a principle that challenges the parameters of interior space design and can be used to produce visually stimulating environments that tamper with visual realism (Dondis, 1973, p.122). This can be seen in the Via Veneto retail space (figure 3.28) where the spatial envelope is organized to simulate the appearance of a structural collapse. An additional example of distortion is the interior of the Casa Batllo in Barcelona by Antoni Gaudi (figure 3.29). Gaudi treats the spatial envelope and architectural elements as a pliable skin to create the appearance of distortion throughout the space.

Figure 3.28. The Via Veneto Store in the Philippines
DIFFUSION

Diffusion is a design principle that can be used to soften the appearance of objects, space, color, and light in a visual composition. Diffusion can be achieved by creating a pattern or texture through the displacement of forms in a space.
DIFFUSION IN NATURE

In nature, an example of diffusion is fog. Fog occurs when water droplets rise and assemble creating visual diffusion of the objects within the environment (figure 3.30).

Figure 3.30. Diffusion in nature.

DIFFUSION IN GRAPHIC DESIGN

In graphic design, diffusion can be used to control the saturation of a space through the disbursement of components within a composition as illustrated in figure 3.31 (Leborg, 2004, p.61).
Figure 3.31. Diffusion in 2D

DIFFUSION IN ARCHITECTURE

In architecture, diffusion can be used to soften or blur the appearance of a space or structure. An example of diffusion in architecture is the ‘Manny’ building in France (figure 3.32) where individual forms are grouped creating an exterior envelope that distorts the appearance of the building.
DIFFUSION IN INTERIOR DESIGN

In interior design, diffusion can be used to soften and blur components within a space as seen in the Barbie Flagship Store in Shanghai (figure 3.33). In this example, the textured element diffuses the appearance of the furniture, elements, color, and lighting without completely obstructing the view into the space. Diffusion can also be used to blur the spatial constraints of an interior space as in the Beijing Noodle Restaurant in Las Vegas (figure 3.34) where the ceiling and walls have been perforated and backlit creating the visual effect of undefined spatial borders.
Figure 3.33. Barbie Flagship Store in Shanghai

Figure 3.34. Beijing Noodle in Las Vegas
EPISODICITY

Episodicity is a design principle that emphasizes the separate, loosely connected visual elements in a composition (Merriam Webster Online). Episodicity can be used to reinforce the individual quality of the parts that make up a visual whole (Dondis, 1973, p.126).

EPISODICITY IN NATURE

In nature, episodicity can be seen in the dandelion seed dome. The seed dome is made up of individual seedlings that loosen and disconnect from the plant. Although the seedlings separate from the grouping, they visually remain a part of the whole (figure 3.35).

![Dandelion seed dome]

Figure 3.35. Episodicity in nature
EPISODICITY IN GRAPHIC DESIGN

In graphic design, episodicity can be used to emphasize irregular arrangements in a composition. Figure 3.36 is an example of individual shapes that appear to have ‘loosened’ themselves from what was once a whole configuration.

Figure 3.36. Episodicity in 2D

EPISODICITY IN ARCHITECTURE

In architecture, episodicity can be used to create the appearance of affect without compromising the whole composition. The Serpentine Gallery, in London by
Toyo Ito is an example of episodicity in architecture (figure 3.37). Ito uses episodicity to produce the appearance of a loosely connected shell that remains visually intact.

![Figure 3.37. The Serpentine Gallery in London](image)

EPISODICITY IN INTERIOR DESIGN

In interior design, if used conscientiously, episodicity can be used to create visual interest, variety, and to reinforce the individual quality of specific spatial elements. The Recess Yogurt Café in New York City (figure 3.38) is an example of episodicity in an interior space. The discontinuous angles of the spatial elements reinforce their individual qualities without abandoning the overall organization of the space. (figure 3.39).
Figure 3.38. Recess Yogurt Café in New York City

Figure 3.39. Analysis of episodicity in an interior space
INSTABILITY

Instability, in design, can be used to mimic activity and movement in a visual composition. Instability can be achieved through the positioning of elements and variety of the shapes, sizes, and lines in a visual space.

INSTABILITY IN NATURE

In nature, instability can be seen in the decaying structures of trees and plants. The decay of the tree trunk (figure 3.40) causes unstable structure and eventual collapse.

Figure 3.40. Instability in nature
INSTABILITY IN GRAPHIC DESIGN

In graphic design, instability can be achieved through the positioning of shapes, lines, and text. In figure 3.41, the shapes are situated in the space to create the appearance of movement, collapse, and falling.

![Figure 3.41. Instability in 2D](image)

INSTABILITY IN ARCHITECTURE

The leaning tower of Pisa in Italy is a good example of instability in historic architecture (figure 3.42). Due to an engineering miscalculation, the tower has shifted thereby creating the appearance of instability and impending collapse (figure 3.43)
Figure 3.42. The Leaning Tower of Pisa in Italy

Figure 3.43. Analysis of instability in architecture
INSTABILITY IN INTERIOR DESIGN

In interior design, instability can be used to create the appearance of activity and motion in a space. In the Flat Flat store in Harajuku (figure 3.44), the elements are made of non-uniform shapes vertically stacked to create the appearance of movement and instability. The interior staircase of the Wexner Center for the Arts (figure 3.45) in Columbus Ohio appears to have no discernible column system. This visual instability creates a spatial void that promotes the flow of traffic.

![Figure 3.44. Flat Flat Retail Space in Harajuku](image-url)
INTERACTION

Interaction is a design principle that can be used by designers to create a visual relationship between elements within a visual composition. Interaction can be achieved through several methods; however, the two most successful are: 1) overlapping and 2) compounding.
INTERACTION (OVERLAPPING)

Overlapping occurs when part of a shape or object lies above another creating the appearance of interaction. In addition to creating the appearance of interaction, overlapping can also be used by designers to create the appearance of rhythm within in a visual composition.

INTERACTION (OVERLAPPING) IN NATURE

In nature, overlapping can be seen in the scale pattern of reptiles and fish, where each individual scale overlaps another creating a visual relationship and pattern (figure 3.46).

![Figure 3.46. Overlapping in Nature](image)
INTERACTION (OVERLAPPING) IN GRAPHIC DESIGN

In graphic design, overlapping can be used to create connectivity amongst shapes, lines, and text in a visual space. The overlapping of the circles forms a visual relationship between the two (figure 3.47).

![Figure 3.47. Overlapping in 2D](image)

INTERACTION (OVERLAPPING) IN ARCHITECTURE

In architecture, overlapping can be used to create visual interaction and flow amongst separate elements. An example in architecture is The Richard B. Fisher
Center for Performing Arts, New York, by Frank Gehry (figure 3.48). Gehry achieved a rhythmical pattern by overlapping separate pieces of the building’s exterior shell.

![Image](image.jpg)

**Figure 3.48. The Richard B. Fisher Center for Performing Arts in New York**

INTERACTION (OVERLAPPING) IN INTERIOR DESIGN

In interior design, overlapping can be used to create connectivity, patterns, and rhythm. The Neil Barrett retail space in Tokyo (figure 3.49) is an example of overlapping used to create connectivity and rhythm within an interior space. The overlapping pieces create visual interest and flow. An additional example of overlapping used in an interior space is The Guggenheim’s Wright Restaurant (figure 3.50). The consistent overlapping of spatial elements creates the appearance of rhythm and pattern along the spatial envelope.
Figure 3.49. Neil Barrett Flagship Store in Tokyo

Figure 3.50. The Guggenheim Wright Restaurant in New York
INTERACTION (COMPOUNDING)

Compounding objects and shapes can also be used by designers to create visual relationships in a composition. Compounding occurs when two objects or shapes (parts) conjoin to form a visual whole.

INTERACTION (COMPOUNDING) IN NATURE

In nature, compounding can be seen when individual water droplets join together and visually become part of a whole (figure 3.51).

![Image of water droplets on a leaf](image)

Figure3.51. Compounding in nature

INTERACTION (COMPOUNDING) IN GRAPHIC DESIGN

In graphic design, compounding can be used by designers to create the appearance of unity and interaction between two or more shapes within a two-
dimensional composition. In figure 3.52, the individual circles have overlapped and then compounded to create a new shape.

![Figure 3.52. Compounding in 2D](image)

**INTERACTION (COMPOUNDING) IN GRAPHIC DESIGN**

In architecture, compounding can be utilized to create the appearance of unity between elements and structure. The residential building entrance in Brussels appears as though a circular window and a rectangular door have joined to create a effective whole (figure 3.53).
INTERACTION (COMPOUNDING) IN INTERIOR DESIGN

In interior design, compounding can be utilized in a space through color, shapes, and spatial components. The interior of the Spanx Headquarters in Atlanta (figure 3.54) is an example of compounding used in an interior space through color. The color red has been applied to a specific wall and corresponding portion of the floor to create a visual connectivity between the two. The Oaza Zdravlja Pharmacy in Serbia by Karim Rashid (figure 3.55) is an example of compounding utilized in an interior space. The ovular counter has been positioned directly in front of the ovular wall opening creating a visual relationship and connectivity.
Figure 3.54. Spanx Headquarters in Atlanta, Georgia

Figure 3.55. Oaza Zdravlja Pharmacy in Serbia
MOVEMENT

In design, the representation of movement is commonly used to create the appearance of activity in a visual composition. Two common methods of figurative movement that are frequently used by designers are: 1) curvature and 2) rotation.

MOVEMENT (CURVATURE)

Curvature occurs in design when a line, shape, or object is configured into an arched form.

MOVEMENT (CURVATURE) IN NATURE

In nature, curvature can be seen in the activity of live plant stems. The stems grow towards the sunlight to grow and droop towards the ground when structure is lost, creating curvature (figure 3.56, figure 3.57).

Figure 3.56. Bending in nature
Figure 3.57. Analysis of bending in nature
MOVEMENT (CURVATURE) IN GRAPHIC DESIGN

When illustrated graphically, curvature appears as a straight line or shape that has been bent or rounded to appear curvilinear (figure 3.58) creating active and dynamic visual compositions.

![Figure 3.58. Curvature in 2D](image)

MOVEMENT (CURVATURE) IN ARCHITECTURE

In architecture curvature can be used to create structures that appear to have been affected or influenced by a dynamic force. The Modern Architecture Design Building in Amsterdam (figure 3.59) is a good example of curvature in
architecture as the framework of the structure suggests movement and activity (figure 3.60).

Figure 3.59. Modern Architecture Bldg. in Amsterdam

Figure 3.60. Analysis of curvature movement in architecture
MOVEMENT (CURVATURE) IN INTERIOR DESIGN

In interior design, curvature can be used to create the appearance of dynamic movement without affecting the architecture. Interior designers can apply curvature to furniture, spatial elements, and spatial envelopes. The Cave Restaurant in Sydney Australia is a good example of curvature applied to the spatial envelope of an interior space (figure 3.61). In this example, the positioning of curvilinear wood pieces form the spatial envelope suggesting activity and movement from within the space (figure 3.62).

Figure 3.61. Cave Restaurant in Sydney, Australia

Figure 3.62. Analysis of curvature in an interior space
MOVEMENT (ROTATION)

Rotation occurs when an object or shape moves around a point or an axis. In design, rotation can be applied to shapes, objects, and surfaces to create the appearance of movement, activity, and flow in a visual composition.

MOVEMENT (ROTATION) IN NATURE

In nature, rotation can be seen when vines twist and grow upward around the center axis of trees (figure 3.63).

Figure 3.63. Rotation in nature
MOVENT (ROTATION) IN GRAPHIC DESIGN

In graphic design, rotation can be seen when an object or shape (two-dimensional) rotates around a central axis (figure 3.64). Rotation can be used in graphic design to convey progressive movement in a visual composition.

![Figure 3.64. Rotation in 2D](image)

MOVENT (ROTATION) IN ARCHITECTURE

A good example of rotation in architecture is the Prototype for the Twirling Towers in Dubai (figure 3.65). In this example, each floor of the building rotates on a central axis creating a consistent change in the appearance of the building.
MOVEMENT (ROTATION) IN INTERIOR DESIGN

In interior design, rotation can be used to create the appearance of movement within the spatial envelope. The visual twisting of spatial elements and surfaces are common methods of incorporating directional movement into an interior space. The Armani store in New York City (figure 3.66) is an example of rotation in an interior space as the staircase appears to be spiraling upwards while rotating on a central axis. This creates the appearance of vertical movement and
encourages flow to second floor of the space (figure 3.67). An example of rotation applied to a surface in an interior space is Antoni Gaudi’s Casa Batllo in Barcelona (figure 3.68). The manipulation of the plaster ceiling creates the appearance of flexibility and fluid movement of the spatial envelope (figure 3.69).
Figure 3.68. Casa Batllo in Barcelona, Spain

Figure 3.69. Analysis of rotation in an interior space

CHAPTER SUMMARY

This chapter demonstrates only some of the many possible principles available to interior designers and provides a visual comparison of the principles in use (figure 3.70).
Figure 3.70. Matrix of images from chapter 3
CHAPTER 4

EDUCATIONAL TOOL FOR INTERIOR DESIGN

INTRODUCTION

When considering how to develop the findings of this study into something that could be used by design students and educators, former experience as a design instructor was referenced. This experience suggests that design students prefer and gain more comprehensive information from educational sources that are engaging (e.g., hands-on) and visual (P. Chan, personal communication, 2012). A set of cards was designed that identify the principles and designing examples in nature, graphic design, architecture, and interior design. The card set offers convenience and flexibility while serving as a comprehensive educational tool for interior space design students and educators. This chapter provides the instruction for the suggested use of this educational tool (figure 4.0).
Figure 4.0. The front cover of the card deck
WHAT (DESCRIPTION OF THE EDUCATIONAL TOOL)

The card deck format was chosen because of the versatility and compact nature that it offers. The deck includes a double-sided card with the dimensions of four inches wide by six inches tall and has rounded corners for durability. This size allows for adequate image size, as well as, ease of transport. The deck includes the following:

1) Front cover card.
2) Table of contents card.
3) Informational card.
4) Instruction card.
5) Descriptive cards for each individual extended principle in each of the four descriptive categories (i.e., nature, graphic design, architecture, and interior space design).
6) Back cover card with copyright.

The front side of each card includes:

1) A color code representing examples of the categories:
   a. Green represents nature
   b. Yellow represents graphic design
   c. Blue represents architecture
   d. Red represents interior design
2) Name of the principle (e.g., complexity).
3) Associated keywords for the principle and a visual example of the illustrated principle (figure 4.1).
Figure 4.1. Example of card front

The back of each card includes:

1) Small image of the illustrated principle.
2) Descriptive text for each principle (e.g., definition, technique, and context).
3) Small corresponding images of the principle in the other categories for reference (i.e., nature, graphic design, architecture, interior design).
4) Source information for the image (figure 4.2).
INTERACTION
COMPOUNDING

DEFINITION:
Interaction is a design principle that can be used by designers to create a visual relationship between elements within a visual composition. Interaction can be achieved through several methods; however, the two most successful are: (1) overlapping and (2) compounding.

TECHNIQUE:
Compounding objects and shapes can also be used by designers to create visual relationships in a composition. Compounding occurs when two objects or shapes (parts) conjoin to form a visual whole.

CONTEXT
In nature, compounding can be seen when individual water droplets join together and visually become part of a whole.

Image from www.adsoftheworld.com

Figure 4.2. Example of card back

Each deck card is laminated to prevent wear from handling and has a punched hole for the organizational pin system. The deck is held together structurally with a metal clevis pin and hitch clip; this system provides a method of securely holding the deck together and also allows the user to disassemble the deck easily.
WHO, WHERE AND WHEN (SUGGESTED USE)

The card deck is designed to be used by two groups of people:

1) Foundation-level interior space design students for instruction and reference of the extended design principles.
2) Advanced interior space design students as a reference tool for interior space design projects.

It is recommended that this educational tool be integrated into foundation-level design courses early in the design curriculum and also to advanced design students for reference. Each student may be given the opportunity to access this educational tool whenever necessary; options include:

1) Make the card deck a required purchase for each design student for use in the course (this option allows the students unlimited access to the tool) and/or
2) The course instructor purchases several card decks for students to access and use in the classroom.

HOW TO USE THE EDUCATIONAL TOOL

This card deck can be used as an educational tool in the following ways:

1) Flash cards for memorizing the principles (figure 4.3).
2) A visual matching game (figure 4.4).
3) Compact and portable reference deck (figure 4.5).

Options two (i.e., visual matching) and three (i.e., flash cards) of the games serve as facilitators for student group activities. This visual educational method promotes a more sound understanding and greater retention for the extended design principles in interior design.
Figure 4.3. Flash card game (front and back)

Figure 4.4. Visual matching game
Figure 4.5. Compact and portable reference deck
The educational tool proposed in this thesis provides interior design educators with a framework for a progressive approach to teaching compositional theory and also serves as a comprehensive resource for interior design students. This design instruction tool could also be utilized by other discipline of design and the visual arts for interactive and creative process.

In addition to its use in the classroom, this tool would be valuable for use in training workshops and design seminars for design professionals representing a useful contribution to the design process. Furthermore, it is important to note that following this model does not necessarily guarantee success. How an audience responds to an interior composition can vary greatly based on many factors (e.g., past experiences, memory, interests, etc...); however, further research on psychological responses to particular design principles would be beneficial. It is with hope that the concept and model of this thesis be widely accepted as part of compositional theory for interior design and be considered a valuable contribution to the design process.
RECOMMENDATIONS FOR FUTURE RESEARCH

The following list outlines some general recommendations for further research on advancing compositional theory for interior space designers and educators:

- Execute similar testing to collect data on the emotional responses to interior space images but with black and white images only (to determine if this method yields similar or different results).

- Execute similar testing with different user groups (e.g., non-design students, advanced design students, etc…) to gather a wider array of data regarding emotional responses to design principles and determine how the results may be more or less relevant depending on the demographics of the user group.

- Execute more extensive research on design instruction in several different design education institutions to determine the levels and methods of design compositional theory education that is being taught.

- Development of teaching tool (i.e., card deck) with a more extensive assortment of visual examples of the extended principles.

- Development of a lesson plan for interior design educators that comprehensively outlines methods of teaching the extended principles of design.
• Testing of the teaching tool in a various teaching environments (i.e., interior design, graphic design, and art courses) and collect data and/or make changes bases on the results.
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